Pits and the architecture of deposition narratives of social practice in the neolithic of North-East England

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Pits and the Architecture of Deposition

Narratives of Social Practice in the Neolithic of North-East England

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Declaration

This thesis is the result of my own work, material from the published and unpublished work of others, which is referred to in this thesis, is credited to the author(s) in question in the text. This thesis is approximately 100,000 words in length.

Benjamin Edwards

Abstract

This doctoral thesis examines the practice of depositing material culture and its relationship with social change during the Neolithic period in north-east England. For the purposes of this study the Neolithic is defined as the period in which the pottery styles of Carinated Ware, Impressed Ware and Grooved Ware were made and used. The study area encompasses County Durham, Northumberland and the now defunct county of Tyne and Wear.

Previous work on Neolithic deposition has been apt to confine it within a series of dichotomous relationships: the potency of material culture versus the power of performance; rubbish versus 'meaningful' material; and the structured versus the unstructured deposit. This study demonstrates how these oppositions are unnecessarily reductive and result from modern classifications of artefacts – norms concerning the value of refuse and the role of 'symbolic' material – that have come to be imposed upon the past.

By undertaking a statistical and comparative analysis of deposited material culture from the North-East, this research emphasises the complexity of past artefact classification, and the transformative role that depositional practices can have upon whole societies. It also shows how acts of deposition are intimately connected with architectural forms, be they single posts in pits, or complexes of henges. By utilising a biographical and narrative approach to interpretation, eschewing the search for the 'symbolic' in artefact disposal, the deposition of material culture is exposed as central to the ontological security of Neolithic communities and the built environment that they created.

Acknowledgements

I am very grateful to all of the following for their support during the preparation of this thesis. My supervisors Chris Scarre and Margarita Diaz-Andreu, University of Durham, and my partner Rachel Pope, University of Liverpool, for their invaluable advice throughout. Roger Miket for providing me with access to the Thirlings archive and numerous insights on the archaeology of the North-East. Chris Burgess at the Northumberland HER and David Mason at the County Durham HER for access to their records. Kate Wilson and Rob Young of English Heritage for making work on protected sites an easy task. Peter Carne, Archaeological Services Durham University, for providing unpublished commercial reports and access to vital equipment. Anthony Harding, University of Exeter, for advice concerning the Milfield monument complex. Blaise Vyner for advice on County Durham cursuses and causewayed enclosures. Arthur Anderson, University of Durham, for standing on many a cold hillside with surveying equipment.

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CHAPTER ONE
INTRODUCTION

Some Deposits from the Past

For a while in the late nineteenth and early twentieth centuries, across many parts of England, Neolithic communities were depositing *themselves* in pits and ditches. Seemingly...

> "...it is not difficult to understand how these dwellings were constructed" (Clinch 1899, 134)
>
> "the trench was more than a mere boundary or enclosure ditch and was actually used for habitation" (Leeds 1927, 443)
>
> "Life at Whitehawk Camp must have been at a very low level...for the dark band in the filling of the third ditch disclosed some sordid secrets" (Curwen 1937, 75)
>
> "Pit-dwellings of the Neolithic period are extremely rare in Britain..." (Curwen 1934, 168)

...indeed one might even say 'non-existent'. Yet regardless of how one views earlier interpretations, it is clear that archaeologists have never been blind to the connection between the depositional practices of the Neolithic and its architectural formations. We may no longer picture people living *amongst* the debris in the pits of causewayed enclosures, but we are certain that it played a pivotal role in their social life. This thesis examines that connection between people, their artefacts, their deposits, their pits, and the architectures that these things conspired to produce.

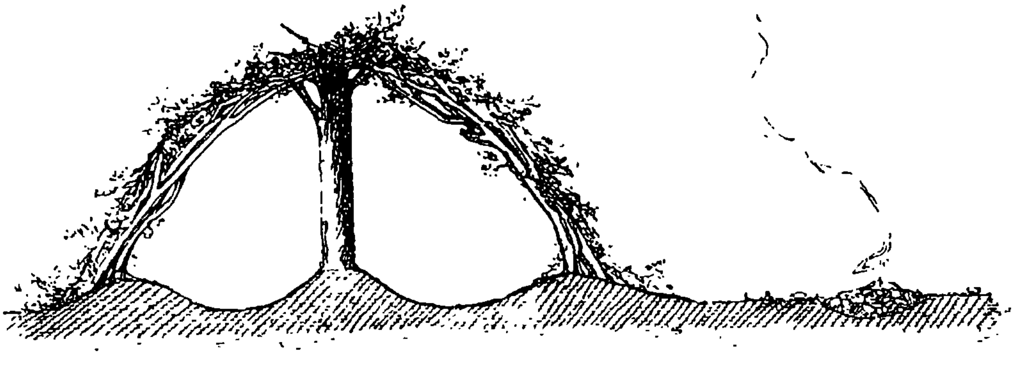


Figure 1.1: "Conjectural restoration" of a Neolithic pit dwelling c.1899 (Clinch 1899, 134)

Theoretical and Investigative Background

Summary

This doctoral thesis attempts to examine social change during the Neolithic in north-east England, using evidence for depositional practice interpreted through narratives and biographies in the *longue durée*. 'Deposition' is defined as a range of activities with different characteristics, depending on context, but sharing a common quality: that of placing things on or in the ground. The remarkable persistence of this practice, alongside the various permutations through which it would develop, enables us to examine its role and context in Neolithic society. The act of deposition is exposed as central to the maintenance and gradual modification of Neolithic world-views. However, this research denies the ability of the interpreter to explain the 'meaning' of deposition – it is impossible to describe the specific details of that Neolithic world-view. Instead, we must focus on how depositional practices developed: how the changing significance of different elements of the rituals reflect, but do not dictate, the ontology of Neolithic agents. By narrating the incredibly complex series of events that produced deposits, this study seeks to understand which elements were of greatest importance to the protagonists, without dictating what they meant. At various points over the coming chapters this will necessitate a re-definition of ritual activity, of the limits of archaeological interpretation, and of the methods by which a post-processual archaeology should examine the past. Importantly, this research rejects the pre-eminence of the 'odd' or the 'unusual' in deposition, seeking instead to examine the everyday, the repeated pattern, and what represented *common* practice. This research represents a new approach toward the methods of investigating and interpreting social change.

Objects of Study

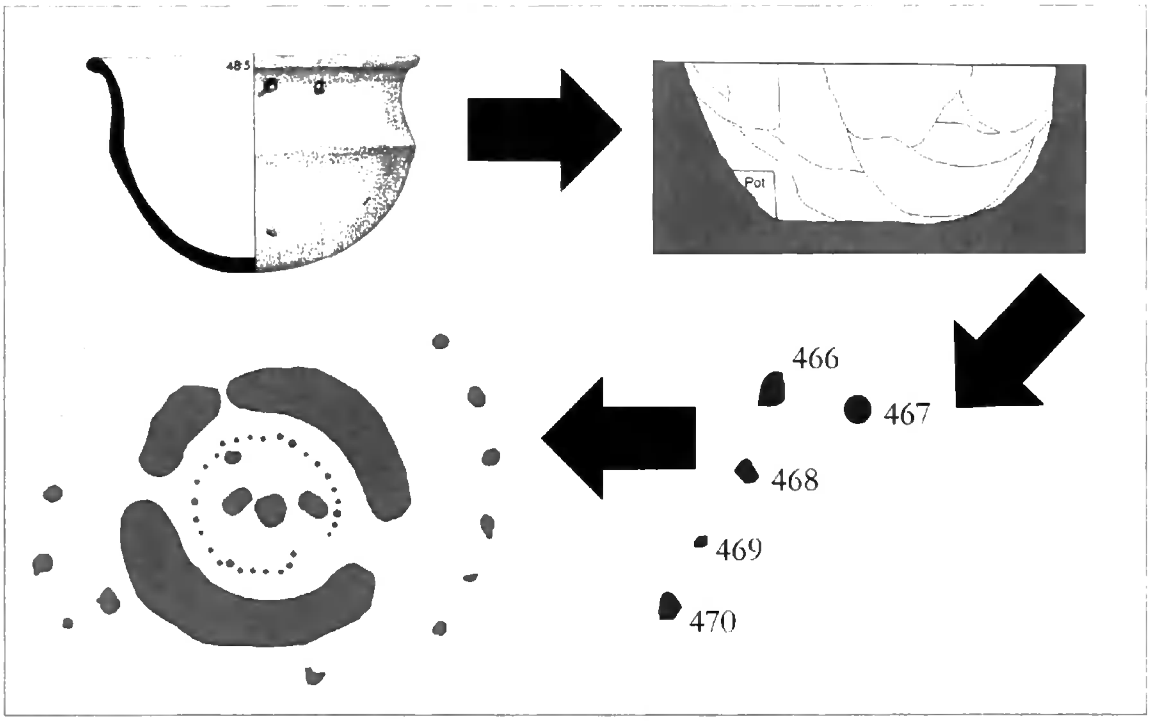


Figure 1.2: The objects of study

Depositional practice is the primary object of study for this thesis, but as a rather nebulous concept, it is worth outlining what comprises its components. It is perhaps best to conceive of depositional practice as operating at, and consequentially being recognisable at, a variety of different scales, all of which are of equal importance to this research (figure 1.2). At the most basic level deposits are defined by what is deposited. Pottery is the material culture studied in the greatest depth here, but decayed organic remains, wooden posts and stone artefacts are also drawn into the discussion. The structure of deposits is also integral to deposition: the forms that are created by the practices. These can be based upon the concept of the pit, but deposits can also be spreads of material on a surface, or even free-standing monuments, such as cairns of stones. Ideas of structure are also evoked by repeated association between the elements of material culture involved in deposition, such as pits containing pottery and marked by a post. More widely, deposition is also defined by its contextual relationship with other acts, be they further examples of pit deposition or the architectural formations of monuments. At the broadest scale, architecture itself can be interpreted as a series of acts of deposition – literally the act of depositing separate components to create a recognisable 'monument' or structure. These acts are spread across whole landscapes: complexes of monuments structuring our whole appreciation of space.

Aims

The aims of this thesis can be described under the following headings, which also broadly represent the order in which the subjects are addressed.

To assess existing approaches to the analysis and interpretation of Neolithic deposition

Since the 1950s there has been a concern with understanding the motivation for Neolithic depositional practices: their purpose and social role. An appreciation of current and past interpretative themes will be key to building a framework for the analysis of deposition in the North-East.

To examine the changing practices surrounding the deposition of material culture during the Neolithic in north-east England

There are a number of practical objectives set for the achievement of this aim. The data from the large pit site of Thirlings in Northumberland will be compiled into a numerical form suitable for statistical comparison. The large number of variables in this dataset, relating both to deposited material culture and to the structure of the site itself, will then be analysed to establish valid trends in depositional practice in space and time. These results will then be compared with those of similar analyses undertaken on smaller contemporary and later sites to ascertain their validity, trajectory and context.

To interpret the above within a framework that does not dictate or impose contemporary meanings on the past

In rejecting the idea that an archaeologist can understand *why* something was undertaken, this research also discards the idea that the meaning of past practices can be understood by interpreters. This thesis, therefore, adopts a biographical approach to interpretation based upon narrating the changing significance of past practices.

To relate this to wider and longer term trends in social change

This final aim relates to the manner in which changes in depositional practice can be related to bigger movements in social change. Themes in deposition will be discussed in relation to theories on the social role of ritual, and how placing objects in the ground could reflect wider ontological concerns. There will be no explanation of the *content* of these metaphysical ideas – as this is an impossible task – instead an attempt will be made to understand their structure in light of their physical effects on human practice.

Theoretical Approach and Method

The Longue Durée

The fundamental premise of all following analyses and discussion is that the role of archaeology is to identify and explain *long-term* social change. The perhaps idealistic aim of this enquiry is to understand how human groups use, and are affected by, their physical surroundings (in every sense) as societies develop. Thus, the study of depositional practice across the Neolithic in north-east England is undertaken in the context of understanding its relationship with slowly changing patterns of architecture and subsistence. This idea of understanding change over the *longue durée*, to borrow the precept of the Annales historians, is not particularly contentious. It is interesting though, as we shall see in chapters three and four, that a history of the study of Neolithic deposition is a history of archaeologists regularly focusing on the short-term and the particular, whilst ignoring the larger-scales of temporal and geographical variation. Interpretations by those whom we might term 'post-processualist' in theoretical orientation, expose an almost exclusive fascination with individual features: a particularist approach based on the recognition of the 'structured' deposit (after Richards and Thomas 1984), generally equated with some 'unusual' arrangement or placement of material culture. Where a deposit lacks obvious structuring principles, as is often the case in Earlier Neolithic Carinated Ware deposition, a simplistic dichotomous structure is introduced into interpretation. The simple is opposed to the complex, on the grounds that the more complicated something becomes, the more symbolically important it must be. The roots of this assumption lie in Ian Hodder's first formulation of contextual archaeology, where the ultimate aim of enquiry is interpret the *symbolic meaning* of past practices (Hodder 1986, 125). In problematising the post-processual approach, this study sets out to change the analytical scale at which we investigate deposition (Mathieu and Scott 2004).

Rejecting Particularism

The approach advocated in this thesis rejects, therefore, the primacy of the 'particular' in archaeological explanation, because it is at odds with long-term narratives. The manifestation of particularism takes many forms. At its most basic it is the process whereby data from one site come to characterise the belief structure of an entire society, as we shall see at Cissbury in chapter three (Topping 2004). More usually particularism produces explanations which, whilst reasonable, may not be relevant beyond an individual site. As these interpretations are built upon what is unique about a certain site, their accuracy cannot be compared with data from other sites effectively, or indeed legitimately; the pits at Firtree Field (Barrett *et al.* 1991, 77) explored in chapters three and four are a good example. When set in the context of the post-modern doctrine of *plurality* (Tilley 1989, 191; Buchli 1995, 191; Preucel and Hodder 1996, 299; Thomas 1996b, 64), there are difficulties in validating interpretations. We are forced to recognise that there are no means by which differing particularist explanations can be reconciled. Perhaps most perniciously, particularism has always advocated the primacy of individual human experience, principally in the present. Thus post-processualism has witnessed the rise of phenomenological approaches that authorise a symbolic explanation of the meaning of a site, based upon contemporary experience, whilst simultaneously justifying the relevance of this *modern* encounter to the beliefs of past peoples (Tilley 1994; Watson 2001; Cummings 2003; Tilley 2004).

Particularism, however, has its value. It may be problematic if one uses it as a template for interpretation, but it becomes relevant and useful when treated as the basis for a *method*. The danger of interpretation across the *longue durée* is the possibility of subsuming variability beneath an imagined broad-scale narrative; Colin Renfrew's Neolithic chiefdoms are only ever a heartbeat away (Renfrew 1973b). Obviously, activity at the scale of the individual agent cannot be ignored; to argue for the *longue durée* is not to return to the grand systems theories of the past. It must be recognised that any broad-scale change is composed of myriad individual actions. So, if one takes the particularist focus upon the formation of individual features or sites, and multiplies the rigour of these investigations across whole landscapes and periods, then the foundation is laid for a long-term narrative based solidly upon a large quantity of data; the idea being that one builds a grand narrative from the bottom-up, rather than attempting to order a mass of data using a pre-conceived model or systems-driven approach – the top-down error. This middle-way finds its expression in this thesis in a movement from the detailed appreciation of 728 potsherds in chapters five and seven, through the analysis of 230 separate features on ten different sites, to the construction of a narrative that stresses a threefold movement in depositional practice by chapter nine.

Studying the Longue Durée

If one claims to be uninterested in the particular details of a deposit for their own sake, but in the collection of these details for some greater narrative, one must still define the object of study amongst this mass of data. This object is *variability*: difference, and the presence or absence of change. It is important to recognise that any long-term understanding of social change is not built upon a continuous record available archaeologically, but upon data gathered from sites, features or deposits that represent separate instances of past activity. These instances must be rendered comparable if any appreciation of variability is to be gained. This research studies instances of past activity at a variety of sites, but the approach is best illustrated by the analysis undertaken in chapter five on the site at Thirlings, Northumberland, comprising 228 pits that produced 523 potsherds of Earlier and Middle Neolithic date. Here, each pit is treated as one instance of past activity. In order to render these features comparable, various attributes of each potsherd and each pit are quantified and subjected to statistical and spatial analyses; attributes such as pottery weight, potsherd size, potsherd abrasion, pit size, and pit type. Similar analyses are undertaken in chapter seven and eight on contemporary Earlier Neolithic and subsequently occupied Later Neolithic sites, using the same quantified measures of activity. In this manner certain aspects of depositional practice are rendered comparable, and are seen to change between the beginning of the Earlier Neolithic and the end of the Later.

Now, this study of the *longue durée* does not make any claim to objective truth based on a resort to what might be described as 'scientific' method – in this case the use of quantified statistical and GIS-based methods. It would be wrong to criticise particularism for its arbitrary means of establishing validity in interpretation, only to replace it with another entirely arbitrary philosophy based upon the supposed objectivity of science. This is most emphatically not a poorly-veiled return to the processual past. Rather, the simple course pursued is this: statistical methods allow us the ability to test the reliability of patterns witnessed in the archaeological record by establishing whether they are likely to be produced randomly or by deliberate choice. It is admitted that these methods are, of course, heavily 'laden' with theory (Wylie 1992). However, they are valid for establishing the existence of variability in the archaeological record, because theories of statistical probability are formulated independently of the hypotheses under test in this thesis. For example, the hypothesis that Earlier Neolithic pits contain a lesser quantity of pottery than Later Neolithic pits is independent of the hypothesis that Kolmogorov-Smirnov two-sample testing is a valid means of comparing two populations of data. This distinction is described by Alison Wylie using the twin concepts of 'tacking' (Wylie 1989) and 'bootstrapping' (Wylie 1986, 319), where complementary but unrelated hypotheses act to undermine relativist uncertainty.

Interpreting in the Longue Durée

As the desired end of analysis in this thesis is neither the meaning of individual pits, nor a series of sterile statistical relationships, an approach is adopted that seeks to bridge the gap between detailed 'scientific' enquiry and social interpretation. The statistical analysis of pots and pits provides a mass of information relating to a number of specific instances in the past, which can be grouped, as one would expect, chronologically. This allows relationships of particular *significance* to be identified for a given period of time. For example: in the Middle Neolithic it appears significant to mark with a post those pits containing a large number of small potsherds. We can identify this association as 'significant' because statistically it is a *non-random* occurrence, and it must, therefore, be the result of deliberate choice or agency in the past. Key to the type of interpretation undertaken throughout this study is the idea that we are able, archaeologically and quantifiably, to identify what was significant to peoples of the past, and what may not have been, by identifying *how* things were done (McFadyen forthcoming). As we shall see, there was a deliberate choice made in the Neolithic to structure pits with complexes of posts, and also to ensure that no pit would ever be physically related to another: these statements both result from past agency – the choice to do something, or not to. These relationships of significance are then traced through time, for example, is it always of significance to mark such pottery-bearing pits with posts? This is explored in chapter six.

An important distinction must be made here, however: by identifying something as significant in the past, we make absolutely no judgement as to *why* it should have been so. This is a departure from accepted post-processual theory. Quite literally, the extension that recognises: "what he [sic] perceives is what he [sic] intends to do about it" (Hall 1977, 77), can be found behind Hodder's statement: in order to "*explain* human behaviour" [author's emphasis] we need to interpret the meaningfulness of past worlds (Hodder 1999, 67). This is based on the avowed ability of the archaeologist to interpret the symbolic meaning of past practices: as the *content* of ideas and symbols [author's emphasis] (Hodder 1986, 124). Chapter four, however, shows how attempts by archaeologists to interpret the symbolic content, or symbolic meaning, of depositional practices in order to make statements about their motivation, regularly impose contemporary meanings onto past practices, and produce in the past a pale shadow of the Western world-view. Quite apart from the ethical and interpretative issues of imposing Western ideas onto the very thoughts of past people, there were undoubtedly as many reasons why something was undertaken in the past as there were people to undertake it, and this variation makes such statements incompatible with the idea of examining practices in the long-term.

'Significance' therefore attempts to identify what was important without falling into the trap of saying why. Yet for these changing relationships of significance to become an interpretation of social life in the past, they must be threaded into a narrative of events and associations. This study constructs such narratives at a variety of scales, drawing upon the biographical approach pioneered by Igor Kopytoff (1986), but eschewing the idea that such biographies can only be created for individual features or objects. Instead, in chapters six, seven and eight, biographies are constructed for *all* the material culture from a particular site, all the pits on a site, whole monuments, and finally an entire landscape of monuments. This serves a variety of purposes. It allows relationships of significance to be traced through time at a certain scale, say that of an individual pit, whilst also providing a means to identify similar or contradictory patterns at the larger scales of the site or landscape. For instance, in chapter eight we discover that pits were dug and filled in the Later Neolithic in an identical manner to certain henge ditches.

Using a variety of narrative threads it then becomes possible to identify broad themes in depositional practice. This thesis recognises three such interrelated themes in chapter nine, which relate, first, to the relative importance of the processes and products; second, to the manner in which certain Neolithic activities were discrete or 'bounded'; and third, to the role of architecture in structuring social action. These themes can, in turn, be related to the manner in which settlement and subsistence practices changed over a two thousand year period, and give a real insight into how the social construction of the human world changes over time.

Finally, this thesis considers the mechanisms that lay behind these narrative themes: why should certain structures of social action become so essential that they are found in a variety of different contexts, across different landscapes, and throughout a wide span of time? What is the underlying characteristic or motivation behind human action that *allows* the production of such structures? In answering these questions, this study ends by examining how a narrative approach to interpretation in the *longue durée* allows us to describe the ontological foundations of a society.

Before proceeding to the body of the study, the remainder of this chapter will describe the structure of the thesis and define some of the major concepts used throughout; these concern the definition of the study area and its character, and certain commonly-used pieces of terminology.

Definitions

Three important concepts, referred to regularly throughout the study are best defined at this stage. First and most obvious is the idea of the 'Neolithic', and its existence as a chronologically specific period. In keeping with the orientation of the forthcoming research the two further concepts requiring early definition are 'deposition' (or the 'deposit') and the concept of the 'pit', as this is the context for most of the deposition studied later. In each of the three cases the definition is intended to be as non-determining as possible, as many variations and caveats are explored and tested in the following eight chapters.

The Neolithic

As this study is not concerned primarily with reasons for the genesis of a recognisable 'Neolithic', it will leave aside, until chapter two, debates on what constitutes the period in Britain. So, in order to define the chronological limits of this thesis, rather than becoming involved in the specific character of the Neolithic, a more simplistic approach will be adopted. The Neolithic, as defined here, is the period of time during which the three pottery styles of Carinated Ware, Impressed Ware, and Grooved Ware were made and used in England, Scotland and Wales. The three styles also define, in broad terms, respectively, the Earlier, Middle and Later Neolithic. Any sites not associated directly with this material culture, but which have produced radiocarbon dates from other evidence that falls within their dated span, are considered to be 'Neolithic' in date. Within the study area of the north-east of England the earliest date associated with Carinated Ware is 4030-3710 cal BC (OxA-6832) from Coupland Henge (Waddington 1996a), and the latest associated with Grooved Ware is 2295-1980 cal BC (BM-1650) from the Milfield North pit alignment (A. Harding 1981, 115-119). These are not the traditional dates for the span of the Neolithic, but considering that this research is directly concerned with the deposition of material culture, it seems logical to take the dates associated with that material culture as the limits of the study. Chapter two deals more completely with the dates associated with these pottery styles, across Britain and within the study area.

Deposition

Every type of evidence studied here, be it artefactual, architectural or environmental, shares the distinction of having been 'deposited' at some point by the actions of people. 'Deposition' is the act by which such evidence is placed on, in or beneath the ground, a human structure or a natural feature. In Schiffer's (1987) terminology this study covers secondary and *de facto* refuse, although the concept of 'refuse' is closely examined in chapter four. This definition is, then, deliberately broad in scope. The reasons for choosing 'deposits' as the major category of evidence for study are explored in chapter two through a consideration of the quality and breadth of the archaeological record in north-east England. The specific character, and current interpretation, of Neolithic deposition outside the study area is examined in some depth in chapter three.

The Pit

As the context for many of the deliberate acts of deposition that occurred during the Neolithic, the concept of the 'pit' has particular relevance. Here, a 'pit' is a feature cut into the ground or into an earlier archaeological feature, which is formed by the removal of the original material, leaving a void. The concept of 'the pit' does not presuppose that it has to be filled, either by different material taking the place of the original matter, or by the reintroduction of that matter; a pit can be left open to silt up. Pits can be elaborated in a variety ways, with a series of ancillary features, such as posts or stakes; with linings of organic material or clay; or with complex juxtapositions of material culture. None of these features make more or less of a pit.

Radiocarbon Dates

Unless stated otherwise, all radiocarbon dates quoted or displayed in this work are presented with a two sigma error-range in calibrated years BC. Calibration was undertaken by the author using OxCal 4 (Bronk Ramsey 1995; 2001), on the IntCal04 calibration curve (Reimer *et al.* 2004).

The Study Area

This study focuses upon the north-east of England, an area defined by the River Tees to the south, the River Tweed to the north, the North Sea to the East, and the summit ridges of the Pennines and Cheviot Hills to the west and north-west (figures 1.3 and 1.4). The Tweed and the summit ridges that delimit the study to the north-west and north also follow the line of the Scottish-English border. The study area corresponds largely with the pre-1995 English counties of Northumberland, Durham, and Tyne and Wear. The area of Cleveland that lay north of the Tees was omitted, as it is highly urbanised and contained no Neolithic archaeological sites other than unstratified flint and pottery findspots from ploughsoil.

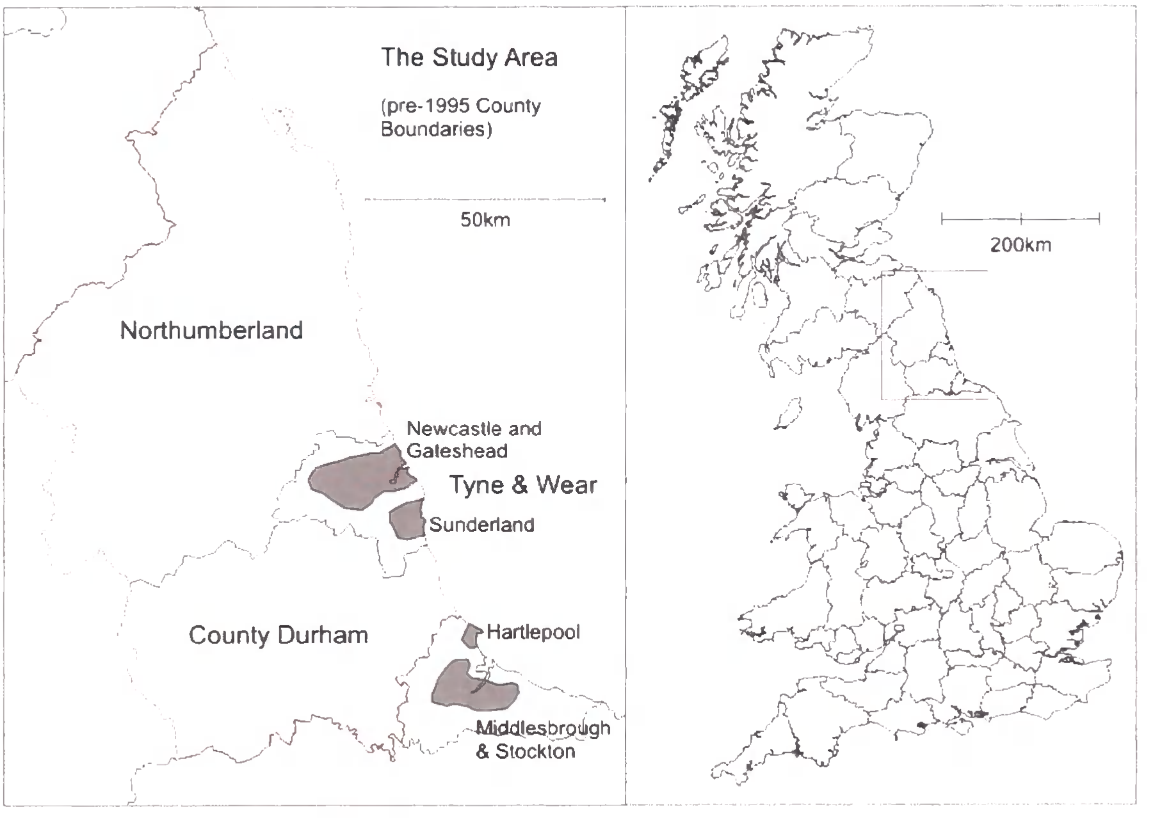


Figure 1.3: Area encompassed by this study, conurbations shaded

The chosen method of circumscribing the study area had certain advantages. Focusing on the three counties allowed simple initial data collection from a small number of Historic Environment Records (HERs). Whilst any boundaries are necessarily arbitrary, those that correspond with natural features would, at least, have existed in the past, even if we cannot be certain as to their meaning.

Landscape and Land-Use

The landscape of the North-East is dominated by the Pennine and Cheviot upland to the west. It is from these heights that the region's rivers originate, which in turn have shaped the country between the uplands and the North Sea. Figure 1.4 shows the major rivers and topography of the study area. The light and thin soils of the upland areas, regardless of differences in underlying geology, have dictated that little of the land above 200m OD has been used by modern agriculture for anything other than pasture. Medieval and prehistoric cultivation is evident in some areas, but these practices had less damaging implications for buried archaeology than the modern arable practices of the lowlands. It is in these upland areas that standing field monuments are most in evidence.

The most obvious difference between the areas of upland in the North-East lies in their slope-profiles. The Cheviot massif is characterised by very steep-sided, narrow valleys, in some cases accessible only to nimble hill-sheep. The sandstone Pennine uplands are more rolling, and the Tyne, Wear and Tees valley systems that cut this terrain are wider and less severe. Agricultural activity has concomitantly had more of an impact in these areas. Differences in the Neolithic occupation of these landscapes are considered in the following chapter. The East Durham coastal plateau is a flatter landscape but one at relatively high altitude compared with the lowlands to the north, or indeed the incised river valleys that pass through it; the plateau is represented on figure 1.4 as the area above 100m OD between the rivers Wear and Tees.

To the north of the Wear lie the Tyne and Wansbeck lowlands, an area of landscape covered in heavy post-glacial alluvial clays, now the location of intensive arable agriculture, and with little evidence for Neolithic occupation. Further to the north, between the Tweed and Coquet stands a north-south ridge of sandstones, once again notable for upstanding monuments. However, between this ridge and the Cheviots to the west, in the valley of the Till, the more forgiving weight of the sandy soils repays the archaeologist with a wealth of cropmark sites, especially in the Milfield Basin. The large conurbations of Teeside, Wearside and Tyneside (figure 1.3) are not notable for their Neolithic archaeology, despite continuous commercial archaeological excavation.

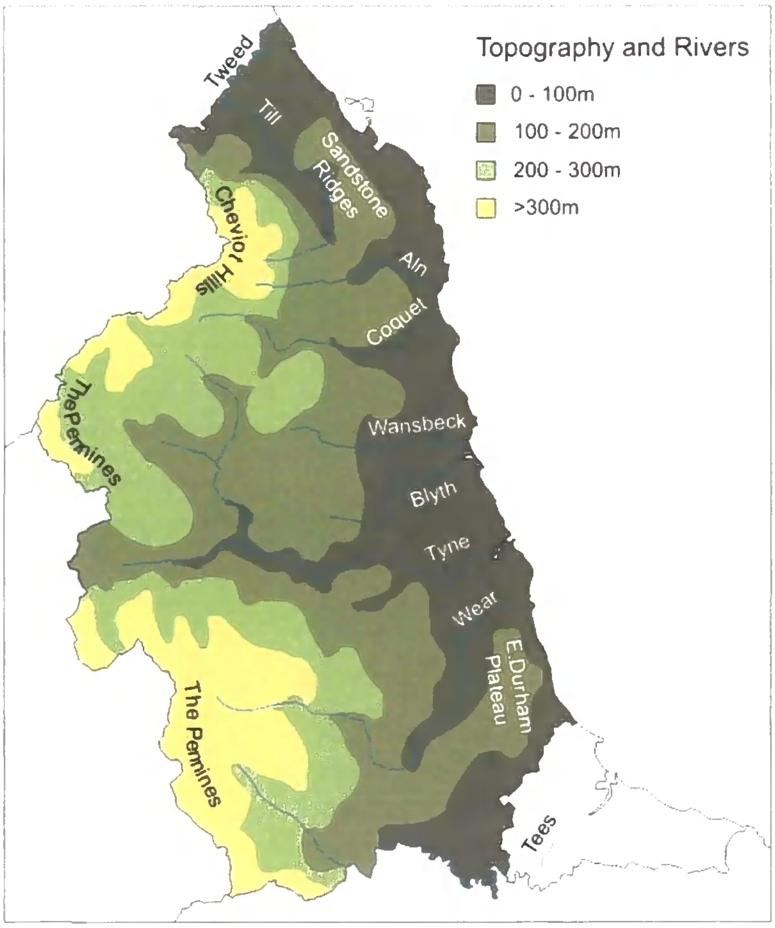


Figure 1.4: The topography and rivers of north-east England

Geology

The drift and solid geology of the study area can be divided into distinct areas, with attendant effects on the types of soil coverage, and in turn upon the nature of the Neolithic occupation. Figure 1.5 displays the major distinctions in the solid geology of the North-East.

The specific effect of these geological differences upon the distribution and type of Neolithic activity across the region is considered in chapter two. However, it is worth mentioning the types of soils generated upon the different classes of rock, setting aside heavy clay riverine soils, which have produced little in the way of Neolithic evidence (see chapter two). Above the valley bottoms, the relatively cold climate and heavy rainfall in the region combine with the properties of the underlying rocks to produce soils of high acidity. These are especially pronounced in the uplands. The Cheviot andesite and the various sandstone bedrocks all decay into acidic soils. The exceptions to this rule are those areas of the coal measures and magnesian limestone that form the East Durham coastal plateau, where soils are more basic in nature. Obviously, the high acidity of much of the soils across the study area has had repercussions on the preservation of organic archaeological remains – it is very rare to find a site on these soils where anything less hardy than carbonised material has survived. The more alkaline soils of the plateau present a different set of problems. Here, the presence of the Coal Measures has led to heavy industrial utilisation of large areas of the landscape and an attendant lack of concern with archaeological investigation during the last two centuries. As the soils on the limestone are light, long-term intensive agricultural exploitation also renders the location of ephemeral Neolithic occupation problematic. It is no surprise, therefore, that the record of the whole study area is dominated largely, as we shall see in chapter two, by upstanding upland monuments, and the cropmarks of large and difficult-to-erase ditched sites.

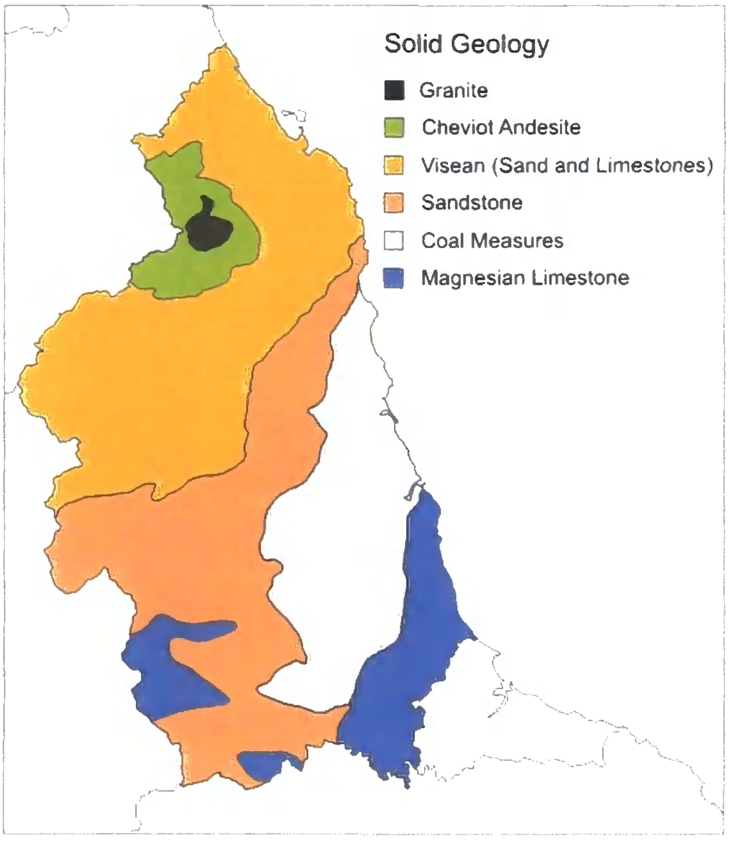


Figure 1.5: Solid geology of north-east England

Structure of the Study

The content of this thesis can be divided into two sections. The first, encompassing chapters two, three and four, presents the background information necessary to any study of Neolithic deposition in the north-east of England. Chapter two covers the history of archaeological investigation in the North-East and the distinctive character of the record that has resulted from these investigations. In addition to a brief survey of the known sites and monuments in the area, this chapter also focuses on the means of identifying and dating the Neolithic of the region. A well-dated corpus of pottery is chosen as the best means of delimiting the period under study, and a combination of palaeoenvironmental records with find-spot data is identified as the best means of tracing the limits of Neolithic activity across the landscape. Given the character of the record in the region, chapter two demonstrates why 'deposition', as a category of practice that cuts across monument and site types, is the best lens through which to view Neolithic social change.

Chapter three examines depositional practice in the Neolithic more generally. The chapter focuses on pits initially, before considering the changing nature of deposition at field monuments. The discussion takes the form of a quasi-historical analysis of the trends in interpretation over the last sixty years, using major sites as examples when the date of their excavation becomes relevant chronologically. The contribution of this chapter, in addition to detailing the physical manifestation of Neolithic deposition, is to provide an understanding of how its interpretation is coloured by a series of rarely acknowledged dichotomies that divide the 'meaningful' from the 'meaningless'.

This thread is taken up in chapter four, which is best described as the 'background theory' to the interpretation of deposition. This chapter engages directly with the underlying preconceptions that gave rise to the types of interpretation examined in chapter three. Beginning with an examination of the division, in Western thought, of 'rubbish' from 'meaningful' material, chapter four proceeds to unpack a series of consequential suppositions about the nature of settlement activity, 'occupation deposits', what constitutes 'ritual' activity and its value in archaeological interpretation. This chain of interrelated assumptions is shown to relate, at the most fundamental level, to the way in which archaeologists attempt to interpret the past.

Chapter five marks the beginning of the second section of the thesis, which analyses and interprets Neolithic deposition in the north-east of England. Chapters five and six are closely related: the first undertakes a statistical analysis of the Earlier and Middle Neolithic pit-site of Thirlings in Northumberland. Thirlings represents the largest data-set in the study, with information available on over 500 sherds of pottery and 220 pits. The analyses focus, first, on trends in deposition between pits; second, on a detailed examination of individual potsherds; and finally, on spatial relationships across the site. Chapter six interprets the results from the analyses in chapter five in a pair of narratives. The first concerns the biography of a potsherd, from the breakage of a pot to its deposition via a complex sequence of activities. The second narrates the creation of pits on the site, with respect to the spatial relationships evident from chapter five. Importantly, both of these narratives make a self-conscious effort to avoid focusing on a single artefact or 'unusual' deposit, preferring to make statements valid for each of the major periods, based upon on quantified and statistically valid relationships.

Chapters seven and eight undertake similar analyses and interpretations for sites that are contemporary with (chapter seven) and post-date (chapter eight) the activity at Thirlings. The aim here is to test how representative the statistical trends observed in chapters five and six may be for the rest of the Neolithic, both temporally and geographically. Chapter seven undertakes an analysis of the material culture from a pit at Yeavering, a Neolithic round-barrow at Broomridge, and across the region's poorly-excavated long-cairns. Chapter eight begins where Thirlings ends, at the beginning of the Later Neolithic and the development of a large monument complex at Milfield, Northumberland. This chapter identifies how depositional practices developed through the Later Neolithic from their roots in earlier activities studied in preceding chapters. Particularly important in this chapter is the impact of henge architecture on the nature and complexity of deposits. Chapter nine, the discussion and conclusions, draws together the trends observed in the North-East, and places them in the theoretical context of chapters three and four. Depositional activity is demonstrated to be of particular significance ontologically, and of direct importance as a mechanism for regulating social change throughout the Neolithic and beyond.

CHAPTER TWO
THE NEOLITHIC OF NORTH-EAST ENGLAND

Introduction

This chapter provides a background to the archaeology of the Neolithic in north-east England, and an appreciation of certain trends in its investigation. It is designed around a brief survey of the relevant sites, monuments, artefacts and environmental data, rather than a detailed description of every piece of evidence. The chapter opens with an account of the sources of evidence available to an archaeologist studying the Neolithic of the area. The date and extent of the various excavations are considered, alongside the nature of survey work, and an examination of the type of synthetic commentary that has, or has not, been undertaken. We then proceed to an appreciation of the material culture that defines the chronological limits of this study, and the manner in which this is related to the absolute dating of the periods under consideration. A description of the major Neolithic and some Early Bronze Age site types then follows, with a brief illustration of important and excavated sites alongside a listing of those that are known but have not been investigated. This appreciation of the source and nature of available evidence will enable critical reflection on the context of the study and how it, as a synthetic piece of work, has been designed in response to the strengths and weaknesses inherent in the dataset from the North-East. Importantly, this chapter will establish why pit deposition has been chosen as the appropriate lens through which to investigate the changing social practices of the Neolithic.

Investigations, Evidence and Syntheses

Before reviewing any chronological evidence or the major classes of monument in the region, it is worthwhile considering the overall patterns in their investigation, the sources of evidence these represent, and any bias that enters the record as a result. This bias can take a number of forms that affect the composition of the record, from the distribution of archaeological investigation across the region and its different landscapes, to the history and quality of excavation itself. The concern here is also how these factors have an effect on interpretations, especially in regional syntheses. This section will briefly consider the sources of evidence that comprise the archaeological record, concentrating on the histories of excavation and survey, before moving on to consider regional interpretation, focusing on the major synthetic works.

Sources of Evidence and the Nature of Bias

There are obvious biases in patterns and strategies of excavation and survey that have affected the constitution of the Neolithic record of the North-East. Beyond certain core lowland areas such as the Milfield Basin (discussed below), excavated evidence from the region, especially in upland locations, is very sparse. Evidence does exist from a small number of upstanding field monuments, but in many cases this is the result of antiquarian excavations of the late nineteenth and early twentieth centuries. The modern excavations at the long cairns of Scald Hill (Miket and Aylett 2006) and Harehaugh (Carne 2006) are unusual exceptions. Although the unrecorded excavations at Duddo stone circle are a source of irritation (Craw 1935), in most cases the problem is not the quality of the recording: Canon Greenwell's numerous round barrow and cairn excavations are very well described (Greenwell 1877), to the extent that reconstruction drawings can be made (Edwards forthcoming). Similarly, Trechmann's excavations at the round barrows of Warden Law, Copt Hill and Hasting Hill (Trechmann 1914) contain plan drawings, and Nancy Newbigin's investigation of Bellshiel Law long cairn is comparable to modern recording practices (Newbigin 1936). The real issue lies in the absence of data about the environment and dating that is taken for granted in modern research excavation, and the fact that unrefined excavation practices had a tendency to focus upon the recovery of recognisable 'deposits' at the expense, for example, of the stratigraphy of a burial mound itself. The method of trenching employed at Hasting Hill is a case in point (figure 2.1). We lack, therefore, the fine-grained information so vital to the reconstruction of specific past practices and their context; major elements, such as evidence for the insertion of later burials into mounds, or the immediate land-use surrounding a site are often absent. The remaining evidence for Neolithic and Early Bronze Age activity is based entirely on metric and aerial photographic survey; this has been extensive, the lists in the previous section illustrate this point quite forcefully, with concerted campaigns by Reverend J.K. St Joseph and subsequently Tim Gates. Yet this has obvious effects on the type and extent of regional synthetic interpretation.

Figure 2.1: C.T. Trechmann and the excavation of Hasting Hill round barrow (courtesy of Roger Miket)

Over the last twenty years, as with all areas of the UK, developer-funded archaeology has become the major means of intervention in the record. In lowland regions, such as East Anglia, developer-funded excavation has led to an effectively random geographic sampling strategy (Garrow 2007, 1); in lowland Scotland, it is actively correcting bias in the excavated record (Phillips and Bradley 2004, 44). Yet PPG-16 in the North-East has concentrated archaeological work in certain types of landscape, mainly lowland areas and the gravel terraces of major river systems and has had little impact on prehistoric research outside these zones (Petts and Gerrard 2006, 23). The best example is provided by the Milfield Basin, north Northumberland, where research work by Brian Hope-Taylor (1977), Anthony Harding (A. Harding 1981), and Roger Miket (Miket 1981; 1985), has been succeeded by various commercial interventions in advance of gravel extraction at Lanton Quarry (Stafford and Johnson 2007) and Cheviot Quarry (MAP 2000; Waddington 2000a; Muncaster 2003), including extensive research work funded through the Aggregates Levy Fund (Johnson and Waddington forthcoming), and has also spawned a further intensive campaign of aerial photographic survey. The observation, made in 1976, that the Milfield Basin was responsible for 95% of all Neolithic pottery finds in Northumberland (Miket 1976, 113) illustrates a situation that has changed little since.

Regional Syntheses

Roger Miket observed in 1976 that the North-East had little presence in discussions of the British Neolithic (Miket 1976, 113). This situation has not changed substantially because a full synthesis of the Neolithic archaeology of the region has never been produced. One might question the validity of such a synthesis given the diverse range of monument types, their uneven distribution, and the wide range of ecological and topographical zones present in the study area, as we shall see below. Yet this question has never really arisen for other studies in the North-East, largely because they have never been undertaken. In this regard it is perhaps telling that very few true syntheses exist. The reason for this absence is the problem of evidence: it was noted above that very little excavation, modern or otherwise, has occurred outside the core area of the Milfield Basin, which unsurprisingly is the only area with a history of synthetic interpretation. It may be that it is this lack of excavation, rather than a true pattern in the record, that has led to claims of a 'Neolithic that never happened' (Waddington 2000b).

Given this lack of detailed evidence, the dominant form of publication concerning archaeology on a regional scale has been the gazetteer, either presenting the results of particular surveys, or written periodically to collate and describe such data more broadly. The Magnesian Limestone Escarpment Plan (Turnbull and Jones 1978), undertaken over the coastal plain of County Durham; the report on the archaeology of the Darlington area (Clack and Pearson 1978); and the larger *Archaeology in the North* (Clack and Gosling 1976) are examples of the large-scale investigation and compilation of aerial photographic evidence, usually for management purposes. Other studies have included a synthetic element, but are largely reliant upon survey or find-spot evidence to reach their conclusions, such as Rob Young's *Wear Valley Prehistory* (1984), *The Prehistory of Tyne and Wear* (Miket 1984), and

The Later Prehistory of Northern England (Annable 1987); still, the bulk of each of these works is the attached gazetteer. As a result of the limitations of the available evidence, discussion in these volumes is rarely able to move beyond interpretations of site or finds distributions, and the highlighting of areas of future potential. The only wide-ranging multi-period regional synthesis was undertaken by Colin Burgess in 1984, and still this was confined to the evidence from Northumberland. However, it was the first attempt to integrate climatic, pollen and archaeological evidence to present a complete picture of the Neolithic, conceived at this point as representing the arrival of the first settled farming communities to the region. Whilst the idea of a universally settled, farmed Neolithic may be questioned twenty years on (though see Rowley-Conwy (2004) in support of settled farming), Burgess' synthesis has been the only attempt at integrating all the evidence from the region, and many of his conclusions are certainly still valid: no subsequent work can question his assertion that the variety and juxtaposition of monument types and pottery styles in the region point to a Neolithic of advanced social complexity (Burgess 1984, 139). It is interesting that Burgess himself should subtitle this work 'A Speculative *Survey*' (my emphasis) given that, in contrast to all previous survey publication, it was the most advanced interpretation of its time.

The exception to this rule is, once again, the Milfield Basin: it has received a disproportionate amount of synthetic attention over the last thirty-five years. This began in 1976 with the discussion of the various Neolithic pottery styles present in the area. Basic divisions were made between earlier Carinated Wares associated with 'domestic' occupation at the recently discovered Thirlings, and emerging styles of Impressed Wares (then Peterborough Wares) in the newly classified Meldon Bridge and Rudston sub-types (Miket 1976). This was followed, somewhat later, with an appreciation of the archaeological evidence for all periods by the same author (Miket 1987). Somewhat more restrictive syntheses were developing at the same time, with Anthony Harding's interpretation of the henge complex and its landscape context (A. Harding 1981), alongside the growing corpus of other excavated monuments (Miket 1981; 1985). Interpretation of these monuments grew through their articulation with rock art and transhumance agriculture (Waddington 1996b), a re-consideration of the role of pit alignments in the basin (Waddington 1997), before culminating in *A Landscape Archaeological Study of the Mesolithic-Neolithic in the Milfield Basin, Northumberland* (Waddington 1999). This study attempted, as Colin Burgess had for Northumberland, to integrate all the available, pollen, geological, find-spot, and excavated evidence into one scheme. A critical analysis of its successes and shortcomings is made in chapter eight.

Northumberland National Park is the only other bounded area to have been the focus of a synthetic work, with the comprehensive volume, edited by Paul Frodsham, *Archaeology in Northumberland National Park* (2004). This included an interpretative section by the editor, followed by a collection of papers dealing with recent work within the Park. This book stresses the indistinct boundary between the Neolithic and Early Bronze Age in Northumberland, with little bronze working, and dates from Food Vessel burials that appear to predate the Milfield henges (Frodsham 2004, 25). These are all facts that necessitate the somewhat blurred chronological distinction made between the end of the Neolithic and Early Bronze Age in this study, reliant upon pottery rather than absolute dates. The interpretative section of this volume is noteworthy, inasmuch as other edited works, such as *Neolithic Studies in No-Mans Land* (Frodsham 1996), the festschrift in honour of Keith Blood (Frodsham *et al.* 1999), and *Northern Pasts* (Harding and Johnson 2000) tended towards specific papers with little attempt at the juxtaposition of their contents beyond a basic introduction.

None of the above should be construed as criticisms; the lack of broad-scale interpretative work is a direct consequence of the nature of the archaeological record, and without improbable amounts of excavation other methods of circumventing these problems must be found. It is worth observing on a more positive note though that, as a direct result of the above, the North-East has not become enmeshed in the tendrils of the 'Wessex-model'. With perhaps the exception of Clive Waddington's synthetic work (1999), which relies heavily on Julian Thomas' scheme for the settlement and subsistence of southern England (1991; 1999), few attempts have been made to equate the Neolithic trajectory of other areas with the dataset available in the region. Consequently, north-east England is ideal ground on which the dominance of Wessex-centred models can be questioned and Neolithic regionalism investigated (Barclay 2000), as it was successfully in East Yorkshire (J. Harding 1997).

Artefacts, Ecofacts and Dating

The pottery styles of north-east England furnish this study with its chronological limits and divisions. This section will illustrate the three major pottery styles that broadly succeed one another throughout the Neolithic in the region, Carinated Ware, Impressed Ware and Grooved Ware, and place them in their regional and national context. The dating of these styles and their contexts will demonstrate why they have been chosen as chronological markers. The radiocarbon dates and monument types associated with these pottery styles in turn dictate the later foci of this study. Diagnostic stone artefact types will also be briefly examined, although their limited distribution and/or uncertain context will prevent lengthy discussion. An appreciation of all the absolute dating evidence and associated contexts from the region will then be considered, and its paucity in comparison with artefactual forms of dating demonstrated. This section closes with a brief survey of palynological evidence for Neolithic and Early Bronze Age activity in the North-East, focusing on pollen indicators of environmental modification through woodland clearance, and the limited evidence for cereal agriculture. Unfortunately, due to harsh environmental and taphonomic factors there is insufficient faunal or other palaeobotanical evidence from the region to pass reasoned comment (Huntley and Stallibrass 1995; Stallibrass and Huntley 1996).

Carinated Ware

This is the first distinct style of pottery to become widespread in Earlier Neolithic Britain. 'Carinated Ware' is a neutral, descriptive term that encompasses the regional styles of Windmill Hill, Grimston, Lyles Hill, Plain Bowl, and Hembury. It is generally characterised by sharp shoulders or 'carinations' and stereotypically exhibits an S-profile with a rounded base. The fabric is often fine, though there is a spectrum of coarseness: the best examples are burnished all over, often almost black, and with a fine leathery appearance. Carinated Wares are the dominant pottery style of their period in England and lowland Scotland and were firmly placed in first half of the fourth millennium BC by Herne in his landmark paper, *A time and a place for the Grimston bowl* (1988). More recently from radiocarbon evidence, the first appearance of carinated pottery in northern England has been tied down to between c.3950/3900 and 3800 cal BC (Sheridan 2007, 453). As the sub-style names suggest, this pottery is prevalent on all major sites of the Earlier Neolithic. It has been recovered from long and round barrows on the Yorkshire Wolds (J. Harding 1996, 67); earthen long barrows in southern England, such as Fussell's lodge (Ashbee 1966) and Hazleton North (Saville 1990); and from a large number of causewayed enclosures, including Abingdon (Avery 1982), Staines (P. Bradley 2004), Etton (Pryor 1998) and Windmill Hill (Whittle *et al.* 1999). However, it would be wrong to classify carinated wares as only associated with burial and communal monuments. The most impressive single assemblage may well be the 2300 sherds excavated at the pit-site of Biggar Common, Lanarckshire (Johnston 1997). Indeed, discoveries on pit-sites are common across Britain, with finds from a number in East Anglia: Hurst Fen, Suffolk (Clark 1960), and Kilverstone, Norfolk (Garrow *et al.* 2005). Yet Carinated Ware has also been recovered from the large timber halls of eastern Scotland, such as Claish (Barclay *et al.* 2002). It is a common style across a wide variety of sites and a large geographical area.

More highly decorated sub-styles also exist, known as Mildenhall, Abingdon and Whitehawk, which may have been used for specific purposes or held specific meanings (Thomas 1999, 99; A. Barclay 2002, 85). However, overall there has been a broad move in interpretation away from distinct regional styles: Trevor Cowie has questioned their applicability to the eastern and central Scottish material (Cowie 1992, 280), and Rosamund Cleal prefers a typology based upon 'open', 'closed' and 'neutral' forms, as all the major stylistic traditions can be represented on the same site (Cleal 1992). Potentially, the only recognisable single style is the Hembury tradition, which utilises the distinctive gabbroic clays of the Lizard (Gibson 2002b, 71). Similarly, the distinction of so-called 'Plain Bowls' from Carinated Ware, and those in turn from more decorative traditions, may also be illusory, with chronological differences insecure (Gibson 2002b, 74; Miket and Edwards forthcoming). It may be better to conceive of a general round-based Earlier Neolithic pottery tradition, with a variety of forms and decorations often recovered from within the same assemblages.

Carinated Ware finds from the North-East are plentiful, but they are largely concentrated in the Milfield Basin due to the disproportionate amount of excavation that has occurred there. However, the pottery has been recovered from a wide variety of site types. The pit site at Thirlings, studied here, produced 270 sherds from a minimum of 37 vessels; further pits at Woodbridge Farm, Milfield (Waddington 2000a) and Bolam Lake (Waddington and Davies 2002) produced small assemblages; pits at Cheviot Quarry produced 79 vessels (Johnson and Waddington forthcoming); and a pit at the Yeavering Palace site produced one bowl (Hope-Taylor 1977, 345; Ferrell 1990). Carinated Ware was also deposited in burial contexts: 204

sherds were recovered beneath the Broomridge barrow by Canon Greenwell in association with flints, charcoal and burnt bone (Greenwell 1877, 410; Newbigin 1935, 150), and C.T. Trechmann recovered three sherds from the Hasting Hill round barrow (Trechmann 1914, 135-156; Manby 1973, 219). There are also assemblages from activity predating the henge at Yeavering (A. Harding 1981, 122-127), and the henge at Coupland (Waddington 1999, 126). Interpretatively speaking, often the pit-derived contexts of these finds are apt to generate a 'domestic' interpretation for the pottery (e.g. Woodbridge Farm (Waddington 2000a, 1)), but the finds from beneath round barrows rather belie such simplistic distinctions. If Carinated Ware is the multi-use pottery for the period, its particular meanings were liable to change with its context, making such interpretations unsustainable. The evidence from Milfield, that the pottery was produced locally, both from its quartzite grits (Miket and Edwards forthcoming) and diatom analysis of the clays (Gibson 1986), does not contradict this assertion.

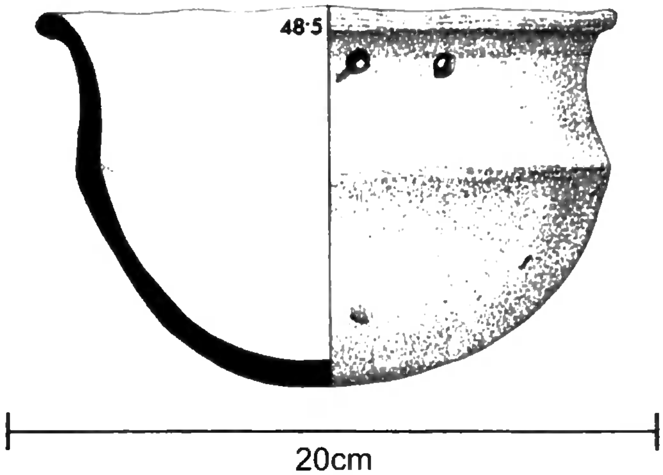


Figure 2.2: A Carinated bowl from Thirlings (after Miket and Edwards forthcoming)

Impressed Ware

The term 'Impressed Ware' denotes those various sub-styles of pottery originally subsumed within the Peterborough Ware tradition. The more southerly styles of Ebbsfleet, Mortlake and Fengate are often still referred to as Peterborough Ware, but in the north sub-styles such as Rudston and Meldon Bridge are known by the more neutral 'Impressed' label. It is characterised by a coarser fabric than the preceding Carinated tradition, and is heavily decorated. In form it is characterised by developed rims and the preponderance of shouldered bowls, with much more restriction in vessel type than previous traditions (Thomas 1999, 107). It is now accepted that Impressed wares are a Middle Neolithic phenomenon (Gibson and Kinnes 1997), fully developed by 3000BC in southern England and Wales (Gibson 1995, 30; 2002a, 175), although the Meldon Bridge style of the Borders may arise slightly earlier, around 3300BC (Gibson 2002b, 80). Whilst the various sub-styles seem to be distinct, there is no evidence from radiocarbon dating that they succeed one another (Gibson and Kinnes 1997, 70), and it is rather more likely that they are contemporary. However, it does seem that the Meldon Bridge style develops into the Early Bronze Age Food Vessels of northern England and the Borders, whilst Mortlake and Fengate may inform the development of contemporary Collared Urns in the south (Manby 1975, 59; Burgess 1976, 176; Gibson and Kinnes 1997, 70). Overall there may be more regional distinction in northern than southern England (Thomas 1999, 110). As one would expect as the pre-eminent pottery type of its period, Impressed Wares are associated with a number of site types, and in the South it appears that certain styles are associated with particular contexts of deposition (*ibid*, 111). For example, in the Thames Valley, Fengate and Mortlake bowls are commonly found in pits, whereas Ebbsfleet is only rarely, yet all three have been found deposited in the River Thames (A. Barclay 2002, 90). Peterborough Ware is common amongst the pits of East Anglia (Garrow 2007, 13); has been recovered from pits groups at Cefy Bryn, Ffonddyrys, Gore Hill and Walton in Wales (Gibson 1995, 29); and was discovered alongside Grooved Ware in the pits at Firtree Field, Cranborne Chase (Barrett *et al.* 1991, 79).

Impressed Ware finds in the North-East are as geographically widespread as the earlier Carinated Ware distributions. In terms of context, the only find associated with a burial was the single sherd from the Hasting Hill round barrow (Manby 1973, 219), although its precise provenance within the mound is unknown (Trechmann 1914, 156). This remains the only burial association for the style because Alex Gibson has questioned the Impressed Ware identification of a vessel buried alongside a multiple cremation at Whitton Hill (Miket 1985), preferring a Bronze Age date (Gibson 2002a, 177), though this matter is far from settled. The remaining finds are from pits or chance discoveries: Thirlings produced sherds from a minimum of forty vessels; Yeavering Palace Site twenty sherds from a variety of contexts (Ferrell 1990, 34); the most recently discovered pits at Cheviot Quarry produced a minimum of four vessels (Johnson and Waddington forthcoming); and those nearby at Woodbridge Farm nine sherds and 43 fragments (Waddington 2000a). Finally, chance finds at Old Town Farm, Heatherwick and Kyloe Crags provide a further three vessels for the corpus (Tait 1968, 275-279). In addition to the Whitton Hill example, it is testament to the difficulties involved in securely identifying relatively un-diagnostic coarse-ware sherds, that the Impressed Ware finds from Crookham, Redscar Bridge and Alnwick have all been reassigned to the Bronze Age (Longworth 1968, 260; Tait 1968, 280; Kinnes and Longworth 1985, 135).

Limited provenance studies have been undertaken and it is interesting to note that, whilst the pottery from the Milfield area is known to be of local origin (Gibson 1986), not all the style-types are consistent. The Impressed Ware from Yeavering Palace Site and a large proportion of that from Thirlings is of the relatively local Meldon Bridge style, but the Thirlings assemblage also exhibits Fengate forms (Hope-Taylor 1977, fig. 123; Burgess 1984, 138). Indeed, as one looks farther south, it appears that the grip of Meldon Bridge diminishes, with the sherd from Hasting Hill appearing to have more in common with the East Yorkshire material (Manby 1973, 221). The various styles of Peterborough or Impressed wares, and their wide and often overlapping distributions, argues strongly for a very varied and regionalist pottery tradition, particularly in the north of England and the Borders.

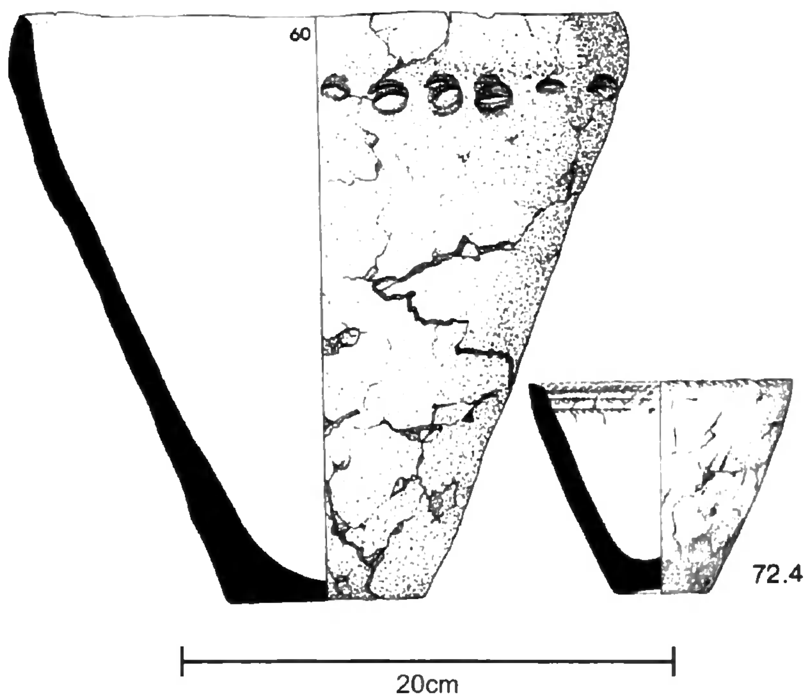


Figure 2.3: Impressed Ware pots from Thirlings (after Miket and Edwards forthcoming)

Grooved Ware

The distribution of Grooved Ware runs from Orkney to Ireland to Wessex. Its four sub-styles of Woodlands, Clacton, Rinyo and Durrington Walls are also consistent across this wide distribution. They seem to be robust, the result of intentional stylistic choices, and are respected in most cases outside of northern Scotland (Cleal 1999, 2). Grooved Ware is characterised by flat bases, tall straight-sided vessels with upright rims, often bucket-like in shape; the fabric, whilst still relatively coarse is less gritty than Peterborough Ware (Thomas 1999, 113). Grooved Ware is a broadly Later Neolithic phenomenon across most of the British Isles, though it seems to have begun as a discrete Earlier Neolithic pottery tradition on Orkney and then spread south. The dates from Scotland can be as early as 3400 to 3100BC (Gibson 2002b, 84), with the Balfarg monument complex, and Quanterness and Stenness in Orkney, producing dates c.2900BC, contrasting with those from Durrington Walls, which cluster more towards 2000BC (MacSween 1992, 269). It is also in Orkney that the well-stratified site of Pool demonstrates the development of Grooved Ware from the local round-based Unstan Ware tradition of the Earlier Neolithic, first with the occurrence of an incised style of decoration and onto the fully-developed later form of applied motifs by 3000BC (*ibid*, 170). Southward spread into Ireland is also attested, with an incised style of Grooved Ware in use c.3000BC at Kiltierney, County Fermanagh (Sheridan 2004, 31). The contextual associations of Grooved Ware are varied. There are indications that it may begin to be deposited in pits in southern England c.2900BC and then henges and palisaded enclosures from 2700BC (Garwood 1999, 154), but as the only ceramic style in use for much of its period, it would be wrong to assign a specific function, such as 'ritual', to its use (Wainwright and Longworth 1971, 249; Hamilton and Whittle 1999, 45; Gibson 2002b, 87). It is true that Grooved Ware from Wessex is most well-known for its association with henges and other ceremonial monuments: Durrington Walls being the obvious example, and there were also 120 vessels recovered from the palisaded enclosure at West Kennet (Hamilton and Whittle 1999, 36). Yet vessels from pits still make up the largest proportion of the corpus (Thomas 1999, 119). Formal deposits associated with monuments, and their subsequent interpretation, such as the pits at Firtree Field near the Dorset Cursus (Barrett 1991, 77), will be considered in the following chapter. Despite some of the more obvious ceremonial connotations of this style of pottery, and the northern Scottish origins of its original diffusion, there is no evidence that pots themselves were transported over long distances (Cleal 1999, 4).

In the North-East, finds of Grooved Ware are entirely confined to the Milfield Basin but, in accordance with the Wessex material, contexts of recovery include both pits and features associated with ceremonial monuments. The Woodlands and Durrington styles seem most widely spread in pits, with Clacton more rare, and few elements of Rinyo (Manby 1999, 59). In contrast to the large assemblages of Carinated and Impressed Wares, Thirlings produced very little Grooved Ware, with two vessels from a pit, and one from the topsoil in the Durrington style (Miket and Edwards forthcoming). The Yeavering Palace site provided a minimum of four Woodlands-style vessels from a pit that saw the complex deposition of potsherds, hazelnuts and other burnt material (Hope-Taylor 1977, 348-351); Cheviot Quarry had four pits containing a minimum of nine vessels (Johnson and Waddington forthcoming); and a lone fragment from the vicinity of Redscar Bridge, whilst initially rejected in 1985 (Kinnes and Longworth 1985, 138), now does appear to belong to the Clacton style (Manby 1999, 60; Gibson 2002a, 178). Grooved Ware is the only pottery style to have been repeatedly associated with the henge monuments and related structures in the Milfield area. Yeavering henge provides several hundred sherds from redeposited contexts, mainly in the upper fills of the ditch (A. Harding 1981, 122-129); and the hengiform monument at Whitton Hill I, despite its burial associations, produced sherds from a bucket-shaped vessel scattered across the top of a cremation pit (Miket 1985, 141-142). Pit alignments associated with the henge complex also yielded Grooved Ware: 37 unweathered sherds in the Clacton style were found in the Ewart 1 alignment (Miket 1981, 139, 142-143), and four grooved sherds from the Milfield North alignment (A. Harding 1981, 115-119). It is interesting that the identifications of Grooved Ware from both Whitton Hill I and the Milfield North pit alignment have been questioned by Alex Gibson (2002a), despite repeated positive identification (A. Harding 1981, 115-119; Miket 1985; Manby 1999, 70). Beyond the debatable stylistic merits of the various sherds, the criticism largely hinges on their late radiocarbon dates (table 2.1). Whilst it is true that these run into the early second millennium BC, given the long currency of Grooved Ware in other regions and our limited understanding of this ceramic in the North-East, why should a wide date-range dictate the style of a vessel over its other formal attributes, especially as Gibson himself states: "with both impressed and incised techniques, [it] is perfectly in keeping with Grooved Ware" (2002a, 176).

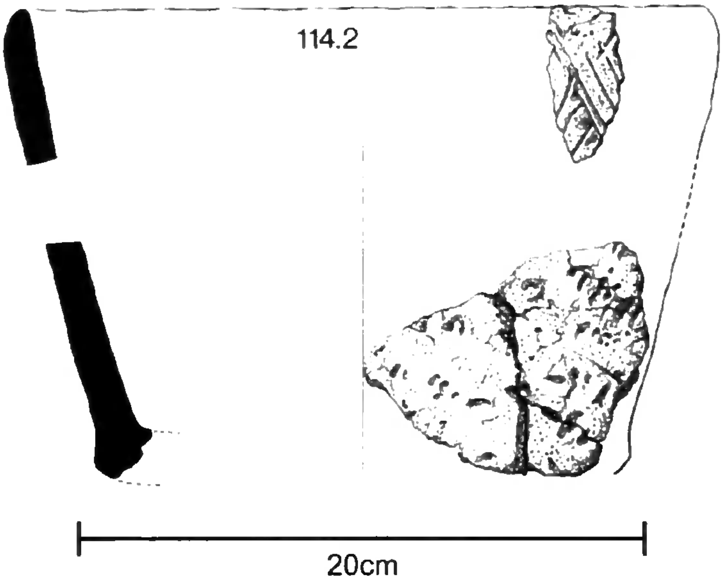


Figure 2.4: Grooved Ware potsherds from Thirlings (after Miket and Edwards forthcoming)

Stone Artefacts

The discussion of stone artefacts will be brief, comparatively speaking, because their recovery from stratified contexts in the study area is rare, and their use as chronological indicators is more limited as typologies are coarse (Thomas 1999, 17). The Neolithic sees the development of finely pressure-flaked laurel leaf points and the classic leaf-shaped flint arrowhead, which remain persistent throughout the period. At their earliest, these are associated with carinated pottery forms. Large assemblages have been recovered from a number of causewayed enclosures (Green 1980, 83), including those examples where they may have been used in conflicts between social groups, such as Carn Brea (Mercer 1981b, 68) and Crickley Hill (Dixon 1988, 82). Chronological progression is evident into the Later Neolithic with the adoption of transverse forms of chisel and oblique arrowheads that show a direct association with activity at henge sites and Grooved Ware (Green 1980, 109). Arrowhead development culminates with the highly characteristic barbed and tanged form, associated with Beaker and later Early Bronze Age pottery styles. In the Neolithic, however, assemblages are generally dominated by scrapers, which see steeper retouch than preceding Mesolithic forms, probably owing to their use in heavier processing tasks such as wood and bone working (Young 1984, 112). Despite the production of some fine points, such as the beautiful ripple-flaked oblique arrowheads of East Yorkshire, the general trend in Neolithic and Early Bronze Age flintwork is one of declining quality (Thomas 1999, 17). This has been connected with a broadening range of tool types in the Later Neolithic (R. Bradley 1987, 182) and decreasing concern over the conservation of cores as a source of raw material (Edmonds 1995, 37), which in Wessex may be linked to a reduction in large-scale mobility (Thomas 1999, 22; after Edmonds 1987, 169).

Ground and polished axeheads are, of course, the other stone industry of note throughout the Neolithic. Of relevance here is the fact that they are recovered from a variety of contexts and in a range of states of preservation. Some axes showing edge-wear were evidently used for productive tasks, whereas others show an association with burial, such as the deposition of Seamer-type axes at Whitegrounds, Yorkshire (Brewster 1984, 10). More generally there seems to have been an association between polished axes and Grooved Ware deposition in the Later Neolithic (Edmonds 1995, 107, 133). With reference to group VI Langdale axes from Cumbria, relatively abundant in the North-East (see below), Bradley and Edmonds have speculated that stone circles may have played a mediating or controlling role in their movement across the Pennines (Bradley and Edmonds 1993, 198), and more generally that such sites could serve as 'arenas of value' where socially important transitions and exchanges could take place (Edmonds 1995, 122-131).

The flint and other stone assemblages of the North-East exhibit few particular regional characteristics and have limited utility as chronological markers, being the result generally of fieldwalking or chance finds. In terms of distributions, the region lacks significant concentrations of the classic Neolithic leaf-shaped arrowhead: Crimdon Dene, County Durham, produced five (Young 1984, 117), and there was a single example from Greenwell's barrow at Ford, Northumberland (Greenwell 1877, 410); most others are from individual findspots. Those examples that are recovered fall into Stephen Green's group 4A: short, squat points that are easily struck from small and low quality cores, typical of areas some distance from a flint source. Barbed and tanged arrowheads follow a similar pattern, with the exception of the very large Ballyclare type that may have been imported (Green 1980, 118). There are no local flint sources in the north-east, and aside from chance utilisation of beach pebbles and glacial material it seems likely that the characteristically grey flint comes from outcrops in East Yorkshire (Young 1984, 153). In accordance with the paucity of field-finds, flint assemblages from excavations have also been insubstantial. The pits associated with the henge at Yeavering, which produced such a volume of pottery, contained only 28 flakes, and these were an undiagnostic mix of Mesolithic and Neolithic types (A. Harding 1981, 128). Similarly, the henge at Milfield South produced only three flakes, although Milfield North did produce six particularly fine barbed and tanged arrowheads of distinctive honey-coloured flint, probably from the same core and worked by the same individual. In contrast, one other flake from the site was of poor green-grey flint, characteristic of local gravel sources (*ibid.* 115), indicating that the fine arrowhead flint was of non-local origin. The only other stratified find of note is the very large scraper/knife from Whitton Hill I, for which a non-local source is also postulated, probably the Yorkshire Wolds (Miket 1985, 141).

Some weight has been attached to the distribution of stone axe finds as a true indicator of the extent of Neolithic activity in the North-East over other categories of material culture. It is argued that stone axes are more easily recovered as a chance find in the present and were less likely to be casually discarded in the past (Burgess 1984, 133). Figure 2.5 shows the plot of their distribution taken from historic environment records. Colin Burgess' comments from 1984 hold true: axe distributions are focused mainly in the lowlands and valleys, with few finds above 300m OD or from the narrow, incised valleys of the Cheviots. This contrasts with the greater frequency of finds from the wider Pennine valleys such as Redesdale, Tynedale and Weardale. Of the lowlands in Burgess' survey, only the heavy clay soils of the coastal area between the Wansbeck and southward to the Tyne produced very few axes (Burgess 1984, 135), to which we can add the similar heavy soils of the lower Tees valley. We must be wary of placing too much stress on these distributions, the distribution of modern ploughing being a major factor in recovery, but the fact that heavily agricultural areas such as the Wansbeck-Tyne and Tees lowlands do not provide many finds, may strengthen their validity.

The source of 117 stone axes and 48 shaft-hole axe-hammers from the region was considered by the Implement Petrology Committee of the CBA. Group VI axes of Langdale Tuff were the most abundant, numbering 63, with group XXVII from southern Scotland the next-largest axe group, numbering eleven. Also of interest here are the five axes and eighteen axe-hammers of group XVIII; whinstone from one of a series of intrusive igneous dykes that run across County Durham, potentially from a source in Teesdale (Cummins and Harding 1988, 79). One axe from near Ewart in the Milfield Basin, Northumberland, has been attributed to an andesite source in the Cheviots, tentatively identified in the Upper Breamish Valley (Schofield and Waddington 1999). Although this remains unconfirmed without evidence of an extraction site or precise petrological identification, the Implement Petrology Committee note the existence of three andesite axes from the North-East that remained ungrouped, with possible sources from mid-Scotland to northern England (Cummins and Harding 1988, 79).

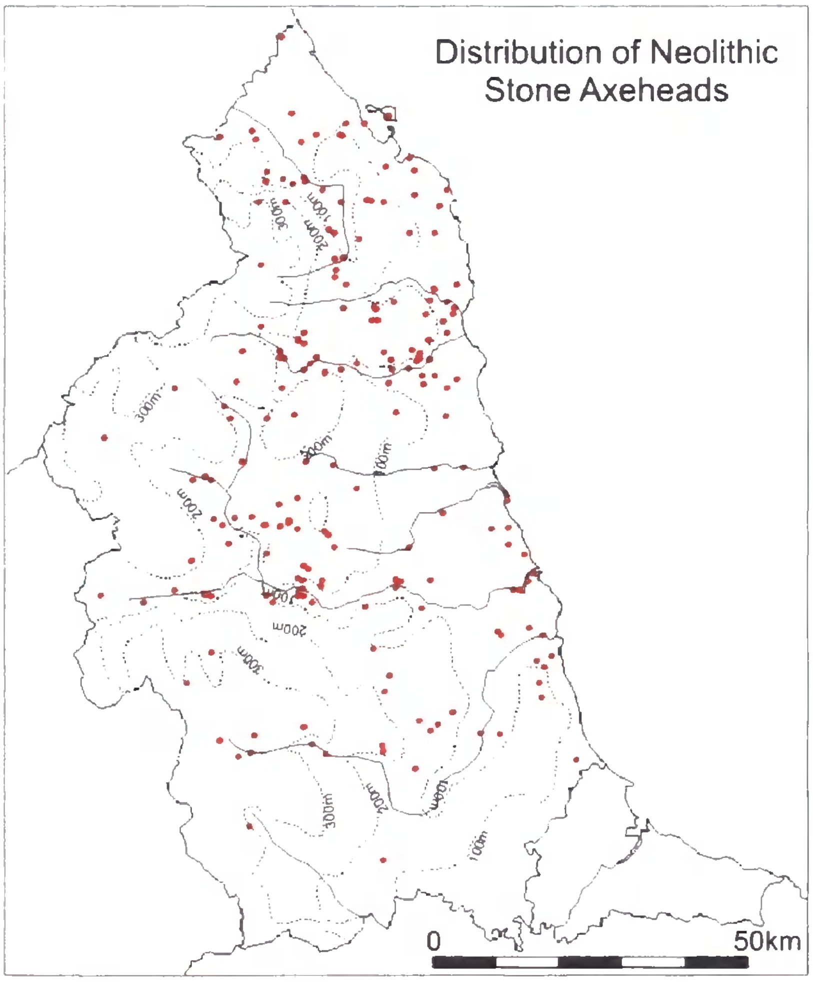


Figure 2.5: Distribution of Neolithic stone axes (Durham & Northumberland HERs 2007 and Miket (1984))

Radiocarbon Dating Summary

As only a minority of the potentially Neolithic sites in the North-East have been absolutely dated by radiocarbon, this research uses ceramic progression to define the period under study. So, sites, monuments, and acts of deposition associated with carinated, impressed and grooved pottery styles are studied here. The preceding discussion concerning the three major Neolithic pottery styles established broad chronological succession from Carinated Ware, through Impressed Ware, to Grooved Ware across much of Scotland, England and Wales. The only well-dated sites in the North-East, in the Milfield basin, support this succession, and provide a relative dating framework for otherwise undated sites and monuments. The radiocarbon dates from Milfield, and their associated pottery are provided in figure 2.6 and table 2.1.

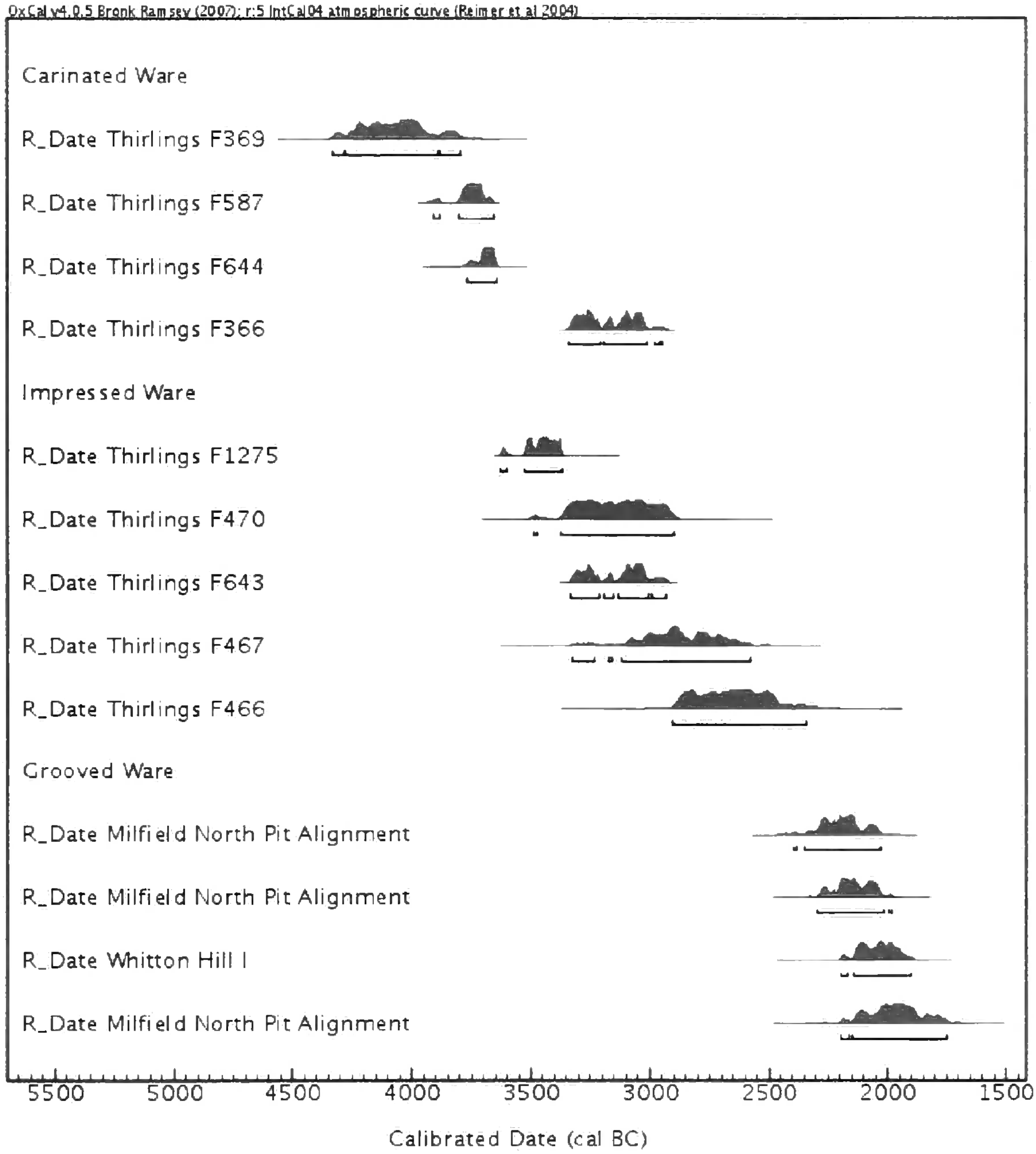


Figure 2.6: Radiocarbon dates showing the ceramic succession in the Milfield Basin

On the basis of these radiocarbon determinations, the analyses undertaken in this research all concern acts of deposition that are likely to have taken place broadly between 4000 and 2000 cal BC. Toward the end of the Later Neolithic, during the currency of Grooved Ware, some overlap, not unexpectedly, occurs with typologically-later ceramic styles, such as Food Vessels. Even during this brief phase of transition, however, Food Vessels are recovered from distinctly different monument types, such as the then emerging tradition of Early Bronze Age round barrow burial. A Food Vessel from the Turf Knowe North cairn in the Breamish Valley was dated to 2165 cal BC (Frodsham and Waddington 2004, 175).

Name	uncal BP Date	Error Range	cal BC Date (2σ)	Lab. Code
Carinated Ware				
Thirlings F369	5230	110	4328-3798	HAR-1118
Thirlings F587	4972	34	3909-3658	OxA-16101
Thirlings F644	4912	35	3768-3641	OxA-16104
Thirlings F366	4453	34	3339-2943	OxA-16102
Impressed Ware				
Thirlings F1275	4678	34	3626-3367	OxA-16100
Thirlings F470	4450	100	3484-2896	HAR-6656
Thirlings F643	4442	35	3334-2929	OxA-16164
Thirlings F467	4270	100	3324-2576	HAR-1450
Thirlings F466	4080	130	2904-2342	HAR-1451
Grooved Ware				
Milfield North Pit Alignment	3770	50	2400-2030	BM-1652
Milfield North Pit Alignment	3740	50	2295-1980	BM-1650
Whitton Hill I	3660	50	2196-1903	BM-2266
Milfield North Pit Alignment	3605	80	2198-1747	BM-1653

Table 2.1: Radiocarbon dates associated with pottery from the Milfield Basin

Palynological Evidence

The artefactual evidence recovered from the North-East tells us little about how Neolithic populations modified their environments, and there is little evidence for or against pastoralism and cereal agriculture. Data recovered from pollen cores over the last forty years does, however, provide glimpses into the effect local populations were having upon forest cover, through the creation of more open woodland or grassland environments. The Neolithic until 3000BC falls within the Atlantic pollen zone, the climatic optimum of the Holocene epoch. Temperature and rainfall would have been slightly higher than today, and forest cover over the study area, when unmodified, was at its maximum altitude (Turner *et al.* 1973, 402). Even the summit ridges of the Cheviots above 500m OD may have been covered in hazel and birch woodland (Tipping 1996, 27). Figure 2.7 shows the earliest radiocarbon-dated episodes of woodland clearance from a series of pollen cores taken across the region over the last forty years. In every instance this clearance was small-scale and potentially temporary and does not represent wholesale deforestation. There is no guarantee that every one of these episodes was anthropogenic in origin. Figure 2.8 displays the locations of each dated core.

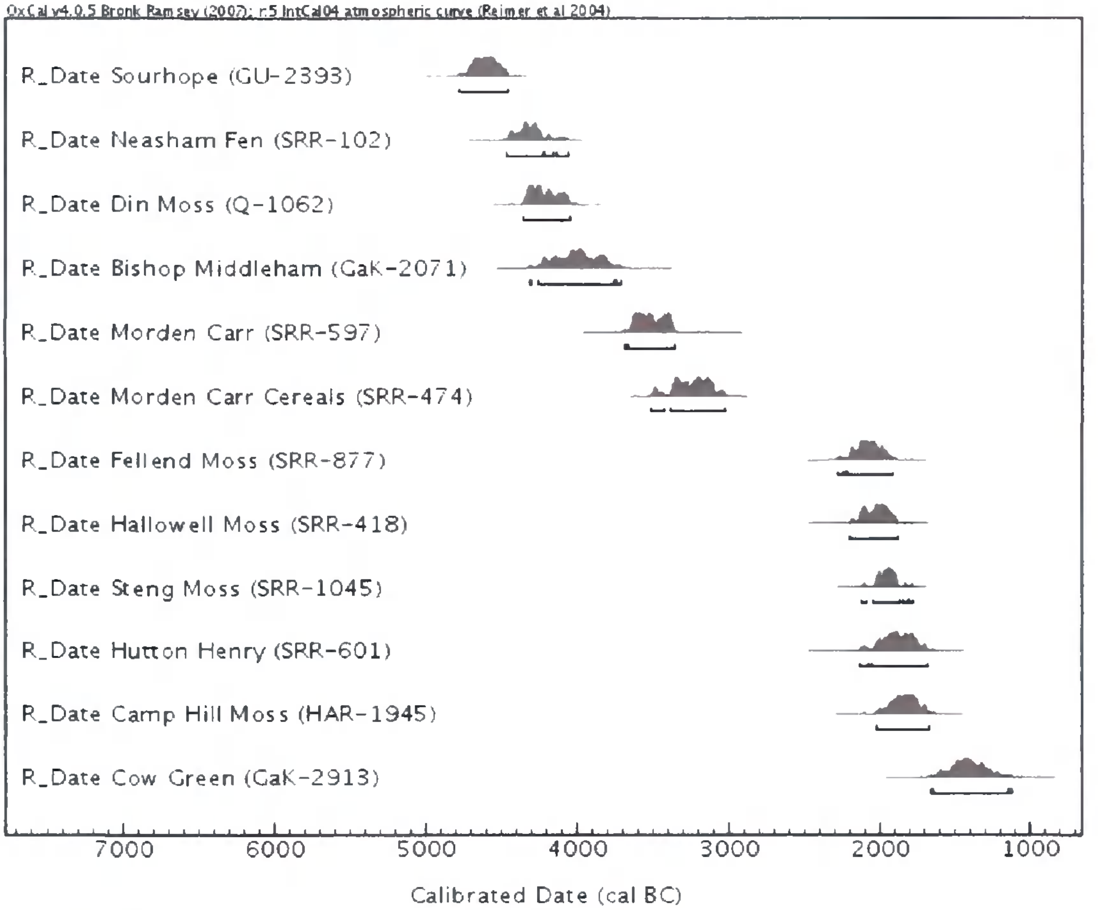


Figure 2.7: Radiocarbon dates of first clearance episodes from pollen cores in the North East

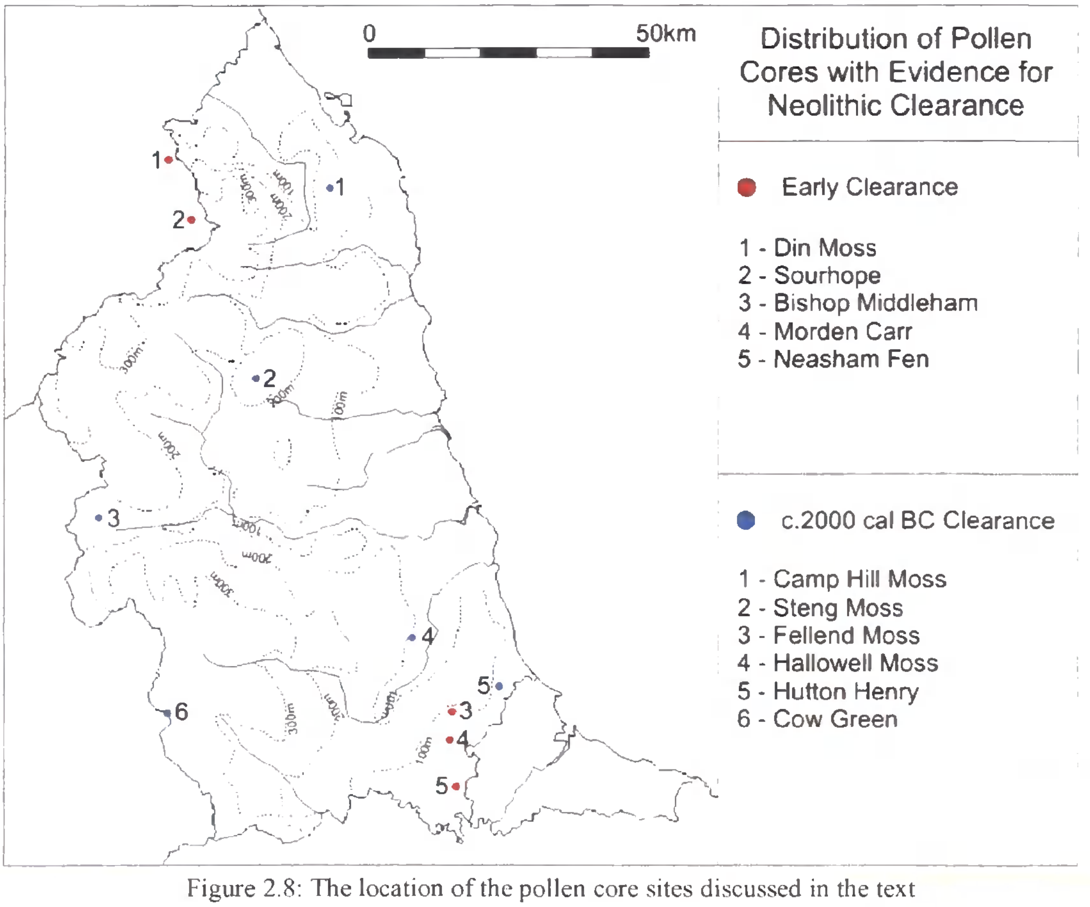


Figure 2.8: The location of the pollen core sites discussed in the text

The beginnings of forest clearance fall into two main periods: a dispersed range from c.4500 to c.3250 cal BC and a tighter band beginning in the Early Bronze Age c.2000 cal BC. This becomes significant when the locations of these cores are considered: there are no evident north-south or east-west patterns in distribution, nor are there absolute differences between upland and lowland landscapes (figure 2.8). It is also interesting that there appears to be no differences in the character of clearance between these two episodes. Of the late episodes, three of the pollen diagrams from Cow Green showed fluctuating highs and lows of *Graminae* and *Plantago* pollen (grassland species), indicating temporary forest recovery after clearance c.1600 cal BC (Turner *et al.* 1973, 403). Likewise, late episodes at Hallowell Moss (Donaldson 1977, 28), Crag Lough (not displayed) (Dark 2005), Fellend, Steng and Camp Hill mosses (Davies and Turner 1979) were all small-scale and temporary. Yet the scale of these clearances did not differ markedly from those that occurred earlier at Din Moss (Hibbert and Switsur 1976, 799), Neasham Fen, Morden Carr and Bishop Middleham (Bartley *et al.* 1976), nor even the Mesolithic clearance at Sourhope (Tipping 1996, 20). Data from unpublished diagrams at Bloody Moss and Drowning Flow in Northumberland National Park show a similar, variable situation (Young 2004, 163). Some cereal pollen does occur, but is too sparse to draw strong conclusions: it appears late at Hutton Henry (Bartley *et al.* 1976, 453), and early at Morden Carr (*ibid.* 446) and Swindon Hill (c.2950 cal BC, not displayed (Tipping 1996, 27)). Across the whole of the study area, true deforestation and cereal agriculture does not recognisably begin until the Middle Bronze Age (Young 1984, 55). The most reasonable conclusion to draw from this very basic consideration is that Neolithic and Early Bronze Age clearance activity was highly localised, with only small areas of the landscape being utilised at any time. This also means that the range of dates at which clearance begins may not represent true 'periods' of exploitation. Rather, the very small scale of clearance creates a situation where there is a very low chance that the distribution of pollen sampling and the distribution of clearance episodes will intersect. Pollen samples present only a local picture around a given site; they are not representative of whole landscapes. One can extend this hypothesis to cereal cultivation: it seems to have been occurring, as three sites show evidence for it, but if it did not take place after every episode of clearance then the chance of evidence being recovered becomes even more unlikely.

Sites and Monuments

The Neolithic archaeology of north-east England is varied in character, and the full range of classic monument types exist in the region. This section will discuss the major classes of sites and upstanding monuments in the study area in broadly chronological order, focusing principally upon excavated examples. In many cases, our knowledge of particular types of site is based upon the excavation of only one or a very limited number of examples, despite the fact that many may be known from surveying campaigns. It will become evident that our knowledge of the Neolithic in the region is characterised by its breadth, rather than its depth. The aim of this section is not to discuss any one site in detail, but to provide a context of Neolithic activity in the region for the sites investigated in-depth later.

Neolithic Round Barrows

Four round barrows that contain evidence for Neolithic activity have been identified in the region. Given the very large number of Early Bronze Age round barrows and cairns in the North-East (see below), it is impossible to speculate confidently upon which may be Neolithic and which ones of later date without excavation. It is possible that a small percentage of round barrows and cairns have a Neolithic origin. All the Neolithic examples that are known were the unexpected result of late nineteenth and early twentieth century antiquarian activity. Canon William Greenwell was digging round barrows in the parish of Ford, Northumberland, when he opened number 188 at Broomridge and discovered no features other than a discontinuous spread of charcoal, pottery and calcined bones (Greenwell 1877, 410). The pottery was subsequently identified as Neolithic Carinated Ware (Newbigin 1935; Miket 1976, 118), and Ian Kinnes listed the site in his category of Neolithic 'pyres' later covered by a mound (Kinnes 1979, 10). The three remaining barrows are located on the limestone escarpment of east Durham near Sunderland, at Warden Law, Hasting Hill and Copt Hill. All three were excavated in the early twentieth century by C.T. Trechmann (1914), and whilst Anthony Harding also directed excavations immediately adjacent to Copt Hill in 2003, he recovered little of significance (A. Harding 2003). Kinnes lists Warden Law as a Neolithic 'simple burial' (Kinnes 1979, 22) from which was recovered a flint cache including leaf-shaped arrowheads (Manby 1973, 222), and Copt Hill as a 'crematorium' (Kinnes 1979, 10). In this case the crematorium was a linear zone beneath the mound formed by boulders, with flues at either end, containing burnt bones and charcoal. Conversely, and perhaps more likely, Rob Young has suggested that these 'flues' were actually large postholes supporting the ridge of a wooden mortuary structure, later burnt (Young 1985). Parallels may be drawn here with the mortuary enclosure and fired wooden structure beneath a low cairn at Street House, Cleveland (Vyner 1984). Although not listed by Kinnes, the evidence from Hasting Hill also indicates a Neolithic date; no *in situ* deposits were recovered, but there were a number of disturbed inhumations throughout the mound (Annable 1987, 401-402), and Terry Manby identified sherds from one Carinated and one Impressed Ware vessel (Manby 1973). These sites are too few in number to generalise on likely dates or on distributions, but the similarity and proximity of the three barrows excavated by Trechmann (figure 2.9) perhaps indicate a contemporary origin, whilst the isolated barrow at Broomridge is dated to the Earlier Neolithic through its association with Carinated Ware.

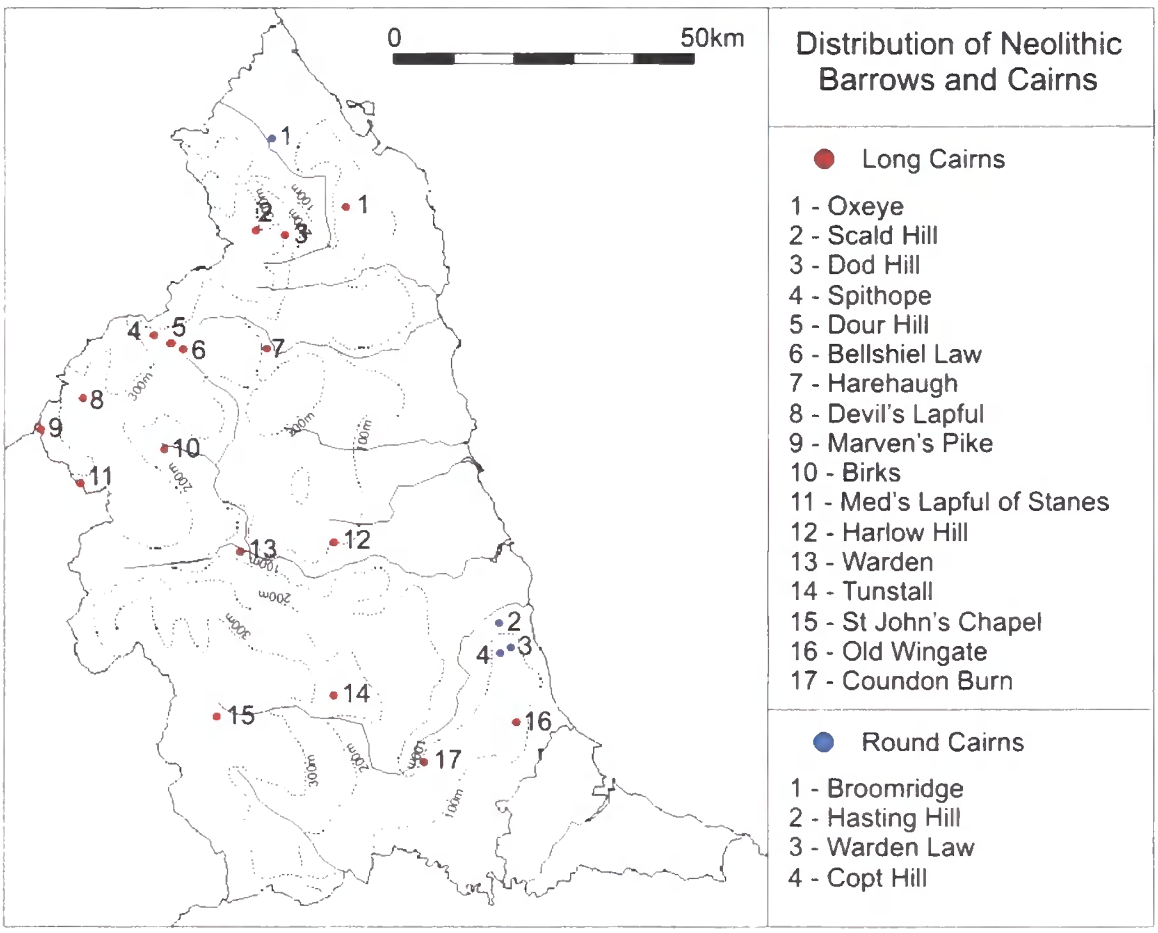


Figure 2.9: The distribution of long and round cairns/barrows

Long Cairns and Long Barrows

Long barrows are the most numerous Earlier Neolithic monument type in the region, with seventeen definite or possible examples known. Their consideration here, however, will be brief as they are the subject of detailed analysis in chapter seven. Modern excavation of the region's long cairns has been extremely limited: Harehaugh in the Coquet Valley, Northumberland, was investigated in 2005 (Carne 2006); Scald Hill in the Harthope Valley, Northumberland, between 2000 and 2004 (Miket and Aylett 2006); whilst Warden is presently undergoing excavation, directed by the author. The only other recorded excavation was undertaken by Nancy Newbigin at Bellshiel Law, Redesdale, Northumberland, in 1935 (Newbigin 1936); although the small-scale identification and excavation of a cist at Dour Hill, Redesdale, occurred in 1932 (Cowen 1934). The monument has been surveyed more recently (Waddington *et al.* 1998). Of the remaining monuments, the results of various surveys represent the only information available: there are definite or highly probable long cairns at Dod Hill, Ilderton, Northumberland (Gates 1982), which may be a two phase monument (Vyner 1986, 11); the Devil's Lapful, Kielder, Northumberland (figure 2.11) (Masters 1984, 59; Annable 1987, 399); Oxeye, Chillingham, Northumberland (Northumberland CC 2006 HER# 13330); Old Wingate, County Durham (Durham CC 2006, SMR#7701); and St John's Chapel, Wear Valley, County Durham (Young 1984). Whilst the remaining cairns at Coundon Burn and Tunstall, both County Durham (Durham CC 2006, SMR#5709; 6464); Harlow Hill, Birks, Med's Lapful of Stanes, Marven's Pike, Spithope (Masters 1984, 64-68), and a cropmark of a long mortuary enclosure near Ewart (Miket 1976, 128), are all possible examples, they remain unconfirmed. Perhaps as a result of preferential preservation, the majority of these monuments are clustered in the uplands of the Pennines and Cheviots (figure 2.9), although there are some outliers on the higher ground of the East Durham plateau and the Fell Sandstone ridge (long cairns #15 and #1 respectively).

As these monuments generally lack spectacular mortuary deposits, even when excavated they are identified as Long Cairns largely on the basis of their form rather than content: a linear mound of rough stones. However, there is a possibility that two distinct morphologies co-exist. There appear to be 'long' long cairns, of a width that stays broadly consistent throughout their length, such as Warden, Bellshiel and the Devil's Lapful (figure 2.11), versus shorter cairns that exhibit a definite trapezoidal form, such as Harehaugh, Scald Hill, and Dod Hill. Whether the visual differences between these two types translate into differences of deposition, structure or material culture at the sites is subject to investigation in chapter seven. The monument at Dour Hill may be an anomaly, as it has been described as a chambered cairn constructed in two phases (Waddington *et al.* 1998, 5-11). This assertion has not been tested by excavation, as the site has only been surveyed. A visit to the site by the author did identify voids in the monument, but it is impossible to determine, from a visual inspection alone, whether these are breached chambers or, more likely, antiquarian robbing that is so common in the region. Likewise, it is impossible to phase the monument, given its condition and rough method of construction, without full excavation (figure 2.10). So, whilst an interesting possibility, and potentially the first chambered cairn in the north-east, Dour Hill is not easily classified. Variation, then, seems to be the key, further exemplified by the mortuary structure at Street House, just outside the study area (Vyner 1984). The dating of these monuments is not straightforward either: no dating evidence has yet been recovered from Warden; Scald Hill produced no dating evidence whatsoever in the form of radiocarbon material or diagnostic artefacts; only Harehaugh has provided unusual dates of 3120-2910 cal BC (SUERC-9154) and 3350-3080 cal BC (SUERC-9158) from beneath the mound body, and 2500-2290 cal BC (SUERC-8603) from an organic deposit within a cist built into the spine of the cairn (Carne 2006, 9).

Figure 2.10: The long cairn at Dour Hill, note the poor condition of the monument (photograph by the author 2005)

Figure 2.11: The damaged long cairn at Devil's Lapful (photograph by the author 2005)

Causewayed Enclosures

No causewayed enclosures have been confirmed by excavation in north-east England, but there are suggestions that this monument type is present from aerial photographic evidence. Figure 2.12 displays the location of the few tentatively identified examples. The most likely candidate is at Hasting Hill, immediately adjacent to the large round barrow of the same name discussed above, and a cursus (see below). The enclosure is an irregular oval some 95 metres by 65, with the long axis aligned NW-SE. It was brought to wide attention in 1976 in *Archaeologia Aeliana* during the analysis of aerial photographs taken by Professor Norman McCord (Newman 1976), and later with the publication of a short note in a volume on regional air photography (D.W. Harding 1979, 29). Both the enclosure and the cursus were the subjects of a small evaluative excavation by Anthony Harding in 1980, and the enclosure was found to be defined by an interrupted ditch 2.2 metres wide at its largest and 0.3 metres deep, although it was not fully excavated and no dating evidence was recovered (Newcastle County Council 2003, Tyne and Wear HER#109). See figure 2.13 for an aerial photograph of the enclosure and cursus, the round barrow excavated by Trechmann is off the image to the top left.

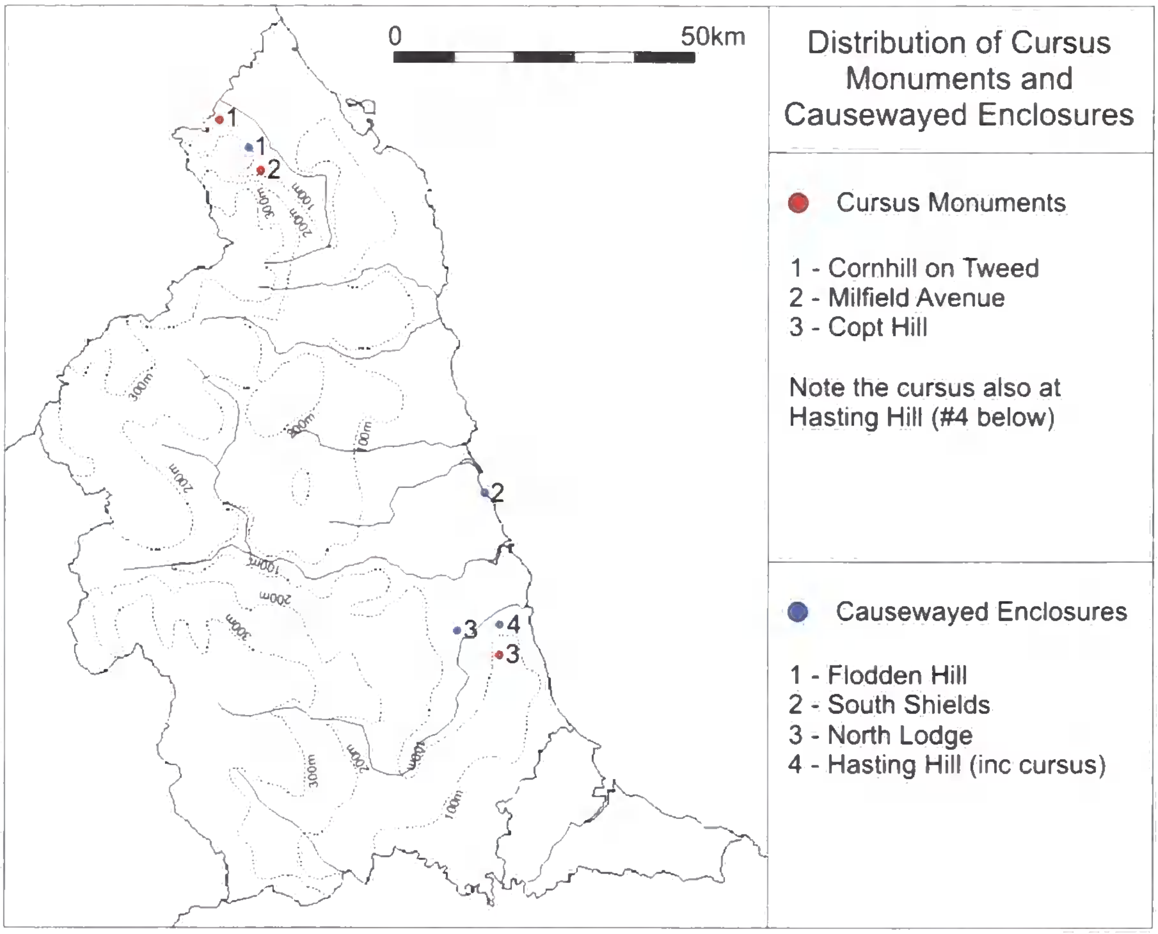


Figure 2.12: The distribution of cursus monuments and causewayed enclosures

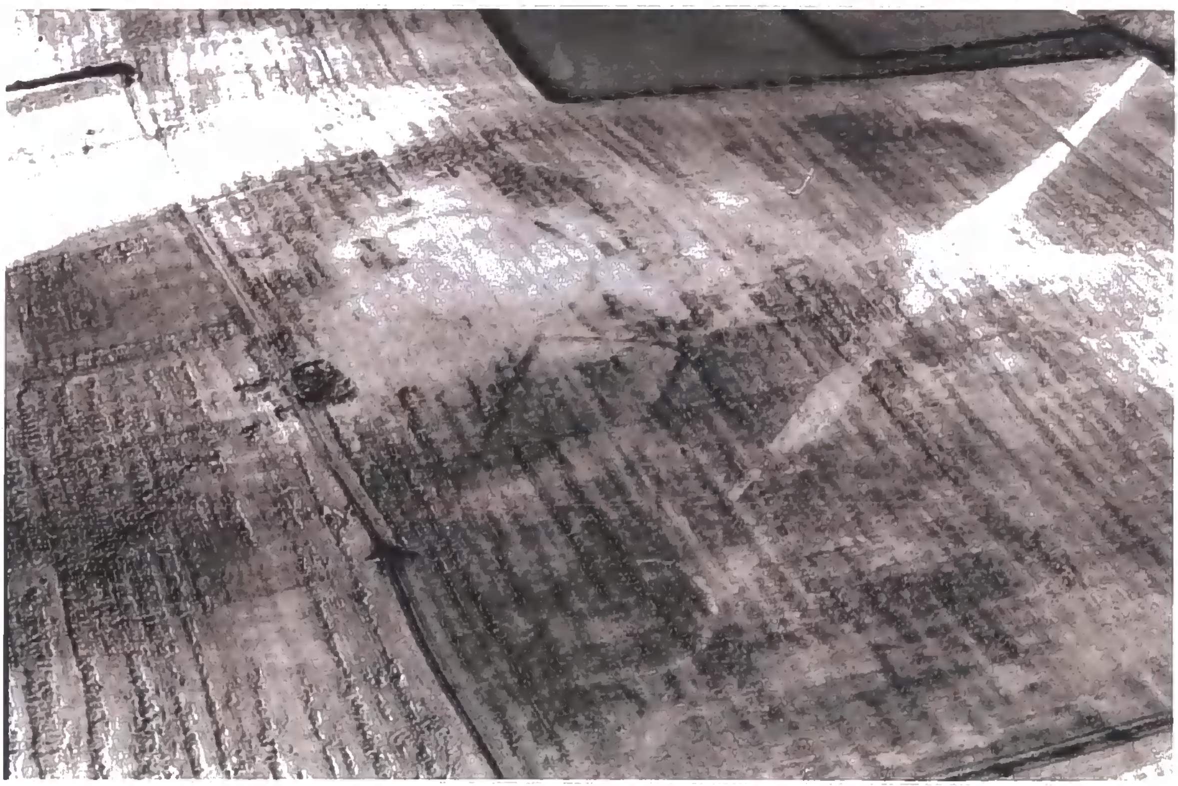


Figure 2.13: The causewayed enclosure and cursus at Hasting Hill (Tyne & Wear HER 2008)

Off the east Durham limestone there are indications of further enclosures at North Lodge near Chester-le-Street, County Durham (Durham CC 2006, SMR#4026); potentially beneath the Roman Fort at South Shields (Hodgson *et al.* 2001); and further north, at Flodden, near Milfield, Northumberland (Gates and Palmer 2004). No dating evidence is available for these monuments, and an Earlier Neolithic date is assumed on the basis of national typology (Oswald *et al.* 2001, 3).

Cursus Monuments

Like causewayed enclosures, cursus monuments in the north-east are present but enigmatic, see figure 2.12 for their distribution. There is a definite example at Hasting Hill (figure 2.13), which was subject to a small excavation and found to consist of a 0.5 metre wide V-shaped ditch defining a linear space 47 metres wide and at least 400 metres long north to south, though its southern terminus has not been identified (English Heritage 1999, NMR#32070). Interestingly, there are indications of another cursus associated with the round barrow at Copt Hill (Blaise Vyner pers. comm. figure 2.14), and yet another associated with the potential enclosure at North Lodge, discussed above (Durham County Council 2006, SMR#4026). A further potential cursus exists near Cornhill-on-Tweed. Whilst the Northumberland HER lists Cornhill as an unlikely specimen, due to its course parallel with a field boundary (Northumberland CC 2006, HER#1029), its existence was confirmed by the author after a re-examination of an aerial photograph in the Cambridge University collection (photo#BHC58); the linear ditches do not actually align with the boundary. Finally, the 'avenue' at Milfield should be noted briefly in advance of a more detailed discussion in chapter eight. This monument is almost certainly not a cursus but it does fit within a tradition of linear monumentality. Its relationship with the henges of the Milfield basin (see below) is insecure, although it post-dates at least one and is therefore probably of Later Neolithic date. Interpretations that favoured an Earlier Neolithic origin for the monument as a stock droveway (Waddington 1999) are now questioned on the basis of poor dating and insecure evidence, but these issues have been treated in-depth by the author elsewhere (Edwards 2007, 64-66), and a reinterpretation is given in chapter eight.

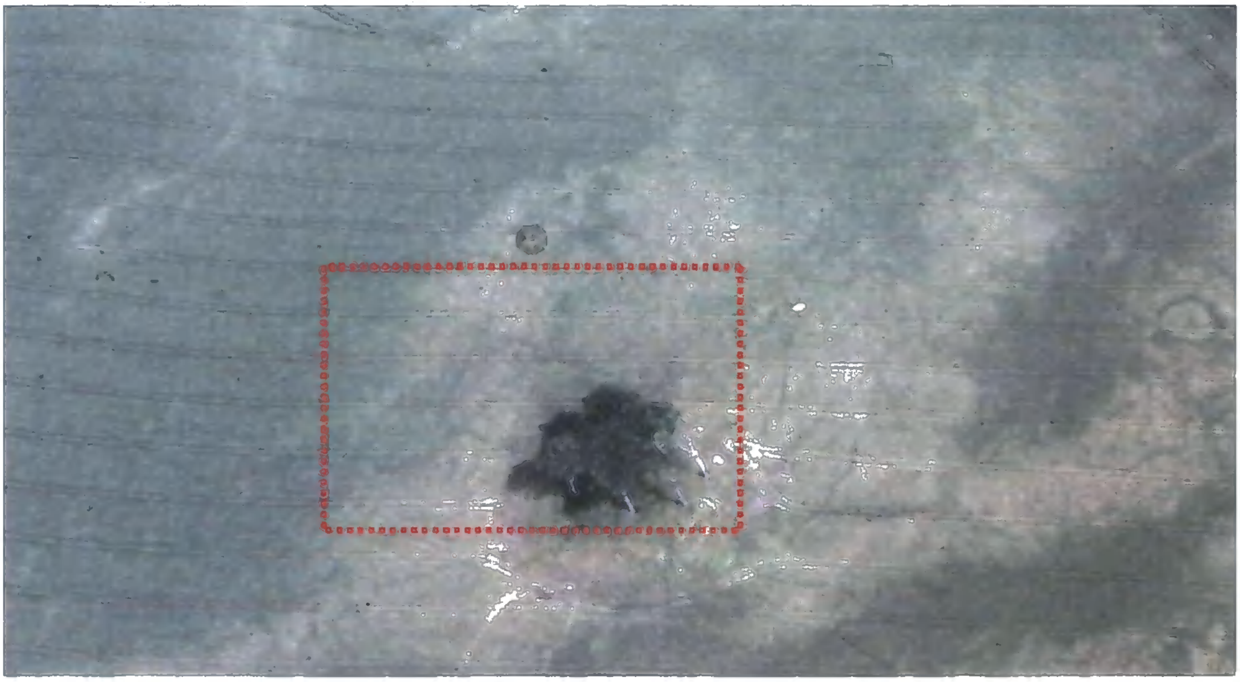


Figure 2.14: The potential cursus (highlighted) and round barrow at Copt Hill (courtesy of Blaise Vyner)

Pit Sites

Pit sites are amongst the more common of Neolithic site types. Thirlings, Northumberland, comprises 228 pits, dug either to receive deliberate deposits or to support an upright timber (see chapter five). It was excavated between 1973 and 1981 by Roger Miket and Colm O'Brien, and provided 523 sherds from a minimum of 80 pots of Carinated, Impressed and Grooved wares; the radiocarbon dates from the pits, likewise, spanned the Neolithic. Chapters five and six analyse and interpret the data from Thirlings in considerable detail, whilst the excavation report is being brought to publication by the author and the two excavators, Roger Miket and Colm O'Brien (Miket and Edwards forthcoming). Unexcavated sites similar to Thirlings are known and there are two potentials from aerial photographs in the CUCAP library: north-west of Chatton, and near Ford (photos#AKK4 & BJY77 respectively). Given the non-diagnostic nature of pits it is impossible to date these sites without excavation. The site at Ford, also, may be an unlikely prospect in light of the very regular spacing of the pits.

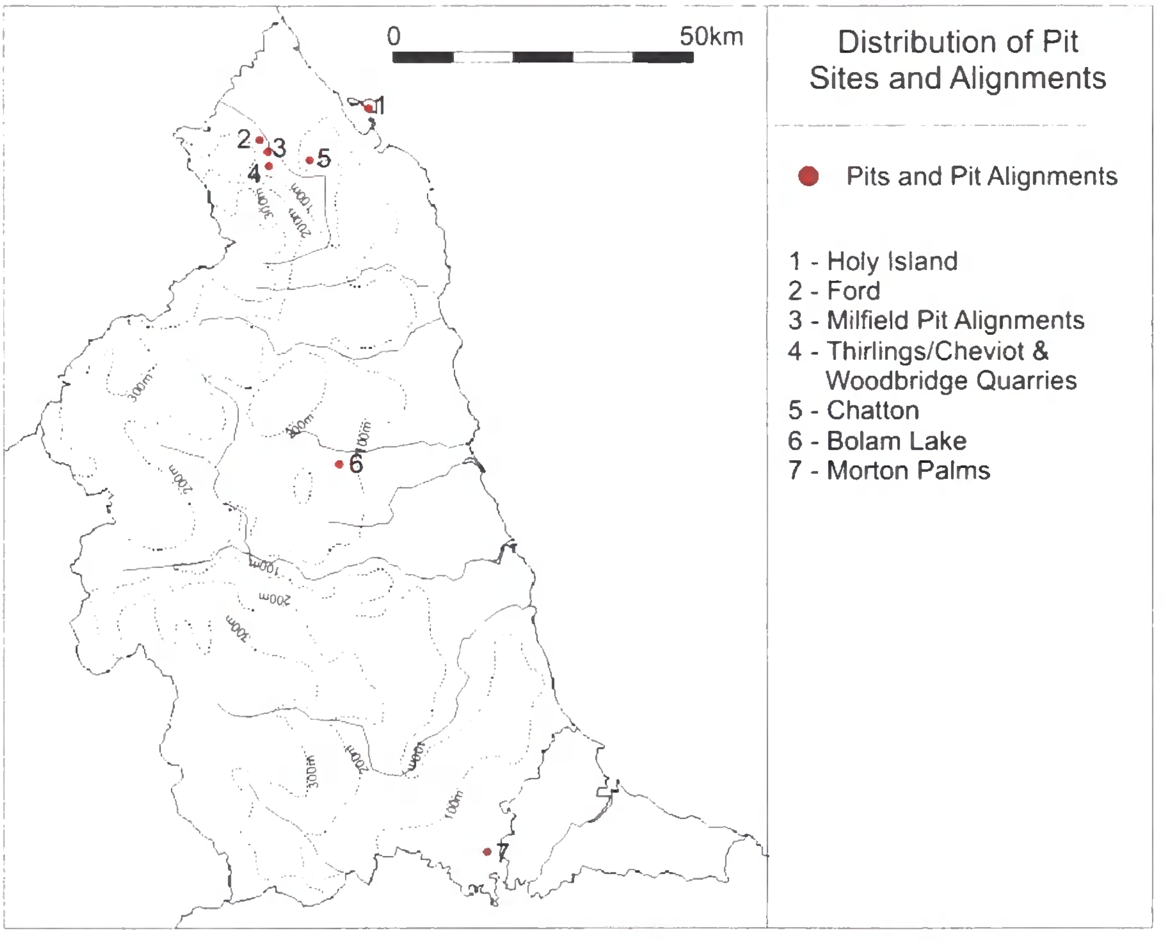


Figure 2.15: The distribution of pit sites and alignments

A more extensive, if less densely populated, pit site was located at Cheviot Quarry, only 800 metres from Thirlings. Details of this site remain limited as the final report has not been published and work has been undertaken by four separate archaeological contractors, all in advance of gravel extraction (MAP 2000; Muncaster 2003; Johnson and Waddington forthcoming). Across the three separate areas of excavation, which, as an aside, may question the notion of a unitary 'site', 22 pits produced either diagnostic artefacts or radiocarbon datable material. The pottery corpus contains all three major Neolithic styles, and the radiocarbon determinations span from 3940 cal BC to 1890 cal BC at the extremes of the 2 sigma error ranges. In general, isolated pits, or those in small groups, are more common than larger concentrations: on Holy Island, Northumberland, a series of postholes and gully features produced a Neolithic date of 3690-3370 cal BC (Beta-96036) (The_Archaeological_Practice 1996); two pits at Woodbridge Quarry, also near Milfield, produced Carinated pottery and flints (Waddington 2000a); an isolated pit adjacent to the henge at Yeavering, Northumberland, produced a date of 3770-3370 cal BC (HAR-3063) (A.

Harding 1981, 122); and two pits that pre-dated the henge at Coupland, Milfield, are dated to 4000-3710 and 3990-3700 cal BC (OxA-6832, 6833) (Waddington 1999, 126).

A small and irregular spread of pits at Bolam Lake, Northumberland, has been interpreted as a Neolithic temporary structure with an associated hearth and inter-cutting rubbish pits (see figure 2.16) (Waddington and Davies 2002). An L-arrangement of posts is argued to have supported a ridged dwelling structure, whilst a variety of lithics, Carinated Ware sherds, and a broken Langdale axe were recovered from the pits, which were marked by a post in their final phase. Radiocarbon dates from two of these pits place the occupation in the Earlier Neolithic: charred hazelnut returned 3940-3520 and 3930-3380 cal BC (Beta-117290, 117291) (*ibid,* 19). However, it may be more plausible to regard all these features more simply as pits without structural roles. The 'building' collapsed when it was re-constructed, and the selection of features argued to represent the ground-plan appear to have been chosen at random; there are no means of distinguishing the 'structural' pits from those deemed extraneous to the layout. The deposition in the 'rubbish' pits was also actually rather complex: the recutting in a single location and eventual post-marking, whilst not contradictory with a quotidian origin for the material culture, does bear comparison with many pits at Thirlings.

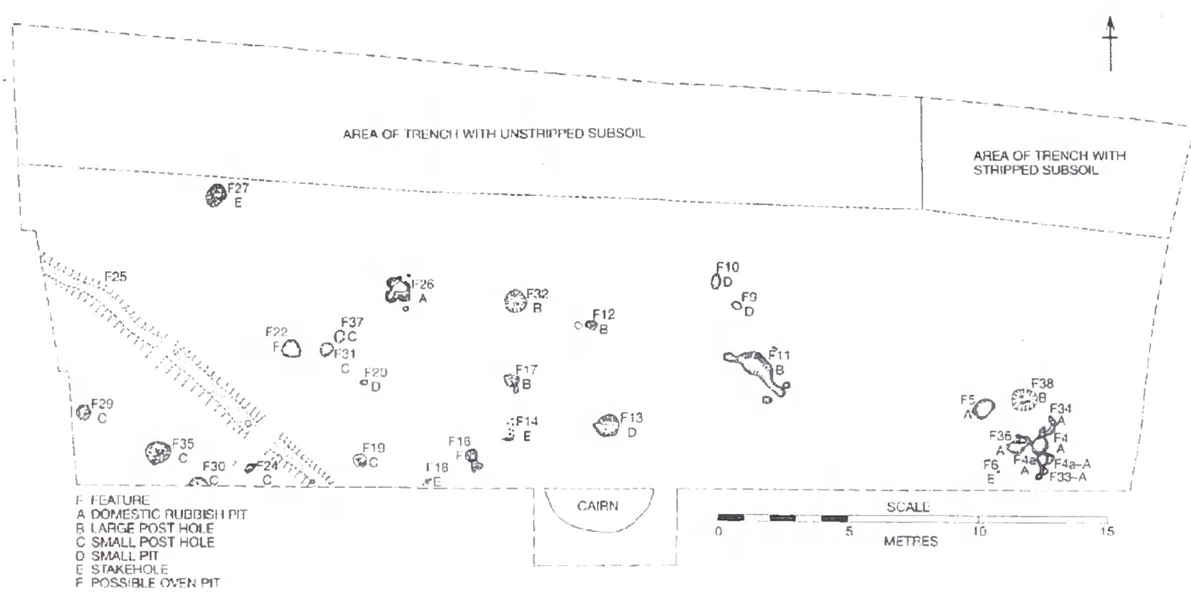


Figure 2.16: Plan of the excavated features at Bolam Lake (Waddington and Davies 2002, 9)

Finally, pit alignments are also a recognised phenomenon in the region, although they are generally restricted to the Later Neolithic. A large number of alignments are clustered in the Milfield Basin, Northumberland, in association with the henge complex (A. Harding 1981); these sites are detailed more fully in chapter eight, but it is worth noting that two of the alignments have been excavated. Roger Miket excavated six pits in the Ewart I alignment in 1977. These averaged 2m x 3m x 0.6-0.8m in size, may have held posts, and were associated with Grooved Ware pottery (Miket 1985). Anthony Harding investigated two pits in the paired alignment at Milfield North in 1978, which demonstrated evidence for substantial posts, later removed. They were dated to the Later Neolithic through an association with Grooved Ware and three radiocarbon determinations of 2340-1980, 2400-2030, 2200-1750 cal BC (BM-1650, 1652, 1653) (A. Harding 1981, 116). Other pit alignments are recorded from aerial photographs alone, including Morton Palms, County Durham (Clack and Pearson 1978, 77), and many others in north Northumberland. Caution must be exercised before assigning all these sites a Later Neolithic date, as an alignment at Wooperton Quarry, Northumberland produced pottery of Flavian date (Headland_Archaeology 2003), and upland pit alignments in the Cheviot Hills have landscape associations with Bronze Age settlement (Rachel Pope pers. comm.).

Stone Circles

The stone circles of the North-East are relatively numerous but remain under-studied, only Duddo having been subject to modern excavation. Antiquarian excavations have occurred at Threestoneburn and Duddo, both in north Northumberland, but the remaining eight stone circles in the region are documented from survey alone. Two Four-Posters are known in Northumberland, but only one has been investigated in any depth. Threestoneburn stone circle, comprising sixteen stones in an oval measuring 36m x 30m, was excavated by George Tate, who located a spread of charcoal and a fragment of a flint knife (Tate 1857). The site was recently surveyed and a potential alignment of stones to the north also recorded (Waddington and Williams 2002). At the substantially smaller stone circle at Duddo, north of the Milfield Basin, a small excavation by Robert Carr c.1890 located a pit in the centre containing charcoal and burnt bone, though no further information is known (Craw 1935, 85). Duddo measures 8.5m x 8.8m and is comprised of five highly weathered sandstone monoliths, originally six, whilst there are also tantalizing suggestions of an outer circle (Raine 1852, 318). Excavations directed by the author at the circle in August 2008 relocated the central antiquarian disturbance and recovered several fragments of burnt human bone dating to 1760-1620 cal BC (SUERC-21366), which seem to represent re-use for Middle Bronze Age burial. Unfortunately, despite excavating two of the stone sockets, no further prehistoric material culture was found. The circles at Threestoneburn and Hethpool also possess outliers that may represent an outer circle, though both are substantially larger than Duddo at c.60m x 45m in diameter (Topping 1981, 7). The remaining monuments at Doddington (Maddison and Sellars 1990, 53); the Mare and Foal on Hadrian's Wall (Northumberland CC 2006, HER#6393); Greenlee Lough (Welfare 1986); Kings Crags (Northumberland CC 2006, HER#7835); Whinny Hill (*ibid*, #3468); Osmaril Gill (Topping 2002); and Carr Craggs, Bowlees (Coggins 1986, 202) have all been surveyed but no further investigations have been undertaken. The distribution of these monuments across the study area is rather striking (figure 2.18). They are found across most of the upland landscapes of the region, aside from the limestone plateau of east Durham.

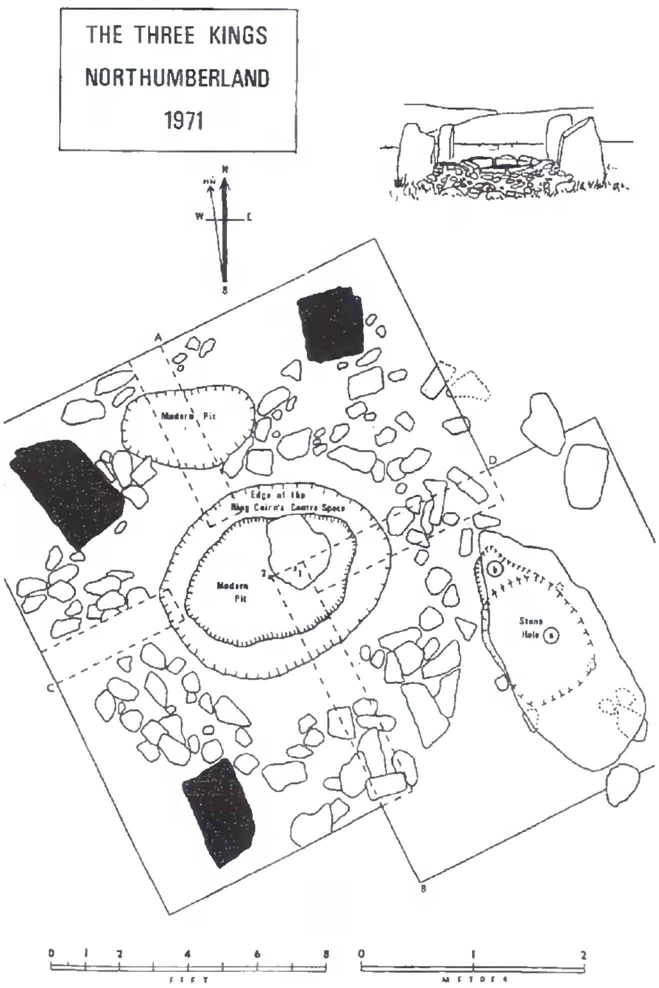


Figure 2.17: Plan of the excavated Three Kings, Redesdale (Burl and Jones 1972, 6)

Also worthy of note are the two Four-Poster stone settings of the Goatstones, Simonburn (Burl 1971; Beckensall 1974, 7), and the Three Kings, Redesdale (both Northumberland). These monuments are considerably smaller than the stone circles described earlier, being some 4.8m and 3.6m square respectively, and it is generally accepted that these are a securely Early Bronze Age phenomenon, but they do seem to belong to the same tradition of monuments as Later Neolithic Scottish circles that contain burials (Burl 1976, 41). The Three Kings were excavated by Aubrey Burl in 1971, when a fourth stone was located, as well as a low stone bank that ran between the monoliths, demarcating a central, disturbed area in which cremation burial is believed to have taken place (figure 2.17) (Burl and Jones 1972). It is features such as these that also link four-poster monuments to the broadly contemporary tradition of ring-cairn construction, see below, which often incorporate stone banks, stone kerbs, and multiple cremation burials (Turner 1990).

Henges

The henges of the North-East must be the region's best-known class of monument. This is not because of particularly wide distributions or large numbers, but entirely due to the existence of the henge complex in the Milfield Basin, north Northumberland. It is at Milfield that Anthony Harding identified seven henges or hengiform monuments, some of which were linked by a ditch-defined avenue, and excavated three of them (Milfield North, Milfield South, and Yeavering), the avenue, and the pit alignment at Milfield North (A. Harding 1981). Where evidence was available, these monuments all returned radiocarbon dates clustering around the very terminal Neolithic and into the Early Bronze Age. They fall within the scope of this study because they were all associated with Later Neolithic pottery styles. Similarly, the hengiform monuments at Whitton Hill, also part of the complex, were excavated by Roger Miket, and returned dates of 2200-1900, 2330-1780, 2300-1980 cal BC (BM-2266, 2265, 2206) (Miket 1985, 143). The pit alignments excavated in the Milfield Basin have already been mentioned. Finally, excavations at the Coupland henge returned a range of dates that seem to indicate Earlier Neolithic pit activity, see above, as well as the later activity at the henge itself, with one date from an upper ditch fill of 1910-1530 cal BC (Beta-117294) (Waddington 1998b, 23). The complex and the activity within it are examined in far greater detail in chapter eight, and it suffices to note that no comparable series of excavations have been undertaken on henge sites in the region.

Other monuments are known from aerial photography, however, with possible henges existing in Northumberland at Bebside, near Blyth; Groat Haugh I and II, near Norham (A. Harding 1987); Linthaugh; under a housing estate at Tynemouth (Stevenson 1998); and Wooler Cricket Pitch (Annable 1987, 414-415). Potential henges have also been identified in County Durham at East Murton Farm (Durham CC 2006, SMR#6669); North Lodge, Chester-le-Street (Durham CC 2006, SMR#4026); and Eastgate, Stanhope (Young 1993, 9-10). Finally, a henge-type monument was excavated at High Knowes by George Jobey near Alnham, Northumberland, defined by an internal ditch and vague traces of an external bank, and measuring c.5.6m across the interior. Whilst very small for a henge, the structural form of this monument differed from nearby cairns as it contained no internal burials; Jobey does not go so far as to state the existence of a bank, although he does record a 6" high spread of brash beyond the ditch, forming a low mound, which could represent an upcast bank given the shallow nature of the ditches (Jobey and Tait 1966, 37-42). It is noted that this could be a causewayed or 'saucer' barrow rather than a monument in the henge tradition (A. Harding 1987, 213), and is included primarily as an illustration of the architectural continuum on which many of these sites lie. The distribution of these monuments provides an elegant counterpoint to that of the stone circles discussed above. All the henge monuments favour lowland or valley locations close to a watercourse (figure 2.18).

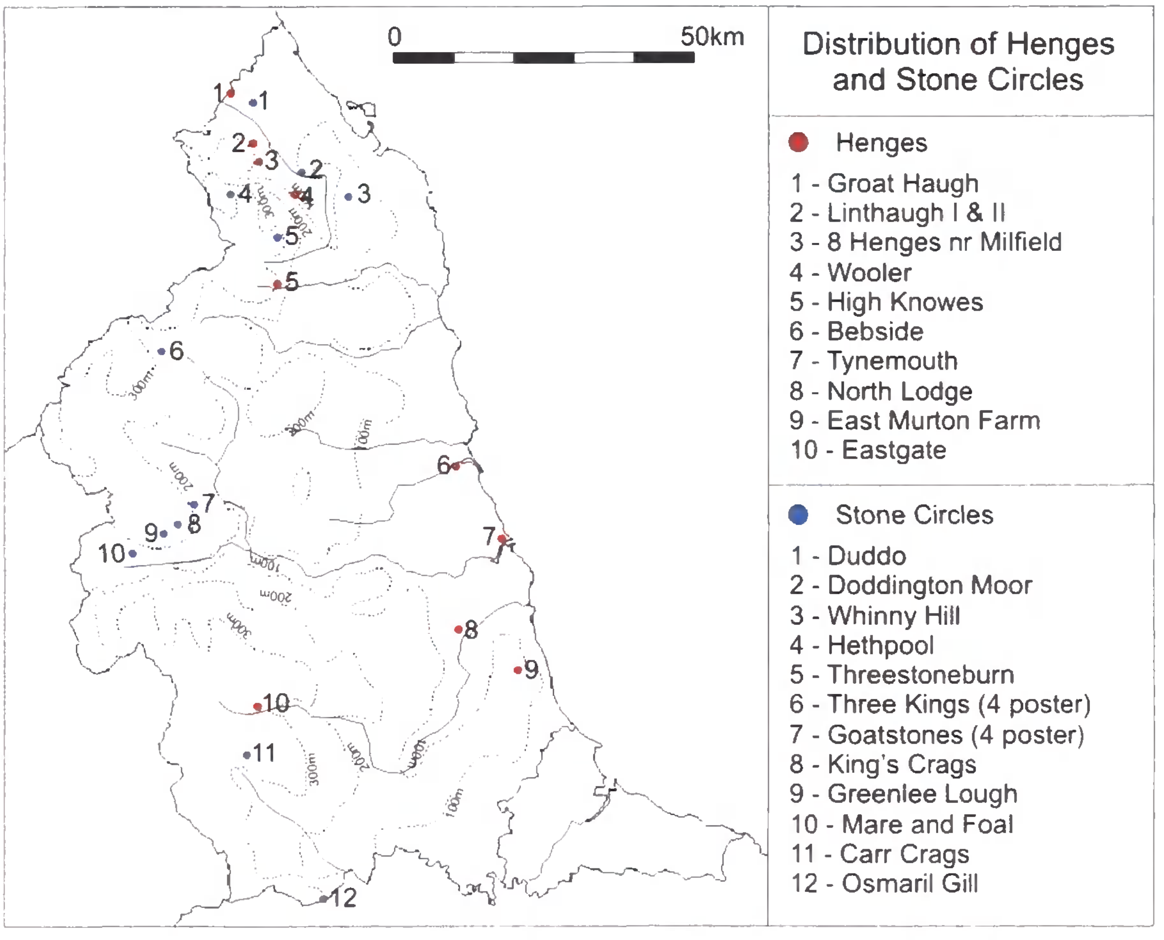


Figure 2.18: The distribution of henges and stone circles

Meldon Bridge

A little beyond the study area, though important for its range of associations with the Neolithic of Northumberland in particular, is the site of Meldon Bridge, near Peebles in the upper Tweed basin. The site is a promontory enclosure, formed on two sides by the Lyne

Water and its tributary the Meldon Burn, and for the remainder of its circuit by a massive timber palisade; an alignment of posts issues from its entrance (Burgess 1976). The posts and the interleaved timber wall would have produced, by the estimate of the excavator, a barrier between three and four metres in height (Burgess 1984, 162). The site is important because its pottery assemblage, from features described as 'domestic' pits (*ibid*, 164), redefined the understanding of Impressed Wares in Northumberland and the Scottish Borders, and coined the sub-style 'Meldon Bridge Ware' (*ibid*, 173). Whilst nothing remotely similar to the encircling palisade is attested in north-east England, there is considerable variation evident in enclosure forms across the North (Waddington 2001). It is also worth noting that the occupation within the enclosure shares features with the pit site at Thirlings, being defined by an un-structured scatter of pits filled with a variety of materials, with the exception of one rather slight circular structure (*ibid*, 169). Moreover, Meldon Bridge Ware has been found at Thirlings, although alongside examples of the Fengate sub-style of Impressed Ware (Burgess 1984, 138). So, whilst the site has few direct parallels, it does stress the potential of studying deposition as a very common category of practice that can draw together otherwise disparate sites.

Rock-Art

Rock-art, in the form of incised cups and rings, is a prehistoric resource for which the region is justifiably famous. It has been extensively catalogued (Beckensall 1974; 1995; 2002; Beckensall and Laurie 1998), and is likely to be Neolithic or Early Bronze Age in date. Rock-art sites usually take the form of 'panels' of motifs on earth-fast boulders, generally in upland situations, (figure 2.19). It is particularly common in sandstone areas, especially the fell-sandstones of north-east Northumberland, and the north Pennines near Rothbury. The number and complexity of motifs vary widely between panels: from simple individual cups to numerous concentric rings. Contextual studies have addressed the interpretation of rock-art in a variety of ways. Richard Bradley noted that the complexity of cup and ring marking is probably the result of systematic relationships between the different elements that form a panel. He related this complexity to topography, arguing that in Northumberland more complex sets of motifs overlook, or are at sites with easy access to, productive areas of lowland landscape. Moreover, carvings seem to be even more complex where they overlook the ceremonial monuments of the Milfield Basin (R. Bradley 1991, 87-93). Concern with movement through such landscapes also appears to have been of some importance in the creation of rock-art panels, as it seems that art was placed overlooking routeways between different topographic and ecological zones. Statistical work comparing the viewsheds of carved and uncarved rocks in valley situations in the Coquet catchment demonstrates a connection between rock-art panels and extensive views longitudinally along valleys (R. Bradley *et al.* 1993). The importance of landscape was also stressed by Clive Waddington, but in this case, rather than looking outward, the art was more directly related to its upland situation. It is argued that rock-art marked 'inscribed grazing areas', linked to marginal upland landscapes, where cattle were kept and allowed to roam freely until required for slaughter or winter provisioning (Waddington 1996b).

Figure 2.19: Cups and rings at West Lordenshaw, Birky Hill, Coquetdale (Aron Mazel 2004, copyright Stan Beckensall Archive, University of Newcastle)

A more 'symbolic' reading has also been advanced, linking the changing context of rock-art with ideological developments in 'control' over the Neolithic and Early Bronze Age landscape (Waddington 1998a). Here a chronological scheme is advanced with Early Neolithic art portraying new relationships with the natural world following the end of the Mesolithic; by the Later Neolithic these motifs were appropriated within the henge tradition, locating 'natural' art in reference to new 'created places'. The process is said to have culminated in the Early Bronze Age when portable rock-art is associated with burial, apparently to extinguish its significance and power (*ibid.*, 50-51). In truth, there is no inherent property of rock-art that should lead us to maintain a distinction between the 'natural' and the 'cultural' in prehistory, nor specifically why it should be bound into ideologies of control. Moreover, dating is too poor to reliably advance schemes of this kind, with only relative dates achieved for Hunterheugh Crag, north-west of Alnwick, where a probable Bronze Age burial post-dated an earlier phase of rock art, which had been broken to allow the insertion of the cist (Brightman and Waddington 2005, 21; Waddington and Johnson 2005).

Rock-art was clearly an important constituent part of the Neolithic landscape in north-east England. However, because it has only rarely been excavated and has few associations with acts of deposition, it will play only a minor role in the rest of this study. Some exceptions do exist, such as the cup marked stone in the central pit at the Milfield South henge, but overall rock-art is of more value for research at the scale of whole landscapes, whereas here the focus is upon individual contexts of deposition.

Early Bronze Age Round and Ring Cairns

Whilst these monuments strictly lie beyond the scope of this study, as they are associated with Beakers and the later ceramic styles of Food Vessels and Collared Urns, they are included here for a number of reasons. First, they are the immediate successors to the monument traditions discussed so far, and thus provide a context for later developments in the region. Second, links between stone circles and typologically Early Bronze Age Four-Posters have been made, and in turn these monuments are seen to be structurally similar to contemporary ring-cairns. Third, given the impressive number and distribution of these burial monuments, it seems sensible to include them in this consideration, if only to note the explosion in monument construction that occurs during the Early Bronze Age.

The regional HERs lists around 750 round cairns, round barrows and ring ditches, although it is difficult to be sure of numbers, given the fact that many HER entries refer to more than one cairn, sometimes a cairn cemetery, and there are likely to be many more that are unrecorded, especially in the uplands of County Durham. There is no reason why the number could not be well in excess of this figure. It is, of course, impossible to discuss meaningfully even a fraction of these sites, but it is worth illustrating their general character through a small number of excavated examples. George Jobey excavated a series of cairns at Chatton Sandyford, Northumberland, including one large robbed round cairn. This monument comprised a ring of stone faced on both sides by a well-constructed and dressed kerb (Jobey 1968, 9-13). In the central space created by this kerb two Beaker burials were overlain by the basal stone of the central cairn body, through which a subsequent Beaker burial was cut, also upon these base stones were two cremations, one un-urned and one within an Enlarged Food Vessel (*ibid*, 13-19). Whilst contemporary accounts no longer distinguish so strongly between ring and round cairns, Jobey's interpretation of a paved area later enclosed by a kerb, and then subsequently buried beneath a low cairn, reinforces current thinking on the gradual development of such sites (R. Bradley 1998, 133). Similar gradual development was also attested at Blawearie, where a kerbed circle, with a cobbled centre, was successfully remodelled through various phases of cemetery use (Hewitt and Beckensall 1996). Jobey also investigated five smaller cairns in the vicinity of Chatton Sandyford, four of which were interpreted as field clearance, and a fifth that covered a grave containing nothing but carbonised material and some spalls of flint (Jobey 1968, 40).

More conventional round cairns have also been excavated. Turf Knowe North cairn in the Breamish Valley, investigated by Durham University, comprised a central burial cist containing a Food Vessel cremation dated to 2165 cal BC (note the chronological overlap with Milfield), associated with jet beads and flint flakes. The cairn was later enlarged with the addition of an outer kerb, whilst a second cist containing at least three cremations was constructed on the monument's earlier perimeter. This cist was noteworthy because it was formed from two flat, grey side-slabs and two pink, rounded andesite end-stones (Frodsham and Waddington 2004, 176). Remodelling and the successive addition of secondary burial deposits are typical of round cairns in the North-East, whilst the colour opposition in the construction of the burial cist also has a parallel. Canon Greenwell excavated a round barrow near Bamburgh, Northumberland, and discovered a central burial cist with end-slabs of sandstone, the local material, but side-slabs of shale, a non-local stone (Greenwell 1877, BB#193). This raises interesting questions, which sadly cannot be pursued here, concerning the importance of creating colour oppositions and the long-distant movement of stone to satisfy the practice.

Conclusion

This chapter has reviewed the wide variety of Neolithic sites and monuments in the north-east of England, and we have seen that every major site type is represented to a greater or lesser extent. Monuments such as causewayed enclosures and cursuses, once thought absent from the region, are coming to light but their distribution is still totally overshadowed by the large number of Later Neolithic enclosures. Whilst the Milfield Basin may boast the densest concentration of sites, Neolithic activity was clearly occurring across every type of landscape, attested by archaeological and palynological data from areas as inhospitable as the Pennine uplands. It is also clear that deliberate modification of the natural environment was undertaken during the period. Obviously, the lists presented in this chapter have not exhausted the potential sources of information on the Neolithic, but what remains is more difficult to quantify, date and study. For example, in terms of monuments, there are a large number of standing stones in the region, and whilst some of these are close to excavated sites, such as the Battle Stone at Yeavering (A. Harding 1981, 119), none are securely dated. Sadly, we must be just as circumspect about stone alignments, such as the Five Kings, Coquetdale (Dixon 1903, 122-123). Similarly, faunal remains are heavily under-represented due to taphonomic factors, to the extent that no meaningful interpretations can be made (Stallibrass and Huntley 1996).

In terms of taking this study forward, the most important conclusions to be drawn from this brief survey relate to the strengths and weaknesses of the archaeological record confronting a potential interpreter. Investigation into the Neolithic of the region has suffered outside the narrow, but archaeologically well-endowed, confines of the Milfield Basin. This is clearly explicable when the nature of more recent excavation is considered. Commercial work has come to dominate intervention into the record. This favours those types of sites that are unlikely to have been detected by traditional means of archaeological investigation, such as pit deposits that do not show so readily on aerial photographs. Scheduled monuments, obviously, are deliberately avoided at an earlier stage of the planning process. In other regions a large corpus of data from field monuments, such as long barrows, causewayed enclosures and henges exists from a long tradition of research, and commercial excavation begins to fill the gaps with its 'essentially random sampling strategy' (Garrow 2007, 1). In the North-East, however, only limited research excavation has taken place, so commercial excavation is not correcting a bias but *actively creating one*. The henges at Milfield are, and will continue to be for some time, an exception to the pattern of research and excavation that characterises the rest of the region. The major losers in this system are upland sites, such as long cairns and stone circles (Petts and Gerrard 2006, 132), and the lowland scheduled monuments. So, whilst rich in survey and cataloguing, especially from aerial photographs, the North-East has suffered a lack of excavation that adequately covers the geographical area and range of site types. This has discouraged the type of regional synthesis that has long been the privilege of the classic Neolithic monumental centres of the British Isles, such as Orkney (Richards 1998) and Wessex (Thomas 1999). Where regional works have been completed they, rightly, tend to catalogue rather than interpret on too little evidence.

The excavated corpus, therefore, places certain constraints on the potential methods of interpretation available to this study. It would be exceedingly difficult to focus upon a particular class of monument, such as long cairns, for example. Even a study of henge sites could do little other than repeat the work already undertaken by Harding (1981) and Waddington (1999) in the Milfield Basin, as no sites beyond this area have ever been excavated. It is for this reason that distinct monument classes are only drawn into this study when aspects of the activity that occurred at such sites cuts across the boundaries of our monument typologies, depositional activity, for example. Chapters seven and eight are orientated around cairns and henges because deposition at certain sites bears direct comparison with contemporary or preceding activity that at Thirlings.

Neolithic material culture itself also places certain constraints on archaeological interpretation. The artefactual corpus is skewed massively in favour of pottery, whilst remaining weak in lithics and environmental evidence. This is problematic for holistic interpretations of material culture, but the well-understood ceramic succession in the region does provide a relative dating framework that is securely founded on radiocarbon determinations. Based upon the progression from Carinated Ware to Impressed Ware and then Grooved Ware, this study can examine patterns of activity on sites that may not be dated absolutely. These pottery styles permit a focus on monuments and deposits related by common forms of material culture. It will also be interesting to determine whether change or continuity in depositional practices over time can be related directly to differences in pottery style.

Overall, we are presented with a dataset that permits certain types of interpretation and denies others. The challenge for this study was to devise a method of synthetic interpretation that could make the most of the strengths of the record, whilst avoiding the problems above. The response was to devise an approach to interpretation that focused on a particular *category of practice*, in this case depositional practice, rather than a type of site or area. The huge scale and range of depositional practices that occurred at Thirlings provide a statistically robust dataset against which complementary practices at cairns and henges are compared. In addition, a large amount of pottery was usually implicated in this practice, and thus this study can utilise a range of methods for the analysis and interpretation of material culture, both before and after disposal. Fundamentally, if the whole span of the Neolithic is considered, there are enough excavations that provide evidence for deposition and its complex development to produce an interesting narrative. Deposition, therefore, is an appropriately recorded lens through which to synthetically interpret Neolithic social practice in the region.

CHAPTER THREE
PITS AND DEPOSITIONAL PRACTICE IN NEOLITHIC BRITAIN

Introduction

The aim in this chapter is twofold: to sketch the characteristics of Earlier to Later Neolithic deposition through a series of detailed examples and, whilst doing so, to investigate how archaeologists have interpreted these places and acts - how meaning is given to them from interpreters at a considerable temporal and cultural distance. This will not be a complete history of Neolithic deposition; instead, the intention is to provide a relevant context for the later examination of the data from north-east England. Concomitantly, this chapter is not concerned with the reconstruction of the social narratives that lay behind *individual* acts of deposition, but instead with the broader issue of why they occurred as a particular type of social action across a number of different sites.

The most common context for Neolithic deposition is undoubtedly the pit, often elaborate, sometimes simple, but always the result of something being removed and then something else taking its place. Deposition was undertaken in many places, admittedly, but it is the pit that occurs right across Britain; its existence is a constant. There is evidence for the Mesolithic deposition of flints in pits: 21,000 flakes were recovered from four pits at Charlwood in Surrey (Ellaby 2004); Neolithic evidence is almost exclusively from pits in certain areas, such as eastern England (Garrow 2006); the Bronze Age sees pit deposition inside houses (Brück 1999); and the Iron Age witnesses structured pit deposits in many different contexts (Hill 1995). This chapter begins with a history of the interpretation of Neolithic deposits, focusing mainly on pits in a variety of contexts, before moving on to consider the material culture utilised in this activity. We conclude with an appreciation of the various themes in interpretation that have been developed by archaeologists over the last sixty years.

Neolithic Pit Deposition: A History of Interpretation

Duncan Garrow (2006, chp 2) has recently discussed the development of the study of deposition from a paradigmatic vantage point, showing how interpretations have usually reflected the theoretical orientations of their day. He argues that interpretations of pit deposits were related to prevailing ideas on the nature of Neolithic domestic economy in the 1960s and 1970s, and then, alongside changes in views on settlement, came to be dominated by the ritual and symbolic meaning of deposition from the 1980s. Building on these observations, this chapter seeks to identify further trends and ideas, in addition to those surrounding settlement and economy, which find their expression in interpretation. To investigate this complexity, rather than a simplistic division into Earlier and Later Neolithic evidence, three broad categories will structure the coming discussion: pits for storage, pits for refuse disposal, and pits and other contexts for overtly 'ritual' deposition. As these three categories reflect more general trends in archaeological thought, their consideration will broadly mirror the chronological order in which they occurred; discussion therefore begins with the functionalist interpretations of the 1960s and 70s before proceeding to an appreciation of more fine-grained and reflexive developments of symbolic and structural archaeologies.

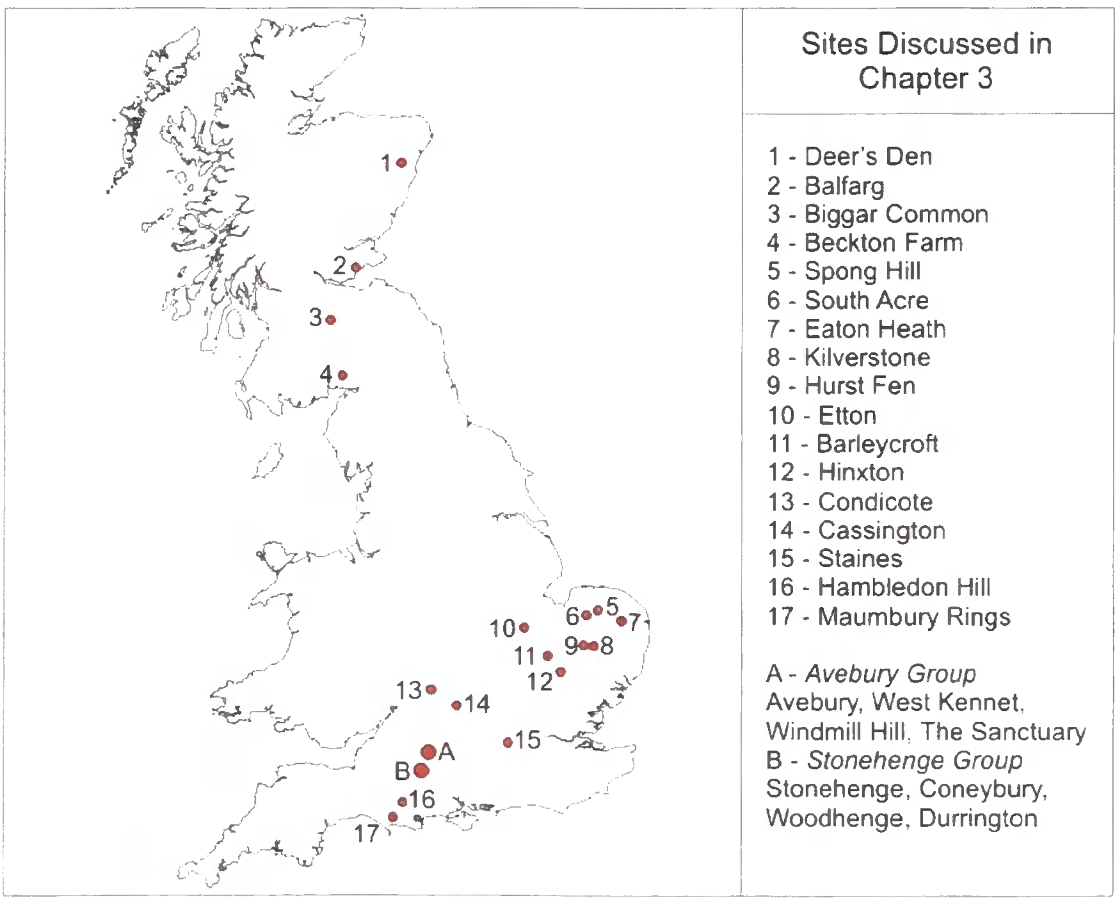


Figure 3.1: Location of sites discussed in chapter three

Storage

The earliest types of interpretation that concern us here are those that saw pits as the functional response to a specific need: the storage of grain as part of an economy dominated by the 'arrival' of farming technologies in the British Isles, and the subsequent development of permanent settled agriculture.

Hurst Fen

Between 1954 and 1958 Grahame Clark excavated the pit site at Hurst Fen, Suffolk, comprising 200 small pits (Clark 1960).The site was significant, not least because it became the type-site for the decorated Mildenhall sub-style of Carinated Ware, but also because Hurst Fen became the definitive Neolithic settlement site. The pits occurred in small clusters, typical of a number of the sites examined below, and many appear to have been open at the same time, as they shared refitting potsherds (*ibid.*, 208). None of the pits were particularly large: 59% of them were between one and two feet in width, and all were broadly bowl-shaped with sloping sides and a rounded base. None showed any evidence of *in-situ* firing, though many contained redeposited burnt remains (*ibid.*, 207). As Duncan Garrow points out, at this point interpretations of the Neolithic were still based upon ideas of permanent settled agriculture (Garrow 2006, 5), and a lack of house structures at Hurst Fen was not seen as contradictory to this premise: it "evidently represents a settlement" (Clark 1960, 241). Using evidence of carbonized hazelnuts, three sherds with grain impressions and one with an apple pip impression (*ibid.*, 213) the pits were interpreted as food storage devices, each cluster of pits representing the property of one family (*ibid.*, 141). It was thought that, whilst in use, they were lined with basketry in common with Egyptian analogues, and when their usefulness was expended they were filled with domestic refuse (Field *et al.* 1964, 367; 370).

Broome Heath

The excavation of Hurst Fen set the tone for at least twenty years of further interpretation. The excavations at Broome Heath (Wainwright 1972), which occurred intermittently between 1966 and 1971 are a case in point. At this site 67 pits were excavated, with the largest measuring up to four metres in width. Wainwright divided these pits into three classes on the basis of their profile: those with a bowl shape, those with a flat base, and those that had been dug to receive a square wooden container (*ibid.*, 12). The presence of these wooden containers are taken as evidence for the use of the pits in the storage of grain (ibid., 19). Figure 3.2 displays a section drawing of one if the pits said to have held a wooden box, it should be noted that evidence of square shapes were also attested for these features *in plan*. However, as no direct evidence of wooden containers survives, with the benefit of hindsight it may be more appropriate to view these features as traces of posts, later removed, hence their absence higher up the profiles. Evidence in plan of square features in these pits would most probably represent the presence of squared timbers.

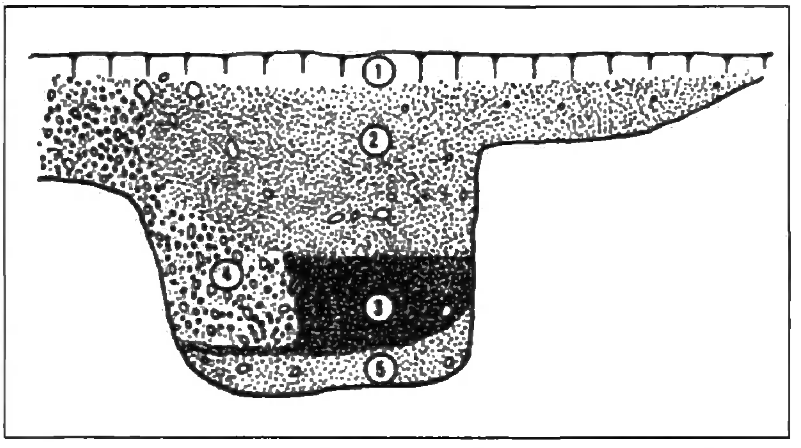


Figure 3.2: Pit 3 at Broome Heath (after Wainwright 1972, 13)

The site also produced 9,326 sherds of Carinated Ware pottery, representing a minimum number of 418 vessels (*ibid.*, 22); 750 of these sherds presented imprints of plant remains, 75 of which were identified as cereal grain impressions (*ibid.*, 90). Interestingly, 64% of the sherds came from only two pits, and across the whole site pottery was only recovered from 31 of the 67 pits, the majority being filled with clean gravel subsoil. These facts are used to justify the interpretation that the pits were used for the storage of perishable material, such as grain. Following the end of their storage role, those pits that were not required for the disposal of domestic waste (represented by the pottery) were, in most cases, backfilled with the original subsoil (*ibid.*, 20).

In a similar vein, Manby argued that the Grooved Ware pits of Yorkshire were grain silos and the only surviving traces of domestic dwellings whose floors, hearths and post-holes had been destroyed by later agricultural activity or erosion (Manby 1974, 77). Eight pits discovered in the Chilterns were interpreted as refuse filled storage pits, containing what was described as a 'standard' domestic assemblage (Matthews 1976, 3-8). Similarly, at Spong Hill, Norfolk, the excavator accepted the grain silo function, whilst noting that the variety of forms suggested different uses (Healy 1988, 105). Importantly, in all cases, subsequent backfilling with refuse was considered a *secondary* use for the pits following a storage role. The 'domestic' nature of this material went unquestioned.

These interpretations were made in spite of work by Reynolds (1974), which decisively undermined the grain storage interpretation by demonstrating that the bowl-shaped Neolithic pits were the least effective shape for preventing spoilage. Hence the more appropriate beehive form of Iron Age pits, with a more obtuse angle between pit wall and seal. Richard Bradley also pointed out that, whilst developed cereal agriculture requires facilities for the storage of grain, pits cannot be simplistically interpreted as the sole evidence for that mode of economy: Mesolithic pits exist in south-east England but nobody claims them as evidence for farming. Indeed, Bradley's assertion (1978, 42) that *hazelnuts* are the most common artefact in Neolithic and Early Bronze Age pits is one that continues to retain its validity. Not far beyond the boundaries of this study, the results of a pipeline excavation on the Yorkshire Wolds discovered a series of pits containing thousands of hazelnuts associated with Grooved Ware at Caythorpe and Marton-le-Moor (Stallibrass and Huntley 1996, 38).

Refuse Deposition

The disposal of refuse as the *primary* motivation behind the digging of pits is an interpretation that still holds currency. It has seen a relatively long history of development, with the concept of rubbish disposal cross-cutting all the major theoretical developments of the last fifty years. It is clear that such interpretations developed out of a functionalist attitude that linked pits to storage. Yet opinions differ as to the amount of 'ritualised' activity that surrounded the act of refuse deposition and the social significance of the material deposited – whether it was simple rubbish clearance or disposal of quasi-religious importance. These differences are not represented by polarised oppositions. Rather, it simply appears that certain authors are prepared to see a greater degree of 'ritual' activity in any act of deposition, which thereby occupies a given position on the sliding scale between 'symbolic' and 'functional' behaviour. Few accounts that stress the functional side of refuse disposal overtly deny that the act of deposition could have ritual significance, and indeed the reverse is true, yet it is instructive that most accounts still conceive of refuse in a combination of these terms. The sites discussed in this sub-section begin with those taking a more functional line on refuse, and progress through those willing to accept a wider symbolic dimension. A further dichotomy is also apparent between interpretations that stress the importance of the *process* of digging and burying, and those that argue for the symbolic significance of the *material* deposited, an intrinsic property of which deemed burial the most appropriate method of disposal.

Two Sites in South-West Scotland: Biggar Common and Beckton Farm

There is a strong connection between the settlement-orientated, functionalist interpretations that focused on storage, and the interpretation of the pits at these two sites. Here, however, the function of the pits is *derived* from the settlement interpretation of the site rather than, *vice versa*, the pits *informing* the interpretation of the site, as at Hurst Fen. Between 1987 and 1993 a series of prehistoric monuments were investigated on Biggar Common, including a long mound, a series of round mounds and an extensive artefact scatter (Johnston 1997). The site is most well known for the recovery of over 2300 Carinated Ware sherds (see chapter two) but it is the context of their deposition that is of concern here. Large numbers of sherds were recovered from a series of postholes, some of which the excavator interpreted as forming a roughly square structure (*ibid.*, 199), There are, however, a large number of other postholes that do not conform to this scheme and, given the amount of artefacts and lack of published sections, it may be appropriate to see these features as orientated around the deposition of material culture. Yet, however one could re-interpret the features, the fact remains that the postholes were seen as representing a building, which is taken as evidence of settlement on the site, associated with cereal agriculture (*ibid.*, 246-247). The deposition of pottery in the postholes was "considered alongside the limited structural evidence" (*ibid.*, 202) and the conclusion was drawn that they represent the disposal of broken pottery refuse as part of 'domestic' activities.

Similarly, a series of putative circular structures were identified at Beckton Farm, Dumfries and Galloway, in association with 'rubbish' pits, Grooved Ware pits and four-post structures (Pollard 1997). The interpretation of the site divided a series of 'ritual' features from those considered 'domestic' (figure 3.3). The non-Grooved Ware pits were interpretatively associated with evidence for circular structures with potential clay floors and hearths (*ibid.*, 75-77), whilst the fills of these pits were identified with the deposition of hearth debris and domestic waste, having been "created" for this purpose (*ibid.*, 111). These were opposed to the four-posters and the Grooved Ware pits, one of which contained human remains dated to

2911-2477 cal BC (AA-12587). The four-post structures were interpreted as excarnation platforms (*ibid.*, 115), despite there being no evidence for this practice anywhere on the site. As at Biggar Common, the fills of the pits were labelled as 'rubbish' depending on the association with structures on the site, rather than any inherent values of their own. Taking a wider view, the use of pits for the unproblematic deposition of domestic refuse is a common interpretation in many site reports. Humphrey Case, during his interpretation of pits 1 and 2 at Cassington, Oxfordshire, argues for an initial use for gravel extraction and then for backfilling with domestic waste. He noted, however, that this was as likely to reflect attitudes towards personal possession and taboos concerning rubbish, as it was simple tidiness of mind (Case 1982, 124). The pit at Rowden, Dorset, which contained ash, flint, and carbonised emmer and barley was taken as evidence of refuse disposal associated with settlement activity (Woodward 1991, 43; 133). Yet interpretations that invoke the involvement of refuse can also stress the symbolic aspects of deposition. It was noted, for example, in the excavation of twenty pits at Deer's Den, Aberdeenshire, that rubbish could be conceptualised as ritually charged material (Alexander 2000, 66), despite the absence of formal or 'structured' deposits.

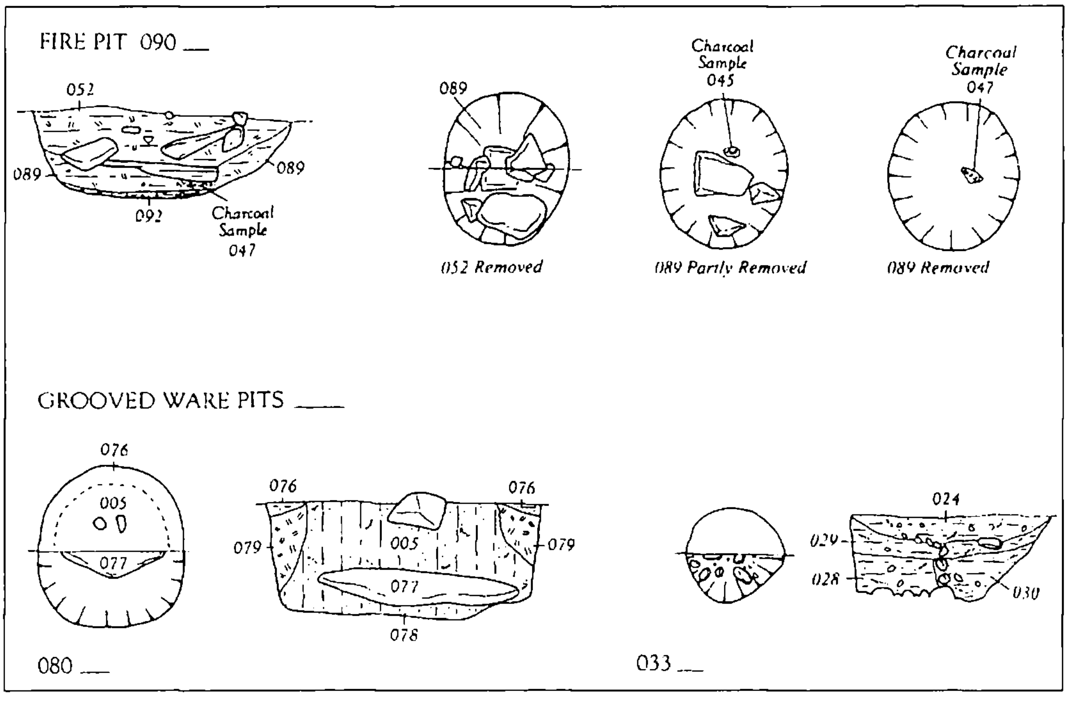


Figure 3.3: Two types of pit at Beckton Farm (after Pollard 1997, 85)

Eaton Heath

The deep shafts at Eaton Heath are an interesting example of a functional interpretation presented with intractable evidence. The site comprised several small scatters of pits and postholes, and twenty-one shafts between one and two metres wide, and up to eight metres deep (Wainwright 1974, 5). The smaller pits produced plain and Mildenhall Carinated Ware, whilst the pottery from the shafts was rather more confusing. Due to their depth and the fact that the sand and gravel subsoil was extremely unstable, the shafts had been lined with clay up to fifteen centimetres thick; this demonstrably had prevented Neolithic collapse because the shafts and their silt fills still remained to be excavated. Yet, despite their depth, finds from the shafts were limited: ten shafts produced nothing and others produced only small numbers of sherds, generally of Carinated Ware (*ibid.,* 12). The dating of the site was also rather confused. Shaft 5 contained a complete East Anglian Beaker at 3.47m down, but Neolithic sherds between 3.7 and 5m (*ibid.*, 15). Similarly, shaft 97a produced three radiocarbon determinations: 3486-2891 cal BC (BM-772) at the base; 2832-2299 cal BC (BM-773) at 1.5 to 3m; but unfortunately also 3895-3535 cal BC (BM-774) between 0.5 and 1m. This inversion of the proper sequence is perhaps not surprising given that the samples were from oak charcoal, and that a definitely residual Mesolithic date of 5356-5053 cal BC (BM-771) was obtained from shaft 108 (*ibid.*, 19). It seems likely that a mixture of material was either deliberately backfilled or eroded into the shafts from their sides or the ground surface.

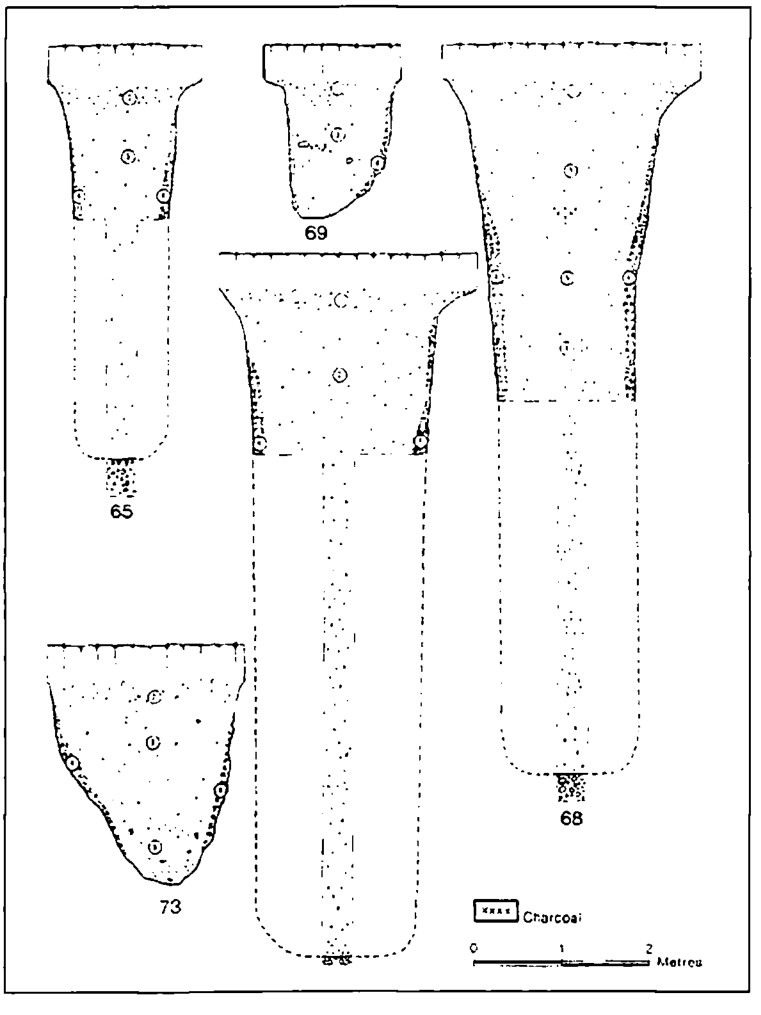


Figure 3.4: Examples of shafts from Eaton Heath (after Wainwright 1974, 18)

This raises the question of the function of the shafts. The specific source of the material culture was never specified, but at the interim report stage of the excavation a utilitarian explanation was favoured: the shafts were used for the deposition of settlement waste (Wainwright and Donaldson 1972, 234). By the release of the final report (Wainwright 1974), the interpretation was more circumspect: parallels were drawn with the ritual use of shafts in 'Celtic' religious practices, but also that the utilitarian use of the shafts as wells was a distinct possibility – the unstable subsoil necessitating the periodic excavation of new features (*ibid.*, 23-25). Deposition of some description certainly did occur, the pottery bears witness to this, as does the charcoal present in the lower fills of certain shafts, but the use of the shaft as wells has interpretative problems. First, the depth of the shafts is highly variable between eight and two metres. Wainwright records the water-table in 1970 at seven metres below the ground surface; it seems unlikely that it would have fluctuated by over five metres in the Neolithic without evidence of some climatic catastrophe. Second, the shafts themselves seem to have been relatively stable once lined with clay, as they still exist. Moreover, even though acts of deposition seem to have occurred at specific intervals, probably filling the majority of a shaft (*ibid.*, 13), they must have been stable enough to leave open, to enable the accumulation of fine silts and later acts of deposition, such as the complete Beaker in shaft 5. None of this contradicts a 'settlement' origin for the material culture, but it may question a functionalist interpretation of the shafts themselves.

Kilverstone

More recent work has demonstrated that refuse can be treated in a complex manner, and provide direct evidence for strategies of settlement and artefact disposal. The excavation of a pit site was undertaken at Kilverstone, also in Norfolk, where 236 Earlier Neolithic pits, all practically indistinguishable on the basis of size and fill, were concentrated in three discrete areas (Garrow *et al.* 2005). The majority of the pits in each area were arranged in clusters with varying degrees of intercutting, and it was possible to identify stratigraphic 'stacks' of pits that demonstrated the sequential development of each cluster. They contained a selection of material culture: a repertoire of pottery, worked flint and burnt organics. These finds were well distributed throughout each pit, both vertically and horizontally, and there was no evidence that deposits of material had been placed in particular positions. There were no definite associations between types of artefact, nor was there any evidence of spatial patterning at site or cluster level (*ibid.*, 144-145).

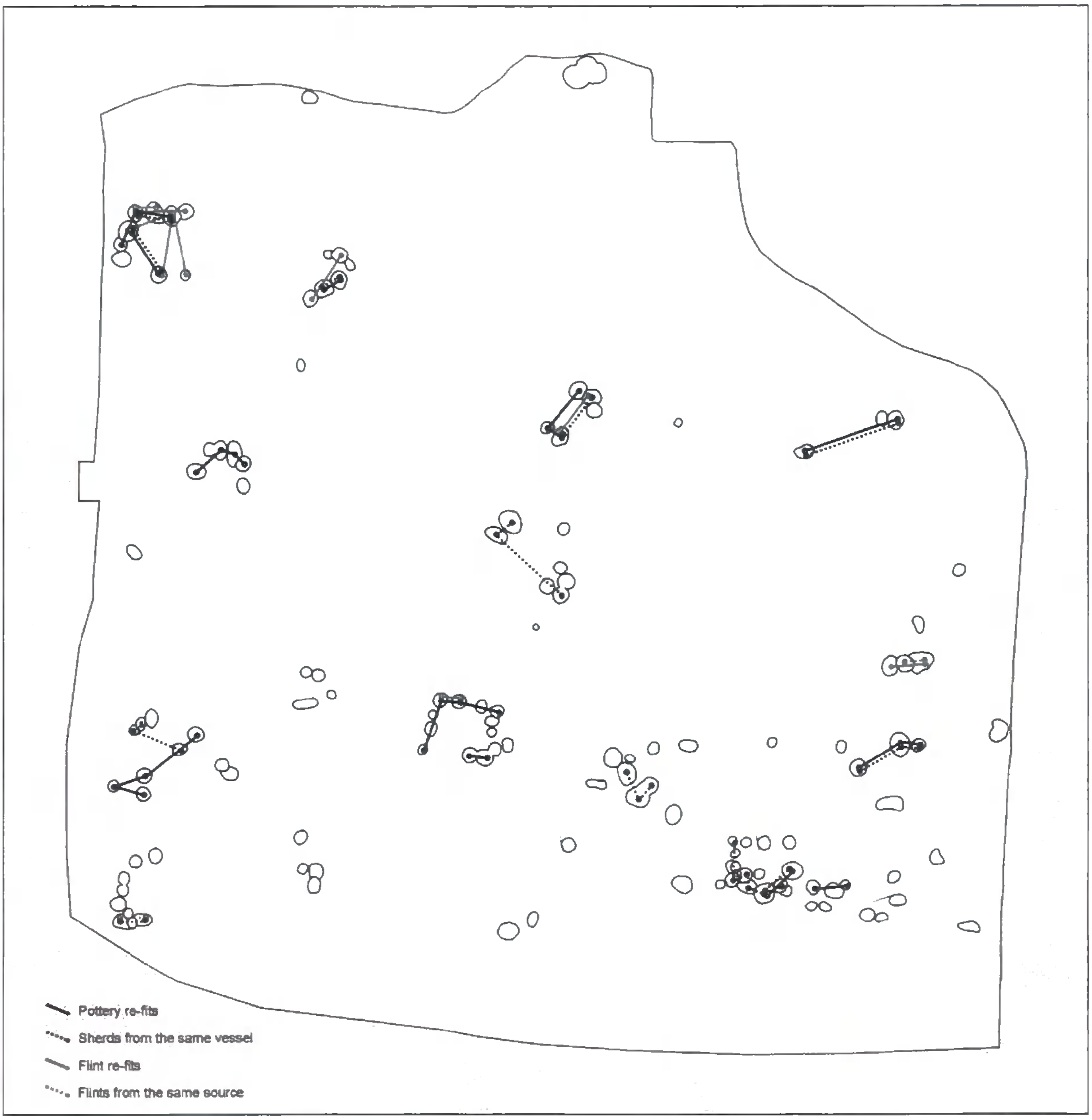


Figure 3.5: Pottery and flint refits between the clustered pits at Kilverstone (after Garrow 2006, 50)

Yet, there were interesting patterns of pottery and flint refit between the pits within a cluster (figure 3.5). Each stratigraphic 'stack' was interpreted as evidence for a discrete settlement episode, but represented deposition activity *throughout* that episode. This is because within a stack of pits it was possible to trace the majority of a lithic reduction sequence, with waste flakes from the earlier stages appearing in stratigraphically higher pits, indicating that pit digging and midden deposition occurred alongside lithic manufacture (*ibid.*, 152). These refitting sherds and flakes were spread throughout a cluster, but never between clusters, and interestingly, no complete pot or flint reduction sequence was ever found (*ibid.*, 147). Differential weathering was also present on refitting potsherds, indicating that each sherd had a unique biography during the time between breakage and deposition. The excavators used this evidence to argue for the existence of zones on the surface of the site where material was left to accumulate; subsequent visits to the site within a mobile settlement regime utilised distinct zones. Differential weathering and artefact abrasion is explained as the product of the passage of people over the surface of the deposit: some sherds avoided being repeatedly trodden on whilst others did not. A given amount of this material was deposited in a new pit in the appropriate cluster after it had passed an appropriate period of time on the surface, though it is evident that the disposal of *all* the material was never a priority due to the total absence of complete artefacts. Thus, the process of burying was interpreted by the excavators as most significant (*ibid.*, 151), rather than any symbolic property of the artefacts that required their deposition. Indeed, the content of the pits is regarded as undifferentiated domestic refuse.

Barleycroft and Hinxton

Despite the often functional 'disposal' of undifferentiated refuse, its deposition can be interpreted with a more symbolic purpose in mind, though not to the extent of the 'ritual deposits' discussed below. Two sites in Cambridgeshire, at Barleycroft Farm on the River Great Ouse and Hinxton on the River Cam, have provided evidence for the deposition of material culture in tree-throws as well as pits (Evans *et al.* 1999). The single tree-throw at Hinxton produced 770 pieces of worked flint and 165 sherds of Earlier Neolithic plain bowl pottery, whilst F504 and F591 at Barleycroft produced 255 and 319 flint flakes, and 157 and 238 sherds respectively (*ibid.*, 245). At Barleycroft the contents of the throws contrasted sharply with that of nearby pits, which only contained 332 flints and 442 Ebbsfleet sherds out of a total of seventeen discrete features. It seems that these pits post-dated the tree-throw deposition, with F591 returning a date of 3780-3650 cal BC (OxA-8110) and one of the pits 3690-3530 cal BC (OxA-8108) (*ibid.*, 247).

The density of material in the tree-throws indicates that it cannot have been randomly introduced into the throws through natural processes, and must instead reflect a desire to remove totally all the surface traces of human settlement (*ibid.*, 247-249). The fallen trees themselves would be present for decades provided they remained unburnt, and the authors stress the significance of depositing material beneath a semi-permanent marker. Through association with these natural monuments it was an act that situated human activity permanently in a landscape only temporarily occupied. If the economy was based upon a long-fallow system of limited agriculture in temporary clearings, the groups responsible may not have returned to these locations for several years (*ibid.*, 251). Here the act of deposition is of privileged importance for the authors, though not for reasons of cleanliness. Its significance is derived from the symbolic aspect of the performance, which references wider beliefs, grounded in the transient woodland nature of Earlier Neolithic settlement practices, implying that trees may have been significant in the marking of permanent places in a temporary landscape, and in the creation of those places themselves.

In those cases where it is clear that a midden was only partially or selectively deposited, interpretation seems to favour a more metaphoric or symbolic reason for the disposal of refuse, usually at the end of a period of occupation. Pollard (1999) argues that the abandonment of a temporary settlement was the beginning of a state of transition, a socially dangerous time which required elements of ritual practice as a form of mediation. In this context, pit deposition evoked continuity in the social order by permanently situating a representation of the community in a known location. It embodied the identity of the participants in a locale (*ibid.*, 89), and thus the material culture was important as it was the personal waste of the group in question. However, it was the *act* of depositing this material that created its significance as the symbolic representation of the social order. If temporary settlement was orientated around cyclical movement, each pit could represent the return to a location by the same group (Thomas 1999, 72), undertaking a similar ritual act of deposition. Although, to the contrary, it should be remembered that the evidence from Kilverstone demonstrates that pits were dug throughout each episode of settlement (Garrow *et al.* 2005, 152), and the mobile-settlement hypothesis itself is certainly not a consensus position (Schulting and Richards 2002; Rowley-Conwy 2004).

Ritual Deposition

After storage and refuse disposal, the third major thread in interpretation is the idea of 'ritual' or self-consciously 'symbolic' pit deposition. This differs from the more 'symbolic' examples of refuse deposition (above) because they saw refuse disposal as the *primary* motivator. However, discussions of pit-rituals can be chronologically indistinct from refuse-led interpretations, and indeed the same archaeologists are involved in both. The difference lies not in the theoretical stripe of the interpreter, but in the preconceptions those interpreters bring to the data. The classic marker for ritual activity in deposition is the existence of a definable structure, or a number of structuring principles, in the organisation of a deposit or across a series of deposits. For example, structure could be evident in the placement of pottery in association with a flint cache, or the division of certain artefacts into certain pits/deposits. This position was first defined by Richards and Thomas (1984) in their landmark paper on structured deposition as a form of ritualised activity. This is closely related to the 'symbolic' acts of refuse deposition described above, where ritual is used to mediate a state of transition (Pollard 1999). In that case, however, there was no definite structure in the deposit, and it was defined as ritual on the basis of interpreted social upheaval during an act of abandonment. The contrast here is that a symbolic interpretation rests upon overt ritual 'observed' in the structure of the deposit, rather than upon an interpreted but unobserved social action occurring alongside it. The essence of structured deposition is its existence as a form of symbolic behaviour: the symbolic properties of the material culture engaged in the deposition are manipulated to form the structure of the deposit and, thereby, communicate certain culturally specific meanings. This is defined as ritual behaviour because it involves a high degree of formal and repetitive behaviour in the creation of the structured deposit (Richards and Thomas 1984, 191). Ritual activity is highly formalised and repetitive because it cannot be open to debate. It must be timeless. In this way the order of the social world that the ritual represents is legitimised and is also portrayed as timeless (Shanks and Tilley 1982, 151). This definition of ritual action and its interpretative value has been challenged by others and this is explored in chapter four, yet the majority of examples discussed below still maintain the structure–ritual link, hence its relevance here. Particular differences exist between Earlier and Later Neolithic interpretations of ritual deposition.

The Earlier Neolithic – The Coneybury Anomaly

The notion of structured deposition as a form of Earlier Neolithic ritual is widely entertained: the stereotypical example is the Coneybury 'anomaly' in the environs of Stonehenge (C. Richards 1990). The anomaly was a large pit c.1.9m in diameter by 1.25m deep, with a primary fill some 20cm deep at the base, dated to 3980-3708 cal BC (OxA-1402). This primary fill contained 1375 sherds of Earlier Neolithic pottery in a matrix of loamy material that returned very high phosphate values, indicating the decay of organic material; it seems that it had been heavily compressed by the weight of the overlying sediments and was originally somewhat deeper (*ibid.*, 42). The faunal assemblage was particularly remarkable. It seems to have represented a single butchery episode, perhaps for a feast, and comprised 2110 fragments of animal bone, including the remains from ten domestic cattle, several roe deer, one pig and two red deer. (*ibid.*, 43). All the material culture was deposited in a single episode, but it is clear that it spent a certain amount of time in a pre-depositional context, potentially a midden. There was evidence for gnawing on the larger cattle bones, there were few refitting flint flakes, and the pottery was not deposited immediately after breakage (*ibid.*, 53).

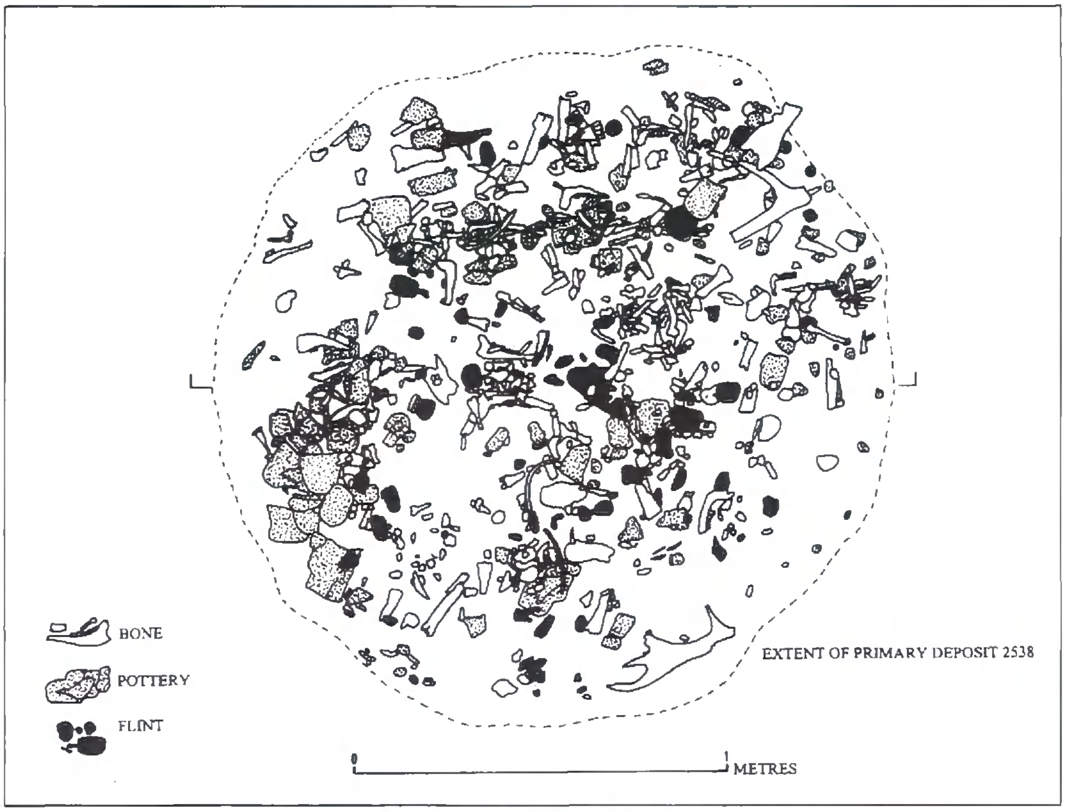


Figure 3.6: The distribution of bone, pottery and flint in the Coneybury anomaly (after C. Richards 1990, 41)

The excavator was aware of the potential for 'placed' or structured deposits to exist, especially bundles of deer remains and pottery deposits, but held back from definitively stating the actual purpose of the pit – whether for refuse deposition or otherwise. However, a 'structured deposit' is usually a favoured interpretation (figure 3.6). Pollard notes that the one metre depth of the Coneybury anomaly meant that someone had to climb down into the pit to arrange the artefacts in their specific positions, the deer ribs in bundles and the pottery in clusters; the nature of the deposit must therefore have been contingent upon a very specific set of choices and symbolic associations with a *defined goal* (Pollard 2001, 325). Similarly, Thomas cites the deliberate choice of rim sherds over wall sherds, and states that the event of deposition would be of significance in commemorating the event of the feast. The activity was therefore concerned with symbolically marking the social event in time and the social groups involved in space (Thomas 1999, 70).

The Earlier Neolithic – The Pits at Balfarg

Another regularly cited example of Earlier Neolithic structured deposition are the two clusters of pits at Balfarg, Fife, associated with a later henge (Mercer 1981a) and monument complex (Barclay and Russell-White 1993). The two clusters of pits were associated with two different styles of Earlier Neolithic pottery: bowls in the Carinated tradition (from Area C) and a heavier, rather unusual, globular ware (from Area A) (T.G. Cowie in Barclay and Russell-White 1993, 65-76). These were associated with radiocarbon dates of 3650-3376 cal BC (GU-1903) and 3638-3370 cal BC (GU-2606) respectively. A large amount of pottery was not deposited in every pit in these groups, but where it did occur the excavator interpreted it as undertaken deliberately and carefully. The form of the pits was not unusual, being typically shallow with a bowl-shaped profile, but in all the pits in Area C large amounts of stone packing had been placed in the upper layers of the pit, sealing the lower contexts (figure 3.7); in two cases these deposits were large amounts of pottery, and in a further four they contained charcoal rich fills and evidence of burnt, fragmented bone (*ibid.*, 60).

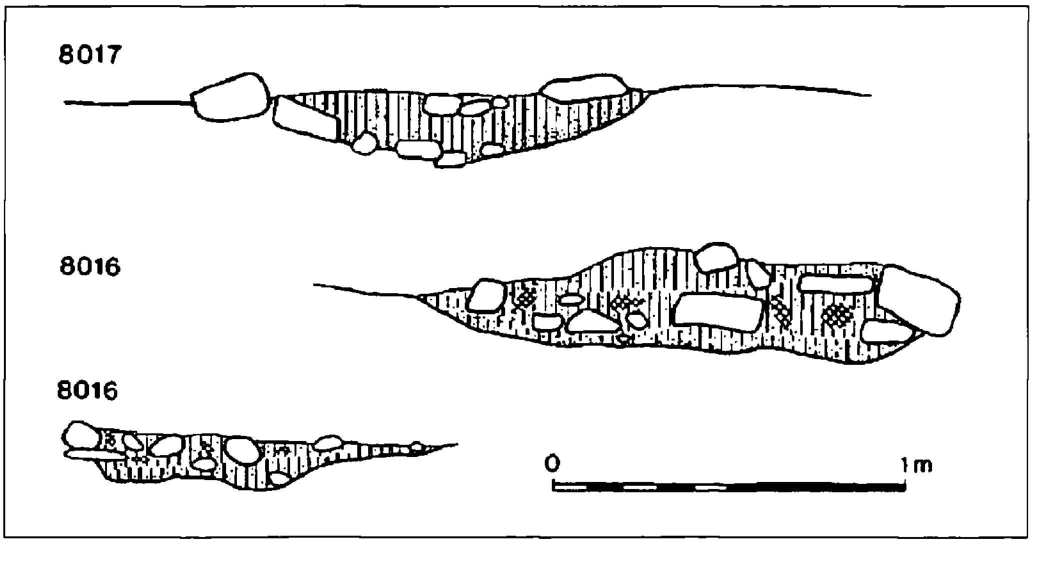


Figure 3.7: The Area C pits at Balfarg, note the stone packing (after Barclay and Russell-White 1993, 61)

The Area A deposits were similarly complex: F2430 was only 0.5m in diameter by 0.2m in depth but produced evidence of *in-situ* burning, was lined with potsherds from twelve vessels, in some cases stacked on top of one another, and contained fifteen barley seeds (*ibid.*, 63). A ritual interpretation was favoured for this activity. The type of pit digging that was undertaken was defined as 'non-utilitarian' because of the structuring principles present in the deposits (*ibid.*, 167-168). The Balfarg data illuminates a more general trend. In the Earlier Neolithic, 'structured deposits' are usually inferred from the deliberate placement of *one* type of material culture, as opposed to the juxtaposition of lots of different types (see Grooved Ware below). For example, beneath barrow G61 on Roughridge Hill it appears that 32 pots were emptied into a pit from a container, but certain sherds were moved into a deliberately upright position, indicating that the deposit was structured after or during the dumping of the material (Thomas 1999, 70; after Zienkiewicz 1996).

The Case of Grooved Ware

It is almost axiomatic that structured deposits are seen as the most conclusive evidence for deposition as a form of ritual activity, to the extent that these terms become interchangeable; this is especially notable in the interpretation of Later Neolithic Grooved Ware pits. These deposits regularly seem to demonstrate the deliberate placement of objects and specific associations between differing artefact types. Although these deposits are often set within a matrix that resembles the dark humic material of decomposed refuse, such functional explanations for disposal are usually rejected. For example, Healy drew a distinction between ritual and domestic material in the pits at Spong Hill, whereby the Earlier Neolithic saw pits used for storage and then refuse disposal, and the Later Neolithic more formal deposition with more easily reconstructable pottery, reinforcing the premise that refuse was a separate class of material that stayed in above ground middens (Healy 1988, 107).

The clusters of pits at Firtree Field, near the Dorset Cursus (Barrett *et al.* 1991) are another excellent example. At this site sixteen pits were excavated in two discrete clusters, with the southern cluster closest to the cursus. The pits could be categorised on the basis of both their shape and fill, and these differences related to variation in the types of material culture found within them. Steep sided pits with flat bottoms held all the flintwork and arrowheads from the site; this type shared all the pig incisors with shallow scooped pits; which in turn shared all the shell finds with asymmetrical shallow pits (*ibid.*, 77). A further set of structured oppositions was evident in the flintwork. Freshly worked chalk flint nodules were associated with animal jaws and skulls, antler picks, axes, arrowheads and decorated Grooved Ware; whereas gravel flint nodules were associated with long bones, vertebrae and undecorated pottery. Both types of flint appeared to have been sourced from middened or provisionally discarded material due to the lack of refitting flakes. Finally, a series of specific formal deposits are worthy of mention: Pit 7 contained two pig incisors next to a scraper and a group VII axe, whilst Pit 11a had an antler with an ox skull on top of it at the base, higher up the profile were two red deer antlers, and an incisor associated with a roe deer antler (*ibid.*, 77).

The excavators based their interpretation of the features around these associations and oppositions. It was also clear that the more 'complex' deposits, i.e. those with the highest variety and number of artefacts, were those closest to the cursus, forming the southern cluster. It appears that this opposition, too, may have been deliberate, as both clusters returned very similar radiocarbon dates: 2887-2506 cal BC (BM-2406) from Pit 11 in the southern cluster, and 2866-2485 cal BC (BM-2407) from Pit 32 in the northern. On the basis of these differences the activity that led to the creation of the northern cluster is defined as 'domestic' or of a settlement origin, whereas the pits nearest the cursus are privileged to be the result of more ritualised activity (*ibid.*, 84).

The general trend seems to be that societies of the Later Neolithic used deposition, especially when associated with Grooved Ware, to make more explicit statements. A greater degree of elaboration in enactment seems evident from the combination of juxtaposed materials (Pollard 2001, 325), and material culture with more obvious, socially charged connotations may have been used, which dictated a more reverent and formal mode of deposition (Thomas 1999, 72). The Grooved Ware pits in the Balfarg monument complex are all interpreted as just such conscious acts of ritual deposition. They were associated with the buried remains of two large timber structures, the stone circle and henge, and the Balfarg Riding School enclosure ditch. Three of five isolated pits were also notable for their large, deliberate deposits of broken pottery and charcoal stained matrixes (Barclay and Russell-White 1993, 88-89). The deposits in the enclosure ditch may have been deliberately placed to mark a significant boundary, and the authors speculate that the items could have been deemed ritually dangerous (*ibid.*, 192). The potent ritual nature of Grooved Ware deposition is interpreted as more plausible on the strength of its association with pit burial. At Beckton Farm, pots had been deliberately smashed and buried with cremated remains (Pollard 1997, 115). Yet, also in Scotland, at Deer's Den the Grooved Ware was less fragmentary than the Earlier Neolithic remains and bore signs of attempted repair; it was not made for deliberate destruction and burial (Alexander 2000, 67).

Deposition and Architecture

Looking more widely at deposition directly associated with recognisable 'architecture', it seems that deposits at or within monuments are liable to be interpreted as ritual in nature on the strength of this context. The most obvious examples are the causewayed enclosures of southern England, where deposition literally forms and defines the totality of the architecture present; affirming the importance of the boundary (Oswald *et al.* 2001, 122). Philippa Bradley's interpretation of the deposition at Staines argues for "structured or ritualistic practices", due to their complexity, surrounding otherwise domestic activities (P. Bradley 2004, 121). The excavators of Windmill Hill take a more cautious line, shying from declaring any form of definite 'occupation' but stressing that the structured deposition of materials such as dead infants, disarticulated human bone, pots and flints created and reinforced a special place. The disposal of these different artefact types appears to have been deliberately patterned across the enclosure (figure 3.8) (Whittle *et al.* 1999, 354). Francis Pryor interprets deliberate structure in the deposits at Etton as definite evidence of ritual, demonstrating that the two halves of the enclosure saw opposing types of deposition. In a butt-end of ditch segment 1 in the western half a pot was placed upright on bark matting as it may have been used in life, whilst on the opposite, eastern side of the site, in segment 7, a pot was upturned and was initially mistaken as a human skull; perhaps the result of deliberate oppositional symbolism (Pryor 1998, 370). This in turn would be related to the use of the sites: it seems that some form of communal activity occurred at causewayed enclosures, as the faunal assemblages from Windmill Hill and Hambledon Hill point to a high level of meat consumption and little bone processing, perhaps indicative of feasting behaviour (Legge 1981, 173; Whittle *et al.* 1999, 354). Any form of settlement is usually directly ruled-out, with the enclosures taking on a ceremonial role (Pryor 1998, 361). The remains of these activities were not treated as rubbish, however. It is argued that most of the items were chosen for some form of deliberate deposition, and were classified in a more complex manner than as simple tools, feasting debris or prestige items (Oswald *et al.* 2001, 123-124). Cattle skulls, for example, appear to have been afforded a specific status at Windmill Hill, and often deposited against causeways (Whittle *et al.* 1999, 361).

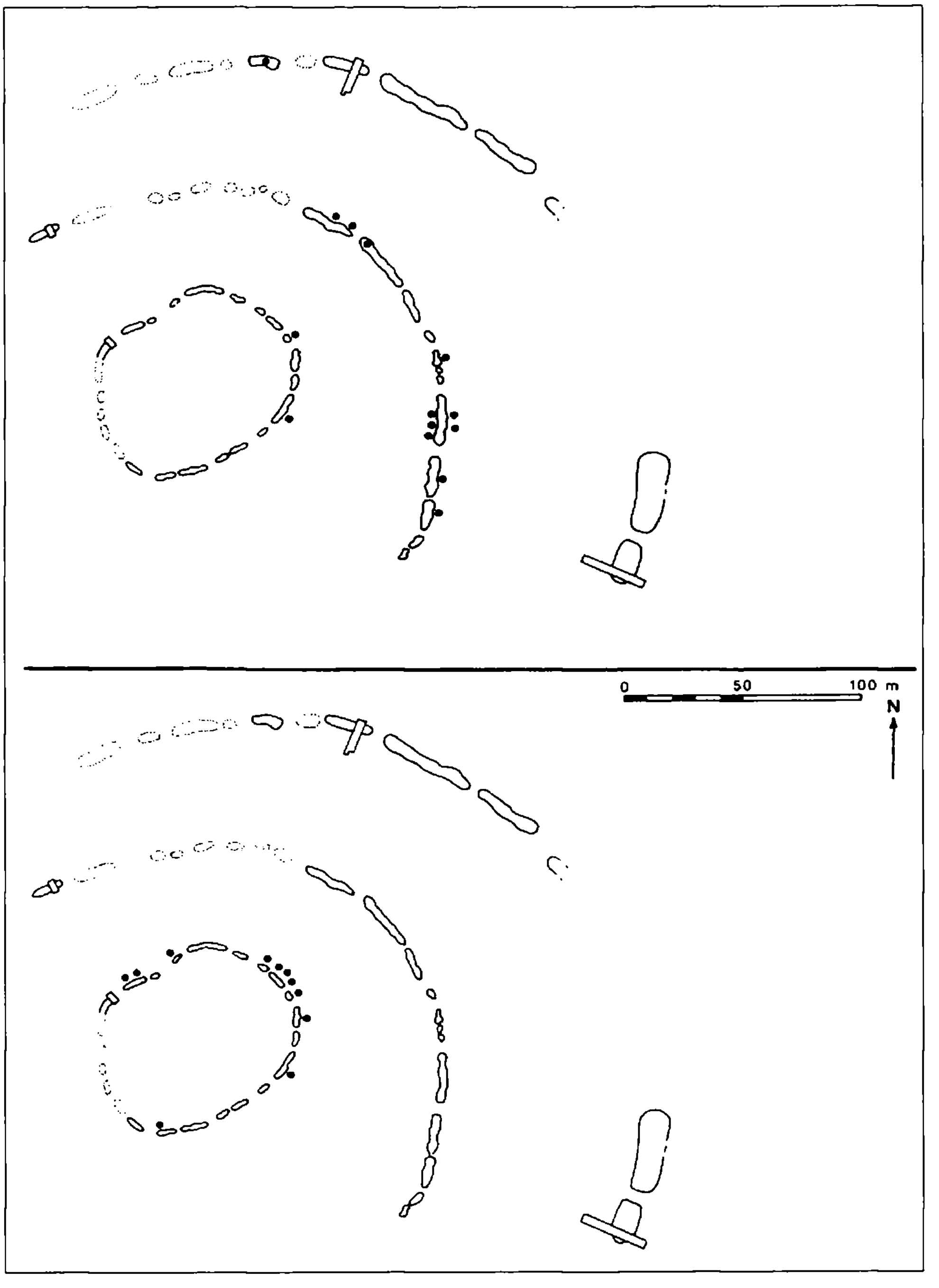


Figure 3.8: The differential deposition of worked bone (top) and leaf arrowheads (bottom) at Windmill Hill (after Whittle *et al.* 1999, 366)

Deposition is undoubtedly linked to the activities that occurred within architectures. Formal deposits at both Woodhenge (Pollard 1995) and the Sanctuary (Pollard 1992) in Wiltshire were related to movement through, and orientation within, concentric post architecture; both monuments saw a focus on the northern and eastern quadrants of the circles, which included the zonal deposition of, amongst other materials, pig bones, human remains, and various pottery styles. Antler picks are often cited as ritual deposits in the ditches of henges, as a form of foundation deposit following the completion of construction, such as those discovered at Durrington Walls (Wainwright 1967, 174), Maumbury Rings (R. Bradley 1975, 16-17), Avebury (Burl 1979, 213), site XI at Dorchester (Whittle *et al.* 1992, 164), and from the socket of Sarsen 1 at Stonehenge (Cleal *et al.* 1995, 524). The assertion that domestic waste was the source for the deposited material in the ditch at Condicote (Saville 1983, 31) is unusual, as deposition in the pits or ditches of henges is usually granted a ritual function, especially where they display evidence of structuring principles. Take, for example, the ten-metre-deep shafts at Maumbury (figure 3.9), which contained antler, human and animal bone, flint, and chalk objects, with evidence that chalk rubble was used to seal the deposits and creatively to maintain similar levels of material across the 45 shafts. Maumbury may be important in another regard: the shafts gradually filled with material bear comparison with depositional activity occurring at flint mines in southern England. There were twelve separate depositional events filling shaft 27 at Cissbury, one of which included a complete ox skeleton. These have been interpreted as symbolic offerings of thanks or renewal to earth deities associated with flint extraction (Topping 2004, 185).

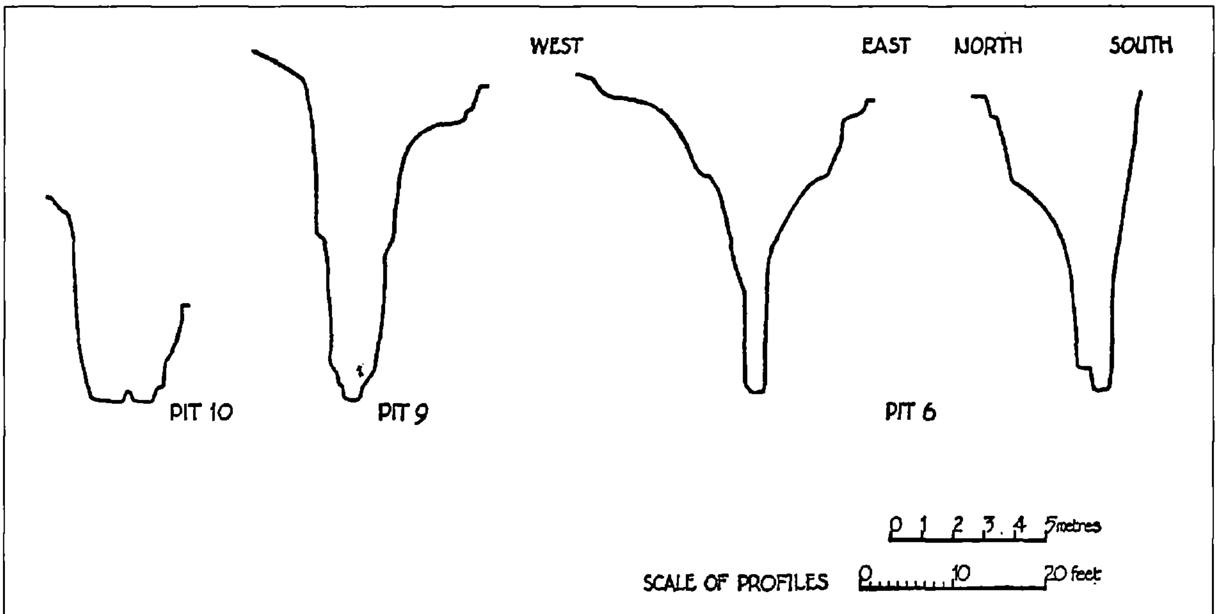


Figure 3.9: Sections of the shafts at Maumbury (after R. Bradley 1975, 12)

Beyond architectures of enclosure, deposition at long cairns may also be structured in nature: Thomas has traced specific associations of material in the ditches of long barrows in southern England (Thomas 1999, 78), and Humphrey Case argues for the re-deposition of midden material in the side chambers of West Kennet during the Later Neolithic, as a means to deconsecrate the Earlier Neolithic monument (Case 1995, 15). It is instructive to compare the interpretations of material associated with the *use* of burial monuments, with those concerning earlier activity. The Hazleton North long cairn in Gloucestershire was found to conceal an earlier phase of Neolithic activity represented by a midden, hearth and possibly a light structure, dating to 3925-3540 cal BC (OxA 646/738/739) (Saville 1990, 16-17). This activity is interpreted as domestic in character and the material culture to be comprised of discarded artefacts and waste material (*ibid.*, 253). This stands in contrast to Case and Thomas' work on West Kennet and long barrows respectively, which takes a very 'symbolic' interpretative line, perhaps because the acts they are describing are directly associated with burial evidence. Saville's remains predate any burial activity and can therefore be safely interpreted as domestic in character, despite midden material also being in both Saville and Case's examples. A similar conclusion seems to have been reached in the interpretation of the ring ditch at South Acre, where two pits containing over 100 struck Mesolithic flints, including five microliths, were found beneath a levelled Bronze Age round barrow (Wymer 1996, 64). The burial association leads the excavator into denying a Mesolithic origin for the pits, disliking such a quotidian source and instead arguing for residuality (*ibid.*, 87), despite the fact that the pits were devoid of any other material culture, were undifferentiated by fill and were dug and backfilled in single episode. As an alternative, J.D. Hill argues that human burial *cannot* be a secure indicator of ritual, drawing on Iron Age examples where human remains deposited in pits are were treated in the same manner and drew on the same contextual associations as animal burials (Hill 1995, 100).

Alternatives to Ritual – Hill, Brück, and Aesthetics

It is striking how 'formality' either in the structure of a deposit, or in the structured nature of an architectural context (i.e. henge), leads interpreters to follow Richards and Thomas (1984) in arguing for a degree of 'ritual' in an activity, usually contrasting it with those that were unstructured or that utilised more quotidian materials. This still occurs despite work in the interim that questions direct links between structured deposition and ritual. Joshua Pollard makes the point that we should not pigeon-hole types of deposition as 'ritual' just because of the presence of structured deposits, although it may be revealing that the alternative practices he lists, such as 'rites of passage' and 'calendrical observances' (Pollard 1992, 222) are all classically 'ritual' in nature. For Hill there is no necessary link between structured deposition and ritual activity, as structure merely identifies symbolic behaviour which, as a necessary part of human existence, is not sufficient to identify ritual (Hill 1995, 96). In Iron Age deposition, Hill sought to show that a ritual definition could be supported when there was evidence for protracted timescales between events of a particular type and when those activities involved irregular practices or material. Winnall pit 6595 is used as an example because it held a number of animal bones from a large-scale meat slaughter for an unusual gathering of people: it was therefore separated from the mundane because it was an exceptional and rare activity, yet still followed certain broad conventions in pit deposition (*ibid.*, 100). For Hill this represents the division between practical and discursive modes of consciousness (Giddens 1984, 41-44): everyday structured deposition is non-ritual because it is practical, whereas infrequent activities were ritual because they utilised specific discursive practices, requiring discussion and memory to be undertaken correctly (Hill 1995, 99).

Even whilst Hill broke down the division between sacred and profane, he maintained a distinction between the symbolic and the practical in order to explain unusual activities. This was criticised by Joanna Brück who sought to deconstruct ritual activity further. Brück's alternative was that all action encompasses both the practical and the symbolic, because they are the same thing (Brück 1999, 325). Using evidence from Middle Bronze Age enclosed settlement, she showed how modern Western ideas about rational action could not be used to explain 'unusual' deposits, such as the left half of a cow deposited in a pit within a roundhouse at South Lodge Camp (*ibid.*, 329; after Barrett *et al.* 1991), or the multitude of deposits in the angles and corners of enclosure ditches. Instead she defined such action as 'site maintenance practices': perfectly logical and rational in their context and a practical response to dealing with the world (Brück 1999, 332). Contrary to Hill (1995, 96) who maintained a distinction between domestic waste and more meaningful deposits, Brück also sought to show how our notion of 'value' was not a given in the past: it could be completely logical to waste usable objects in certain circumstances if their deposition would have a perceived beneficial effect on, say, agricultural fertility (Brück 1999, 330). More recently, Hill has argued for the deposition of pottery on settlement sites in the Middle Iron Age to be interpreted with similar subtlety, pointing out that, beyond concerns immediately associated with deposition, the treatment of potsherds would also reflect distinctions between vessel types and changing foodways related to them (Hill 2002, 155).

Finally, even for those who continue to argue for their distinctive nature, the subtlety of 'ritual' interpretations has developed over time, seemingly in response to dissatisfaction over the emergent dichotomy between the importance of performance and the intrinsic potency of material culture. Pollard has proposed an aesthetics of deposition that focuses on a combination of these factors. It is still argued that formal deposits drew upon the inherent meanings of objects to construct specific statements through deposition, but he advocates a move away from trying to reconstruct the 'meaning' of the deposit and towards an understanding of the effect: the end relationship between people and objects (Pollard 2001, 317). It concerns *aesthetics* because there is a focus on the performative, the style of the deposit, but also because it concerns the value that people attach to objects in different cultural contexts (Gosden 2001, 165). Pollard states that in examining the performance inherent in creating a particular deposit it is necessary to consider the biography of the objects acting in that performance (Pollard 2001, 327). If they are often associated with burial, for example, this would directly affect the overall aesthetic of the deposit, as well as conditioning its form. A focus on actual effect, rather than desired meaning, must account for both the act of deposition and the actors (artefacts) in that deposition. It is hard, however, using Pollard's criteria, to distinguish the difference between meaning-as-intention and meaning-as-effect, and moreover, why the latter should be easier to interpret, given that both are symbolic and contextually-specific constructs utilising the same material culture.

Material Culture

Having explored the various contexts and interpretations of deposition, it is necessary to consider the materials and artefacts involved in the various practices. Pottery, flintwork and animal bone stand out as the most commonly utilised forms of material culture in deposition, but the soils these items are found within should not be forgotten. The matrices of many pits are characterised as highly humic and often contained evidence for the deposition of charcoal or burnt remains, but *in-situ* firing was relatively rare. Functionalist interpretations of pits – those that saw them as devices for the deposition of rubbish, perhaps after a storage role – interpret these deposits as the only remaining traces of settlement; the decayed remnants of waste that the eating and living of biological organisms must necessarily produce. This was the case at Hurst Fen (Field et al. 1964, 367; 370), Cassington (Case 1982, 124), but also more recently at Barleycroft and Hinxton (Evans *et al.* 1999, 247-249) and Beckton Farm (Pollard 1997, 111). It is only with the advent of Grooved Ware deposition that interpretations become more circumspect about the origins of this decayed matrix, often not discussing it at all.

Whatever the function or origin of the matrices artefacts are found within, it does seem to be the case that these items were most often *used* in some way prior to deposition, rather than being pristine objects produced for disposal. At Kilverstone there was clear evidence that the flintwork was being actively prepared and used on the site, as the reduction sequences in the 'stacks' of pits demonstrate (Garrow *et al.* 2005, 152); the antler picks deposited in the ditch at Durrington Walls may have been those used to excavate the feature (Wainwright 1967, 174); whilst the animal remains at Coneybury (Richards 1990, 43), Firtree Field (Legge 1991, 67-68), Windmill Hill and Hambledon Hill (Legge 1981, 173; Whittle *et al.* 1999, 354) had all been slaughtered for some form of consumption and were not wholesale 'sacrifice'. There could be differences between categories of material culture, as the deposition of gravel flint versus fresher chalk flint at Firtree Field demonstrates (Barrett *et al.* 1991, 77). Yet the overall picture is one of a persistent set of practices that utilised artefacts that had come to the end of some previous phase of use, perhaps because of breakage, decay or some more esoteric reason.

There is also a growing body of evidence that addresses the use of pottery prior to deposition, and it seems that most Neolithic pottery styles were used for subsistence activities: carbon isotope evidence demonstrates the use of Neolithic pottery in the processing of foodstuffs. The analysis of absorbed lipids (fats) is achieved by measuring the different stable isotope values of ^{13}C in certain fatty acids from various foods, such as palmitic and stearic acid, which are absorbed by the fabric of pottery during use (Copley *et al.* 2005a, 896). This technique is especially effective as it enables differentiation between the absorbed fats from dairy products, animal carcasses, plants and beeswax.

Of the 437 Neolithic sherds analysed by Copley *et al*, 50-60% of those that contained extractable lipids were found to be dominated by dairy fats, and the majority of the remainder by carcass fats (Copley *et al.* 2005b, 528). The isotopic data from sherds from Windmill Hill, Hambledon Hill, Runnymede Bridge and Abingdon correlated with evidence for dairying in their bone assemblages, which showed a classic dairy herd age/sex distribution from those sites (Copley *et al.* 2005a, 902). It is important to note that these samples were taken from a variety of different site types, as well as all three of the major Neolithic pottery styles. An earlier analysis by Dudd, Evershed and Gibson, on the absorbed lipids from the pottery found in pits beneath a Bronze Age barrow at Upper Ninepence, revealed that both Peterborough and Grooved Ware vessels were used for food preparation, with porcine fats most common in Grooved Ware and ruminant fats in Peterborough pots (Dudd *et al.* 1999). These findings are correlated by analyses undertaken on a broader spectrum of sites, where Grooved Ware appears associated with porcine production, and there are potential links between the amount of lipids and the compositions of the faunal assemblages (Mukherjee *et al.* 2007). This seems to be the extent of variation however, as extensive investigations by Copley *et al* failed to reveal any significant differences in absorbed lipids across all Neolithic pottery types/fabrics (2005a, 903), nor any intra-site variation at Windmill Hill and Hambledon Hill in deposition and pot use on the basis of different lipids (2005b, 531). It is especially important to note that there seem to be no real distinctions between types of site or styles of pottery, and raises the possibility that all pottery was potentially utilised in food preparation or storage prior to deposition.

Conclusion: A Brief History of Deposition

Themes in the Study of Neolithic Pits

Setting aside its motivation, the underlying trend in Neolithic pit deposition appears to be one of increasing complexity through time. This idea of 'complexity' should be qualified. People utilising earlier Carinated Ware for deposition could be very inventive in the manner in which material culture was *arranged*. The early pits at Balfarg with their juxtaposition of pottery and organic remains are a good example, yet a relatively restricted range of artefact or material types were involved in this arrangement. Pottery, for instance, would generally be deposited alone in a humic matrix, which probably indicates an association with organics, now decayed. This can be contrasted with the practices surrounding Grooved Ware deposition, which combined a more varied range of material types; Firtree Field is an excellent example, where various arrangements of flintwork, animal bones and pottery were associated with specific shapes of pit. Complexity, therefore, is apparent throughout, but moves away from complexity in spatial arrangement to include complexity in juxtaposition. Whether this reflects a move from a 'domestic' or waste-disposal frame of practice, to one that was more overtly symbolic or ritual is a question examined below.

Deposition at monuments, however, should not be forgotten, and here one may find a deviation from the simple scheme outlined above. Both characteristically Earlier and Later Neolithic monument types placed depositional practice in a spatial frame of reference that related it to other, more visible, architectures. Causewayed Enclosures were *created* by acts of Earlier Neolithic deposition, they were composed of pits; the complex deposition in individual pits was mirrored in the arrangement of artefact types across whole monuments, with examples from Etton particularly striking. Although Grooved Ware was often involved in the activity that occurred at henges, one can question the idea that this makes the deposition at those sites any more 'complex'. With the development of henges there is a shift to a form of architecture that provides an *arena* for various different types of depositional practice; whereas it was the creation of the arena itself that concerned deposition at causewayed enclosures.

Themes in Interpretation

The theoretical developments in archaeological interpretation that have taken place over the last fifty years are neatly characterised in the discussions of deposition examined in this chapter. Alongside overarching themes, such as the fall of functionalism and the rise of symbolic and structural archaeologies, more specific trajectories of thought are also visible. It is clear that debates over settlement and economy within Neolithic studies have also had their impact on the manner in which pits are conceptualised and their roles interpreted. However, what is particularly interesting is the manner in which some new themes have come to be integrated, and other have not. In truth, no particular theoretical development has been ignored: we have seen highly symbolic interpretations, those which stress the practice of performance, and those that argue for the structured use of the mundane. Rather, it seems that the interpretation of deposition runs on a series of parallel tracks. Despite wide-ranging critiques on the separation of the structured from the commonplace (Hill 1995) and the everyday from the ritual (Brück 1999), refuse is still conceptually separated from more 'meaningful' deposits, and the origins of buried material culture remain ill-considered beyond a simple characterisation of settlement/subsistence; no interpretation has synthesised the strengths of those that have gone before. Most notably, there is a lack of critical reflection on the contemporary categories of material culture that interpreters bring to the data, and how attitudes to concepts such as 'refuse' could shape the manner in which we interpret the past.

Certain themes are present from the earliest examples discussed, such as Hurst Fen and Eaton Heath, that run into the most recent at Kilverstone. Grooved Ware may be taken as an example: whatever the specific associations evident in individual acts of deposition, the various interpretations of this material serve to highlight a wider point. In much of the literature there exists a distinction between 'rubbish' disposal, which is taken to characterise deposition in the Earlier Neolithic, and structured ritual deposition that occurred in the Later Neolithic, usually associated with Grooved Ware. On sites where 'rubbish' is being deposited, it is not the material culture that is privileged in importance, it is the *act* of digging the pit or the act of disposal that is deemed significant (see Barleycroft, Hinxton and Kilverstone (Evans *et al.* 1999; Garrow *et al.* 2005)). When Grooved Ware is deposited in a more overtly structured manner, even if in association with a phosphate and charcoal rich matrix, interpretations stress the powerful and dangerous potencies of the *objects*. These are seen to dictate their deposition in liminal or significant places. The material culture is therefore privileged in importance over the act of deposition (see Balfarg (Barclay and Russell-White 1993, 192) and general theorisation in Thomas (1999, 87)). Yet this dichotomy operates in spite of long-standing material culture studies, which demonstrate that all forms of material culture had a specific use-life prior to deposition. This is especially pertinent in the case of Grooved Ware, which seems to have been used in subsistence activities in the same manner as fore-running styles of ceramic.

The omission of either the importance of the act, or the importance of the artefact is, in turn, related to preconceptions concerning the origins of the material culture. Following the work of Duncan Garrow (2006, chp 2), this discussion has also recognised how changing interpretations of settlement and economy have been important. Pit deposition has been recruited as evidence for both the functional *outcome* of a particular mode of subsistence (cereal agriculture), versus its role as a vital, *active* constituent of a mobile way of life. It is clear how divisions such as this also follow the historical development of the discipline in Britain: despite the reservations of some, the idea of a largely mobile Neolithic in southern England has become dominant over earlier ideas of settled agriculture. The functionalist has given way to the symbolic, although sometimes rational (Brück 1999), mode of interpretation. Yet an element of the old functional / ritual division remains, as the Grooved Ware example demonstrates. So in total, three dichotomies of mutually exclusive practice underpin the interpretations discussed above, all of which cross-cut potential theoretical divides and have existed throughout the last fifty years:

- the potency of material culture versus the power of performance;
- rubbish versus ‘meaningful’ material;
- and the structured versus the unstructured deposit.

Chapter Four
The Meaning of Deposition? How Archaeology Interprets

Introduction

This chapter develops and examines more closely those themes and issues in interpretation identified in chapter three. It is particularly concerned with establishing the mechanism by which contemporary preconceptions and classifications of material culture feed into wider interpretations of practices. If chapter three was concerned with tracing the history and content of interpretation, this chapter is concerned with examining the presumptions that lie *behind* that content. Three theoretical oppositions were identified at the end of the previous chapter: the potency of objects versus the power of performance; rubbish versus meaningful material; and the structured versus the unstructured. Our aim is to challenge these dichotomies by identifying and questioning the grounds for their existence. This will be undertaken in four ways:

1) through a consideration of the classification of material culture by the contemporary interpreter,
2) via an examination of how our attitudes toward artefacts influence interpretations of past practices,
3) by identifying a continuing 'ritual versus functional' thread in interpretation,
4) by locating the root-cause in the focus of contextual archaeology on the symbolic.

However, in adopting this fourfold strategy, critique is not the only aim. In evaluating classifications and terms such as 'refuse', 'settlement', 'occupation', and 'ritual', this chapter seeks to explicitly define the grounds for the interpretation of Neolithic deposits. It is reflexive in the sense that it questions the basis of the very understanding of the past via our classification of it, but recognises that this process in unavoidable. The task becomes, therefore, to identify those methods of classification that may be useful and dispose of those that may not. Before proceeding to analyse the evidence from north-east England in subsequent chapters, the terms of this investigation must be defined. The intention is to avoid, or at least highlight, modes of interpretation that privilege the position of the contemporary observer over the potential plurality of past action and motivation, whilst building a framework for the effective interpretation of Neolithic deposition. The effects of our preconceptions are always unavoidable to a degree, as we cannot escape our political and social context, but the clearer the categorical bases for our interpretations, the more robust they will be.

The Classification of Material Culture

Interpretations of Neolithic depositional practice are heavily reliant upon the manner in which contemporary archaeologists classify the material culture involved. A central dichotomy has always existed between rubbish disposal and ritual action. As we saw in chapter three, the definition of the 'ritual' side of this opposition has been effectively criticised by Brück (1999), but a thorough examination of how 'rubbish' or 'refuse' is defined remains absent. It was also observed that a majority of the accounts of pit deposition were liable to classify material culture as either refuse or a meaningful ritual resource. This was most obvious for early functionalist writers, but was true even for very recent discussions that saw pit deposition as a symbolic action associated with Neolithic settlement (see Barleycroft and Hinxton (Evans *et al.* 1999)). A basic division existed between Grooved Ware, which was deemed inherently meaningful, and other pottery styles that were, generally, classified as refuse. However, we also saw in chapter three how every one of the three major Neolithic pottery styles could be involved, seemingly without great distinction, in all manner of food preparation and storage. They could, therefore, all have been used in the same way, but this fact should not be used to support a quotidian or 'functional' interpretation of simplistic refuse disposal. Rather, the 'everyday' use of this material culture, *alongside* its often complex deposition, leads us to consider the social role of rubbish disposal here.

This section has two aims: to demonstrate that the material culture deposited in Neolithic pits can be defined as refuse; and to show that such material is ideal for meaningful deposition, because it is always bound by complex social conventions, which transcend reductive oppositions between valueless rubbish and valuable ritual. Toward this end, discussion begins with the contemporary and archaeological attitude to rubbish, and moves on to consider the variety of social classifications from ethnographic sources as examples of alternatives. Throughout this chapter the terms 'rubbish' and 'refuse' are used interchangeably.

Interpretative Rubbish

The manner in which refuse is constituted interpretatively demonstrates how simplistically it is usually considered. Unless a deposit with a particularly distinctive artefact assemblage is being considered (the classic 'odd' or 'structured' deposit), the matrix of material within a pit is usually interpreted as 'refuse' because of a distinctive composition of broken and incomplete artefacts, decomposed organic material and high charcoal levels. This refuse is opposed conceptually and interpretatively, in most cases, to those acts of deposition where the material culture is 'useful', in the sense that it is implicated in some larger, usually ritualistic, practice. Take Spong Hill for example, where interpreters saw occupation debris, including pottery, being disposed of unproblematically in Earlier Neolithic pits; it was only with the arrival of Grooved Ware that the disposal of pottery in pits became of ritual concern (Healy 1988). It is notable that rubbish on the site in the Later Neolithic was argued to exist in above-ground middens, which were never identified (*ibid.*, 107). Broken Grooved Ware pottery deposited in pits was, therefore, *no longer classed as refuse* in the interpretation. At Firtree Field all the pits contained humic material, which in unstructured deposits or Earlier Neolithic contexts was often described as the refuse of occupation debris; however, it is only described as such in the less complex deposits farthest away from the Dorset cursus (Barrett *et al.* 1991, 84). The classification of 'refuse' at Firtree Field is thereby rendered incompatible with any type of activity interpreted as more socially complex. Similarly, those interpretations that stressed the use of occupation debris in a deliberate manner, to make statements about the presence of cohesive social units in the landscape and to mediate their social reproduction in times of transition, still do not discuss the *nature* of the material culture (Case 1982, 124; Evans *et al.* 1999, 249; Pollard 1999, 89; Thomas 1999, 72). The material deposited is characterised as refuse, but the meaning and associations of this resource are not problematised beyond the observation that it was a product of human occupation and therefore appropriate for burial for some reason – often ill-defined.

The interpretations above subscribe to an essentialist and ahistorical view of refuse and rubbish. Attitudes towards rubbish are not universal, and to assume that peoples of the Neolithic subscribed to our binary opposition between discarded object : useful object is incorrect. We risk prejudice in our consideration of pit deposits. It seems that if our conception of refuse is taken as a universal functional category, its antithesis is any practice that uses material in a more complex manner or disposes of it in a more structured way. Yet in most cases the 'rubbish' is the same material being used elsewhere for 'structured deposition'. Thus we see that 'refuse' as a term used in archaeological interpretation is dependent entirely upon categories of artefacts or modes of deposition that we as archaeologists recognise in the present, not those that may have operated in the past.

The archaeological classification of refuse is a reification of a contemporary Western reference to objects beyond functional use, with no intrinsic value (Chapman 2000c, 348). In applying uncritically the terms 'refuse' or 'rubbish' to Neolithic pits we assume that our culturally specific notion of 'valuable material', as a polar opposite of refuse, is applicable to all cultures and in all times (Moore 1982, 75). Yet refuse and its associated value is far from universally standard (Hill 1995, 4). Indeed, different categories of refuse may be charged with a variety of potencies and practical uses well beyond the point of discard. Even our society categorises refuse in different ways. We often categorise objects as 'dirty' through contextual association, as matter out of place (Douglas 1966, 35), such as a broken mug left on the kitchen floor; this is in turn linked to the contemporary binary opposition of dirtiness/disease and hygiene/health. Our entire understanding of rubbish, refuse and dirt is bound into specific socially conditioned values concerning the categorisation of objects and their place in our structured world (Brück 1999, 334). Contravention of these inherited rules, either via a loss of functionality or existence in an alien context, indeed both in many cases, such as the broken mug on the kitchen floor, leads to the classification of an object as refuse and also determines the correct method and location of its discard. For example, autumn leaves on floor of a hallway are classified as rubbish, collected and disposed in a bin. The same leaves on a lawn may not be classified as rubbish and ignored, or may be classified as refuse, raked up, but be disposed of in a composter. Context, as much as the material in question, dictates its identification and treatment as refuse.

Reflexive Rubbish – Alternatives Regimes of Value

Alternatives to Western attitudes to refuse are widespread, and most are manifested through a wider variety of object classification. For example, the Marakwet of Kenya recognise three kinds of rubbish: ash, animal dung and chaff; other items, such as bone and tin cans, are not described as rubbish. Moreover, the three refuse types have specific disposal areas: ash is always behind the house but never with the ash of other houses; chaff is often deposited on the front edge of the compound; and animal dung is swept over the edge of the compound below the animal quarters (Moore 1986, 102). Similarly, amongst the Mesakin Qisar of the Nuba Mountains, Sudan a strong prohibition exists on contact between cattle and pig. The discard of cattle and pig bones is tightly controlled; both take place well away from the residential compound but there must be no risk that wandering cattle come into contact with pig bones, so it is normal for bones to discarded in discrete areas and stuck into cracks in the ground to prevent movement (Hodder 1982b, 158). Yet by Western standards the Mesakin also tolerate extremely dirty food preparation and consumption areas, often littered with animal dung, because they go to great lengths to protect themselves and their food symbolically (Hodder 1982a, 65). They acknowledge the risk of dirt in food preparation but, as they do not subscribe to our notions of physical and bacterial hygiene, so their attitude to the necessary disposal of animal faeces is totally different. This provides a clear illustration that dirt and pollution are explicitly cultural ideas, with any number of categorisations of refuse available as alternatives to those Western norms based on Victorian ideals of cleanliness and decency (*ibid.*, 67; see also Hill 1995, 4).

Differential object classification and a multiplicity of refuse categories are not only reflected in traditions of discard, as societies can also value refuse in alternative ways. In Slav peasant culture there is no concept of refuse whatsoever, as all objects have the potential to be recycled (J. Chapman 2000c, 351); thus the value of an object is not negated once its primary use has ended. The Endo do not view broken pottery as rubbish. Broken pottery is called *materr* and is valued in three roles: as roof-top guards; as water vessels to ward against evil; and to protect water sources (Welbourn 1984, 22). In the Lozi area of Zambia broken pots are used to feed animals and collect water. In southern Iraq the 'Kuzi' pot form is used for water or salt until it becomes cracked, then it is used for grain storage, and when broken utilised for feeding and watering poultry (Hodder 1982a, 56-58). These may seem like very basic points, but they articulate a very specific attitude towards the nature and value of broken objects, objects that we would consider refuse and dispose of accordingly. In all of the examples discussed above, Western concepts of functional value, cleanliness and appropriate disposal are entirely inapplicable; clearly 'rubbish' and 'dirt' are almost entirely culturally constituted.

Indeed, their cultural constitution becomes increasingly apparent when discard is placed in the context of wider social practices. The separation of the three kinds of rubbish in Marakwet society is directly related to burial practices and the correct roles of the genders: women should be buried beneath the chaff and men beneath the dung, as these reflect their responsibilities in life. In practice these rules are not fixed, as refuse and gender roles also integrate with house location and age-related burial customs to produce the final burial site within the compound (Moore 1982, 104). The Endo use of broken pots as guardians against evil is connected to protective support given to people by clay and water, which is translated in broken pottery (a product of transformed clay) into protection against danger and pollution.

In practical terms this is articulated by filling a broken pot with water, and placing it by the door of the house to be looked into by strangers to prevent danger to the household (Welbourn 1984, 22-23). Amongst the Mesakin the separation of cattle from pig bones reflects metaphorically their social concerns about the pollution of men by women. As they are associated with pigs and menstruation, women are prohibited from milking cattle and goats, and unmarried men in daily contact with cattle cannot eat pig or their cattle will die (Hodder 1982b, 158). Ideas of dirt and pollution from refuse do not necessarily rely on the physical manifestation of rubbish: the Maenge of East New Britain, Melanesia are highly concerned with the avoidance of 'dirty' substances that include sweat, saliva, faeces, menstrual blood, and sexual excretions, which can all be used by sorcerers to bewitch victims. Yet these substances need not be physically present to cause harm to an individual, as their traces are permanent. Even when decayed and invisible they have the potential to stick to part of a person's divisible soul present at a particular location and can thereby affect the rest; thus the entire concept of *being* for the Maenge is directly related to their attitudes to dirt (Panoff 1970, 239).

Redeeming Rubbish

It is important to note those archaeological studies that do privilege refuse or rubbish as one of the very highest forms of evidence for human social practice. John Chapman's studies on Balkan settlement sites illustrate neatly the potential for the interpretation of pit deposits, and indeed the very act of their digging. In the Neolithic and Copper Age of the Balkans, pit digging was unusual and refuse was generally placed on the ground surface immediately around houses (Chapman 2000b, 63). Even if the breakage of pottery was accidental and the accumulation of organic waste mere happenstance, the eventual deposition certainly was not (Chapman 2000a, 24). Similar to the buildings at Skara Brae (Childe 1929; Clarke 2003), one is left with the impression of a society living in its own filth, although it would be quite wrong to expect such an interpretation from those who occupied the sites. The presence of this refuse, its smell and the physical impediments it presented, would doubtless have been of significance to those who deposited it. Clearly this rubbish cannot have been value-neutral, since to live surrounded by it was to integrate it into social practice. Pit-digging takes on new significance in these circumstances, as to dig was to remove the deposits of earlier generations, and Chapman makes the point that to deposit items in such a pit is to juxtapose the present with the past (J. Chapman 2000b, 64).

The nature of 'rubbish' as a resource to be deployed in making social statements, has become well-established outside archaeological circles. Thompson identified three categories of objects in any value system: 'durable', 'transient' and 'rubbish' (Thompson 1979). The ability to control the movement of objects between these categories was deemed essential to the maintenance of social inequality, especially in that some movements were impermissible, such as from a 'durable' (e.g. a crown) to 'rubbish' (*ibid.*, 198). Whilst this highlights the value of refuse in social reproduction, Chapman and Gaydarska (2007, 79) point out that supposed impermissible transformations occur regularly in the archaeological record (e.g. the disposal of grave goods) and that Thompson is guilty of imposing three Western categories of object onto past social relations. Others have stressed the significance of the *practices* of rubbish disposal, rather than the products themselves. The sociologist Hetherington argues that the disposal of refuse is more concerned with 'placing' than with the material being placed; specifically that the disposal of waste creates 'absences' that are located spatially and socially (Hetherington 2004, 159). Thus, as we have seen repeatedly in the examples above, the classification of a material as a form of 'refuse' dictates the mode and locale of its disposal – the placing of the absence. These repeated actions have been termed 'conduits of disposal' by Munro (1997). These conduits are not simply concerned with the disposal of problematic objects, but also their associated meanings. Chapman and Gaydarska (2007, 78) observe that these approaches, even if problematic in some regards, constitute a powerful argument for a contextual approach to the investigation of social classifications of refuse.

Discussion: Classifying Material Culture

There is no question that rubbish and its disposal can be important in both social practice and to the very world view of a community, and this has clear implications for the study of archaeological deposits. It is the contention here that the material culture in Neolithic pits can be considered 'refuse', but not in the sense the term has been deployed in the past. It was not valueless detritus. It is clear from residue analysis that Carinated Ware, Impressed Ware and Grooved Ware could all be used in the preparation and storage of meat and dairy foodstuffs. This includes pots from classically 'ritual' locations such as the Windmill Hill and Hambledon Hill causewayed enclosures (Dudd *et al.* 1999; Copley *et al.* 2005a; Copley *et al.* 2005b, 531). However, it would also be wrong to write-off the social value of this material simply because it was used in a quotidian manner before breakage. Such divisions lead other interpreters to privilege 'performance' when the pottery itself cannot have been of 'ritual' importance (Evans *et al.* 1999; Pollard 2001). Rather, we should accept that the material in Neolithic pits probably was 'rubbish', but only in the sense that it had come to the end of one of its *original* purposes. This rubbish was undoubtedly still classified in a socially complex manner, with a huge variety of potential associations, powers and prohibitions. It could be utilised for deposition in a manner that was highly symbolic and of great social importance.

There is, of course, a counter-argument centred upon those specific artefacts that do not sit comfortably within a 'refuse' classification: deposits such as the chalk plaque in the eponymously named Wiltshire pit (Vatcher 1969), or the large number of unbroken barbed and tanged arrowheads deposited at Milfield North henge (A. Harding 1981, 115). Julian Thomas has argued that these types of deposit result from the ritual pollution of objects, which necessitated their disposal, arguing they are "out of character for everyday household waste" (Thomas 1999, 66). Does this kind of interpretation once again impose our own preconceived classifications on the past, without considering the variability of present practice from ethnography? Clearly, these objects would have been created and deposited by people who were members of 'households', which would have created a variety of forms of refuse. We have seen how certain kinds of material can carry polluting associations, such as the pig bones of the Mesakin Qisar. Equally though, certain 'obvious' categories do not: the same group did not consider animal dung to be in any way dirty or dangerous (Hodder 1982b, 158). These items could, therefore, have been intimately connected to everyday life, even if they were not 'used' in our functional sense, and still been eventually classified as refuse and deposited. Thomas could be correct in interpreting some symbolic pollution that necessitated discard, but we should not conceptually separate the arena of this pollution from the everyday. The social complexity of refuse deposition is very capable of encompassing even the 'oddest' of deposits. Equally, however, it would be wrong to privilege the symbolic entirely. It was for this reason that Michael Schiffer levelled criticism at Ian Hodder's model of refuse disposal, which was dictated by ideological and symbolic factors alone. Schiffer argued that Hodder only demonstrated a correspondence between refuse disposal and beliefs, not a *causality* (Schiffer 1987, 74). This comment articulates with that other Western opposition, so well-criticised by Brück (1999), between the polar opposites of the functional versus symbolic loci of causality. Overall, it is perhaps better to conclude, a) that discard behaviour is driven by a degree of functional concern, given that it is often recognised that waste should be disposed of owing to its potentially polluting properties; and b) concede concurrently that the specific form of this behaviour is culturally constituted.

The Classification of Practices

The classification of material culture into questionable universal categories, such as 'refuse' or 'ritually charged material', is largely the result of the preconceptions of modern archaeologists. As a result, it must also be the case that interpretations of the *practices that created* the material culture will be affected by those same preconceptions. This was illustrated clearly at Spong Hill (Healy 1988), where the appearance of Grooved Ware dictated a ritual dimension to the practice of pit deposition, replacing settlement activity as the locus of practice that operated through the Earlier Neolithic. Similarly, because the material that was deposited in the tree-throws at Barleycroft and Hinxton was conceptualised as settlement waste, it was interpreted as having been stored in a midden prior to disposal (Evans *et al.* 1999). Yet 'middening' is a very specific form of practice. In the Barleycroft and Hinxton examples, the social implications of middening behaviour were not explored owing to preconceptions about the value of waste material and, by extension, an unacknowledged assumption about the role of middens as functional storage points for useless refuse. The 'value' of waste material thereby comes arbitrarily to dictate the interpretative value of the practices that created it.

These practices are very important, however. A large proportion of deposited pottery and organic remains can be described as *socially conditioned* refuse. It is clear that the modes of social classification into which this refuse was bound depend on the wider context in which it was generated. For example, we saw how the polluting properties of pig bones amongst the Mesakin was reliant upon the social relationship between men and women (Hodder 1982b, 158). This is to move back in time from the point where objects and materials are adjudged ready for discard, such as the breakage of a pot, to consider the spheres of practice that created the conditions under which a pot could be broken, such as their use in subsistence activities. We are concerned with identifying those practices that *produced* socially conditioned refuse. As we have seen, the current interpretation of many of these practices is intimately connected with contemporary preconceptions about the value of waste material. So, this section will examine critically the interpretations of practices that surround the creation of Neolithic rubbish, focusing upon pre-depositional processes that remain unproblematised or under-theorised due to assumptions over the value and role of waste material in the past. This section will begin by considering the contexts of origin for refuse, particularly ideas of 'occupation' and 'settlement', before moving on to look at pre-deposition practices such as middening, curation and fragmentation. Finally, it will be demonstrated that material culture can be deemed 'rubbish' but still be implicated in complex structured depositional processes.

Contexts of Origin: Occupation and Settlement

The material culture in most Neolithic deposits, especially pits, was not produced 'for' deposition, but can be regarded as socially significant refuse. It is therefore important to identify the circumstances under which such refuse is normally generated, and examine the interpretative preconceptions that surround these practices. We are drawn unavoidably to consider ideas of occupation and settlement; not in a manner that defines the mode of subsistence, such as 'mobile' or 'sedentary', but more to sharpen their actual *meaning*.

'Occupation' is a broad term, and it is this broadness that ensures it carries relatively little controversial theoretical baggage, because it does not attempt to qualify the nature of a given practice as would, for example, the term 'domestic settlement'. At its broadest 'to occupy' is, simply, to "fill or take up (a space, time or position)" (OED 2002). An 'occupation deposit' is therefore the remains of a given episode of occupying, whatever its actual nature. Attempts have been made to theorise this term: Stuart Needham argues that occupation should only be identified with *settlement*, through an association with the "act of living", i.e. sleeping or eating for "significant parts of the year" (1996, 20). For him, an occupation deposit represents the material remains of settlement, although not necessarily tied to the same locale as that settlement (*ibid.*, 22), in accordance with Schiffer's proposal that such deposits are only rarely primary refuse (1987, 59). Needham's definition has problems, however, owing to this close association with settlement. It should be possible to occupy a given space for an extended period of time without settling there, provided that the time frame is defined, such as a day spent knapping flint near a flint source. The temporal dimension of the definition is also troublesome: what exactly is a "significant part of the year" (Needham 1996, 20), especially considering that the mobility of Neolithic communities is a far from settled issue (see 'comments' in Rowley-Conwy 2004). If they were highly mobile the logical conclusion of this line of reasoning is that Neolithic people never 'occupied', because they never had settlements of any kind.

'Settlement' need not be a problematic term, nor should it necessarily be conflated with 'occupation'. Needham's definition of settlement is, in essence, very suitable once the requirement for staying in one place for a 'significant' amount of time is removed. Settlement activity can describe the location in which a group undertakes the majority of its "acts of living", to quote Needham (1996, 20), such as eating, sleeping and, importantly, generating all forms of waste products. So, perhaps a better approach is one that admits that settlement is just *one type of occupation* of space, and that the length of time that defines occupation, and therefore has an influence on the definition of settlement, should be related to the specific pattern of occupation peculiar to certain times/places/peoples. The task of the archaeologist is therefore to define the nature of occupation, not to examine a site and to see whether it conforms to an essential or ahistorical view of occupation and mark it 'out of ten', as it were.

If settlement is defined merely as one of many types of occupation, the possibility emerges of identifying and examining other types of activity that may also constitute and create occupation deposits. Feasting at causewayed enclosures (Legge 1981) or the deposition of antler picks in henge ditches (Wainwright 1967, 174; R. Bradley 1975, 16-17; Burl 1979, 213; Whittle *et al.* 1992, 164) are the result of the human occupation of space but result from different activities in those locales. Furthermore, this comparative view of occupation allows a consideration of more ambiguous deposits. It is arguable that the majority of refuse in pits was the result of **settlement** occupation activity, as it is defined above. It was demonstrated in the previous chapter that all types of Neolithic pottery had the potential to have been used in the production and preparation of foodstuffs. The most likely explanation for the creation of highly organic and charcoal-rich matrixes is that they were produced by people through everyday subsistence and biological functioning; and it is clear that exactly these types of material can be classified as refuse, and still be deposited in socially meaningful and deeply complex ways (Hill 1995). These deposits should not be directly conflated with the spatial distribution of settlement. They could be evidence of activities that occurred as a direct result of settlement practices *elsewhere*, whatever their duration, economic base, or type. Deposits in pits are occupation deposits insofar as they represent the disposal of material that was generated through occupations, most likely settlement-type occupations.

Let us reconsider the deposition at Firtree Field, near the Dorset Cursus (Barrett *et al.* 1991, 77). Despite the highly structured nature of these pits and the differences between them, it is arguable that *settlement activity* is still the best type of occupation activity to explain them and other, similar, deposits. Settlement is the type of occupation that concerns the acts of living, eating, sleeping, and the myriad other social interactions, technical and productive tasks that could be undertaken at a given location. The Firtree deposits were the result of these settlement activities deposited in inventive and specific ways. The distinction maintained by the interpreters between 'ritual' pits near the cursus and more quotidian ones further away becomes artificial in this scenario, because all the material has the same source – some was just deposited more elaborately. This does not deny that the presence of the cursus could influence that elaboration, but it does mean that preconceived classifications of the material culture involved should be set aside. There is no reason why all the material in those pits could not have been the result of settlement practices, deposited appropriately.

So, if it is accepted that the majority of occupation deposits in pits originated in settlement activity, then a further thematic dilemma can be successfully addressed. Chapter three discussed the way in which interpretative models of Neolithic settlement and subsistence alter contemporary interpretations on the role of pit deposition (Garrow 2006, chp 2). Functionalist interpretations for grain storage were based on the assumption that the British Neolithic was defined by an agricultural economy based upon a permanent settlement regime (Field *et al.* 1964, 367; Manby 1974, 77). Later symbolic interpretations stressed the active role of pit deposits in a mobile lifestyle (Evans *et al.* 1999, 247-249; Pollard 1999, 89; Thomas 1999, 72). As already noted, the issue of settlement patterns and practices is not resolved: the debate over the sedentary nature of the Neolithic and the speed of agricultural adoption continues (Rowley-Conwy 2004), though there is a general move toward more regional understandings (Barclay 2000). Yet for the continuing discussion of deposition here, this is a non-dilemma, because pits cannot provide the answer. What needs to be realised is that pit deposits, if they are the result of settlement activity, *cannot* be used as evidence for the mobility or otherwise of the regime. Occupation deposits within pits merely demonstrate that such occupation occurred *somewhere*. The contents of the pits should define the nature of the source occupation activity, rather than the existence of the pits being used to support a pre-determined scheme.

Middening, Curation and Pre-Deposition Processes

The nature of the activities that affected an item or body of refuse between the end of its original use and its deposition is often passed over briefly in discussions of pits. Yet these activities clearly had the potential to closely inform the manner and significance of those later depositional practices, as seen in the ethnographic examples in chapter three. Any activity that involved refuse would affect the social classification of both the refuse and the status of the activity itself. This could occur by directly changing the status of the refuse as a type of artefact, such as the damaged Kuzi pots that become grain storage devices (Hodder 1982a, 56-58), or simply by altering its associations, such as the Endo pots that remain powerful after breakage owing to their construction from clay (Welbourn 1984, 22-23). The potential processes that could have affected refuse prior to its deposition should be considered carefully.

Deposition in Middens

The pre-depositional storage of objects in middens is a popular explanation for their often fragmentary re-deposited state. By midden, this study follows the OED (2002) in defining a midden as a "pile of refuse". Anne Woodward argues that middens could be the context of curation for certain Beaker sherds (Woodward 2002, 104). Humphrey Case posits that middens provided the original context for the Beaker sherds and the charcoal, flint, and bone rich soil found in the secondary fill of the chambers in the West Kennet long barrow, with different middens providing material for each chamber to explain the different Beaker styles (Case 1995, 10-11). Similarly, animal gnawing on 24 cattle bone fragments, and the incomplete representation of pottery vessels deposited in the Coneybury Anomaly, led to the interpretation that these items could have been redeposited from a temporary midden (Richards 1990, 43). The material introduced into tree-throws at Barleycroft and Hinxton were interpreted as originating from defined middens, since the low density of surface scatters indicated that this material was not spread randomly about the sites (Evans *et al.* 1999, 248). Chris Fowler argues that old, abraded debris in the quarry ditches of long barrows was redeposited from middens and intended to act as a metaphor for slow change and decay, producing a temporality for Earlier Neolithic monuments (Fowler 2003, 47). It is rare to find direct evidence for the span of time that passed between midden deposition and re-deposition in the final context. A rare example is provided for the Later Bronze Age by a structure at Callestick in Cornwall, where refitting sherds from one 10th century BC Trevisker Ware vessel were not only found in the walls, obviously dating to the construction phase of the building, but also in the infill that dated to the site's abandonment (Jones 1998, 26). A midden was identified as the likely place for the temporary storage of the sherds. Yet a common problem in *all* of the above examples is that a midden was never identified on any of the sites that could have provided that context for curation. Importantly, this is evidence that is lacking in most cases: there are very few securely identified Neolithic middens, the majority being in the Northern Isles, such as Tofts Ness (Dockrill *et al.* 1994) and the Links of Noltland (Clarke *et al.* 1978); the example beneath the Hazleton North long cairn being something of an anomaly in southern Britain (Saville 1990).

The untheorised acceptance of the term 'midden' to represent a temporary depositional context has been criticised by Needham and Spence, who argue that *in-situ* deposits and proof of persistent use are the only way of demonstrating the existence of middening (1997, 80). They do not deny that midden material can be used as a resource for later retrieval and reburial (*ibid.*, 84), but make the basic point that the existence of temporarily deposited rubbish does not equal the existence of a midden. This is important because there is a social aspect of middening that is essentially ignored when it is seen as an unproblematic means of storing objects prior to an act of deposition. Where middens have been identified their importance can be very obvious: Potterne, Wiltshire was used for over 500 years in the Late Bronze and Early Iron ages and comprised a midden containing an enormous 40-50,000 cubic metres of material. The site that had seen post-hole activity prior to the midden, in which a huge range of artefacts were deposited, including disarticulated human bone and a gold bracelet, but there was also widespread evidence for stock-keeping directly on the growing mound (Lawson *et al.* 2000). Similarly, the middle to late Bronze Age site at Houseledge West in the Cheviots covered 225 square metres and contained over 2000 artefacts (McOmish 1996, 73). Guttmann also draws attention to the social importance of Mesolithic midden material for the later location of Neolithic activity (2005, 234). In these cases the authors stress the complex sequences of deposition that led to the overall character of the various deposits, and it is clear that we should not regard middens simplistically. Given their complexity and the particular attitudes to rubbish that they represent, it seems safer not to invoke middening unless there is secure primary evidence to do so.

Alternatives to Middens: Forms of Curation

If we are wary if interpreting the existence of middening without evidence, an alternative is represented by less structured 'temporary deposition' (Schiffer 1987, 99). For example, the complex pattern of refits, differential weathering, and burning amongst potsherds at Kilverstone was interpreted as the result of their position on the surface of the site: whether near to a fire or available to be trodden on, and so forth; the sherds were initially deposited in discrete zones, but these were not interpreted as middens (Garrow *et al.* 2005, 148-150). More haphazard surface storage without deliberate middening does seem a realistic proposition. The faunal analysis of animal bones from the Grooved Ware pits at Firtree Field highlighted the fact that they were selected for deposition on the basis of size, not their meat-yielding value, but also that a great deal of dog-gnawing was present (Legge 1991, 67-68). It was observed that larger, denser bones would survive gnawing better, so collection for deposition may have been an opportunistic process that selected the more visible surviving bones from amongst the *surface debris* left after scavenging.

Alternatively, 'curation' itself can describe the activity that intervenes between the initial production of waste material and its final deposition. Lewis Binford's 'curate behaviour' defined the process whereby still-usable items are transported away from an abandoned activity area (Binford 1979), and this is developed by Michael Schiffer into an opposition with *de facto* refuse, which describes the material left behind but which still has use-potential (Schiffer 1987, 89-96). The linking principles here are that the items abandoned or curated still have a use-value that is conceived in functional terms, and that curated items are valuable enough to travel with people when they leave. Rosamond Cleal examined the existence of drilled holes in Later Neolithic ceramics, arguing that they represented repairs that allowed broken or cracked pots to be bound with twine to prevent further breakage (Cleal 1988, 141). However, these holes could also represent post-breakage drilling to allow potsherds to be carried on twine as some form of relic or portable artefact, just as Anne Woodward argued for certain Beaker sherds in the context of their selective deposition (2002, 1042).

Perhaps we should be as equally wary about 'curation' as 'middening', however. Once again this describes a very specific form of activity that may not have operated in most incidences. Where pottery was deposited in Neolithic pits and ditches, the individual pots were often in a highly fragmented state and usually incompletely represented by their sherds; not a situation in which they were subject to 'curate behaviour' in Binford and Schiffer's sense (Binford 1979; Schiffer 1987, 90). The sherds at Kilverstone were burnt and trampled, and the animal bones at Firtree Field were allowed to be gnawed by dogs until only the densest recognisably survived. Whether it is accepted that these items were, or were not, 'stored' in a midden, and following Needham and Spence (1997) the position taken here is that they were not, it seems that they were classified in such a manner as to dictate that *preservation in their original state was unimportant*. This is not concordant with ideas of curation. With reference to the sites discussed earlier, including Barleycroft, Hinxton, Kilverstone, Coneybury, Firtee Field, and Woodward's Beaker sherds, it seems that Schiffer's more neutral term 'provisional discard' (Schiffer 1987, 99; Needham and Spence 1997, 77) is preferable to curation, because it stresses the transient nature of the initial deposition, whilst the nature of subsequent re-deposition reflects human intentionality – an important qualifier (Needham 1996, 25).

An Alternative to Curation: Deliberate Fragmentation

At the farthest end of the spectrum from curation or preservation lies the concept of artefact fragmentation, which has been defined as a social process by John Chapman on the tell sites of the Balkan Neolithic and Chalcolithic periods. This approach directly applies principles concerning the social importance of 'broken' artefacts to archaeological evidence, artefacts that are often uncritically labelled as refuse. Chapman has connected the deliberate breakage (or fragmentation) of artefacts with relationships of enchainment between people, and with structured deposition and artefact biographies. One of the fundamental bases of this work is that objects can carry values and symbolic associations in a manner akin to people (J. Chapman 2000a), which dictates their continued importance and circulation after breakage. Chapman notes five possible explanations for broken and incomplete artefacts that could be of use in reconstructing possible scenarios for the breakage and deposition of potsherds. These are:

- objects are broken accidentally through use
- objects are buried because they are broken
- objects are ritually 'killed' and deposited
- objects are broken to disperse fertility
- objects are broken deliberately, used in enchainment, then buried (J. Chapman 2000a, 23)

The fifth possibility is that explored most fully in Chapman's work. Some artefacts, figurines for example, appear to have been designed for deliberate breakage, and on sites where total excavation has revealed that fragments were definitely missing from certain artefacts, it seems that they were taken off-site and had a continuing social use.

Deliberate fragmentation has been explored in other contexts: Richard Bradley questions the recycling motive behind Romanian broken sickle hoards, with the observation that there are a large number of incomplete objects, and also notes that sword hilts were often preferentially deposited compared to blades in the British Bronze Age (2005, 151-155). Anne Woodward has argued, in the context of heirlooms and relics, for the deliberate fragmentation and curation of Beaker sherds at Mount Pleasant, by showing that later Beaker fragments are often larger (2002, 1042). This leaves the interesting question as to whether the earlier Beaker sherds' fragmentation was a direct taphonomic result of their longer life-span, or whether they were progressively fragmented into smaller pieces so they could be more widely dispersed between people. Indeed, the interrelatedness of people and things through fragmentation has been noted at British Neolithic sites. Human remains at Windmill Hill were fragmented and deposited in a similar manner to the objects and animals deposited with them (Fowler 2003, 51). Unfortunately however, much of the British Neolithic material is not amenable to this kind of analysis, as *in-situ* occupation deposits are rarely excavated, and the context of use is usually absent. Since we cannot prove that the area immediately around a group of pits was the locale of use and breakage for the pots recovered from them, we cannot therefore prove that all possible potsherds have been recovered.

To summarise. We know from many site reports that Neolithic material culture, and pottery in particular, spent some time in pre-depositional contexts after its initial breakage or end of use. 'Middening' is an inappropriate way of describing this activity as middens are so rarely identified in the British Neolithic, and because the specific set of practices that surround middening implies specific social relationships with refuse that should not be invoked lightly. Equally, the more deliberate curation of material seems unlikely, unless one is prepared to loosen the definition considerably. The term 'provisional discard' appears most appropriate to describe pre-depositional behaviour surrounding Neolithic pits. It allows for the damaged, abraded and incomplete state of artefacts and animal remains, without specifying a particular attitude towards them. In many cases the preservation of items in their original state seems to have been of little consequence. John Chapman's work on fragmentation suggests that selective provisional discard strategies may have been based upon the state of decay that artefacts had attained. This is entirely compatible with the idea that refuse maintained specific social associations and roles.

Structured Deposition and Ritual Action

One of the strongest preconceptions surrounding the classification of material culture was the division between refuse and meaningful material. When 'refuse' was deposited in a structured or complex manner we saw that the 'performance' of structuring the deposit was interpreted as more significant than the material culture involved, because the latter was unproblematically defined as valueless rubbish. When Grooved Ware was utilised, its 'meaningful' classification meant that *it* was seen as more significant than the performance of deposition. In those interpretations, Grooved Ware comes to *dictate* the nature of the deposit, structured or otherwise (e.g. Spong Hill (Healy 1988), Firtree Field (Barrett *et al.* 1991)). Fundamentally, meaningful material culture, such as Grooved Ware, is seen as inherently symbolic, and this symbolism is connected with its structured disposal, which in turn becomes of ritual concern. We have already seen that this approach is problematic because of the assumptions it makes about the social value of 'refuse'. Yet it is worth examining the preconception that sees something 'structured' as inherently *more symbolic* than something that is not, regardless of whether 'ritual' or some other means is invoked.

Structured deposition is a very popular principle. It has become all-pervasive, and has been applied to acts very different in nature and widely distributed in space since it was introduced by Richards and Thomas (1984). For example, in addition to all the Neolithic examples cited in chapter three, structured deposition of midden material is also attested at the Iron Age Broch of Dun Vulan in the Outer Hebrides, providing information on patterns of activity and diet that differ from contemporary roundhouse settlements (Parker Pearson and Sharples 1995). Michael Fulford has discussed the long tradition of structured deposition in Roman domestic contexts and its prevalence from the Late Iron Age to the end of the Roman period (Fulford 2001). The most detailed study of structured deposition is Chapman's consideration of the links between deposition, material culture and personal identity in the Neolithic and Copper Age of the Balkans (Chapman 2000a; 2000b; 2000c). In all these cases deposition is *not merely for functional ends*, but reflects culturally specific symbolism, and is attributed in varying degrees to forms of ritual practice.

The direct relationship between structured deposition and ritual, and indeed between symbolism and ritual, has its problems. The importance of structured deposition lies in the ability of material culture to carry associations and meaning beyond its functional use, and this is well attested (Hodder 1986, 124; Barrett 1991; Robb 1998, 336; R. Bradley 2005, 194). However, Hill points out that *all* human activity is symbolically structured around cultural norms, whether the protagonists recognise it or not (Hill 1995, 96), and furthermore, many aspects of secular life also share formal or repetitive characteristics without religious overtones (Brück 1999, 315). Moreover, it should be recognised that our existence in the world is almost entirely apprehended through symbols: language-as-symbol is one of the fundamental buildings blocks of our interpretation of the social world. The ability of a word to stand for something else is the basis for the construction of *ideas*, such as the 'future', the 'possible', the 'ideal', and many other creations of human consciousness (Rappaport 1999, 8). So, arguing for the existence of symbolism in a deposit does little more than state that it was involved in the social life of a person. Everything deposited is symbolic, even if not every deposit seems structured. Objects and contexts clearly were deposited with specific associations in mind. This behaviour was indeed informed by a symbolic element of practice, but only to the degree that *all* human behaviour uses symbols and symbolic forms of communication. So, 'symbolically structured deposition' is an essentially meaningless category of practice.

Discussion: Classifying Practices

The meaningless-rubbish : meaningful-symbols dichotomy is produced by exactly the same flawed reasoning as the middening-of-rubbish : curation-of-special-things opposition. The preconceptually loaded nature of terms like 'midden' and 'curation' are seen to originate in the contemporary classifications of material culture. Once rubbish, always rubbish; or, once a symbol, always a symbol. Indeed, one consequence of the label 'occupation refuse' given to Neolithic pits is that it renders their contents and the manner of its deposition unproblematic (Chapman 2000c, 349): the deposited material is removed from its social context and attributed the same values as modern rubbish – functionless, valueless detritus. Yet it is obvious that most of the practices surrounding pre-depositional activity, whether middening or provisional discard, and whether they result in a fragmented, structured deposit or not, can all be implicated in settlement activity. They may not provide direct evidence for the character of that activity, but pits almost certainly contain the occupation deposits that represent the only material remains of Neolithic settlement practices, albeit in redeposited form. The definition of 'settlement' activity should not preclude a highly structured manner of disposal. Nor should it become disconnected from highly symbolic activity. We have seen that all human activity is symbolically structured, and this is reinforced by the ethnographic studies of refuse discussed earlier. The material in Neolithic pits represents occupation deposits from settlement practices that has been provisionally discarded, potentially fragmented, and selected for deposition in a complex and often structured manner.

Ritual Activity and Material Culture

Ritual is inextricably linked to meaningful symbolic action whilst being opposed to functionalist refuse. This is a problem, and as a result there have been influential interpretative movements away from ritual, bypassing it or subsuming it within other processes (Brück 1999; Pollard 2001), yet the concept of ritual is valuable for two reasons. First, there is a large body of work that identifies ritual practices as central to the social reproduction of human groups. Second, the archaeological existence of ritual, and the division of refuse from 'meaningful' material, is based in a contemporary world-view that accepts a division between symbolism and functionality. Basically, the current basis for the idea that ritual *can exist as a separate practice*, visible in archaeological evidence, is born from the same set of preconceptions that classified refuse as separate and valueless. The problems with ritual stem from, or perhaps illuminate more fully, the problems of preconception and classification that we have been analysing so far.

In order for 'ritual' to be a useful frame of analysis, it must be demonstrated that it can be extricated from the dichotomies into which it is usually bound. Ritual must be redefined in a specifically archaeological manner. Can we use 'ritual' in an interpretative manner, without circumscribing artificially the practices and materials that can be part of it? Can, for example, the structured deposition of settlement refuse be considered a ritual practice, and what would we *gain* from understanding such deposition in this manner? This section will examine these questions, first, by outlining how archaeology has defined ritual activity; it will then move on to examine what social roles ritual can fill; before ending with a consideration of its 'other' in domesticity and the classification of material in Neolithic deposits.

Archaeology and the Definition of Ritual

The fundamental problem of using 'ritual' interpretatively is that elements of ritualised behaviour exist in all realms of practice, but the definition of these elements generally relies upon a discredited functionalist philosophy separating the unusual from the mundane. Our recognition of the unusual in a given deposit hinges on the recognition of structured or formal characteristics, and thus we come full circle. We generally recognise ritual from evidence of structured deposition, but this is discredited as meaningfully separate from everyday practice because its supposed 'symbolism' is all-pervasive, as we saw above. So, ritual is accordingly most often defined in the archaeological record as what is unusual (Grant 1991, 109), and opposed to what we would recognise as functional economic or subsistence activity, just as Richards and Thomas observed nearly twenty-five years ago (1984, 189). Many seek refuge in 'rational' activity that is both symbolic and functional (Brück 1999). Yet this is not an option if we wish to salvage the value of ritual practice.

Deposition is usually the practice most unambiguously associated with ritual activity at Neolithic monuments. Philippa Bradley argued for "ritualistic practices" at the Staines causewayed enclosure (P. Bradley 2004, 121), and Francis Pryor saw the pattern of deposition at Etton as evidence for ritual (Pryor 1998). Any form of deposition at henges is usually granted a ritual connotation, especially in ditches or pits (Wainwright 1967, 174; R. Bradley 1975, 16-17; Burl 1979, 213; Whittle *et al.* 1992, 164). Indeed, it may be its repeated association with henges that makes interpreters so prone to involve Grooved Ware in interpretations of meaningful or ritual deposition, given that henges have so long be automatically granted a ceremonial function. In pit deposition more generally, if refuse was involved then the *practice of deposition* was associated with ritual, as at Balfarg (Barclay and Russell-White 1993, 167).

Despite these examples, archaeological theory now recognises that, in most cases, ritual is **not** an autonomous domain of practice (Edwards 2005, 114), either because of its metaphorical references to 'everyday' life (R. Bradley 2005), or because of its potential as a leverage for social power (Sherratt 1991, 61). It is the capability of ritual to utilise the symbolic attributes of material culture, and human communication more generally, which is the source of its significance. Reference to 'symbolism' was rather criticised above, when it was conflated with structured deposition, but in this case the potency of ritual *is* based upon the fact that all human action is symbolic to a degree, and the manipulation of such symbols within a defined event (or ritual) can perpetuate and legitimise a social order (Richards and Thomas 1984, 190) by providing forms of conceptual continuity (Whittle 1988, 203). The idea of ritual as an all-permeating mode of practice has, of course, questioned its place in simple dualist or structuralist philosophy: it is now difficult to sustain prehistoric divisions between sacred and secular, or indeed ritual and domestic life (R. Bradley 2005).

Definitions for others, however, seem to be less problematic. Amongst philosophers of religion there is general agreement that ritual is marked by a greater degree of structured formality in its performance than other activity (Jennings 1982, 111; Bell 1997, 166; Rappaport 1999, 24; and implicit in Raposa 2004; Schilbrack 2004). Yet the sociological and ethnographic research upon which these theories are based is able to draw upon a wider array of evidence for ritual activity than is available to the archaeologist, such as Bell's requirements for public assembly and the invocation of divine beings (1997, 166); or more widely, the "manner of saying and doing" (Rappaport 1999, 38). In the Neolithic, elements of public assembly are often inferred from henges or other public monuments, and consequently ritual behaviour is rarely questioned. At the fringes of ritual, amongst the pits, archaeologists are left recognising mere levels of formality and occasionally the repetitiveness of a given set of actions. Since many other aspects of life produce repetitive traces and involve a degree of formality it is almost an impossibility to distinguish a definition of Neolithic ritual under these terms. The *performative context* that is key to the identification of the ritual act is unrecoverable, leaving only evidence for 'structure', in the widest sense, which is problematic as we have seen. Under the terminology as it is currently accepted in the discipline, ritual is indeed relatively useless; either because its definition is too broad, or because its identification relies upon discredited functionalist distinctions in practice.

The Value of Ritual

The concept of ritual is potentially very valuable to archaeological interpretation if used correctly. Its strength lies in its all-permeating nature, but we cannot identify specific elements of a given practice that could carry ritual overtones. Rather, ritual has the potential to inform every element of human social interaction on a general *structural* level, not necessarily at the identifiable scale of individual action. It fulfils this function in two ways: first as a means by which the world-views or 'metaphysics' of human groups are constituted, and second, as an effective means of reproducing and *changing* elements of that world-view.

Metaphysics

At its most broad, metaphysics is the enquiry into the necessary features of existence, or world-view, of a given community; it is *not* a concern with the supernatural or the world beyond human experience (Schilbrack 2004). To state that ritual concerns the metaphysics of a social group does not simply reiterate the position taken by archaeologists who argue that ritual reinforces the social order (Shanks and Tilley 1982; Richards and Thomas 1984; Whittle 1988; Sherratt 1991; Hill 1995). In many ways such a conflation of social order and world-view is simplistic. Whilst eschewing the major problems of phenomenology, but taking the human body as the means by which social relations are expressed and the world understood (Merleau-Ponty 1962), ritual can be described as an act of social inscription: the conceptual or physical marking of bodies as belonging to particular social categories. Schilbrack argues that there are two forms of social characteristic: 'contingent', which are forms of social identity that may or may not be exhibited, such as male/female or child/adult during rites of passage; and 'necessary', which cannot fail to be exhibited at all times and are shared with all other people/all existence, i.e. metaphysical or ontological characteristics (Schilbrack 2004, 131). 'Contingent characteristics' would seem to be those concerned with the immediate social order, such as the appropriate roles of the genders, or statements concerning the cleanliness or pollution of people and artefacts. It is this ascription of contingent characteristics that archaeologists generally stress as the basis for the importance of ritual, since it directly affects the social role of individuals. However, the 'necessary' or metaphysical characteristics inscribed during ritual are also extremely important for our understanding of past societies. They represent the world-view or ontology, a set of far more basic characteristics that define right and wrong and indeed the very conception of the inhabited universe. In other words, these characteristics do not legitimise a social order, so much as create and define the community as a whole. Ritual is thus vitally important beyond the immediate context of its performance (Jennings 1982, 121): ascribing an ontological orientation that influences the actions and thoughts of people at *all times*.

It seems from archaeological writing that scholars of the Neolithic are not averse to the concept of ritual metaphysics. Bradley (1998) and Thomas (1999) have both underlined the importance of 'thinking' in a Neolithic manner as a precursor to the development of the period's distinctive monuments and practices. More specifically, Colin Richards' work on Orkney (Richards 1996; 1998) argues that Neolithic architecture can reflect a shared cosmology or idea of the *axis mundi* based upon the work of Mircea Eliade (1959, 36). Through a large-scale investigation of the settlement at Barnhouse, the henges at Stenness and Brodgar, and the chambered tombs at Quanterness, Quoyness and Maeshowe, Richards has been able to identify a series of architectural components that link all the constructions together. First is the overarching circular ordering of space in the external shape of the houses, the henges and the tombs. This is then complicated by the cruciform ordering of internal space inside the houses and the tombs (Richards 1996, 194). Furthermore, the four standing stones and the four large corner buttresses that stand within the chamber structure of Maeshowe create the same recesses as are found within the large Barnhouse House 2, (*ibid*, 196), and may once have stood at the centre of the tomb's platform, just as the stones do at the centre of the Stones of Stenness. The Stones of Stenness are surrounded by a rock cut ditch, just as is Maeshowe; and the stones in the centre of the henge surround a hearth, just as is found within the centre of the similarly circular houses (*ibid.*, 199). It is argued that these architectural devices mirror the cosmology of the island world, where the inhabitants see themselves (the hearth) at the centre of a circular world created by the horizons, and it is further contended that the architecture of the henges represents that order even more blatantly through the central hearth (house), surrounding water-filled ditch (water of the bordering lochs), all surrounded by the henge banks (the hills beyond the lochs) (*ibid.*, 203). Whilst we cannot securely link the specific 'island' meanings to the architectural forms (the purely symbolic content), the repeated associations may represent an aspect of metaphysical belief.

Ritual and the Production of Knowledge

Ritual inscribes social bodies and locations with metaphysical characteristics. It can also be described as transmitting *practical* knowledge, as it gets people to act in a certain way in accordance with the accepted ontology (Schilbrack 2004, 131). Ritual as a means for the transmission of knowledge is uncontroversial and is implicit in the discussion of ritual by archaeologists such as Shanks and Tilley, who saw ritual activity transmitting a false ideology (Shanks and Tilley 1982). Yet it should be understood that ritual is, to a large degree, *self-ascriptive* of social characteristics: people involved in rituals accept the meaning of the ritual and choose to take part in it; this is the role of agency in ritual but it also demonstrates, as Jennings stresses, that such activity is a mode of enquiry and discovery (Jennings 1982, 112). Ritual is a process of learning, of 'coming-to-know' (Schilbrack 2004, 136). It is, therefore, an embodied form of practice. Ritual can be used to discover metaphysical knowledge, but this does not dictate that the form of this knowledge should be mental, or noetic, as this would reinforce the discredited mind/body dualism. Rather, ritual knowledge is gained through bodily action that alters the world or the person's place in it (Jennings 1982, 115); a practice alternatively described as 'thinking through and with the body' (Raposa 2004, 115).

Learning through the body is also the mechanism by which adherents to ritual, and thus the act of ritual participation, can gradually *change* the ontological 'givens' of entire societies. Ritual action forms a stable context for individual exploration (Jennings 1982, 115), but just as this allows the discovery of new embodied knowledge it cannot dictate the precise *form* of that knowledge: it is partially improvised. As rituals involve a degree of structured formality (Bell 1997, 166), participants gain security in the habitually induced manner of a ritual unfolding; within the stability of this framework individuals can undertake an amount of 'abductive' or hypothetical reasoning (Raposa 2004, 116). This can range from serious religious meditation, to vocal improvisation, or mere daydreaming. This degree of improvisation is possible because the symbolism of ritual is inherently vague (*ibid.*, 122); this also contradicts the ability of ritual to reproduce un-problematically relationships of social domination (*contra* Shanks & Tilley 1982). It should be accepted that the rituals themselves can be subject to change from within the conceptual confines of their undertaking. Abductive reasoning, or 'musement' to use Raposa's term, can also be applied to the structure and meaning of ritual. As Jennings commented, studying the Latin liturgy across the globe reveals definite temporal and geographical differences, demonstrating that ritual is not ahistorical (Jennings 1982, 122). Therefore, if ritual can be a means of ascribing 'necessary' embodied characteristics that articulate the world-view of communities, the very nature of these characteristics, and thus the metaphysics of the community, can also be open to gradual change through the accretion of alterations in ritual practice. As thought embodied in action, a person's conduct during ritual can have a real impact on belief (Raposa 2004, 114). The ability of rituals to influence behaviour beyond their immediate performance (Jennings 1982, 121) combines with the process of coming-to-know, within the context of the inherent vagueness of ritual, to change metaphysical belief and thus the very nature and organisation of society (figure 4.1).

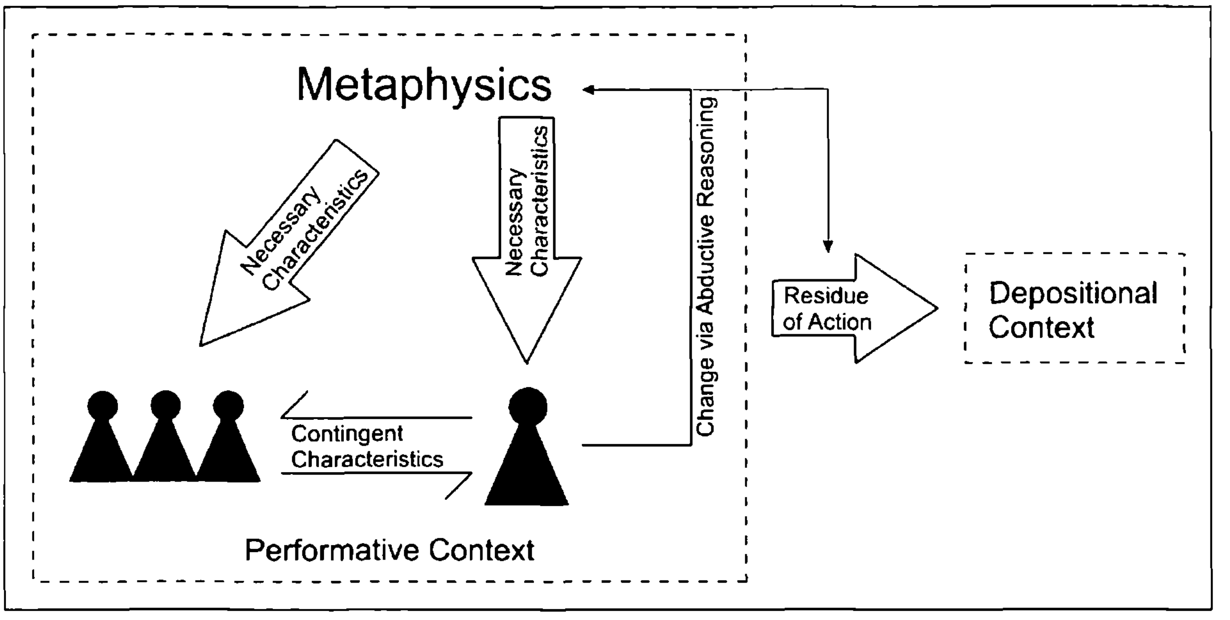


Figure 4.1: Ritual metaphysics

The 'Domestic'

It is the 'domestic' that has classically been opposed to 'ritual'. The structuralist pedigree of this, and other related dichotomies, has been extensively criticised in recent years (Thomas 1996b; R. Bradley 2005), and it is not the intention of this discussion to reiterate any of those points. Yet we must, however briefly, engage with domesticity because a) the value of ritual has been defined in specific terms, so the domestic must be examined in light of this reworking; and b) the settlement-refuse origin for material culture discussed earlier carries overtones of the old the ritual/domestic distinction. Given the criticism of explicitly 'symbolic' approaches to interpretation, it is important to demonstrate why this thesis is not falling back on functionalist methods of explanation.

It may be illustrative to consider an interpretation that makes implicit use of the distinction between rituality and domesticity. 'Architecture and Order', a paper by Mike Parker-Pearson and Colin Richards (1994a) identified how the architectural form of Neolithic houses at Barnhouse on Orkney was the symbolic expression of the relationship between the ritual and the domestic. The authors note how, within the cruciform layout of the house, the right hand 'bed' is usually bigger than the left, and how the passageway through the thick walls into the house generally orientates right towards it, by passing through the wall at an angle. They also assert that the hearth in the centre was usually cleared out to the left, into the area interpreted as 'darkest' and most secluded, though this has been incisively criticised by David Clarke

(2003, 90). They claim that on Orkney in the recent past it was usually the 'woman's job' to clear out the hearth (Parker Pearson and Richards 1994a, 44) and, therefore, the left hand area of the house was the domestic female half, which was the darker and more private. It was also the side associated with death due to the structural similarity with tombs. This is a transparently structuralist and implicitly sexist argument. The only evidence that supports this interpretation is an observation from the recent past that women generally clean out the hearth, ignorant of the intervening millennia. Upon this foundation is built the social interpretation of a sexual division of labour, activity, and the rituality of male access to the outside world. This is monolithic, dogmatic and allows no explanation for change, particularly for the women confined inside. It is an example of how the structuralist divisions between inside and outside, light and dark, male and female, ritual and domestic, can still be invoked. It illustrates the dangers of the domestic.

The reinterpretation of ritual draws it away from being used in this questionable manner. The relevance of ritual does not lie in its ability to structure every act of deposition directly and symbolically, but rather as a means of inculcating metaphysical knowledge. It cannot, therefore, stand in opposition to the domestic sphere because as a form of action it is implicit in all arenas of human practice. This is a different criticism from that which seeks to blur the dichotomy between the two spheres, such as Richard Bradley's *Ritual and Domestic Life* (2005), because that position still relies on the existence of ritual and its 'other', domesticity. The position adopted here is that ritual cannot provide the 'other' for the domestic because ritual exists in all things; the concept of domesticity is therefore irrelevant. The entire opposition between the two terms was a construction of structuralism. From the definitions proposed here, ritual has a basis in social practice, but 'domesticity' is a recent construction with no relevance to the past. Quite simply, if ritual as *originally* conceived is to be abandoned then so must the domestic. If ritual is no longer the catch-all to describe the inexplicable, the domestic cannot be the catch-all for the mundane.

Discussion: Ritual Deposition

Ritual activity can be understood as a form of embodied practice, both through the engagement of human actors in the physical dimension of activity, and the function of ritual in the transmission and discovery of embodied knowledge. Yet this returns us to the original problem of definition: our ability to identify a separate sphere of ritual action, or elements of a given set of practices that could be described as ritualised. How can we distinguish ritual as an embodied practice from all other spheres of embodied human action? Just as ritual ascribes embodied metaphysical knowledge, the work of Merleau-Ponty stresses that all existence in the world is embodied (Merleau-Ponty 1962, 346); Heidegger's 'being-in-the-world' (Heidegger 1962, 53) is, for our broad purpose, also analogous to this concept; and Bourdieu's *habitus* is the result of just such embodied existence (Bourdieu 1990). This problem is identical to that faced by those who tried to identify ritual through overtly symbolic deposition: symbolism is similarly rife in every aspect of human existence, and thus attempts to define ritual on these grounds failed.

The first step in this process is to reiterate that ritual both permeates and informs every dimension of human existence: it is functional, rational and symbolic (Brück 1999). Thus, something separate called 'ritual', or even 'elements' of ritual practice, are *unidentifiable* at a specific level; i.e. one could not analyse a complex pit deposit and state the ritual associations of the resources involved. Fundamentally, there is no such thing as a *distinct* 'ritual practice' that is identifiable archaeologically because it is *not a separate arena of practice*. As we lack the essential performative context we are unable to single-out a practice that can be considered 'ritual'. To attempt a definition of Neolithic rituals, their content, or their meaning on these terms is an already failed effort. Instead, discussions of ritual must be reoriented around its strengths and values: the discussion of metaphysics, ontology, and the structures that surround the reproduction of knowledge. It may not be 'ritual' as many archaeologists have defined it, nor indeed as it could be identified ethnographically or sociologically, but the contention here, is that this is the only form of ritual visible archaeologically.

The second step towards the discussion of ritual on these new terms is to examine it from a different direction. We must abandon the current, particularist approach to ritual. Generally, attempts are made to identify ritual based upon the content of a given deposit/practice or sets of deposits/practices; this was the basis of J.D Hill's 'odd' deposits (Hill 1995, 96). This method starts from the deposit and tries to identify a ritual element. However, we know that the metaphysical dimension of ritual structures practice on a very broad scale: it is concerned with 'necessary', rather than the specifics of 'contingent', characteristics. Yet 'necessary' characteristics are not identifiable archaeologically at the level of single deposits, or even groups of deposits. To identify ritual in the archaeological record we need to refocus on the *longue durée* and across a wider geographical scale than a single site. What we need to ask is what practices are so widespread, so common, that they appear central to the functioning of human groups. An obvious answer might be 'pit deposition', but this is no answer at all. A 'pit deposit' is the outcome of a specific set of practices, not a distinct and identifiable practice in its own right. Quite simply, pit deposition is undertaken in a huge variety of different ways throughout the Neolithic and across the British Isles. It does not, therefore, provide evidence for an element of ritual practice. Rather, what is sought is a practice that is not only evident in, say, pit deposits, but also at other locations where deposition occurs, such as henges or causewayed enclosures. For there to be evidence of a ritual element in a practice it must affect human action at the majority of times and places. Two principles govern the identification of ritual, therefore: a) repetition across time and space, and b) repetition in *a variety of very different contexts*. Moreover, it would have to be demonstrated that this association could not be the result of random chance – it should be valid by an external, probably quantifiable, measure. There is no place for the merely 'unusual' in this method. For example, hypothetically one might find a contextual association between leaf-shaped arrowheads and debitage from group VI axe manufacture in a pit deposit. One could argue for a ritual element to the practice of associating these two types of artefact if they were, first, identified in a number of other pits distributed geographically and temporally; and second, if they were discovered together in other contexts, such as the interior of tombs or the ditches of causewayed enclosures.

Concomitantly, and finally, we must recognise that the contents of individual deposits *do not* tell us anything about the 'content' of ritual practice, or about the specifics of belief. This is because at the level of individual deposits we are not 'identifying rituals' – this is only possible in the *longue durée*, because of the need for reiteration across space and time. Yet it would be incorrect to ignore the unique nature of pit deposition. We have seen how the flexibility of ritual practice allows a degree of abductive reasoning or 'musement' (Raposa 2004, 116), and it is this flexibility we see in operation where unique deposits are created. This is the operation of agency within the structuring principles of ritual. Finally, given that it is only in repeated practices that we can recognise the reproduction of rituals, and therefore of ontological principles, it should be possible to examine common characteristics of deposition that *change* over time due to accretions in the results of this 'musement'. It is in this way that the examination of repeated patterns in deposition should allow us to study directly the changing structures of social reproduction. The possibilities of this approach are examined further using information from the North-East in chapter nine.

Conclusions: Some Problems and an Alternative

At the end of chapter three, a series of oppositions were identified that ran through most interpretations of pit deposits. These were: the potency of material culture versus the power of performance, rubbish versus 'meaningful' material, and the structured versus the unstructured deposit. This chapter has demonstrated how these oppositions are based upon a series of contemporary preconceptions that affect the classification of material culture. By starting at the most specific level, that of broken artefacts, we have seen how the Western ideal of refuse as valueless detritus has influenced interpretation. If valueless rubbish was involved then the performance of deposition was most important; if meaningful material (usually Grooved Ware) was deposited, then the artefacts were important and dictated the mode of deposition. Yet we have also been able to trace the effect of these preconceptions into wider areas of interpretation; up the chain of inference. When an artefact is unproblematically classified as refuse, whether implicated in an important 'performance' or not, the practices that created it are, likewise, unlikely to be considered reflexively. A more 'meaningful' artefact is likely to be interpretatively associated with practices of symbolic or ritual disposal, despite, in the case of Grooved Ware, having been used in the same manner as other ceramics through the whole of the Neolithic. A consideration of the structure within which these classifications operate, led to a discussion of ritual and its interpretative value. The very existence of a category of practice called 'ritual', despite wide-ranging critiques, creates the climate in which relative judgements of the symbolic value or meaningfulness of an artefact can be made. A simplistic conception of ritual arbitrarily divides valueless refuse from meaningful material.

An alternative to the above way of thinking has also been outlined. First, the opposition between refuse and meaningful material was dissolved by demonstrating the degree to which rubbish is bound by social rules and classifications, and can be imbued with important potencies and powers. Recognising that all the major Neolithic ceramic styles could be used in a subsistence context, the position was advanced that the contents of Neolithic pits was composed largely of socially important refuse deposits. Second, having established that refuse could be implicated in very meaningful activity, the contents of pits were identified as occupation deposits from settlement practices. However, having dissolved earlier dichotomies, it was evident that this material could have been involved in complex social classifications that necessitated complex sequences of provisional discard and selection for deposition, potentially on the basis of differential fragmentation. Third, it was shown that a given element of depositional practice could be considered ritual in nature, once the concept of ritual was freed from earlier problematic associations. Practices are not 'ritual' because of any inherent symbolism of the material involved, but because of the potential for widespread practices to articulate the transmission of metaphysical or ontological knowledge. Under this scheme, the content of individual deposits is totally unimportant for the definition of a ritual element. Rather, it is actions repeated across time and space that form the ritual element by articulating a shared ontology. As archaeologists lack the performative context of rituals, specific structures in certain deposits cannot be interpreted; they are interesting, but only as an expression of how individuals can express agency within the structure of ritual. They get us no closer to symbolic beliefs, but it is important to remember that they express the mechanism by which ritual maintains its dynamism and slowly changes. This is what sets this redefinition apart from those earlier interpretations that saw ritual acts in unusual or structured deposits; we are concerned with ritual here as a common sweep of practices: it is *not* to be found in the complexity of its individual manifestations.

This had two important consequences for the manner in which depositional practices should be analysed and interpreted, both with direct relevance to the continuation of this study. First, investigating practices in order to identify their broad-scale existence and long-term change dictates that a particularist approach to interpretation will be unsatisfactory. The emphasis cannot lie on 'explaining' an individual set of material associations or using 'thick description' (Geertz 1973, chp 1) to interpret a single pit. Yes, an appreciation of depositional practice must be built from the most specific investigation of contextual information as is possible; for example, the size and condition of hundreds of potsherds are investigated in later chapters. Yet this information must be available and comparable with similar data from contemporary, similar, different, and subsequent sites, in order to elucidate those underlying associations that affect practice in the *longue durée*. The particular must build toward the general, and it must do so in manner that is rigorous and, preferably, reliable in a statistical sense.

Second, interpretation must abandon any attempt to state what a particular practice 'meant' to the protagonists. This is because any meanings we impose for material culture are hugely problematic, such as those represented by the definitions of 'refuse', 'settlement', 'curation' etc, explored above. Interpretations that argued for some inherent 'meaningfulness' for

Grooved Ware but no earlier form of broken pottery, which was just refuse, imposed directly contemporary values onto the past with no justification. These problems found their ultimate expression in the explicitly sexist interpretation of the Orcadian house and domesticity by Parker-Pearson and Richards (1994a). Literally, those interpretations that purport to explain *why* something happened based upon the symbolic motivations of people involved operate on the premise that the *thoughts* of those people can be understood. Yet how can we tell that deposition in flint mines reflects beliefs in chthonic deities (Topping 2004, 185)? We cannot contextually establish the existence of a god. Yet this is just one extreme of a continuum of interpretation that claims to be able to explain human action based upon symbolic motivation. It is the same as saying that proximity to a cursus necessitated more symbolic deposition, as at Firtree Field (Barrett *et al.* 1991, 77) or that causewayed enclosures encircled ritualistic practices in an otherwise 'domestic' domain (P. Bradley 2004, 121).

The problem with 'meaning' here is a very specific one. Many types of meaning may exist in the human world, which can be more or less interpretable. For instance, it is probably acceptable to state that *one* of the meanings of representative art is the object being represented. However, in the examples above, there is not even a representative link between the items (broken pottery, flint mines, houses) with the interpretation given (rubbish, chthonic deities, sexual inequality) because the archaeologists involved are attempting to interpret an entirely *symbolic* linkage; i.e. one that does not require a logical or representative link with the objects being studied. This is the problem with *symbolic* meaning, as opposed to other meanings: they are easy to speculate about, but impossible to substantiate. Yet in speculating, the interpreter makes very basic assumptions about the past, and imposes a contemporary framework of thought upon past actors.

Interpretations of symbolic meaning are even less tenable if one is engaged in an attempt to identify social change over the *longue durée*. The changing personal beliefs of over a thousand years of history cannot be identified in a truly reflexive manner. Rather, the limit of interpretation must be the identification of what practices were important to people over long periods of time and how they developed and changed. We are concerned, therefore, with *how* not why certain depositional practices were undertaken. This chapter has identified how ritual provides a mechanism for certain social practices to be maintained and implicated in transmitting metaphysical knowledge, thereby securing social reproduction. It was not their ritual nature that made such practices important. That the practices were deemed important enough to be repeated was why they *became* ritualised. In studying depositional practice in the manner proposed here, and in potentially identifying its ritualised elements, we will never identify the content, the world-view, they expressed. Instead, analysis can only ever identify what was of *significance* to people over a given span of time, but this is not the same as stating 'why' it was undertaken. The interpretation that a practice was 'significant' should be based upon its quantifiable existence across a variety of contexts and considerable amount of time, not upon the chance recognition of, say, a deposit that looks unusual. An ongoing concern for this study, therefore, is the identification of the relative significance of particular depositional practices. This requires an alternative framework of interpretation.

CHAPTER FIVE
ANALYSING DEPOSITION: THE PITS AT THIRLINGS

Introduction

This chapter describes the analysis of Neolithic pit-deposition at Thirlings, Northumberland. The analysis was designed as an attempt to examine as fully as possible every dimension of pit deposition visible to us from the data available. There is no model or set of established procedures for undertaking an investigation of this kind, so methodologically it breaks some new ground. For this reason the various statistical and spatial techniques employed to examine the data are presented in some depth, and even those tests that provided negative or ambiguous results are discussed. First, however, the basics of archaeological investigation into the site will be focused upon, including the history of excavation, the basic structure of the Neolithic deposits and the effect of subsequent Early Medieval activity, as this has some relevance to the later analysis of the site archive. Three broad analyses will then follow, focusing on different scales of investigation and types of relationship, the precise structure of which is outlined in this section, including details on the methodological procedure and interpretative terminology. A plan of the site (figure 5.1) is provided on the following page.

The Site

The Neolithic archaeology at Thirlings is entirely composed of pits, which vary widely in character. 228 pits, of which 39 held datable Neolithic material culture, were excavated between 1973 and 1981 by Roger Miket and Colm O'Brien. Some pits were relatively straightforward single-fill affairs and the site also revealed a large number of postholes, yet many of the pits exhibited startling complexity and a unique approach to the combination of relatively simple elements of material culture. The site lies at 45m above ordnance datum on a gravel terrace of the River Till in the Milfield Basin (figure 5.2), an area well known for its Neolithic henge complex and pit alignments (see chapters two and eight); Thirlings is around 500m from the nearest of these henges at Ewart. However, the site was initially investigated because of Anglo-Saxon structures that were identified from aerial photographs (figure 5.6), the Neolithic nature of the pits only coming to light upon excavation. These Early Medieval remains pose some interpretative problems, which are outlined below.

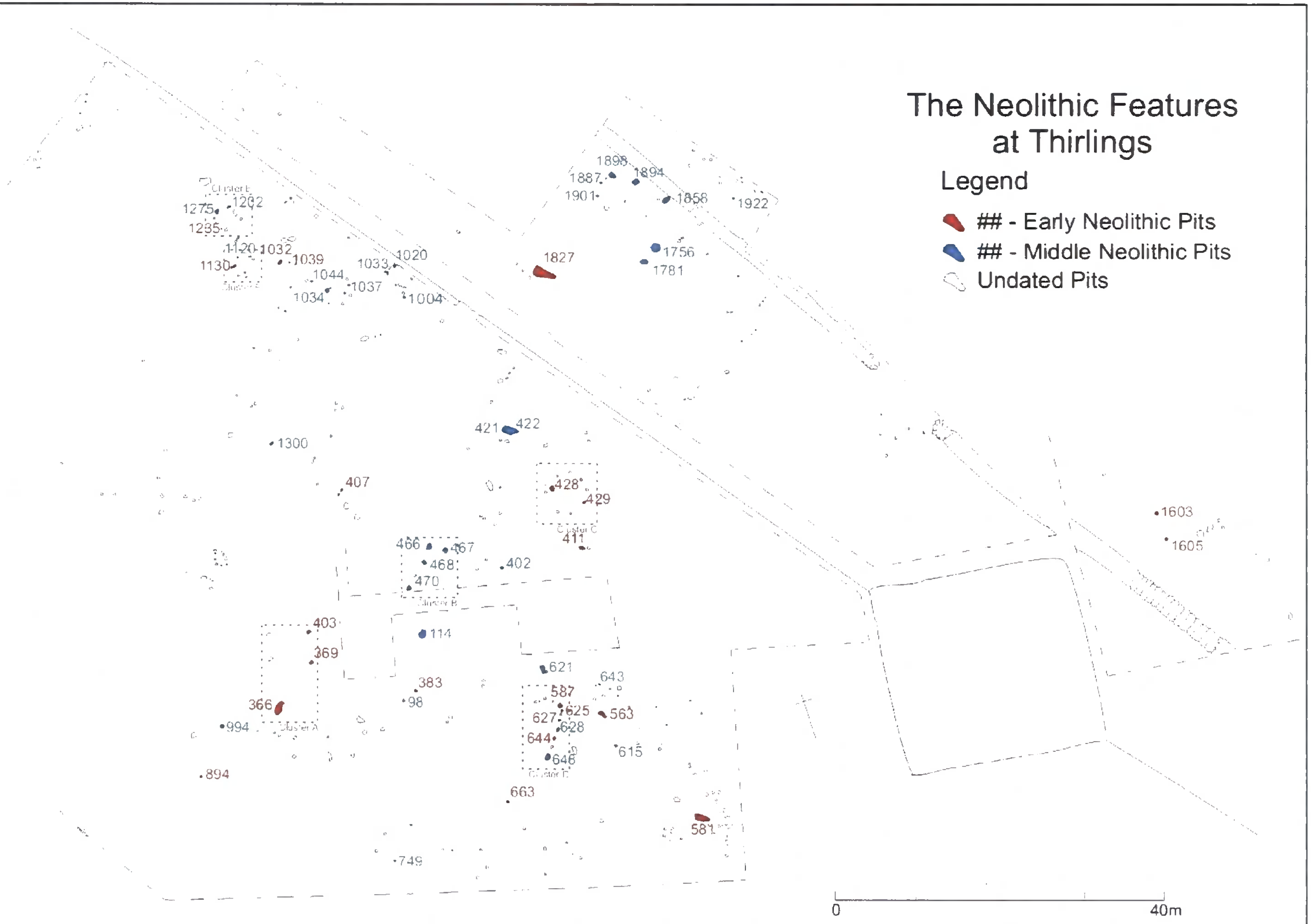


Figure 5.1: Plan of Neolithic activity at Thirlings

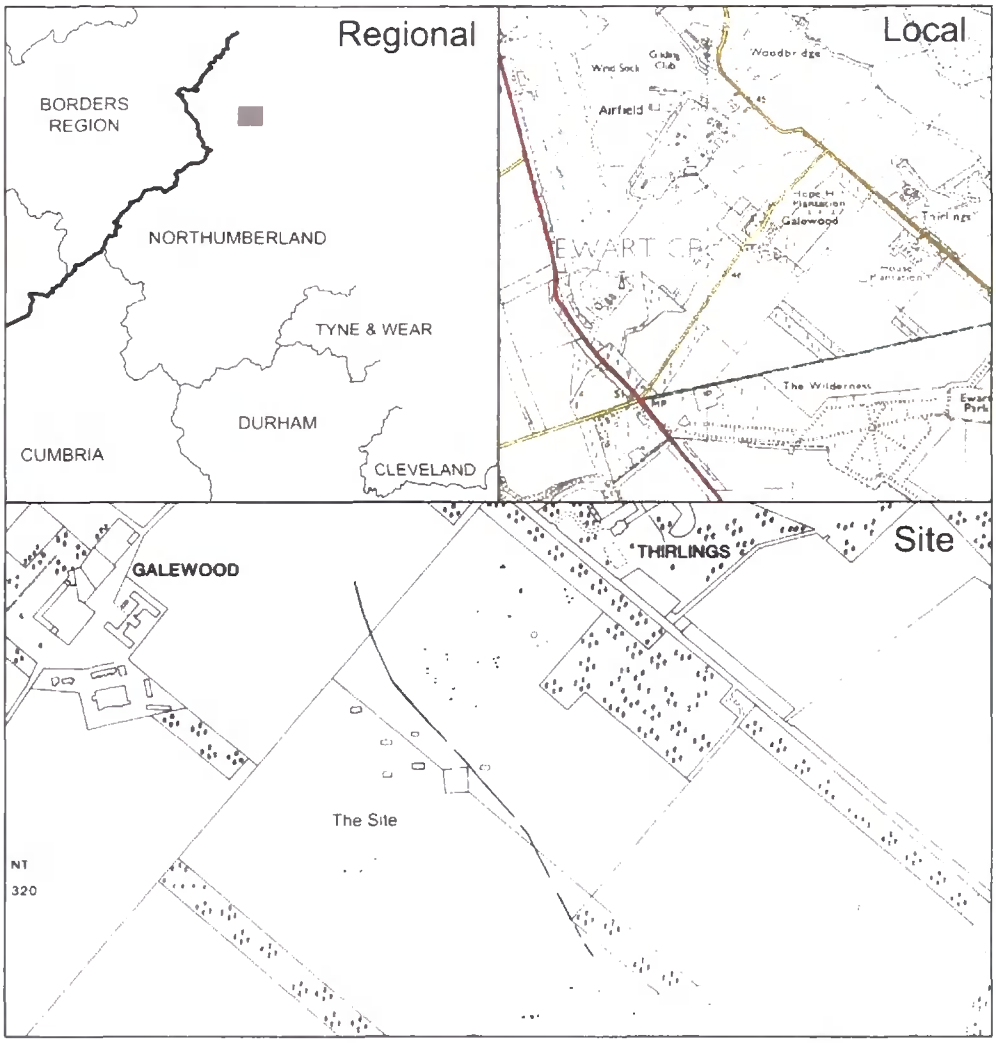


Figure 5.2: The location of Thirlings

The Evidence

Some 523 potsherds originating from at least 80 separate vessels were recovered from the 39 pits that provided Neolithic dating evidence. A small amount of flint was recovered from a few pits. In addition to the material culture, the majority of pits contained contexts rich in charcoal, other burnt material, and evidence of organic decomposition through highly loamy fills. It was these contexts that provided the range of Neolithic dates from the site, below, which span the whole of the period. The first group of dates represent samples sent for radiocarbon determination to the Harwell laboratory between 1973 and 1981; the second group are the results of a more recent programme in 2006 by the Oxford Accelerator laboratory. Figure 5.3 is the OxCal plot of the determinations, grouped by pottery style into dates associated with Carinated Wares, Impressed Wares, and those with no association. HAR844 from pit F366 has been discarded as anomalous, and OxA16102 used in its place.

F366:	7030 – 5370 cal BC (HAR844) - anomalous
F369:	4340 – 3780 cal BC (HAR1118)
F430:	3640 – 2890 cal BC (HAR6659)
F466:	2920 – 2210 cal BC (HAR1451)
F467:	3279 – 2570 cal BC (HAR1450)
F470:	3500 – 2880 cal BC (HAR6658)

F366:	3340 – 2940 cal BC (OxA16102)
F587:	3910 – 3650 cal BC (OxA16101)
F643:	3340 – 2920 cal BC (OxA16164)
F644:	3780 – 3640 cal BC (OxA16104)
F648:	3360 – 3020 cal BC (OxA16103)
F1275:	3630 – 3360 cal BC (OxA16100)

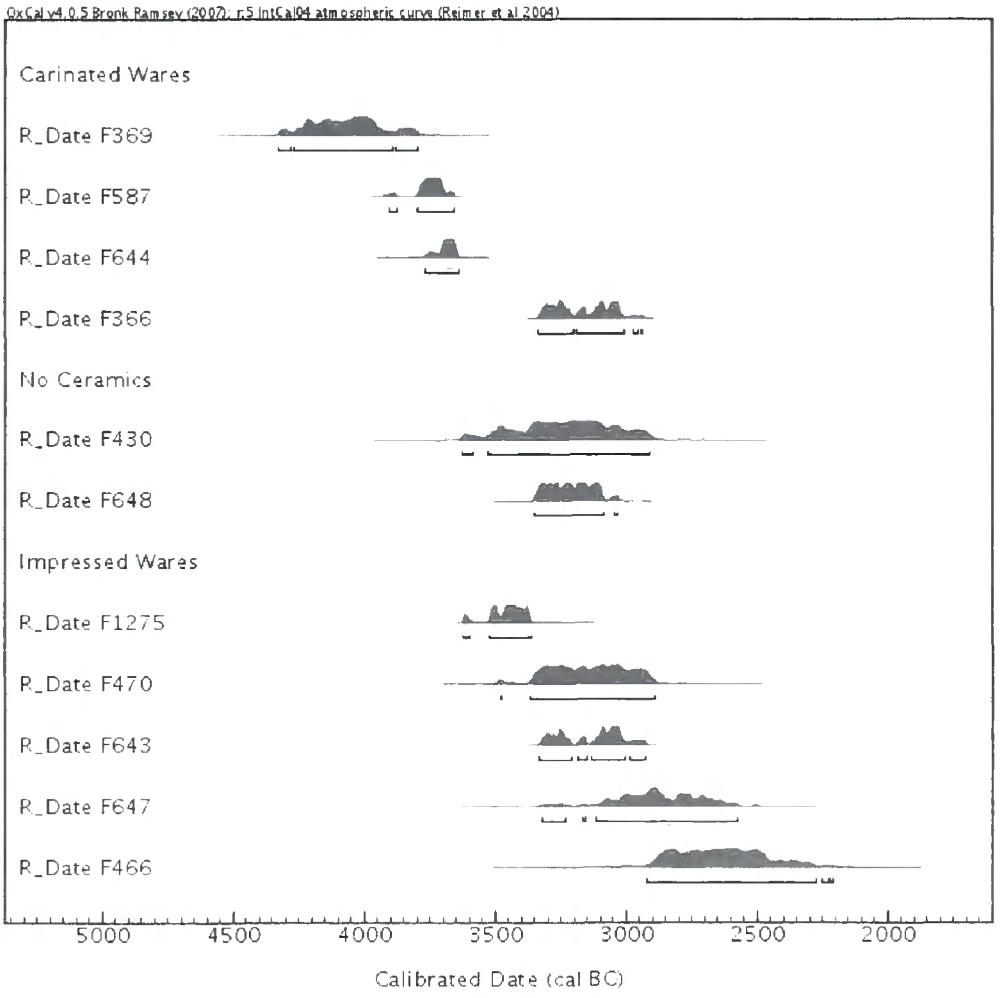


Figure 5.3: Calibrated C14 dates from Thirlings grouped by pottery type

This analysis is not a site report, and therefore its purpose is not to discuss individual pits in detail, but the complex nature of deposition on the site does require illustration. The two pits selected represent the more complex end of the spectrum of pit creation, but whilst they are unique in their specific structure, they are by no means the only examples of their type. An Earlier and a Middle Neolithic pit, F563 and F466 respectively are illustrated (figures 5.4 & 5.5); in both cases the reconstruction diagram presents notional post heights, though all other dimensions are correct. The pits are clearly different, in shape and deposits, but both are marked with a complex arrangement of posts, both contained highly loamy fills flecked with charcoal indicative of decayed organic remains, and both produced large amounts of diagnostic pottery, Carinated Ware in the Earlier Neolithic example and Impressed Ware in the Middle. F563 later had its post arrangement burnt, F466 was lined with clay with pottery pressed into it, and neither pit contained silting layers indicating that any time passed between its digging and each successive deposited layer. As shall be seen throughout the following analysis and subsequent discussion, these variables combine in numerous ways in the pit deposits at Thirlings.

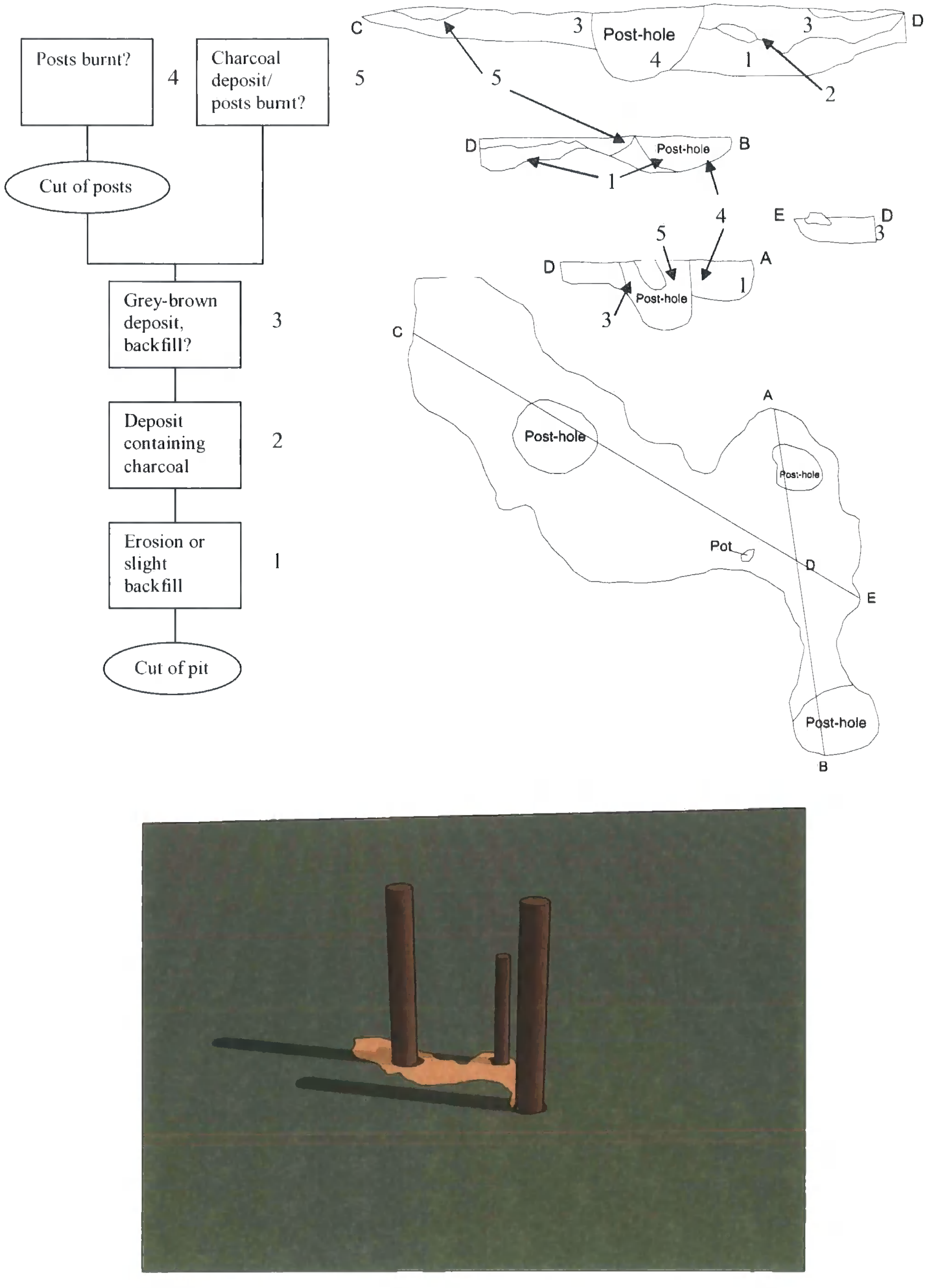


Figure 5.4: Reconstruction, sections, plan and matrix for F563

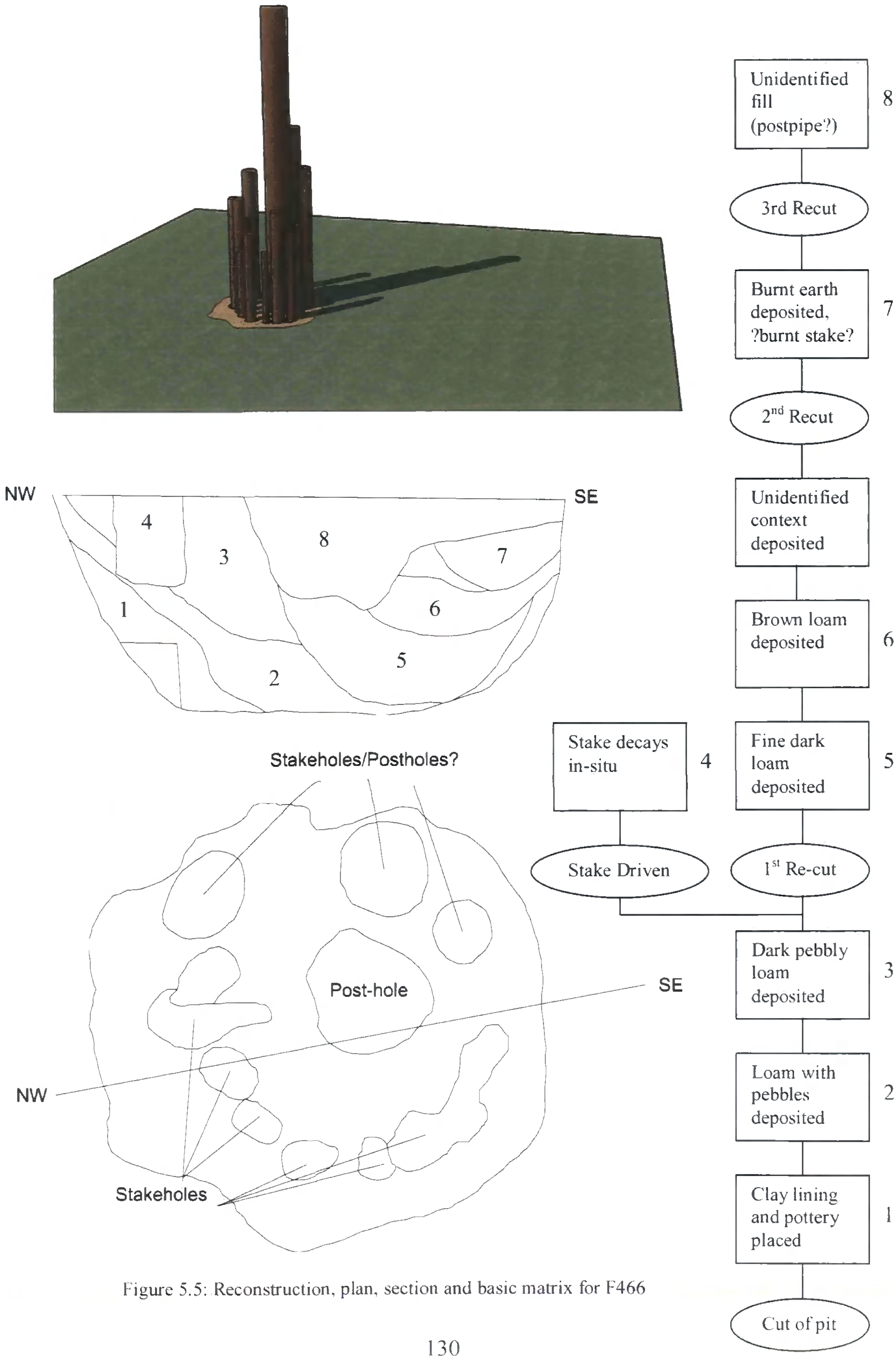


Figure 5.5: Reconstruction, plan, section and basic matrix for F466

The Anglo-Saxon Phase

Given the presence of a large number of Early Medieval buildings on the site (see aerial photograph, figure 5.6) it is important to justify that none of the Neolithic material was residual within Anglo-Saxon pits. This can be achieved for individual features due to their extraordinary complexity, and also through recourse to the general character of the Medieval occupation. The Anglo-Saxon occupation was largely aceramic, but furthermore, there is no evidence that the people of that period dug a large number of pits for depositional purposes: there were no pits directly associated with the buildings other than postholes and beam slots that formed architectural components. Similarly, none of the contexts that produced Neolithic pottery contained any later ceramics or radiocarbon dates; so whilst there is obviously a chance that Anglo-Saxon activity badly damaged or truncated Neolithic pits directly beneath the buildings, there is little cause to suspect that any further sub-surface disturbance was undertaken on the site. Finally, it is worth mentioning the pit that produced a saddle quern placed on its side, flush with the pit wall. Such intentional placement argues strongly against a residual origin, as does that fact that saddle querns had gone out of use during the Anglo-Saxon period. This is just one example of the highly complex Neolithic deposition that cannot be explained through mere residuality, and which will be explored in greater depth.

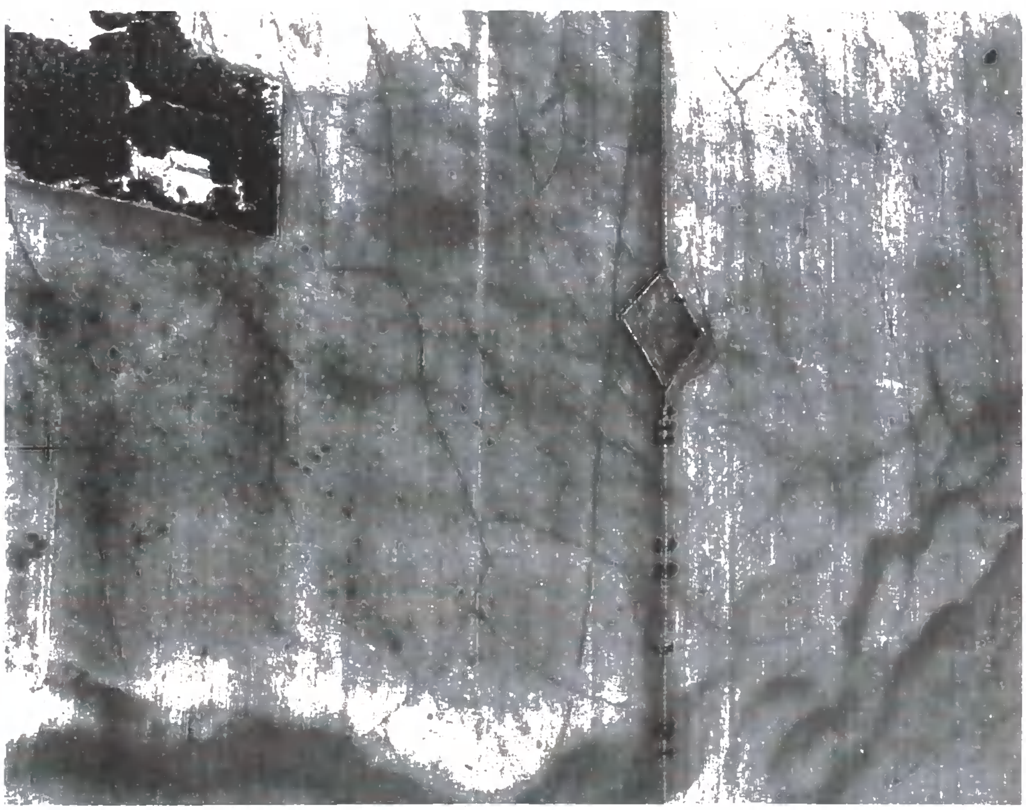


Figure 5.6: Aerial photograph of Thirlings, note the pits and faint building outlines (Museum of Antiquities, Newcastle)

Background to the Analysis

This section provides an appreciation of the methods involved in collating and abstracting data from the Thirlings site archive, alongside a definition of important interpretative terminology used throughout. In the following sections analysis proceeds through three major divisions, the first of which is a statistical analysis of the relationship between the physical features of the pits and the material culture deposited within them. The second analysis concerns the treatment of the pottery directly, as the major category of material culture on the site, primarily concerned with the abrasion of the sherds as a means of identifying the pre-depositional treatment of the ceramics, leading to the construction of a pottery 'biography' in chapter six. Finally, a spatial analysis in undertaken using GIS to identify any trends in the distribution of particular pit types, or patterns in the deposition of material culture across the whole of the site. These three analyses could reasonably be characterised as operating at the 'feature scale', the 'deposit scale', and the 'site scale' respectively.

Data Source and Abstraction

Data on the pits and their contents were abstracted directly from the excavation archive of the site: the details on the form and fill of the pits are taken from the site notebooks that contain the details of individual features, whilst data on pottery and flintwork is derived from the unpublished specialist reports within the archive. The pit data consists of 228 plans and sections with accompanying commentary on fill and finds. The author is very grateful to Roger Miket, one of the original excavators of the site, from whom the archive was obtained and permission to analyse it kindly extended. To facilitate analysis, two databases were created from the Thirlings archive: one concerning every pit on the site, and the other containing data on those pits that yielded datable material.

Database 1: All Pits

This database is concerned with the basic record of every one of the 228 pits on the site. It contains information on length, width, depth, presence of a recut, presence of burnt material or organically stained fill, and whether the pit was regular or irregular in shape. An interpretative judgement on the purpose of the pit is also made: whether its likely function was as a post-hole; a post-marked pit for deposition; an unmarked pit for deposition; or unknown. The definitions of these terms are explained below. Whilst some of the pits in database 1 did provide Neolithic material, most did not, so the pits that produced datable material are also recorded in more detail in a separate database. The reason for caution is the presence of the Anglo-Saxon settlement directly adjoining the clusters of pits (O'Brien and Miket 1991), which raises the possibility that some may be of late origin. None of the pits in database 1 contain Anglo-Saxon material or are associated with any such features, but nevertheless it was deemed interpretatively unsound to *assume* a Neolithic date without datable material. Figure 5.7 is a series of sample entries from the database; it is presented complete in appendix 1.

Feature Number	Length (m)	Width (m)	Depth (m)	Shape	Type of Pit	Organic/Burnt Material	Re-cut?
366	2	1	0.4	Irregular	Deposition	Yes	No
367	0.1	0.1	0.08	Regular	Post-hole	Yes	No
369	0.4	0.44	0.2	Regular	Post-hole	Yes	No
385	0.48	0.24	0.18	Irregular	Deposition	Yes	No

Figure 5.7: Sample data from database 1

Database 2: Pits Producing Datable Material

This database is formed from those entries in database 1 that are datable to the Neolithic on the basis of radiocarbon determinations or pottery typology, and thus it contains far more detailed information. Here the basic details of database 1 are reproduced, but there is further data on the quantity and type of pottery recovered; the number of fill layers in a feature; any evidence of specific depositional practice, such as burnt material; and the presence or absence of posts. During the design of this database a series of columns relating to the presence/absence of human and animal bone were included; however, as none was recovered from Thirlings, these fields were removed. Finally, there are a series of interpretative judgements on the purpose of the pit, as above, but also a consideration of the fate of the post if one existed: burnt, removed, or decayed in-situ. This database is too large to present a sample, but can be found in the appendix 2. It should be noted that during the 1970s excavations single-context recording was not undertaken, and records are restricted to the level of the whole pit; some information on the individual contexts does exist as it was integrated into each feature record.

Interpretative Terminology

Before discussing pit characterisation, it is important to remember that pits were categorised into types on the basis of structural form alone, *not* the quantity of material culture deposited within them. The overriding assumption was that, if it contained no structural indicators of a post, a pit was *de facto* for deposition due to its highly loamy fill, regardless of the presence/absence of pottery. In order to keep the variables independent, the amount of pottery deposited within a pit has never influenced any stage of pit categorisation, only pit form has any bearing.

Irregular and regular pits

These terms refer to the broad shape of a pit primarily based upon its degree of symmetry. This was an interpretative judgement, but one with few grey areas: nearly all the pits were either smoothly sub-rounded or highly variable to the extent that no common form was discernable. The presence of posts and recuts did not affect this judgement. This characterisation was based upon plan form as few pits exhibited irregularity in section. F563 and F466 (figures 5.4 & 5.5) are examples of irregular and regular pits, respectively.

Post-hole

A common term referring in this case to a judgement based on the physical form of a pit, including the presence of a post-pipe or packing stones, which implies that it was dug *with the deliberate aim of supporting a vertically set timber*. This can be contrasted with 'post-marked deposition' below. This does not presuppose a lack of material culture.

Post-marked deposition

This refers to instances of pit digging where the form and contents of the pit, and the stratigraphic relationship with the post, indicates that it was dug *with the aim of depositing material culture and marking that episode of deposition with a timber or series of timbers.* This can be set apart from post-holes by the number of fills below the post, often the flimsiness of the timber, and the shape of the pit. For example, there may be no post-packing; the pit may be too large to be considered a post-hole for the posts present; and/or there may be evidence of successive re-cuts and secondary instances of deposition prior to the erection of a post in the pit.

Unmarked deposition (or 'deposition' in data tables)

In the context of pit types this refers to those pits where there is no evidence of posts and that contain evidence of material culture, which could have been introduced purposefully or incidentally. In *database 1* this includes pits with no material culture but highly organic fills, whereas in *database 2* all such pits provided pottery.

'Unknown' pits

This refers to a judgement only present in *database 1* in the field "type of pit", where a lack of material culture and no evidence for posts or post-packing made interpretation insecure; generally these pits have a sloping profile that could represent the base of a truncated post-hole but without the necessary degree of certainty. This category does not exist in the more detailed *database 2*, which shows only those pits containing evidence of material culture; they were therefore *de-facto* one of the above three categories.

Re-cut

This is also a common term, but in this context the identification of a re-cut in a pit does not extend to the insertion of posts into depositional contexts; it only refers to removing part of an existing deposit and then inserting, or allowing the accumulation of, new material in its place. This is simply to distinguish between repeated acts of deposition and post insertion as two separate practices.

Refits

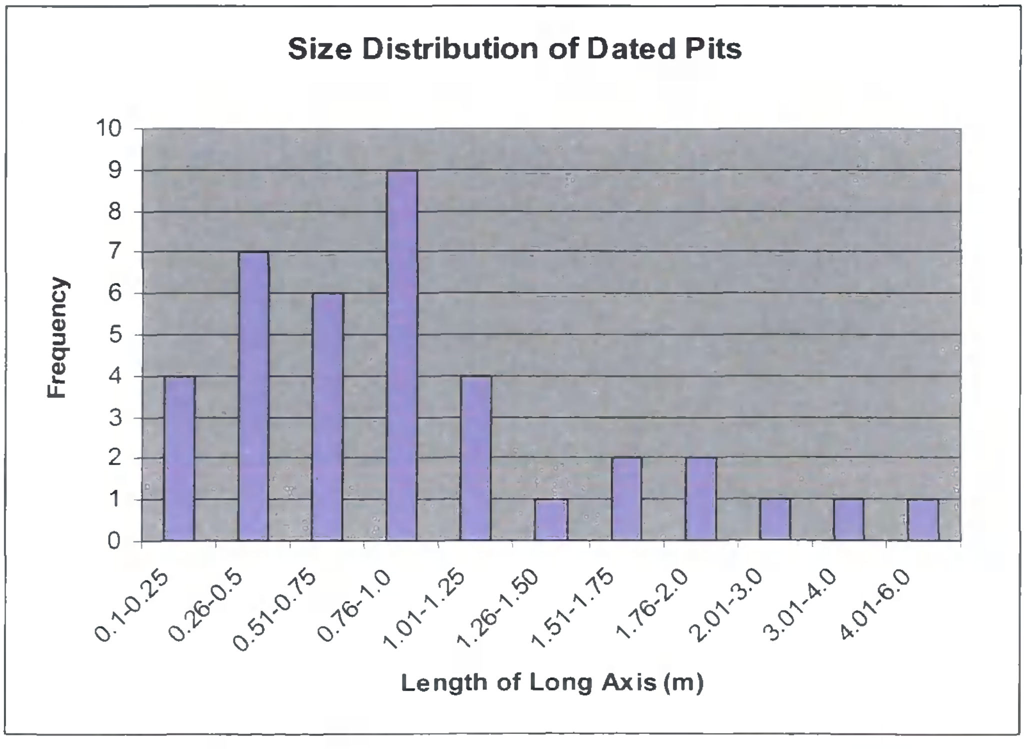
This refers to sherds of pottery that demonstrably arose from the same vessel because they 'refit' back into their pre-break form. The author was not responsible for the refitting study, as this was undertaken during and after the original excavation of the site in the early 1980s. However, the excavator, Roger Miket, reports the methodology as follows (Miket pers. comm.). First pottery from the same layer or feature was visually sorted on the basis of fabric (i.e. the presence or absence of burnishing, inclusions etc) and thickness, whilst mindful of taphonomic factors that could have had an effect. Joins between similar sherds were then tested and positive results recorded. There were no time constraints on this activity and sherds were re-checked at least twice. Once layers/features were exhausted, the same methodology was applied to checking sherds from different features.

Deposition Analysis

This section will explore whether the Neolithic pit deposition at Thirlings followed recognisable trends, or adhered to any particular rules that governed associations between specific types of material culture, the nature of depositional contexts, and the outward form of the pit itself. Central to this concern is the relationship between pottery and the pits it came to fill. As the major category of material evidence, ceramics are the only truly quantifiable material culture deposited at Thirlings. It is in the deliberate deposition of pottery that the pits begin to exhibit rather unusual characteristics. Following a discussion of the some of the more basic details of the pits containing diagnostic pottery, this section will move on to analyse the presence or absence of relationships between the characteristics of pits and any related material culture. Each of these analyses is presented with a statement of its aims, methods and results for clarity.

Basic Details

The site encompassed 228 pits, although the majority of these held no datable material and are not included in this analysis. Pits containing stylistically datable pottery are the subject of *database 2*, above, and were 39 in number. Before any finer distinctions are made, as a single body of pits, their size distribution based upon the length of the longest axis is as follows.



Graph 5.1: The size distribution of the *database 2* pits producing datable material

The pattern is relatively unsurprising and shows a clear cluster of pits between 0.1 and 1.25 metres along the longest axis. The smallest extreme of this range obviously corresponds with stakeholes rather than post-holes or pits, but their presence indicates that they did contain Neolithic pottery, and therefore have a place in this analysis.

As discussed above, there were three types of pit identified: post-holes, post-marked deposits, and unmarked deposits; and two shapes of pit based upon their plan form: regular and irregular. The coincidence of these types is shown in the following frequency tables; note that table 5.1 displays all the pits on the site, and table 5.2 the datable pits in this analysis.

Pit Types and Forms (All Pits)

	Pit Type		
	Post-Hole	Deposition (unmarked)	Deposition (post-marked)
Regular	61	78	4
Irregular	6	68	6
Total	**67**	**146**	**10**

Pit Types and Forms (Datable Pits)

	Pit Type		
	Post-Hole	Deposition (unmarked)	Deposition (post-marked)
Regular	10	9	2
Irregular	2	10	6
Total	**12**	**19**	**8**

Tables 5.1 & 5.2: The frequencies of pits attributable to each type and plan form

As one would expect, post-holes do form a large proportion of the regular pits on the site, but those pits where unmarked deposition is interpreted as the primary function constitute 58.6% of the total corpus of pits and 42.9% of dated examples, and it is clear that unmarked depositional pits do comprise the largest group on the site. Specific associations between these categories and the deposition of material culture are established below.

Finally, the tables below demonstrate that there are a comparable minimum number of Earlier and Middle Neolithic pots, represented by similar numbers of sherds; the statistic 'total pots' represents the minimum number of individual vessels separately identifiable. The 'total sherds' here include every fragment of assignable pottery; however, in some cases these were too small to be included reliably in statistical tests. The sherds included in the statistical analyses can be found in appendix 3.

Total Sherds

Earlier	270
Middle	253
Total	**523**

Total Pots

Earlier	37
Middle	43
Total	**80**

Tables 5.3 & 5.4: Total pottery numbers at Thirlings

Pottery Amounts, Pit-Type, and Fragmentation

Aim

To establish whether there is a relationship between the type of a pit (post-marked deposition, unmarked deposition, post-hole) and the amount of pottery it held.

Data

Tables 5.5 and 5.6, below, display the average number of sherds and the average minimum number of pots represented by those sherds in each of the three pit types, divided by pottery type into Earlier and Middle Neolithic forms. The use of the statistic 'minimum number of pots' can be contrasted with 'pottery weight' used in the following test.

Average Min. No. Pots by Pit Type

	Earlier	Middle
Deposition (all)	2.33	2.40
Deposition (post-marked)	2.67	3.4
Deposition (no post)	2.22	1.90
Post-Holes	1.50	1.17

Average No. Sherds by Pit Type

	Earlier	Middle
Deposition (all)	20.5	14.47
Deposition (post-marked)	28.67	17.4
Deposition (no post)	17.78	13
Post-Holes	4	6

Tables 5.5 & 5.6: Average numbers of pots and sherds by pit type

This can also be expressed as an average number of sherds per pot:

Earlier Neolithic
avg. post-marked deposit: 28.67 (sherds) / 2.67 (pots) = 10.74 sherds per pot
avg. unmarked deposit: 19.88 (sherds) / 2.22 (pots) = 8.00 sherds per pot

Middle Neolithic
avg. post-marked deposit: 17.4 (sherds) / 3.4 (pots) = 5.12 sherds per pot
avg. unmarked deposit: 13 (sherds) / 1.90 (pots) = 6.84 sherds per pot

Discussion

On average post-holes contain fewer pots than pits categorised as depositional in character, which legitimates these categories. There may be a slight trend towards a greater quantity of pots in post-marked compared to unmarked pits. This trend is more evident in the number of sherds deposited: in both the Earlier and Middle Neolithic there is a tendency towards a greater number of sherds in post-marked pits, although it is during the Earlier Neolithic that this difference is most pronounced. This may indicate that was a differential degree of pottery fragmentation between the two types of depositional pit. Further differential fragmentation is evident between the Earlier and Middle Neolithic: on average there were fewer sherds per pot in both types of depositional pit during the Middle Neolithic. However, using the average number of sherds in complex analysis could be a dangerous practice, as the taphonomic factors affecting sherd fragmentation on the site are not fully understood. These results are further complicated by the abrasion analysis undertaken below that seems to indicate a degree of either deliberate fragmentation or selective deposition of sherds of specific sizes. Therefore, the following test was undertaken using pottery weight to test these results.

Pottery Weight and Sherd Size: More Reliable Comparators of Pits

Aim

To quantify differences in deposition in post-marked and unmarked pits using pottery weights rather than amounts. This avoids making assumptions about taphonomic processes and circumvents any inaccuracies inherent in the 'minimum numbers of pots' statistic'. Any differences are then related to sherd sizes as a test of fragmentation.

Data

The following tables display the weight of pottery taken from each of the dates and types of pit: table 5.7 records the average total weights from the pits that fall into each category, whilst table 5.8 records the average weight of each individual sherd.

Average Weight (g) of Pottery by Pit Type

	Earlier	Middle
Deposition (all)	252.17	312.78
Deposition (post-marked)	471.40	389.28
Deposition (no post)	203.46	274.53
Post-Holes	121.30	62.55

Average Weight (g) of a Sherd by Pit Type

	Earlier	Middle
Deposition (all)	13.07	29.12
Deposition (post-marked)	18.89	17.89
Deposition (no post)	11.77	34.74
Post-Holes	16.68	17.48

Tables 5.7 and 5.8: Average pottery weights by pit type, important differences highlighted (see below)

Table 5.9 displays the mean length of sherds, their mean maximum length, their mean minimum length, and the mean range between the two preceding values; all concern length along the longest axis.

Sherd Dimensions by Pit Type

	EARLIER			MIDDLE		
	Post-Marked	**No Post**	**Posthole**	**Post-Marked**	**No Post**	**Posthole**
Avg	46.82	38.99	42.44	41.06	50.45	45.19
Avg Max	74.50	52.33	66.25	63.75	75.13	54.17
Avg Min	30.50	33.00	29.50	25.25	33.25	38.83
Avg Range	44.00	19.33	36.75	38.50	41.88	15.33

Table 5.9: Sherd dimensions, important differences highlighted

Discussion

Tables 5.7 and 5.8 support the earlier results, showing that in the Earlier Neolithic there was a large difference between the volume of pottery deposited in post-marked compared to unmarked pits: post-marked pits contained 131% more pottery. The Middle Neolithic sees a 42% difference. Perhaps more interesting, is that, in the Middle Neolithic, individual sherds weighed 94% more in unmarked pits than they did in post-marked ones, despite the fact that *overall* there was a lesser weight of pottery in those same unmarked deposits. The significance of this observation is assured when the size of sherds is factored into the analyses. From the evidence presented in table 5.9, the sherds from Middle Neolithic unmarked pits were also *larger*, in every measure of size, than those from post-marked pits. By contrast, in the Earlier Neolithic the situation was somewhat simpler: post-marked pits held more pottery by weight, and the sherds were also larger and heavier than in unmarked deposits. The trends are summarised in a deliberately simplified form in the following table (5.10).

Pit Type	**Total Pottery Weight**	**Individual Sherd Weight**	**Individual Sherd Size**
Earlier Neolithic			
Deposit (no post)	Lesser	Lesser	Smaller
Deposit (post-marked)	Greater	Greater	Larger
Middle Neolithic			
Deposit (no post)	Lesser	Greater	Larger
Deposit (post-marked)	Greater	Lesser	Smaller

Table 5.10: Trends in pottery deposition and fragmentation by pit type

So, in the Middle Neolithic, post-marked deposits held more pottery by weight, but this was composed of smaller and lighter sherds than those recovered from the unmarked pits. A picture is beginning to emerge of the deliberate deposition of differentially fragmented sherds, perhaps through selection by size or through deliberate fragmentation; in any case a definite degree of human intentionality is becoming evident.

As a final consideration of the differences between depositional pit-types, it is also interesting that post-marked pit deposits account for a comparatively high number of all the pots found on the site, despite the very small number of pits falling within this classification, i.e.

Post-marked pits = 4.4% of ALL pits on site (not just dated ones)
Post-marked pits contain 31.25% of all pots

Unmarked pits = 64.8% of ALL pits on site (not just dated ones)
Unmarked pits contain 48.75% of all pots

Therefore:

There are 2.5 pots per post-marked pit
There are 0.28 pots per unmarked pit

It seems that, overall, different types of pit received quantitatively different types of deposits. Post-marked pits are emerging, not only as structurally different in form from unmarked pits, but also quantitatively different in terms of the deposition that occurred within them.

Pottery Deposition and Plan Form

Aim

To establish whether there is any connection between the plan form of a pit and the amount of pottery it contained. This is based on the observation (above) that there were two distinct shapes of pit on the site: those that were highly irregular and those that were more regularly ovoid.

Data

Tables 5.11 and 5.12 relate the average minimum number of pots per pit, and the average weight of the pottery in each pit to the pit's shape.

Average Min. No. Pots by Pit Shape

	Earlier	Middle
Regular	1.38	1.71
Irregular	2.60	2.71

Average Weight of Pottery by Pit Shape

	Earlier	Middle
Regular	72.98	226.28
Irregular	313.45	234.21

Tables 5.11 & 5.12: The average minimum numbers of pots and pot weights by pit plan form

Discussion

Regular-shape pits contain a fewer minimum number of pots, but this is not particularly significant as there are a large number of post-holes that are regular in shape, and it has already been established that post-holes contain fewer pots. It is important to remember that this is not a circular argument: pits were not categorised into types on the basis of their pottery counts, only on the presence/absence of posts, and the manner in which these posts were stratified with the other contexts of the pits.

What is most significant here is the vindication of the use of pottery weight as an arbiter of the difference between pits: the absolute differences detected between weights are actually at odds with that data for minimum pot numbers. 'Minimum number of pots' is a rather more subjective statistic, as it relies upon the correct identification of sherds belonging to the same or different pots. When this is combined with the potential for unknown taphonomic factors, pottery weight has to be the more reliable variable. Thus we see that regular Middle Neolithic pits held slightly more pottery than their irregular counterparts, whilst the Earlier Neolithic saw a very large difference, with irregular pits holding far more pottery on average by weight.

Pottery Deposition and Pit Size

Aim

To ascertain whether there is a quantifiable attribute of pits that can be related to the deposition of material culture. General features of pits, such as their shape and type have been discussed, but this is an attempt to relate two mathematically certain variables, rather than interpretative categories.

Data

The graphs and data tables below illustrate the average weight of pottery and the average weight of individual sherds against a linear scale of pit sizes. The indicator of pit size is the long axis; this was chosen over depth due to the possibility of truncation affecting this variable. Note the latter three size classes are larger as fewer pits fall into them. No variable other than weight is considered in this analysis and it was considered inappropriate to try and differentiate these results by Earlier or Middle Neolithic styles of pottery, as this would create size categories too sparsely populated to have any real validity.

Size Range	Avg Pottery Weight	Avg Sherd Weight
0.1-0.25	23.17	15.58
0.26-0.5	77.22	11.72
0.51-0.75	220.05	14.42
0.76-1.0	315.07	32.50
1.01-1.25	90.15	23.21
1.26-2.0	433.78	12.43
2.01-3.0	486.40	24.66
3.01+	73.90	8.68

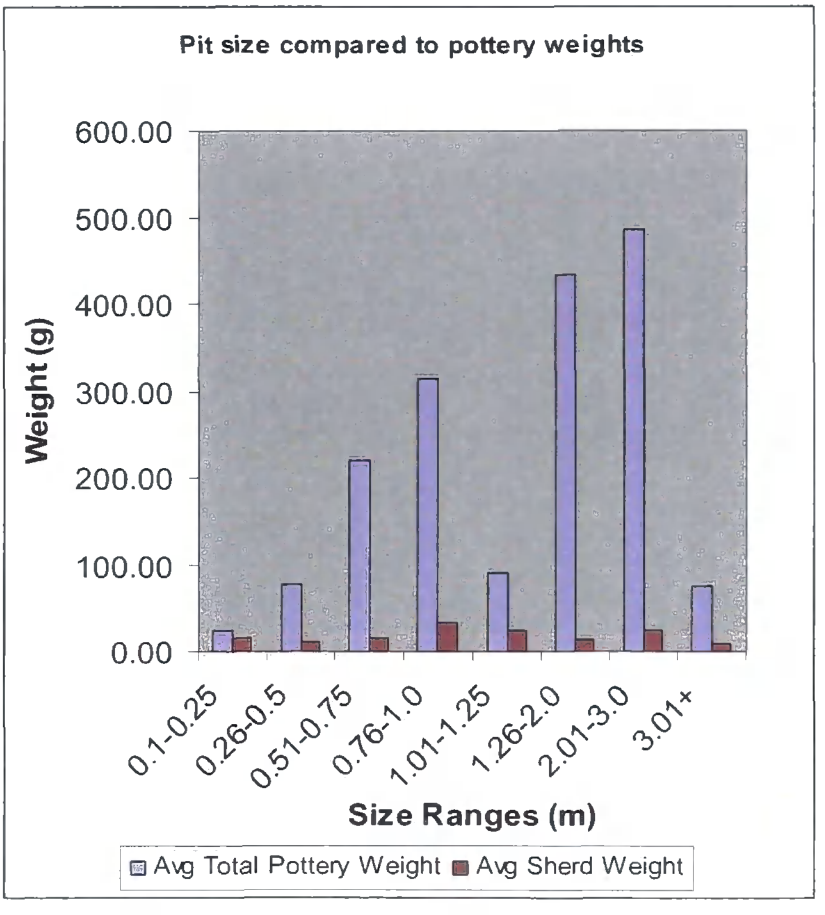


Table 5.13 & Graph 5.2: Average weight of pottery in pits, and individual sherds, by pit size

Discussion

The average weight of pottery per pit increases with pit size; there are two anomalous values but the overall trend is undeniable. What is most significant, however, is the fact that this trend is *not a product of increasing sherd weight*, and concomitantly, nor is it a result of varying sherd size. This is highly significant because it was demonstrated earlier that sherd weights and sizes were directly related to the variable 'pit-type'. Therefore, pit size is *not* the only measure of depositional complexity. However, this analysis does demonstrate that larger pits were likely to contain a greater quantity of pottery. It seems likely, therefore, that the complexity of pit deposition was related to a host of factors surrounding pit shape and type but, cross-cutting these categories, as they became larger they held more pottery. Importantly, the existence of the trends established above, means that deposition at Thirlings **cannot** be reduced to a simple observation that 'deposition gets more complex as size increases'. It may be more likely that pit size increased *as a result* of increases in complexity.

Recutting

The practice of re-cutting pits deserves a brief mention. Only thirteen of the 228 pits on the site showed any evidence of having been recut, and in every case but two, the pits were depositional in character. None of the recut pits contained any evidence for silting between the initial fills and later disturbance, indicating that they were dug, filled and recut almost immediately, as the unstable sands and gravels of the Milfield Basin collapse into open excavations in a matter of days. It is also worth noting that none of the pits on the site ever inter-cut; i.e. a later episode of pit-digging never disturbed an earlier feature. The interpretation of this pattern of activity, indeed, how it is possible given the large number of pits on the site, is considered in chapter six.

Summary

These analyses have concerned the identification of trends and associations between pottery deposition and both measured and interpretative variables, which can be summarised as follows. Note that point 1 is not a circular argument, as pits were characterised on their form, not the presence of material culture.

1. Post-holes always contain fewer minimum numbers of pots than depositional pits.
2. Using 'minimum number of pots' and 'number of sherds' the Earlier Neolithic saw a slightly greater degree of pottery fragmentation and overall deposition in post-marked pits compared to unmarked pits.
3. In addition to the above, when total pottery weights were considered this difference became more obvious.
4. Middle Neolithic post-marked pits contained 42% more pottery on average than the period's unmarked pits, but this was composed of lighter, smaller sherds. Unmarked pits held less pottery overall, but the individual sherds were 94% larger and heavier.
5. When all pits are considered, post-marked pits contain a higher proportion of the site's pottery despite being far fewer in number than other types.
6. In the Earlier Neolithic irregular pits held far more pottery than regular pits; there was a much smaller distinction in the Middle Neolithic.
7. Pit size is a useful indicator of the amount of pottery a pit is likely to contain: the two variables are arithmetically linked, but this does not account for the other relationships above.

These points can be combined to produce two major observations. First, post-marked pits saw larger amounts of deposition. Second, and more specifically related to material culture: in the Middle Neolithic different degrees of pottery fragmentation were related to the physical marking of a pit with a vertical post or series of posts. Thus, as the physical complexity of a pit increased so did the amount of deposition that occurred within it, inasmuch as a proliferation of post-marking can be interpreted as a more complex form of pit deposit. Finally, we must consider the direction of the analyses as a consequence of these results. At the risk of pre-empting later discussion, the fact that certain trends have been identified certainly should not imply that we are ready to speak of a 'grammar' of pit deposition, or postulate pre-determined plans of ideal pit types. Rather, the above has united deposition with pit type, and the analysis must now turn to the specific character of the potsherds that comprise these deposits.

Pottery Abrasion

It has been demonstrated that differentially fragmented sherds were deposited within different types of pit. Particularly in the Middle Neolithic, it seems likely that there was a process of *deliberate selection* of pot/sherds for burial based on size. This analysis is designed to identify the processes that generated these sherds; either as the result of conscious human action or by more general taphonomic factors. Before proceeding to the analyses, a brief introduction to the principles of ceramic abrasion will be provided, as well as an appreciation of the methodological procedures followed. The various statistical analyses can be divided into two broad scales: those which take all the sherds from an individual *pit* as the unit of analysis, and those concerned with sherds from the same *pot*. As with earlier tests, the aims and data for each analysis are provided at the relevant juncture.

The overarching principle behind studies of abrasion is that the present condition of a pottery sherd provides indications as to the processes that created that condition (Schiffer and Skibo 1989, 101). The analysis of abrasion is concerned with the quantification of the degree of erosion that has judged to have acted upon a pottery artefact prior to excavation. The analysis does not presuppose that this abrasion occurred pre- or post-deposition, though it is usually the case that abrasion largely ceases upon burial (*ibid.*, 90). At its most basic, abrasion usually dictates that sherds with a long history of post-breakage disturbance, such as trampling, will get smaller through time, and the number of sherds will increase (Bradley and Fulford 1980, 86). The fragmentation of ceramics usually stops when the size reached provides enough stability to resist further breakage (Schiffer 1987, 129).

Methodological Procedure

The method in this study largely follows, with a few variations, that described by Sørensen (1996) in her consideration of the middened pottery deposits at the Bronze Age site of Runnymede Bridge. The aim in Sørensen's study was to examine abrasion as an indicator of archaeological deposit formation, *not* as an indicator of artefact based activity prior to deposition. In this sense it differs from the concerns here, where we can be relatively certain that deposition was a discrete activity and abrasion was therefore a direct consequence of exclusively pre or post-depositional activity. As a result Sørensen's levels of abrasion were relatively simplistic (1996, 67), and organised on three levels 'low', 'medium' and 'high', which covered abrasion to both the edges and the surfaces together. For the analysis of the Thirlings material Sørensen's scheme has been slightly elaborated, into four levels for edge abrasion. They are as follows:

1. None or very little abrasion - very fresh breaks, unpatinated core colour, sharp edges, very rough texture, and extruding grains of temper.
2. Low abrasion - edges maintain sharpness but markedly extruding edges and temper are worn, core colour generally still fresh but texture is slightly smoother.
3. Medium abrasion - points and edges are now worn blunt, temper no longer extrudes, texture of core noticeably smooth, core colour is dull or patinated.
4. High abrasion - sherd is heavily rolled: surfaces have receded from core and core worn smooth, presenting a rounded effect, core is heavily stained and altered.

In this study, assessment of abrasion was undertaken for every sherd in the dataset and, crucially, within the same two-day period. As this analysis is essentially subjective, and its judgements largely relative between sherds, it was important to examine all sherds as a group to ensure a similar treatment was applied to each. This assessment was undertaken at the same time as the sherds were measured and weighed.

Average Abrasion in Pits

Aim

To assess whether any particular level of abrasion characterised the sherds from Thirlings, and whether the distribution of these abrasion levels was statistically significant. As earlier tests demonstrated that the character of individual pits was important in defining deposition, here the individual pit is taken as the unit of analysis, and their abrasion values are considered.

Data

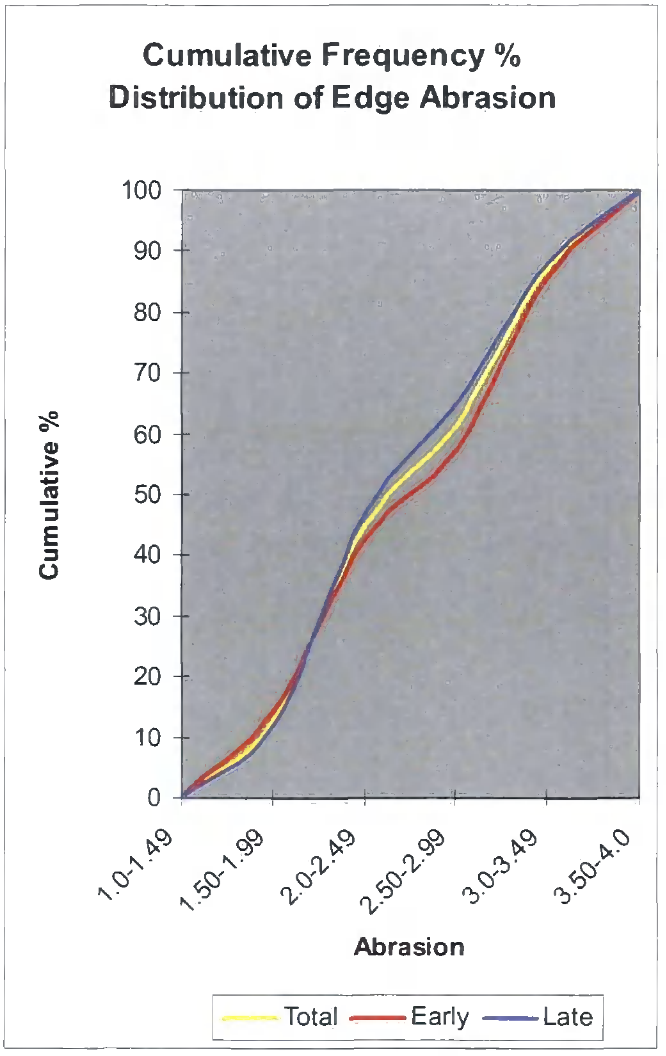
The abrasion table cannot be displayed as it has 279 entries; however, this data can be found in appendix 3. The following tables and graph display the frequency of average edge abrasion levels across the pits on the site; the graph presents cumulative frequencies in order to compare Earlier and Middle Neolithic data.

Earlier Neolithic

Range	Freq	Cum. Freq	Cum. %
1.0-1.49	0	0	0
1.50-1.99	2	2	14.29
2.0-2.49	4	6	42.86
2.50-2.99	2	8	57.14
3.0-3.49	4	12	85.71
3.50-4.0	2	14	100

Middle Neolithic

Range	Freq	Cum. Freq	Cum. %
1.0-1.49	0	0	0
1.50-1.99	2	2	11.76
2.0-2.49	6	8	47.06
2.50-2.99	3	11	64.71
3.0-3.49	4	15	88.24
3.50-4.0	2	17	100



Tables 5.14 & 5.15, Graph 5.3: The frequencies and distribution of edge abrasion levels at Thirlings by pit; the scale is decimal to account for averages originating in pits that held differing abrasion levels.

These distributions can be directly compared using Kolmogorov-Smirnov (KS) tests. Using a KS test for distribution, the cumulative percentages can be compared to assess the degree of randomness present (Fletcher and Lock 1991, 101). This will demonstrate whether the average abrasion values in the pits are likely to be the result of deliberate choice (i.e. skewed towards a particular degree of abrasion), or just a random sample of the potential abrasion values. This test requires comparison of the test statistic (*D*) with the KS one-sample test table (appendix 4.6). *D* in this case is the largest difference between the actual cumulative distributions and a notional series based upon a random distribution (an equal frequency in each of the abrasion classes). Full tables and working for this test can be found in appendix 4.1.

Kolmogorov-Smirnov One Sample Test for Random Distribution

Earlier Neolithic
For a random distribution D must be less than 34.9 (95% probability)
D = 19.04 - the distribution is random.

Middle Neolithic
For a random distribution D must be less than 31.8 (95% probability)
D = 21.56 - the distribution is random.

These two distributions can also be tested to ensure that they come from the same population (Fletcher and Lock 1991, 111), i.e. that when compared with each other they do not differ significantly. This is undertaken with two-sample KS test, using the KS table in appendix 4.7.

Kolmogorov-Smirnov Two Sample Test

For the two populations to be different, the result must exceed 111

n.A x n.B x D/100

n.A and B refer to the size of the Earlier and Middle samples (14 & 17)
D = the maximum difference in their cumulative percentage (7.56)

14 x 17 x 7.56/100 = 18 - they are from the same population (95% probability)

Discussion

Statistically, these tests demonstrate that a) the average abrasion values of potsherds are randomly distributed amongst pits, and b) there is no difference between the two periods considered. The indication is, therefore, that potsherds were not selected for deposition on the basis of their level of abrasion.

Average Abrasion by Pit Type

Aim

To directly establish whether different types of pits held pottery that was differentially abraded. It was established earlier that different types of pit, either post-marked, unmarked or posthole, displayed significantly different levels of deposition and, in some cases, pottery fragmentation. Given these differences in fragmentation, it is important to establish whether these result from differential abrasion.

Data

The following table relates the three pit types to the average level of abrasion found on the sherds within them.

	Abrasion	
Type	**Edge**	**Surface**
Post-Marked	2.28	1.40
Unmarked	2.68	1.75
Posthole	2.59	1.75

Table 5.16: Average abrasion levels by pit type

Discussion

There are too few classes to interrogate these values statistically, and visually the raw numbers are unimpressive at first glance. It is important to remember that these values are averages within a very narrow range of possibilities: they can only exist between the values of 1 and 4. It is apparent that unmarked depositional pits and postholes experienced slightly greater edge abrasion than post-marked features, but the differences are too small to be considered particularly significant. The low 1.4 value for the surface abrasion of sherds from post-marked pits, however, does seem to indicate a different process of weathering in that instance.

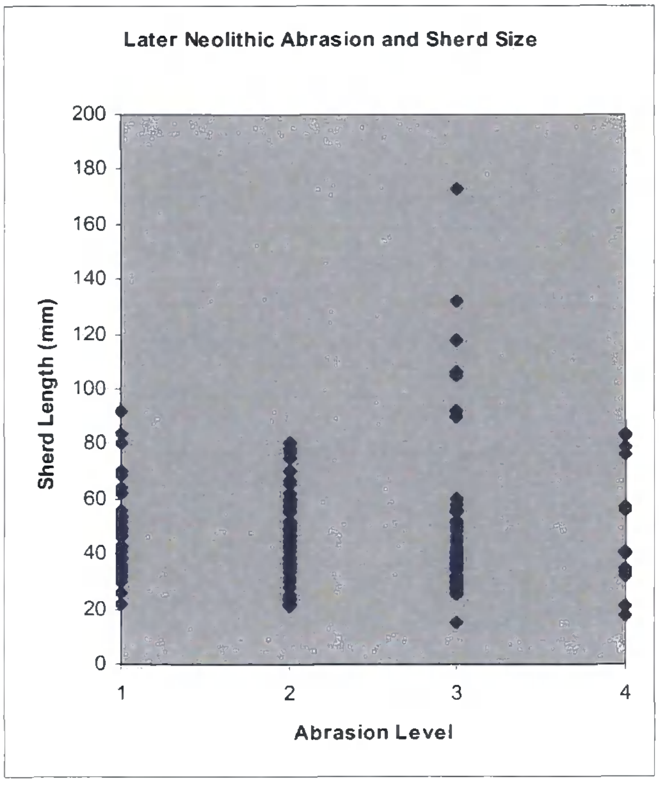
Abrasion and Sherd Size

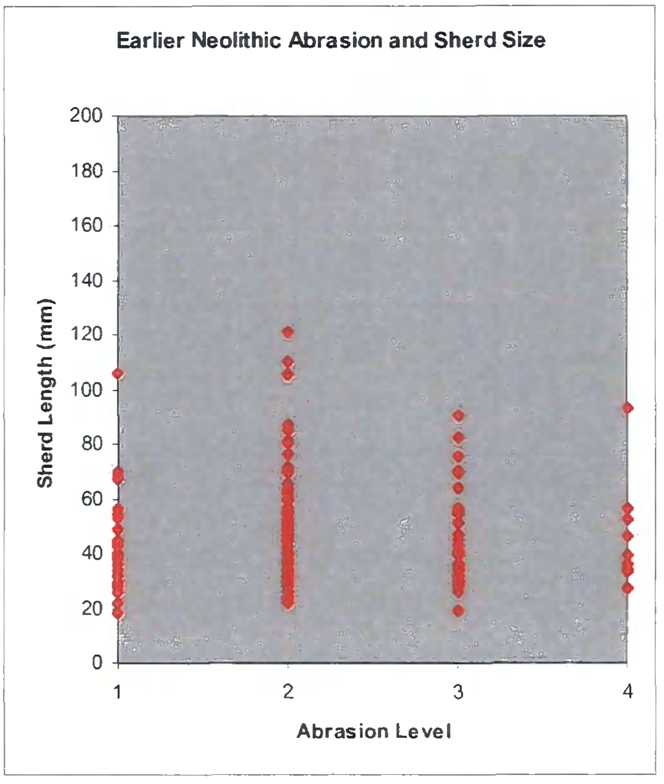
Aim

To assess whether sherd size decreases when abrasion increases. Given the lack of direct associations established in the previous two tests, and the general trend from previous studies, for sherd size to decrease as abrasion increases (Bradley and Fulford 1980, 86), it is important to attempt to relate abrasion to another variable.

Data

Graphs 5.4 and 5.5 display the abrasion of sherds plotted against their length along the longest axis.





Graphs 5.4 & 5.5: Scatter plots of abrasion level against sherd size

This is better analysed through statistical testing; in this case through the use of Kendall's Tau, a test measuring the level of association between two ordinal variables (Fletcher and Lock 1991, 135). Tables 5.17 and 5.18 contain the data required. In order to undertake this analysis, both sets of variables must be categorical, thus the length data has been grouped into twenty millimetre units, aside from the upper two classes, which are larger. Tau-c is used as the tables are not square. See appendix 5.1 for the full workings.

Earlier Neolithic Sherd Lengths and Abrasion Levels

	Sherd Length						
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+	**Total**
1	1	26	9	3	1	0	**40**
2	0	54	25	11	6	1	**97**
3	1	29	12	4	2	0	**48**
4	0	9	3	0	1	0	**13**
Total	**2**	**118**	**49**	**18**	**10**	**1**	**198**

Middle Neolithic Sherd Lengths and Abrasion Levels

	Sherd Length						
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+	**Total**
1	0	22	21	6	2	0	**51**
2	0	24	29	8	0	0	**61**
3	1	27	20	0	5	2	**55**
4	1	5	3	2	2	0	**13**
Total	**2**	**78**	**73**	**16**	**9**	**2**	**180**

Tables 5.17 & 5.18: Frequency of abrasion levels within each division of sherd length

Kendall's Tau (τ) Test of Association

A result near 0 indicates no association between the variables, a result near -1 or 1 indicates association

$$\tau = \frac{2k(P-Q)}{n^2(k-1)}$$

n = total frequencies (198 & 180 respectively)
k = number of rows or columns, whichever is smaller (4 rows)
P = sum of every cell multiplied by the frequencies in every cell below and to the right
Q = sum of every cell multiplied by the frequencies in every cell below and to the left

Earlier Neolithic
$\tau = 0.001$ – no association

Middle Neolithic
$\tau = -0.031$ – no association

Discussion

Kendall's Tau indicates that the size of a sherd is not related to its level of abrasion. Sherd sizes do not drop as abrasion levels increase, and this indicates that abrasion was not the result of the processes that caused sherd fragmentation. We must therefore postulate a disconnection between abrading and fragmenting processes. There is no significant difference between the Earlier and Middle Neolithic in this respect.

Consistency in the Abrasion of Sherds from the Same Pot

Aim

To establish whether sherds from the same pot experienced similar levels of abrasion, and therefore whether they were exposed to similar abrading processes. Obviously, all the sherds from a pot are very unlikely to have identical abrasion states, but it is important to identify those pots in which there is a high degree of variation.

Data

Tables 5.19 and 5.20 calculate the *coefficient of variation* (*V*) (the standard deviation divided by the mean) present in the abrasion levels of the sherds; this demonstrates how far from a mean level of abrasion sherds are likely to vary, by characterising whether the spread of the standard deviation is large or small. The coefficient of variation (*V*) is always between zero and one, closer to one means a wide spread of values (i.e. a large standard deviation and a wide variety in abrasion levels), whereas closer to zero means a tight spread of values (i.e. a small standard deviation and low variety in abrasion values) (Fletcher and Lock 1991, 49). Not every pot has been examined, as the results are rather meaningless in cases where a pot is represented by only a single sherd; only pots represented by a minimum of four sherds have been included.

Earlier Neolithic

Pot No.	Sd. Dev.	Mean	*V*
31.1	0.47	1.67	0.28
36.2	0.43	2.75	0.16
46.3	0.49	2.40	0.20
48	0.71	1.93	0.37
48.1	0.90	2.57	0.35
48.6	0.67	2.67	0.25
52	0.43	2.25	0.19
71.1	0.43	1.75	0.25
71.3	0.68	1.68	0.40
76.1	0.69	1.83	0.37
113	0.75	2.80	0.27

Middle Neolithic

Pot No.	Sd. Dev.	Mean	*V*
57.1	1.03	2.67	0.39
57.9	0.00	2.00	0.00
69	0.64	1.42	0.45
69.1	1.15	2.00	0.58
69.2	0.83	2.25	0.37
69.3	0.50	1.50	0.33
72.2	0.52	1.26	0.41
80.1	0.87	2.50	0.35
84	0.30	2.90	0.10
86	0.00	3.00	0.00
94.1	0.45	2.71	0.17
95.1	0.64	2.36	0.27
114.1	0.58	2.00	0.29
114.2	0.37	2.17	0.17
117	0.47	2.33	0.20

Tables 5.19 & 5.20: Variance from mean abrasion values for sherds from individual pots

All of the values but one are comfortably lower than 0.5 and thus there is low variance amongst sherds from the same pot. We are able to state, therefore, that sherds from the same pot share similar abrasion values. To quantify differences between the Earlier and Middle Neolithic the average variance for each period can be calculated. For the earlier deposits the mean variance is 0.28, and for the later 0.27; there is no appreciable difference between the two periods. It is likely, therefore, that sherds from the same pot were kept together following breakage and treated in a similar manner, as their abrasion values show low variance.

Consistency in the Abrasion of Sherds from the Same Pit

Aim

To establish whether sherds from the same pit experienced similar levels of abrasion, and therefore whether they were exposed to similar abrading processes, regardless of the number of pots present,

Data

As with the previous analysis, the *coefficient of variation* (V) must be calculated for the sherds from each pit, once again, pits represented by anything lower than four sherds are omitted.

Earlier Neolithic

Feat. No.	Sd. Dev.	Mean	V
369	0.79	1.91	0.42
383	0.43	2.75	0.16
407	0.50	2.50	0.20
366	0.75	2.05	0.37
411	0.43	2.25	0.19
581	0.76	1.77	0.43
663	0.76	2.00	0.38
1827	0.75	2.80	0.27

Middle Neolithic

Feat No.	Sd. Dev.	Mean	V
466	0.85	2.33	0.36
615	0.97	1.81	0.54
643	0.76	1.40	0.54
628	1.12	2.50	0.45
1034	0.30	2.90	0.10
1044	0.00	3.00	0.00
1275	0.45	2.71	0.17
1300	0.74	2.14	0.35
1858	0.49	2.08	0.24
1898	0.47	2.33	0.20

Tables 5.21 & 5.22: Variance from mean abrasion values for sherds from individual pits

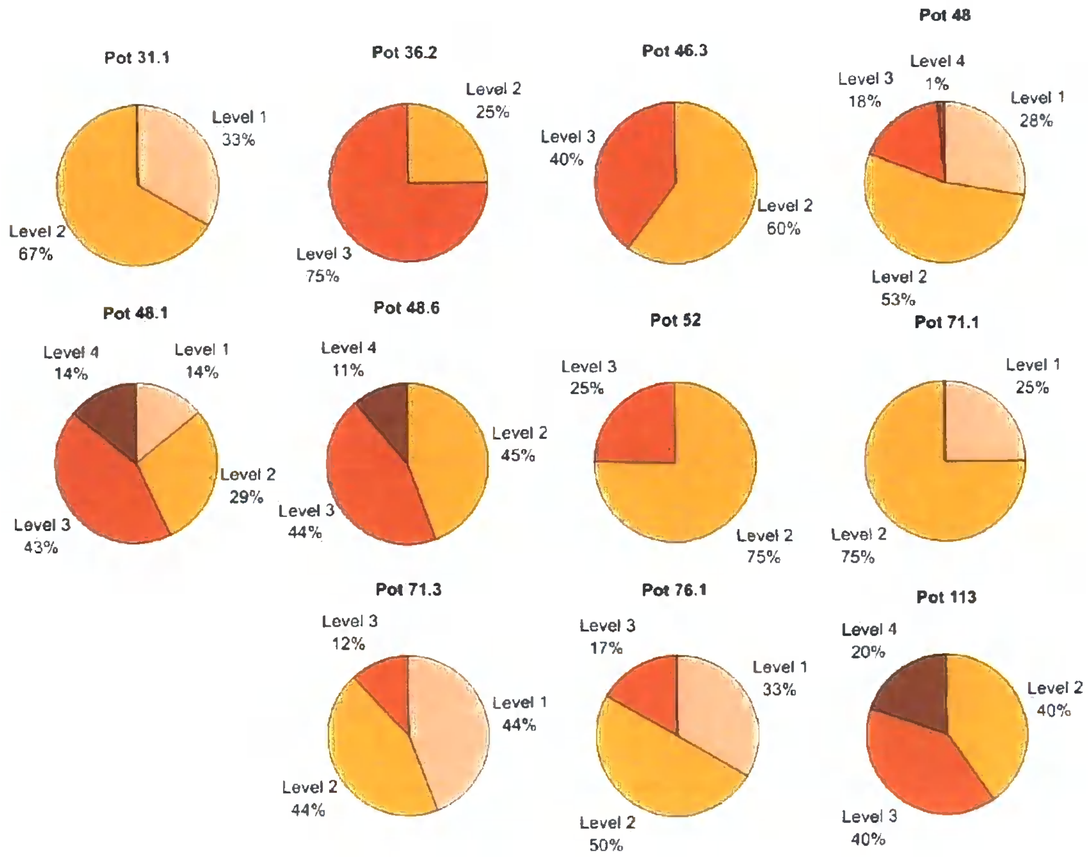
Discussion

The results here are largely the same as in the previous analysis. Although the Middle Neolithic has two pits with values of 0.54, low V values predominate. They demonstrate that all the sherds within a pit were treated in a generally similar manner. The average variance for the Earlier Neolithic is 0.30, whilst the Middle Neolithic records a value of 0.29; again very similar. This analysis shows that sherds that were deposited in the same pit were probably kept together, because there is a low variance in their abrasion values. Yet, the differences between the individual variance values of each pit are quite high, meaning that differences may have existed in the way the sherds that ended up in different pits were treated. We know from the Kolmogorov-Smirnov tests (above) that sherds were not *chosen* for deposition based upon these levels of abrasion, as statistically these are random.

The pie charts on the following pages (figures 5.8 and 5.9) provide a degree of visualisation for the results of the preceding two tests. These charts are divided into Earlier and Middle Neolithic results. In the top half of each page the abrasion of sherds *from the same pot* are displayed as percentages, each pie chart representing one pot. The pie charts on the lower half of the pages are similar but represent the abrasion of sherds *from the same pit*, with each pie chart representing one pit.

Earlier Neolithic

The differing levels of abrasion on the sherds of individual pots



The differing levels of abrasion on all the sherds within pits

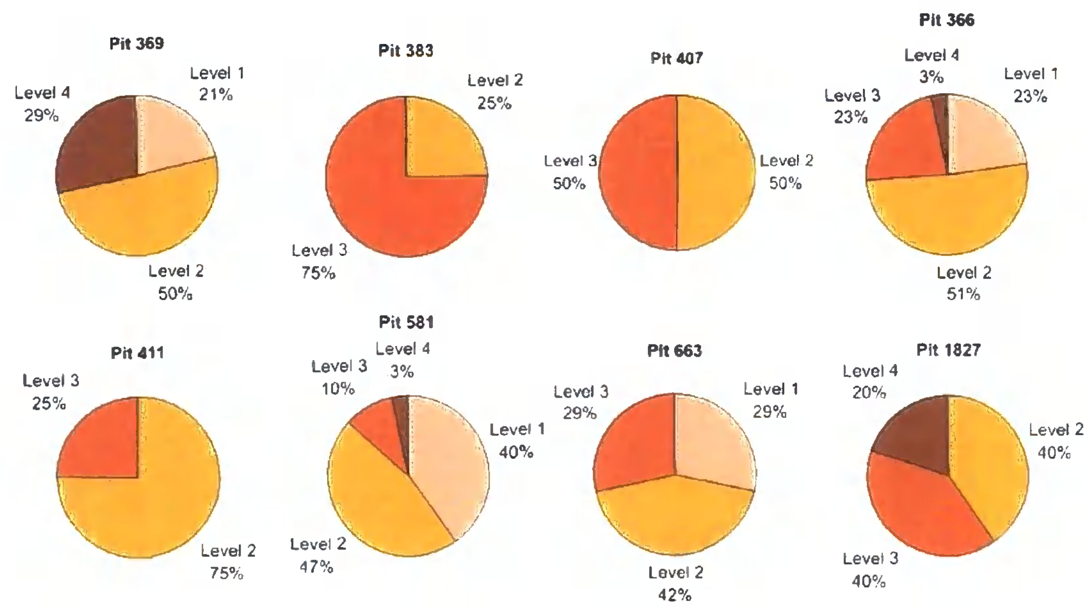
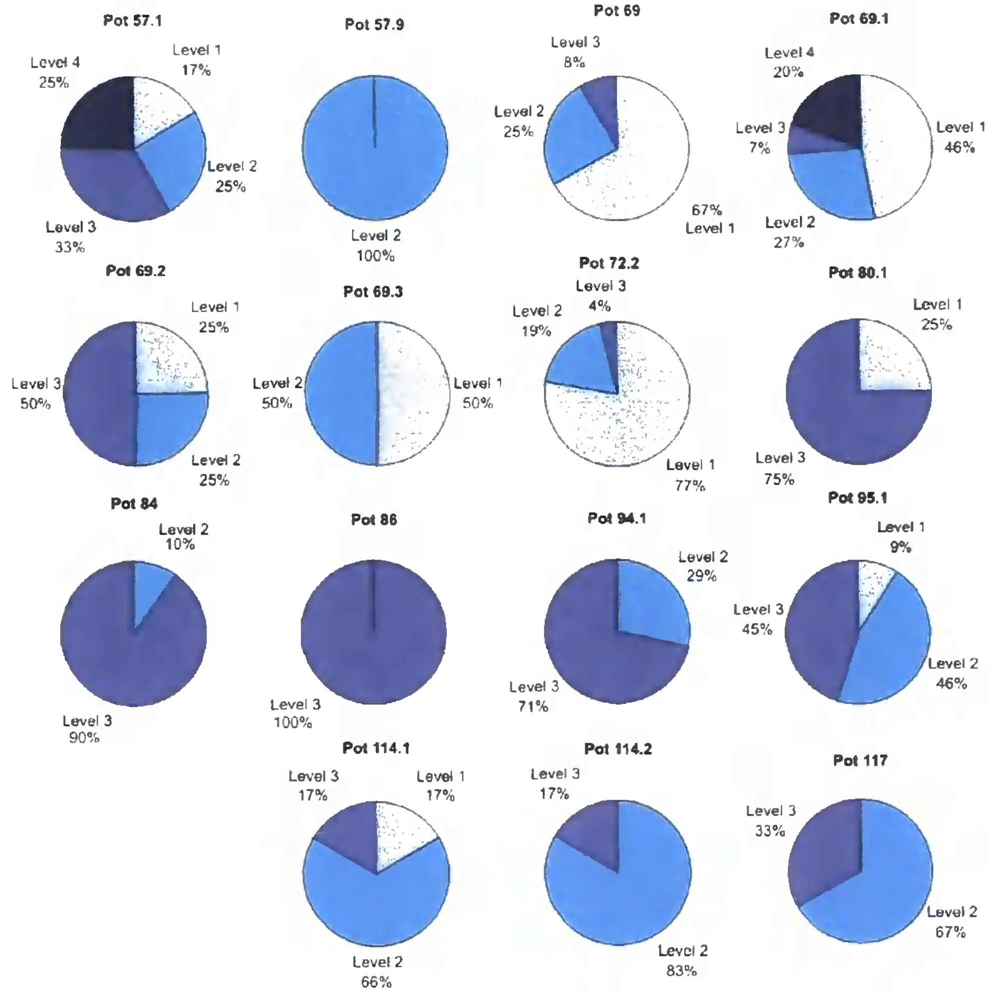


Figure 5.8: Pie charts displaying relative levels of abrasion amongst Earlier Neolithic pots and pits

Middle Neolithic

The differing levels of abrasion on the sherds of individual pots



The differing levels of abrasion on all the sherds within pits

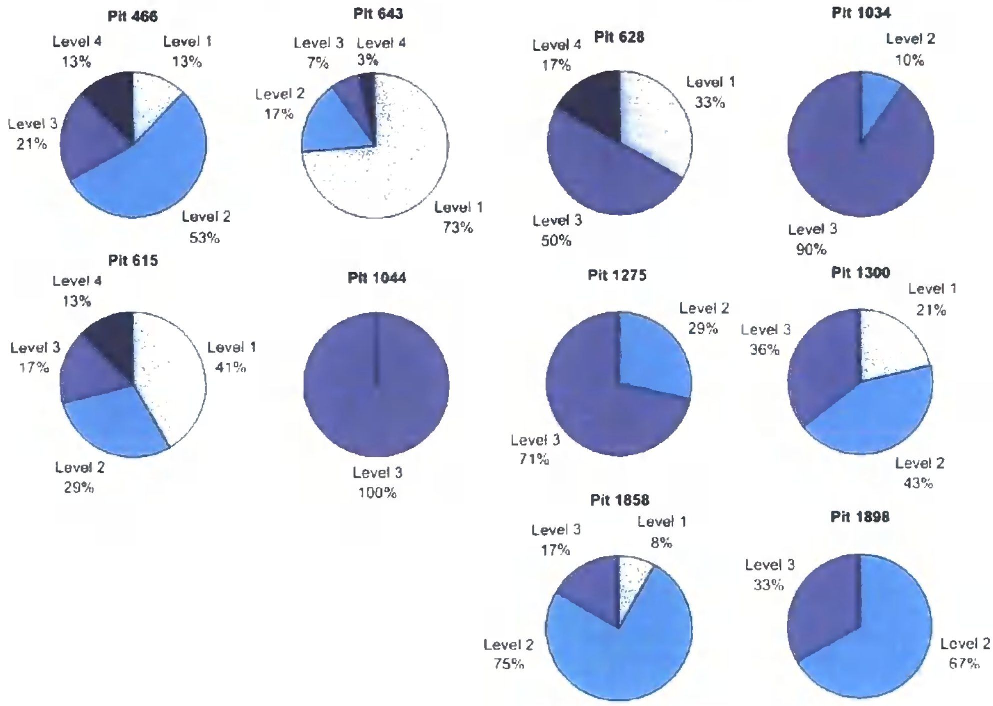


Figure 5.9: Pie charts displaying relative levels of abrasion amongst Middle Neolithic pots and pits

Summary

The following trends have been observed:

1. No particular level of abrasion characterises the site, statistically the abrasion levels conform to a random distribution.
2. Unmarked pits and postholes experienced slightly greater average abrasion than post-marked deposits, though this is unlikely to be significant given point #1.
3. **Fragmenting and abrading processes are disconnected on the site, contrary to what is normally to be expected.**
4. Sherds from the same pot are similarly abraded.
5. Individual pits held sherds that were all similarly abraded, but there were differences in average abrasion between pits.

It has already been demonstrated that the deposition of differentially fragmented potsherds was definitely of concern, especially between post-marked and unmarked pits in the Middle Neolithic. The abrasion data introduces a further factor: fragmentation was not the direct result of abrading processes. So, if the level of fragmentation of sherds in pits was not the result of pre-depositional random abrasive action or taphonomic factors, the only remaining alternative is that it was the result of *deliberate choice*. This could take two forms. Sherds could have been fragmented down to the desired size on breakage, or at a later point sherds could have been selected for deposition based upon size. Yet, whilst fragmentation levels were deliberate, it is clear that *abrasion levels were not*, as they are statistically random.

However, because there is also a range of abrasion values present and not every sherd was freshly broken, potsherds must have a) suffered some form of abrading process(es) that *did not lead to further fragmentation*, and b) suffered these abrading process(es) for differing lengths of time or at different intensities. It seems that sherds from the same pot were treated similarly, as there is low variance in their abrasion values, and this is broadly true for all the sherds from the same pit too. Yet between pits there are differences in this variance. If we combine this observation with the fact that there is only one example of inter-pit sherd refitting, then it seems that sherds ending up together in the same pit were probably stored together prior to deposition. As there are differences in abrasion between pits, either the length of this storage period varied, or the intensity of the abrading process(es) changed.

Spatial Analysis

Neolithic deposition at Thirlings was clearly a complex matter: varied associations existed between the types of pit present and the material culture that was used to fill them. This section is aimed at analysing whether these patterns extended to the spatial relationships between pits; whether the distribution in space of variables such as pottery quantity, pit type, etc, referenced the connections we have already established. Toward this end, analyses are presented under two broad headings: the pits producing datable material, and the undated pits; obviously, more time is spent considering dated examples, as it is these that yielded material culture. For the pits that produced datable material the analysis will proceed from simple concerns, such as raw pit distribution, to relational variables, including the distribution of pits by pottery quantity and pottery abrasion. Analyses concerning every pit on the site are focused more towards the understanding of any potential structures, although the degree to which clusters of dated and undated pits can be considered Neolithic is also addressed.

Much of the data presented in this section is displayed as it was produced in the Geographical Information Systems computer application ArcMap, from the ArcGIS 9 suite of programmes. This application has been instrumental in much of the spatial statistical analysis that is undertaken and its utility extends beyond the creation of attractive site plans. The results of individual analyses can be found as in-text mapping, although it will be useful to refer to the large site plan presented at the beginning of the chapter (figure 5.1), especially concerning the location of specific pits and/or pit clusters. It should be noted that on all in-text plans the distribution of the pits is geographically correct, whilst the actual pit icon is always a schematic data point: the shape, therefore, is idealised.

Datable Pits: Distribution by Period

Aim

To identify whether pits assignable to either the Earlier or Middle Neolithic were spatially segregated or clustered in a recognisable fashion.

Data

The distribution of the pits is displayed in figure 5.10.

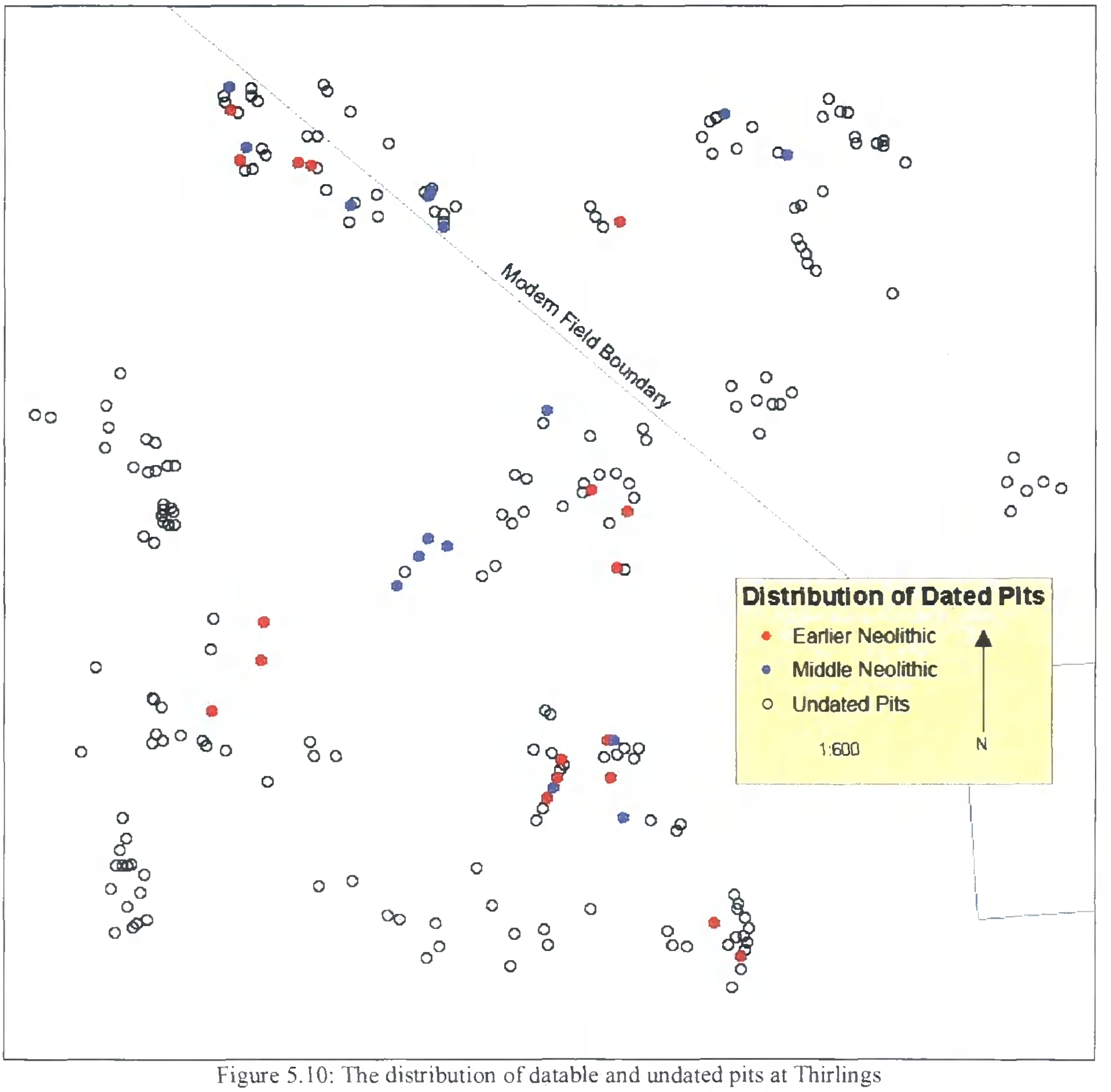


Figure 5.10: The distribution of datable and undated pits at Thirlings

The statistical significance of this distribution can be assessed using Nearest Neighbour Analysis in ArcMap. This test produces a ratio as the test statistic, by calculating the average observed distance between the pits of the two periods, and comparing with the expected distance if they were spread randomly across the maximum area.

Nearest-Neighbour Analysis

Ratio (test statistic) must be <1 to exhibit clustering, >1 dispersion

Earlier Neolithic
Expected mean distance between pits (hypothetical random) = 9.71m
Observed mean distance between pits = 6.20m
Ratio (test statistic) = 0.63
Confidence = 99% (3 Standard Deviations)

Middle Neolithic
Expected mean distance between pits (hypothetical random) = 9.54m
Observed mean distance between pits = 6.45
Ratio (test statistic) = 0.67
Confidence = 95% (2 Standard Deviations)

Discussion

Statistics, therefore, bear out an initial visual conclusion that the pits of both periods exhibit a degree of clustering, with Middle Neolithic pits slightly less-so than Earlier, but with both at a confidence level of at least 95%. This, of course, does little to alter the fact that both periods appear thoroughly mixed on the site. It is fair to state that the pits in which datable material was deposited do form recognisable clusters; indeed, the formation of L-shaped clusters that held relatively large numbers of datable remains seems to have been a deliberate strategy.

It is also worth noting that the truncation of Neolithic deposits by later activity, potentially resulting in their total removal, would not affect this test. The nearest neighbour analysis only concerns, literally, a pit's nearest neighbour within the same class (in this case Earlier versus Middle Neolithic). The non-existence of pits in certain parts of the site would only affect pits immediately surrounding those areas. Yet the effect of large empty areas is very limited as all the pits are in tight groups, and no pits are isolated without close neighbours. It is also unlikely that the areas where pits have potentially been removed contained a significantly different amount or distribution of dated pits, given their even distribution across the rest of the site.

Datable Pits: Distribution by Pottery Quantity

Aim

To ascertain whether any particular areas of the site were subject to differential levels of deposition, represented by pottery weight per pit. Such differences may indicate zonation either in activity on the site, or in depositional practice.

Data

Figure 5.11 displays the distribution of pottery by weight in each of the pits.

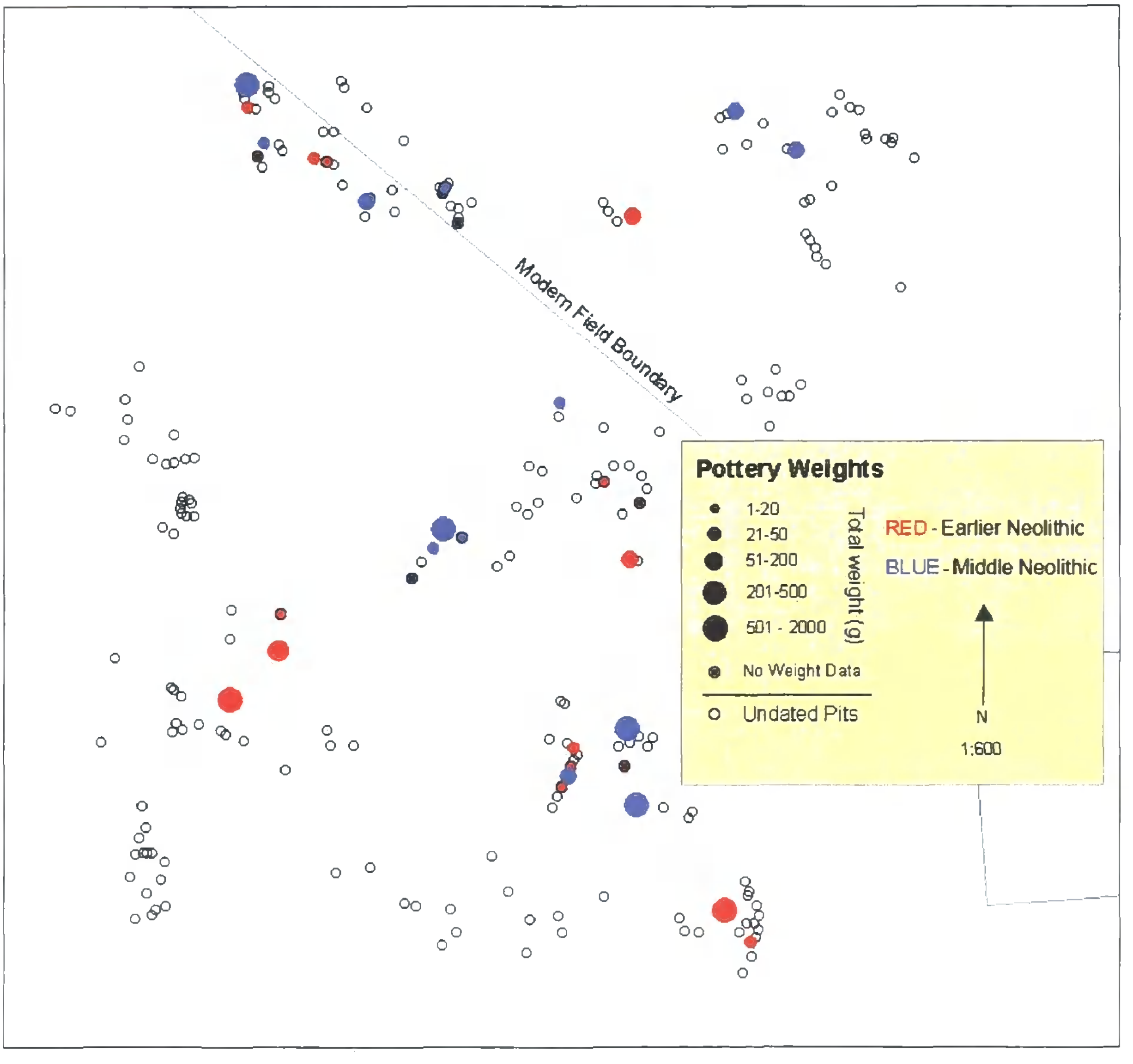


Figure 5.11: The distribution of pottery by total weight per pit, note the logarithmic quantity scale.

The relationship can be examined statistically using a spatial autocorrelation test known as Morans *I*. This assesses the patterning in a set of features based upon spatial proximity and a set of attribute values; in this case it measures whether there is any spatial patterning in the weight of pottery in pits. The test is designed to produce a judgement as to whether such attributes are deliberately clustered, dispersed, or appear random. This test was undertaken using ArcMap and returned the following results.

Morans I Test for Spatial Association

An I score near 1 represents clustering, near -1 dispersion

Earlier Neolithic
100m range = 0.06 Random
10m range = 0.10 Random

Middle Neolithic
100m range = 0.10 Random
10m range = 0.14 Random

This can be compared with our other statistics based upon minimum pottery *numbers*:

Earlier Neolithic
100m range = 0.01 Random
10m range = 0.08 Random

Middle Neolithic
100m range= 0.12 Random
10m range = 0.15 Random

Discussion

First, the visualisation reveals a possible, but rather weak trend: each cluster of pits contains one with a disproportionately large quantity of pottery compared to the others. This is, perhaps, a sign of differentiation between pits on the basis of their contents. Second however, across the site the distribution of pottery weight is statistically random. Note that at a notional 10m range, representing the relationship between closely proximal pits, the result is very similar, and nearly as random, as the 100m range representing pan-site distances. There is, therefore, no spatial clustering between pits based upon the amount of pottery deposited within them, and we must further examine the association between pits that have large pottery deposits and those that have none.

Datable Pits: Distribution by Abrasion Level

Aim

To assess whether the patterns of abrasion established in the previous section are manifested by any patterns in distribution across the site.

Data

Figure 5.12 (following page) displays the distribution of abrasion levels across the site, differentiating between Earlier and Middle Neolithic deposits. In this analysis, the mode rather than mean (average) value for abrasion has been used; thus the amount displayed is the most 'popular' level of abrasion amongst the sherds within a given pit. It is impossible, in spatial terms, for a pot to have an abrasion level of 2.2, as it must be a whole number; the use of such mean-based figures was appropriate when considering pit-types statistically, but does not serve a visual identification of patterning.

The distribution can be considered statistically in exactly the same manner as the distribution of pottery, using the Morans *I* test in ArcMap. Again, the tests consider the relationships between pits at both ten and one hundred metre cut-off values.

Morans I Test for Spatial Association

An I score near 1 represents clustering, near -1 dispersion

Earlier Neolithic
100m range = 0.62 Weakly Clustered
10m range = 1.22 Clustered

Middle Neolithic
100m range = -0.54 Weakly Dispersed
10m range = -0.72 Dispersed

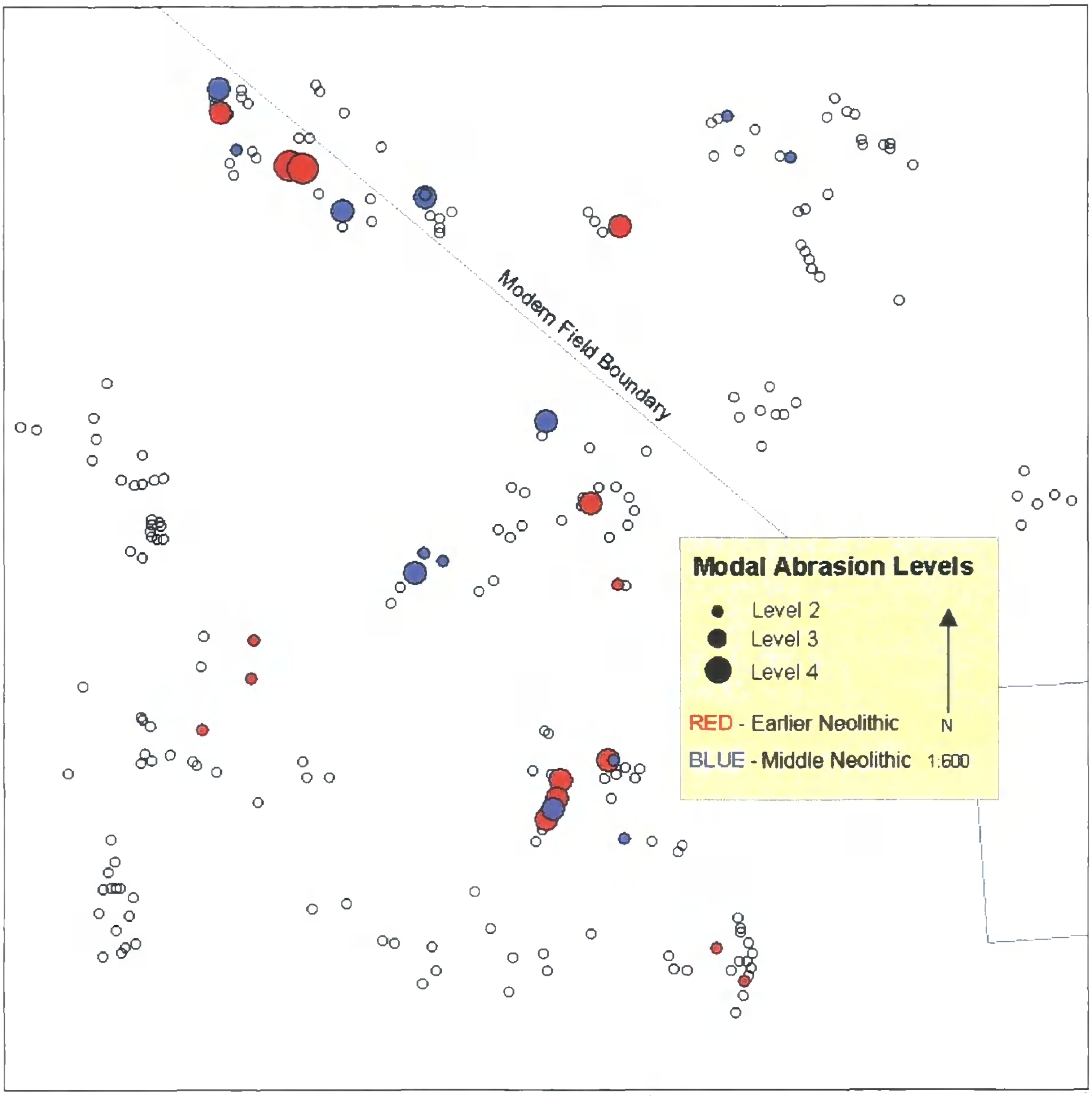


Figure 5.12: The distribution of modal abrasion values

Discussion

In the Earlier Neolithic it appears that pits within ten metres of one another contained pottery with similar modal abrasion values. This trend does not extend to the Middle Neolithic, where there is a tendency for abrasion values to be overtly differentiated within ten metres. Given that earlier analyses established that the sherds within the same pit were probably treated in a similar manner, the patterns here indicate one of two further possibilities for the Earlier Neolithic: a) that pits in close proximity, sharing similar abrasion values, may have been dug at a similar time; or b) such pits were dug at widely different times, yet held pottery which was weathered for a similar duration. Concomitantly, the Middle Neolithic saw the opposite: either deposition at different times, or merely different degrees of weathering. Occam's Razor may dictate the second possibility the more likely for both periods. Finally, it should be remembered that across the whole site (the 100m range) the patterns were much weaker, indicating that these results should only be considered significant for closely proximal pits, and that overall the distribution of abrasion values were more random. We are left with the conclusion that, whilst abrasion data has the potential to inform us directly about the formation of individual deposits and closely proximal pits, it has a lesser connection with deposition across the whole site.

Datable Pits: The Distribution of Pit Types

Aim

To ascertain whether there are any patterns in the distribution of the three pit types: post-marked deposition, unmarked deposition, and postholes. An earlier analysis confirmed the validity of these types when it was observed that post-marked depositional pits held the greatest proportion of the site's pottery deposits. It is of considerable interest, therefore, whether any such patterns are reinforced when variability across the whole site is considered. Figure 5.13 displays the distribution of the different pit types.

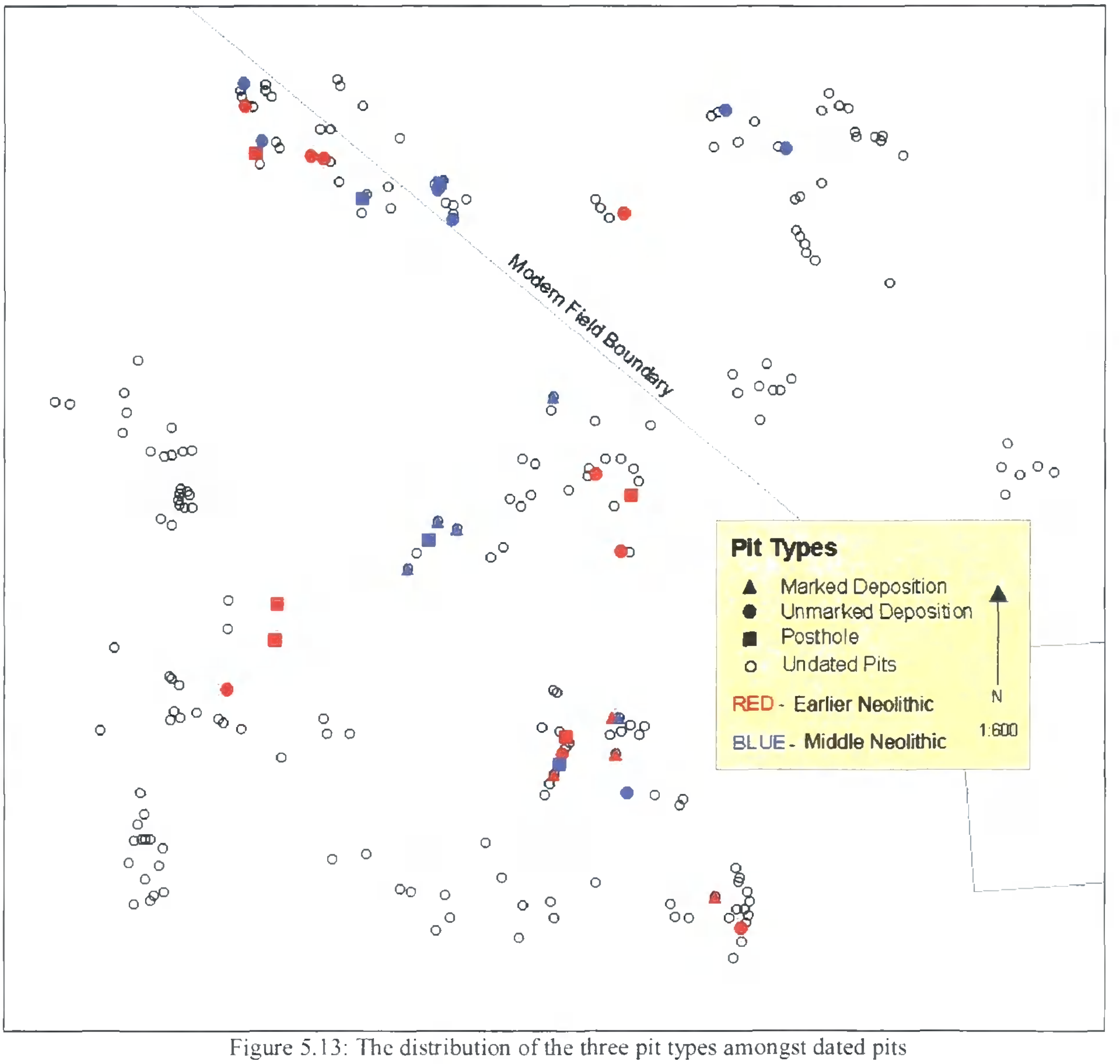


Figure 5.13: The distribution of the three pit types amongst dated pits

Discussion

There is very little scope in the plan for the identification of repeated associations between the pit types, or patterns in their distribution. There was evidently no rule or convention governing the choice of a particular pit type based upon spatial considerations, although from the evidence already presented it seems such conventions may have relied upon other factors. In both the Earlier and Middle Neolithic variety seems to be the key, as no differences are apparent between the periods. There is an indication, however, that the two L-shaped clusters of pits in the centre of the site may possess a more varied juxtaposition of pit types. These clusters are considered below.

Pit Clusters: Qualifying the Relationship between Datable and Undated Pits

Before proceeding to any further analyses, it is important that the clustering of pits is critically evaluated. Thirlings contained a large number of pits that yielded no dating evidence, but still contained significant charcoal traces and soils with high organic content. It is impossible to treat these pits as part of the Neolithic dataset due to the presence of the later Anglo-Saxon settlement, discussed above. However, the close proximity of many pits, usually through clustering into broadly repeated patterns, provides a mechanism by which analysis can be extended to some undated pits. The important issue here is demonstrating that clusters of pits can be considered of similar period, although *not* necessarily contemporaneous in their construction, based upon spatial proximity and a degree of structural association.

Identifying Clusters

In many cases, clustered pits do appear closely associated, as the undated pits form recognisable patterns alongside dated examples. Figure 5.14 (below) displays clusters of pits that juxtapose dated and undated features (dark spots indicate dated pits). It is argued that the level of structural association between the dated and undated pits is sufficient to support the inference that they were all created in the Neolithic. At this stage there is no suggestion that these features represent structures of any kind or that they were dug at the same time, just that the degree of order in their layout implies a related scheme of development. Their layout is structured, without implying a built structure. Two major forms are identifiable: L-shaped, exhibited in clusters D and B; and sub-circular, seen in clusters C, E and F.

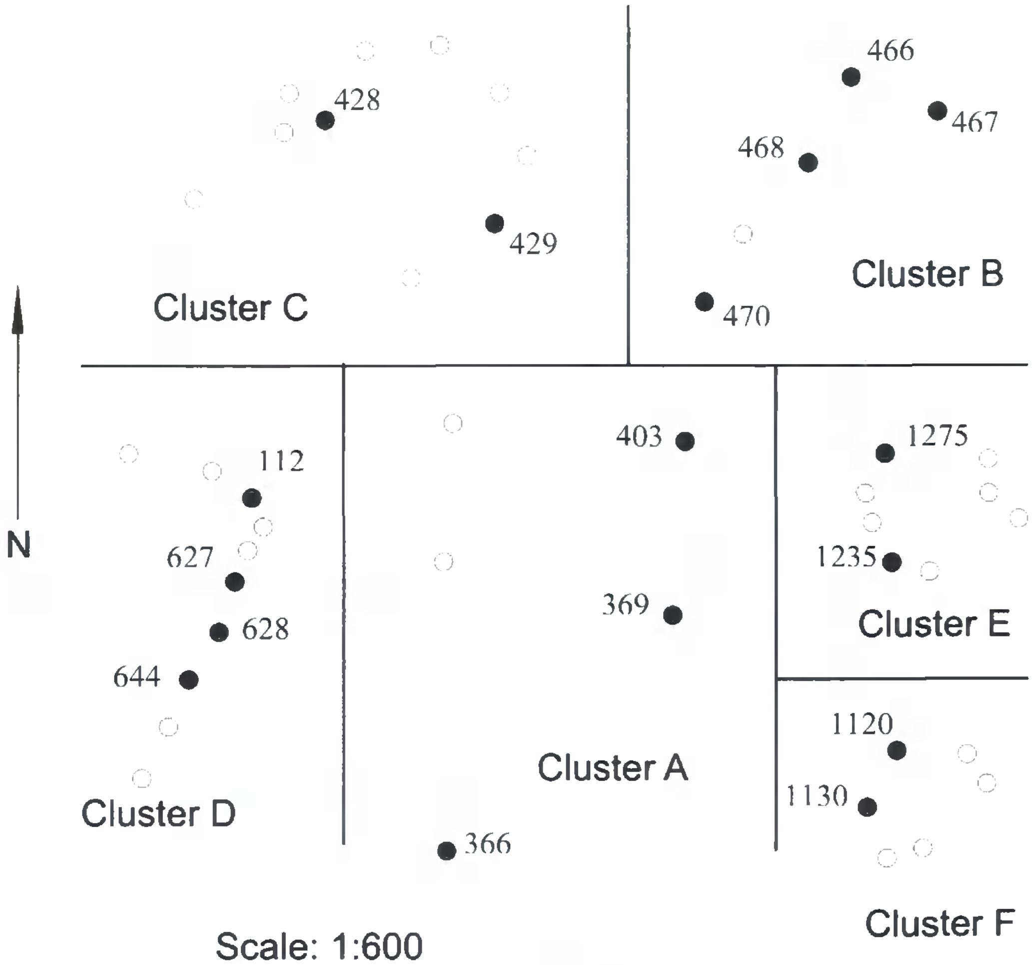


Figure 5.14: Clusters of pits at Thirlings, dark spots indicate datable pits (distances true, pit shape schematic); note that there existed the site's only pottery refit between pits 366 and 369 in cluster A

Only for cluster C is there a strong argument for the layout representing a roofed structure. Of the two dated Earlier Neolithic pits in this group, F429 is a posthole, whilst F428 is an unmarked deposit, potentially associated with the use of the structure. Figure 5.15 is a photograph of the cluster from the site archive. The character of the Neolithic occupation of Thirlings is addressed more fully in the site report (Miket and Edwards forthcoming), and the subject will not be pursued further here, as this thesis is concerned with the nature of Neolithic depositional practices.

Figure 5.15: The features in cluster C (courtesy Roger Miket 1978)

Clusters and Residuality

There remains the question of residuality: to what degree could the dating information from these pits, both from pottery typology and C14, be a residual component in an Anglo-Saxon feature? A discussion of Anglo-Saxon depositional practices addressed this issue earlier in a general sense, but the problem can also be approached through the structural details of the pits in question. Take the pits in cluster B as an example. F466 held a post and stake arrangement, which was definitely non-structural in origin and totally unmatched by anything Anglo-Saxon. This pit also provided a C14 date of 2920-2210 cal BC, which matched with F467's date of 3270-2570 cal BC. Moreover, F467 held a layer of Middle Neolithic material that was directly associated with the deposition of a saddle quern, a form not used in Anglo-Saxon Northumberland (Miket pers. comm.). Finally, F470 had a deposit of Middle Neolithic pottery on the base of the pit, suggesting deliberate rather than haphazard deposition and therefore implying a Neolithic date for the feature. See figure 5.16 for section diagrams of these features. Similar examples are common across the site. Therefore, alongside the absence of Anglo-Saxon pit-digging, there seems to be enough evidence of complex deposition to rule out the possibility of residuality. The problem really lies in the huge number of postholes and the class of 'unknown' pits, which are either too shallow or irregular to be explicable, and that are without any form of dating evidence or association with dated features.

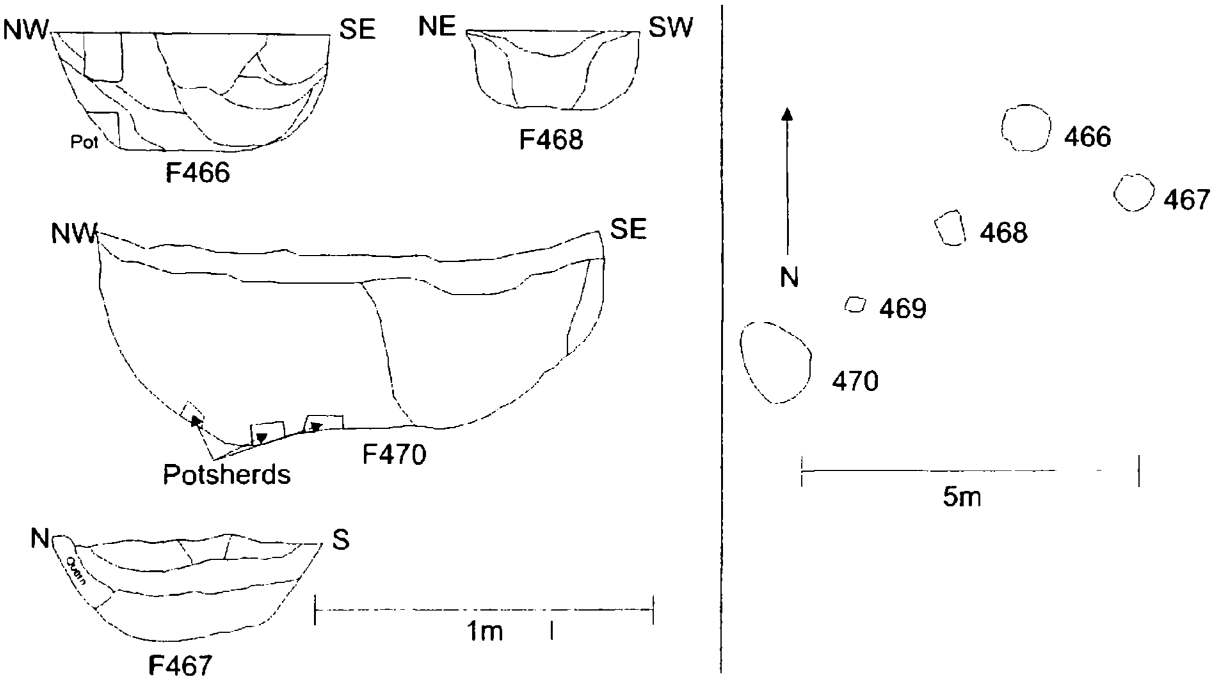


Figure 5.16: Section diagrams of the complex pits in cluster B

Although the Earlier and Middle Neolithic periods cluster on the site, they are also heavily mixed; when applied to clusters of pits this fact causes a problem, as in half the identified clusters Earlier and Middle Neolithic features coexist (figure 5.1). This issue is exacerbated by the conclusion that residuality is not a major factor in deposition within clusters. If it is argued that Neolithic material is not a residual component in Anglo-Saxon features, then likewise Earlier Neolithic material cannot be residual in Middle Neolithic pits. This is an interpretative issue, which is addressed during the attempt to build a social understanding of pit digging at Thirlings. Yet an inescapable conclusion must be that, whilst pits that eventually formed clusters may have been visible for some time, it is most unlikely that they were dug together.

Clustering and Refits

The text label for figure 5.14, above, notes that pits 366 and 369 are the only features to share a pottery refit, and this may indicate contemporaenity for the pits within the cluster. Yet the corollary of this refit is that all other pits have no such distinction, which is perhaps a more interesting observation, as it has implications for temporality and/or the decisions behind the consignment of material culture to the pits. It has already been noted that pottery had a complex life-history prior to its burial, which probably involved an unquantifiable temporal dimension. A lack of refits complicates this situation further: it could indicate that no pits were open at the same time, or that they were, but discrete pottery selection took place before burial; it could indicate both of these things. These issues are explored in more depth during the overall interpretation of the site.

Datable and Undatable Pits: The Deposition of Organic Remains

The deposition of organic remains also has relevance to the clustering of pits. Evidence for organic material was recovered mainly as charcoal-rich soils, but also in the form of very humic fills representative of the decay of organic remains; see figure 5.17 for their distribution. There are interesting statistics associated with the recovery of organic remains:

> 40% of pits producing charcoal or a highly organic fill existed in a cluster
> This equals 66% of all pits in clusters

Yet,

> Pits in clusters only comprise 33% of pits on the site
> From unclustered pits only 24% produced charcoal or a highly organic fill

It seems that pits in clusters do exhibit a degree of differential deposition. It is unknown whether this is the result of practices in the Neolithic differing across the site, or because clustered pits are probably Neolithic and unclustered ones possibly not. An interesting comparison is provided by the overall relationship between clustered pits and pottery deposition. This is less conclusive:

> 57% of all the pits that contained pottery existed in a cluster
> 45% of potsherds by weight were from clustered pits

These amounts are not as significant. So, if certain pits in clusters preferentially received pottery and/or organic deposits, this did not extend to a situation where clustered pits were more likely to contain greater quantities of pottery overall. Indeed, given the results of earlier analyses, it seems that absolute quantities of anything were relatively unimportant in the definition of a clustered/unclustered pit.

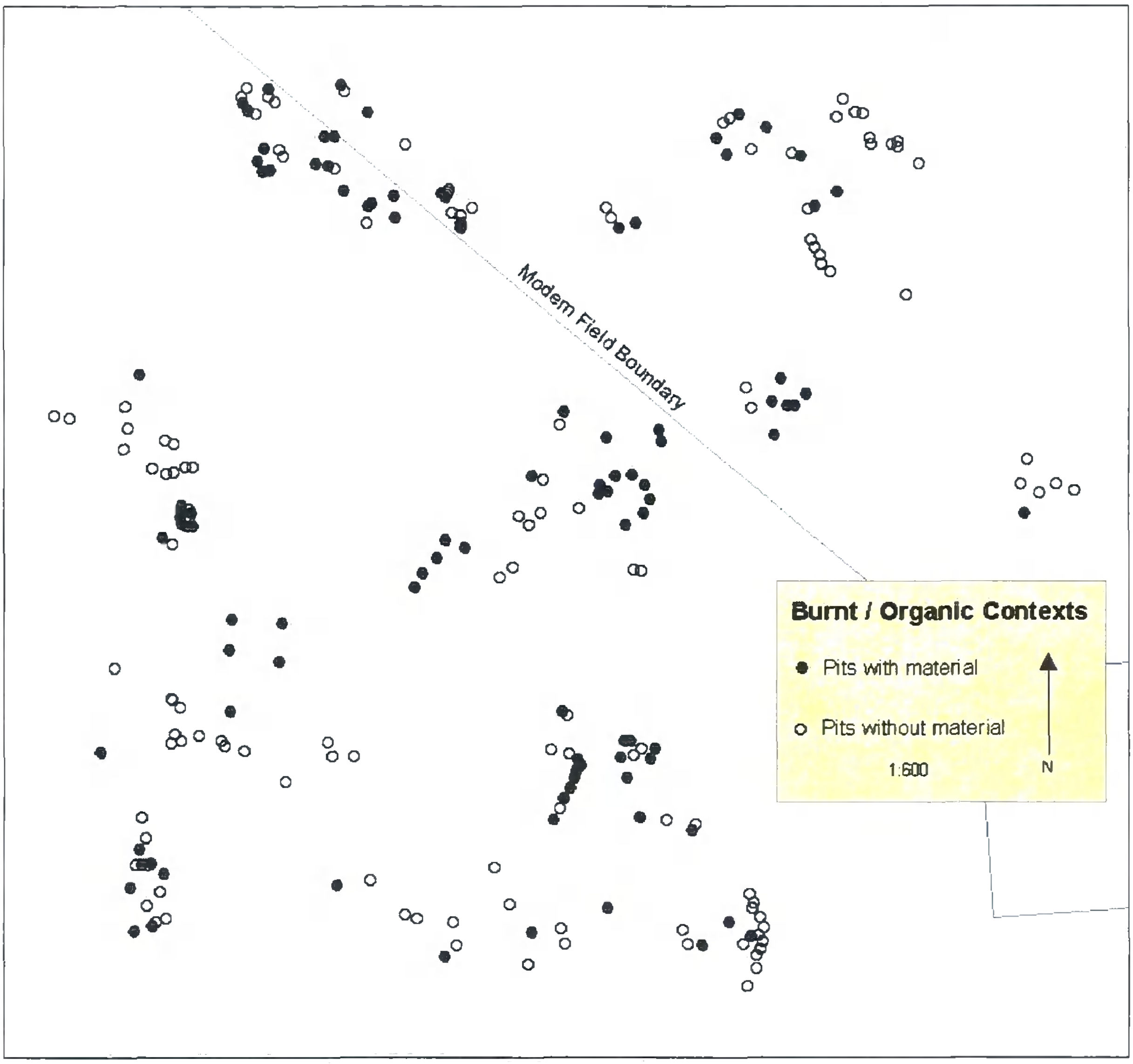


Figure 5.17: The distribution of pits with fills containing burnt debris or a high organic content in the soil

Datable and Undatable Pits: The Existence of 'Structures'

Aim

To establish whether roofed structures existed on the site, the ground plans of which may have become lost in the confusion of pits on the site. Nearly 200 of the site's pits were undated and unclustered, yet an analysis of possible structural associations between these pits was deemed worthwhile. The site plans immediately disabuse any notion of a large number of recognisable buildings and there is no test for the existence of single-pole, tent-like dwellings, but statistical analysis can be undertaken to identify associations between pits and postholes representing simple construction techniques.

Data

This is the first of two analyses that have been devised to examine the existence of structures. The logic informing the test ran thus: if a pit or posthole forms part of a roofed or otherwise structural unit, it is likely that its supporting timbers will be of roughly similar size, and furthermore, that these will sit in pits or postholes of likewise similar size. This analysis, therefore, focuses on the size of the pits. Cluster/Outlier Analysis (or Anselin Local Morans *I*) is a variation of the Morans *I* autocorrelation test undertaken earlier: it takes a set of weighted points and returns values that indicate whether a given point is surrounded by points with similar or heterogeneous values. In this case, the length of a pit's longest axis provides the weighting for the point. Undertaken in ArcMap, this test returns a new set of graphical data points that can be displayed. Importantly, a high value means that neighbouring features are of similar size, whilst a low value indicates differing sizes, regardless of the actual dimensions. The test was undertaken with a cut-off value of 5m, only features within this distance of each other were compared. The results of the test are displayed in figure 5.18.

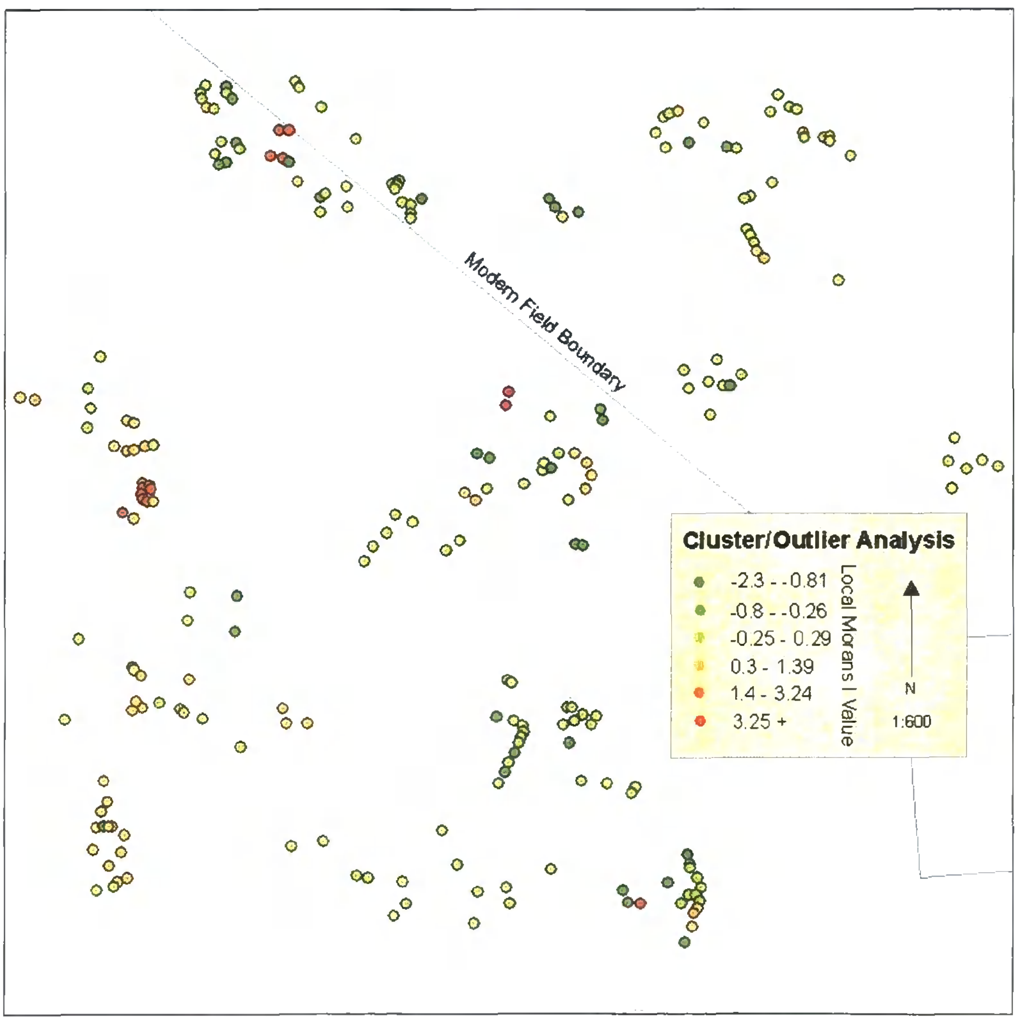


Figure 5.18: Anselin Local Morans *I* values for Cluster Outlier Analysis for all pits at Thirlings

Discussion

Mindful of the fact that the (*I*) value must be in the 1.4 to 3.24, or 3.25+ ranges, this analysis indicates that there is little association between pits of similar length. This result confirms earlier suspicions that the dated clusters spread across the site do not represent 'structural' entities, although they may be rather structured in plan form. Three notable exceptions exist: the undated cluster to the west, the trapezoid of pits in the north-west, and the pair of pits in the centre. Unfortunately, this is not an infallible means of identifying similar pits: the central pair of pits with the 3.25+ values are actually widely different in size at 1.5 and 5.7m respectively. They have returned high *I* values as they are very similar, respectively, to a number of other pits in their immediate vicinity though, those pits in turn are dissimilar to pits further to the south. The two high values are therefore a function of the isolation of those two pits combined with the 5m cut-off value for the analysis. It follows that the other two high value clusters are more accurate, as they sit within a denser concentration of features. It is clear therefore, that there are very few multi-posthole structures amongst the spread of pits because a standardised and associated size of pit or post-hole is not in evidence; the pits are extremely heterogeneous in character. It remains to be seen whether simpler structures are present.

Paired Pit Analysis

Aim

To examine whether pits on the site were paired in simple structural units. This analysis was undertaken at the prompting of the excavator, Roger Miket. He observed that, although it seemed unlikely that any complex structures existed on the site, pits seemed to pair in a number of instances; i.e. they had similar size and depth values. However, it has been shown in the preceding sections that a number of other observed variables, such as pit shape and pit type, have analytical viability. Pairing will therefore also have to be demonstrated through these categories. Such associations would have been missed during Cluster/Outlier Analysis as the calculation was designed to account for *every* pit within a 5m radius, and was insufficiently precise to identify specific associations.

In order to test the idea of pit-pairing a new form of analysis had to be designed, using a method based upon the work of a fellow graduate in structural engineering. It is exceedingly simple in concept but difficult to institute in practice due to the number of variables. A pit is selected and then all pits within a given distance are identified; of these pits, those with a length above/below a given percentage of the selected pit's value are excluded; then, those remaining pits that are of a different type (e.g. posthole v. deposition) are excluded; finally, those pits that differ in form (e.g. regular v. irregular) are excluded. This leaves very few pits, which is precisely the desired outcome, as it qualifies any degree of pit-pairing. The calculations were devised in an Excel spreadsheet. The formula used to identify matching pits is as follows:

If pit A = pit B, return "blank"

1 – distance between pit A and pit B is within threshold distance

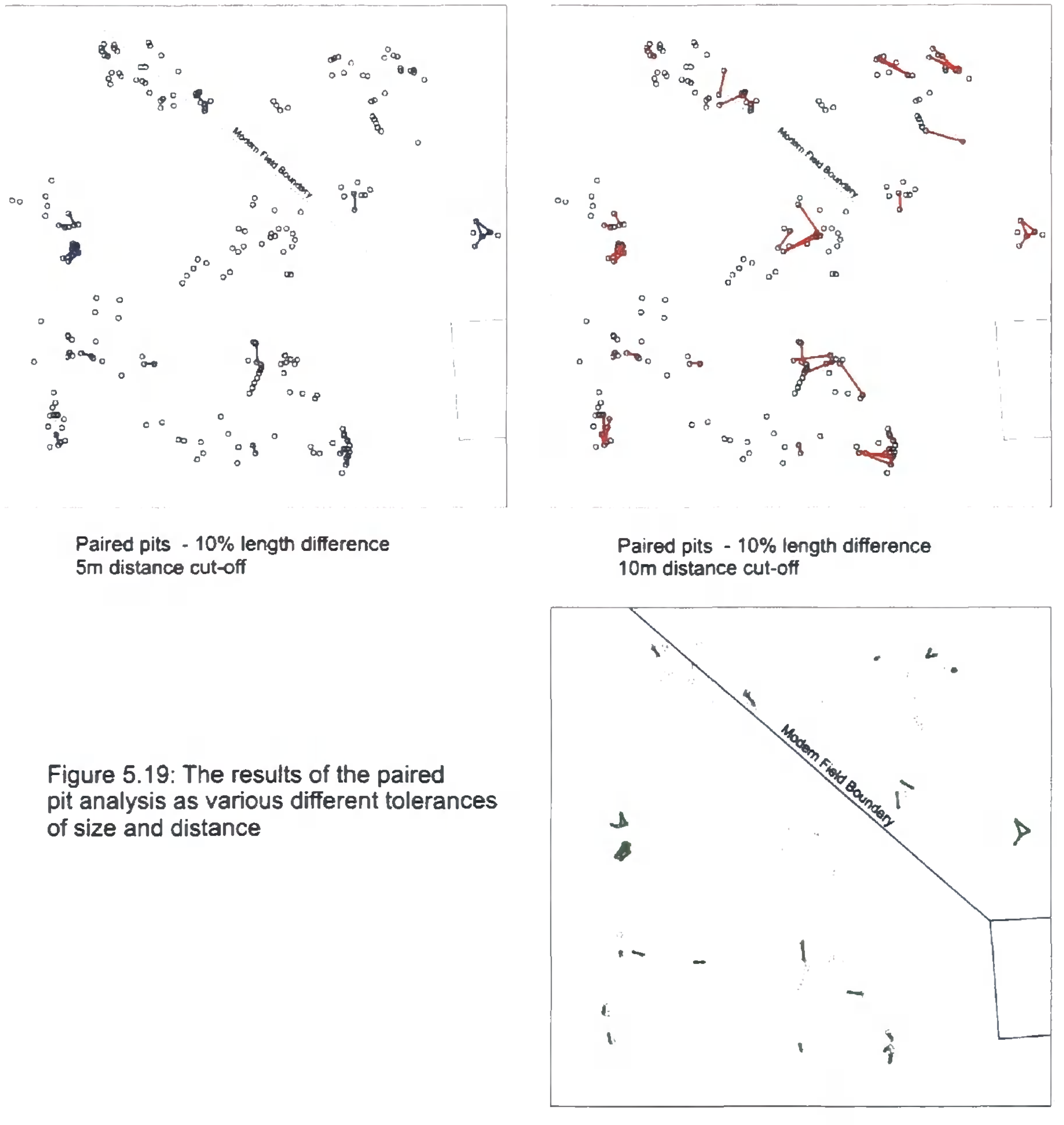
2 – length of pit A is within given % of pit B

```
=IF(R$8=$B13, "", IF(AND((SQRT((POWER(($C13-VLOOKUP(R$8,
$B$13:$H$240, 2, FALSE)),2)+POWER(($D13-VLOOKUP(R$8,
$B$13:$H$240, 3, FALSE)),2))))<$D$8, AND(VLOOKUP(R$8,
$B$13:$H$240, 4, FALSE)>((1-$D$7)*$E13), VLOOKUP(R$8,
$B$13:$H$240, 4, FALSE)<((1+$D$7)*$E13)), VLOOKUP(R$8,
$B$13:$H$240, 6, FALSE) = $G13, OR(VLOOKUP(R$8, $B$13:$H$240,
7, FALSE)=$G13, $H13="Unknown")), $B13&" => "&R$8, ""))
```

3 – type and shape of pit A is same type as pit B or "unknown"

If 1, 2 & 3 are positive results, return "pit A => pit B"

The qualifiers "pit A" and "pit B" are replaced by the feature reference number of the pit in question, and the two variables "threshold distance" (between the two pits) and "% difference in length" (between the two pit's values) can be altered to suit the parameters of the investigation. In this case, three tests were undertaken: a threshold distance of 5 metres between the pits with the length values within 10% of one another; a threshold of 10 metres with a 10% length difference; and a threshold of 5m with a 20% length difference. The three results can be found on the following page (figure 5.19).



Paired pits - 10% length difference
5m distance cut-off

Paired pits - 10% length difference
10m distance cut-off

Figure 5.19: The results of the paired pit analysis as various different tolerances of size and distance

Paired pits - 20% length difference
5m distance cut-off

Discussion

This analysis demonstrates that incidences of pit pairing are very few. A large number of pits do show association at the less restrictive levels of analysis, but these are often within existing clusters, or between more distant pits that are otherwise dated or associated. It seems unlikely that pits were deliberately paired in the Neolithic in a manner that is visible in their physical features. We cannot, therefore, posit any kind of structural relationship between paired pits, and the form of any recognisable structures at Thirlings must remain speculative. However, the results are interesting for the number of associations present between pits already identified as belonging within cluster groupings. As many features in these clusters have close matches with *numerous* other pits in their cluster, this strengthens the case for the validity of these groupings. This is especially apparently in the entirely undated cluster on the eastern extremity of the site, which has a number of associated pits even at the most restrictive level of analysis (a 5m threshold and 10% length difference, figure 5.19).

Summary

In contrast to the interesting results obtained during the purely statistical considerations of pit deposition and abrasion, the outcome of these spatial analyses is rather more muted. They can be summarised as follows:

1. There is no segregation of Earlier and Middle Neolithic activity on the site; the pits are evenly mixed, sometimes within recognisable clusters.
2. Across the entire site there are no other patterns in the distribution of pottery by weight: statistically these distributions are random.
3. One pit in each cluster may hold a larger weight of pottery, than the other pits in the cluster.
4. There is little patterning in the distribution of modal abrasion values across the whole site.
5. In the Earlier Neolithic sherds with similar abrasion values were deposited in clusters of pits.
6. There are no patterns overall, or in clusters, in the distribution of the three pit types.
7. The datable clusters contain a larger proportion of pits with highly organic fills or charcoal compared to unclustered pits, but pottery deposition does not follow this trend.
8. There are no associations between pits, dated or undated, based upon their size; this removes any possibility of large buildings relying on structural homogeneity.
9. No associations can be detected between individual pits forming pairings, which further removes the possibility of multi-post structures existing on the site, though it strengthens the likelihood of deliberate clusters existing.

It seems that two major levels of associations, or indeed disassociations, are present in the spatial distribution of the data. On one level we see total randomness across the entire site: in the locations of the three pit types, in the amounts of pottery deposited, and in the abrasion levels of that pottery. This extends to the distribution of these values within clusters of pits, with the exception of modal abrasion values. However, on another level we *do* see association between pits: if all the deposit-specific data is ignored, and the pure distribution of pits is analysed alone, it is clear that pits do form recognisable clusters. What we cannot achieve is the connection of these clusters with any specific aspect of the deposition that occurred within them, and we cannot state that these clustered pits were created contemporaneously, although it is possible that certain pits may still have been visible when later ones were dug. Finally, although these pits may be spatially associated, this does not extend to their other physical features: they cannot be related on the basis of size, within or without the clusters.

Conclusions

Three different scales of analysis have produced three very different, occasionally contradictory sets of results. Understanding levels of pottery fragmentation has been crucial to these analyses. It has been shown that pits physically marked by an upright post always experienced quantitatively different levels of pottery deposition than those without. In the Earlier Neolithic this was represented by a greater weight of pottery overall, whilst in the Middle Neolithic there was a deliberate attempt to deposit smaller, more fragmented sherds in post-marked pits, and yet these marked features continued to hold more pottery on average despite the decrease in sherd size. These situation is further complicated, because the fragmentation of potsherds was not a direct result of their abrasion by mechanical means, as would normally be expected. They did not get smaller as they became more abraded. So, sherds seem to have been conserved by some means prior to being selected for burial on the basis of their size. Whatever form this conservatory practice took it did not prevent their gradual weathering, nor can it have occurred post-burial (Bradley and Fulford 1980, 90). It has also been shown that sherds (or pots) that ended up in the same pit experienced broadly the same levels of abrasion, and were therefore probably stored or processed together. Sherds were either fragmented to the appropriate size before storage, or sherds of the appropriate size selected from the stored resource.

When spatial distribution came to be considered it was shown that there existed very few connections between any variables and the physical location of a pit. The only evident relationships were the possibilities of clustered pits in the Earlier Neolithic sharing broadly similar abrasion values, and one pit per cluster potentially holding more pottery. More generally, pits within clusters exhibited few connections beyond their proximity and, in a number of cases, clusters contained pits from different periods of the Neolithic. A picture emerges of striking variability and of few fixed rules, even the time-depth experienced on the site cannot account for differences within the same broad periods. It seems as if the statistical patterns in pottery deposition owe a great deal to specific practices that originated in contexts of fragmentation and abrasion. These patterns eventually found their expression on the site through burial, but the location of this disposal was less important. An explanation for the nature of the activity at Thirlings must be sought in those pre-depositional processes, and not something inherent in the pits themselves.

It is likely that the location of a pit on the site could have been significant to those who dug them; the formation of structured clusters may indicate this, and there is the simple fact that the site actually exists. However, in most instances the location of a pit was *fundamentally disconnected* from the specific acts of pit digging, the choice of the form of pits, and the material placed within them. All of which held complexities of their own. Once located in reference to other acts of deposition, which generally meant nothing more than within the same hectare, there were no other spatial connotations to the business of filling a pit. The most deliberate reference to existing pits appears to have been *avoidance*, as no pits ever inter-cut. Recutting does occur, but with no intervening layers of silting. Perhaps the entire pit, including its recuts and post-marking, should be taken as the unit of analysis, and evidence of a series of events that occurred in a relatively restricted period of time. Recutting then becomes part of the activities that took place in one episode of pit development, rather than an event following a significant interlude. Overall we are drawn to seeing pits as individual statements, largely alienated from their contemporaries; this theme is developed in chapter six.

CHAPTER SIX
NARRATING DEPOSITION: INTERPRETING THE PITS AT THIRLINGS

Introduction

This chapter interprets the data from Thirlings using a 'narrative' approach. It is orientated around two biographies, operating on two different temporal scales. At the level of the deposit, we are concerned with charting the sequence of events involving pottery sherds that led to those interesting associations between pit types, fragmentation and abrasion. At the level of the site, and across a somewhat broader time-scale, we trace the development of Thirlings through the spatial relationships, or lack of them, between pits. This, therefore, is a narration of the process of pottery disposal in its totality. We are concerned with understanding practices through the *process* of their undertaking: ultimate outcomes are relatively unimportant compared to the choices made throughout their creation, because it is through the articulation of these choices that human beings created and maintained their world. Following, therefore, a brief prologue considering the origins of the material culture involved, this chapter will narrate the two biographies in turn: that of pots, and that of pits.

In a real sense, the creation of a narrative *is* the interpretation as much as it leads to anything further. Yet further interpretation these narratives do produce. The chapter will conclude with overarching themes that become visible once the process of deposition has been considered, primarily revolving around the role of human choice and intention set against a ritualistic structure of practice. Broadly, it is hoped that, in elucidating a narrative approach to interpretation, the value of showing *how* something happened, against the incredible number of instances in which it could have happened differently, will demonstrate two things. First, that the normalising, essentialist mode of interpretation that sets out to interpret the motivation of past practices based in their symbolic meaning is unworkable. Second, that 'how' questions tracing the formation of archaeological evidence in the past allow us to make definitive statements about both the structure and agency of human action, the maintenance of social reproduction and the creation of ontological security in the *longue-durée*.

The Biographical Approach

Whilst a narrative approach to interpretation is a relatively novel manner in which to engage with the past, the tools this approach utilises are far from original. In order to navigate the complexity of the evidence from Thirlings, the principal method of interpretation here is the construction of 'biographies'. The idea of a 'biographical' approach to interpretation came to the attention of archaeologists with the publication of Igor Kopytoff's 'The cultural biography of things: commoditization as process' (1986). He sought to show how the interpretation of the biography of an artefact should account for its existence as culturally constituted and how, through its 'birth', 'life' and 'death', it could be at the centre of shifting meanings and values. Objects need not be physically altered in order to change their social role and therefore their meaning, changes in their contexts of use or performance also heavily influence the values ascribed to artefacts (Gosden and Marshall 1999, 174). The classic example is the competitive exchange of Kula necklaces in Melanesia, which can be of greater or lesser 'worth' depending on the genealogy of their previous owners (Strathern 1988). The biographies written in this chapter differ from those commonly interpreted by archaeologists. Usually biographical accounts focus upon individual artefacts or restricted groups of object that are treated in a similar manner. Be they about the stones at Avebury (Gillings and Pollard 1999), decorated pots (A. Barclay 2002) or Greek Neolithic buildings (Nanoglou 2008), these interpretations are avowedly particularistic. Here, however, the narratives are based upon statistically significant trends recognised in a large dataset, deliberately avoiding a focus upon particular pots or pits. The intention is to create an interpretation that is valid not just in one time or place, but trace the changing significance of practices over the whole of the occupation of Thirlings, to create a robust framework against which biographies in chapters seven and eight can be compared.

Prologue: The Origins of the Material Culture

The origins and use of the material culture involved in Neolithic deposition has been discussed in a number of previous chapters. In chapter two we saw how the pottery and stone artefacts from the north-east of England were of common types across a variety of different classes of site; in chapter three the prevailing interpretations surrounding the contexts of use and deposition of these materials were illustrated in some depth; and in chapter four, likely contexts of origin and their classification were considered. The purpose of this section is to briefly demonstrate that the material culture from Thirlings, analysed in the previous chapter, can be considered in a similar manner. The narratives, or biographies, of deposition and pit creation developed later must be reliant, at least in part, on the contexts of origin of the objects and substances involved. Establishing the likely nature of this activity is therefore of primary importance. First, the organic remains, including evidence from charcoal will be discussed, then the pottery, before finishing with a consideration of the nature of occupation on the site.

The Organic Matrixes

The pottery from Thirlings was excavated from within a matrix of charcoal-flecked, loamy soil that almost certainly represents the presence of decayed organic matter. This is not unusual in pits of the period, as demonstrated in chapter three, where previous excavations have generally characterised this as domestic, settlement or occupation refuse, placed in the ground for a variety of possible reasons. As we have seen, the origin of such material has generally been a non-question: it was straightforward for those interpreters who saw pits from the largely functional, storage point-of-view, such as Hurst Fen (Field *et al.* 1964); the Grooved Ware pits of Yorkshire (Manby 1974); pits in the Chilterns (Matthews 1976); and those at Spong Hill (Healy 1988). As the pits were excavated and used for domestic purposes prior to their filling, it followed that the refuse-rich fill was of domestic origin also. Interpretations of pits as places for refuse deposition also saw the material as domestic in origin: as at Biggar Common (Johnston 1997), Beckton Farm (Pollard 1997), Rowden (Woodward 1991, 43), and Cassington (Case 1982). Even those accounts that stressed the symbolic or ritual *act* of pit deposition also posited a domestic *source* for the material. Deposition in tree throws was attributed to a desire to completely clear settlement traces from the landscape (Evans *et al.* 1999, 247-249); Pollard saw the symbolic deposition of settlement refuse as marking the end of a site's use (Pollard 1999); and finally, the bizarre juxtapositions of artefacts in pits near the Dorset Cursus at Firtree Field were contrasted with simpler examples further from the monument, which were described as 'domestic' in character (Barrett *et al.* 1991, 84). All these interpretations share a readiness to attribute a quotidian origin to the material culture, regardless of the manner in which they categorise the type of deposition it was involved in. This study would discard the 'domestic' label, but nevertheless, it is clear that the material culture deposited in pits, especially organic remains, can be considered the refuse of everyday activities.

What little is known of the composition of the organic matrixes from Thirlings certainly does not contradict an everyday source for the material. Small-scale environmental sampling of four pits (F1858, F1894, F1898, and F1901) identified a large amount of hazelnut fragments associated with Carinated Ware, Impressed Ware, and Grooved Ware (Miket and Edwards forthcoming). The carbonised wood utilised in radiocarbon dating was commonly from Oak, Hazel, or Hawthorn, though notably in pit F1450 there was a mixture of woods from Apple, Rowan, Hawthorn and one of the genus *Prunus*, probably plum. There was no particular dominance of any species, and the environmental sampling was too sparse to even tentatively attempt statistical analysis. Unfortunately, due to the lack of organic preservation on the Milfield gravels, there is no data on the type of wood used for the upstanding posts.

The lengthy discussion of 'refuse' as a complex category of evidence sought to demonstrate the variety of ways in which it could be treated, and there seems to be little alternative to characterising the decayed organic matter at Thirlings as some form of 'refuse', however we define this term. Human life during the Neolithic must, after all, have generated organic waste. This straightforward explanation is not a slide back into a functionalist interpretation of pit deposition: material can have mundane origins yet still be active in social life, and still be deposited in a highly esoteric manner. Also, the generation of organic waste should not be conceptually separated from its eventual disposal, as the social categorisation of the material during its pre-depositional history is directly relevant to the nature of its burial. Yet this complex social classification obviously does not *exclude* a 'mundane', everyday origin for the material. Without more secure knowledge of what substances actually constituted that organic material at Thirlings we can speculate little more.

The Pottery

In chapters two and three the very different contexts of Neolithic pottery were discussed, with the conclusion that it was practically impossible to define a given set of associations for any of the three major styles, given that they were a multi-purpose technology throughout their respective periods of prominence. It would be wrong, therefore, to interpret Thirlings based upon only one of the many associations of the various styles, say, as for the symbolic deposition of Grooved Ware. Moreover, following the appreciation of the chemical evidence supporting pot use in food preparation in chapter three (Mukherjee *et al.* 2007; Copley *et al.* 2005a; Copley *et al.* 2005b; Dudd *et al.* 1999), it seems that, in keeping with evidence from a variety of contexts across Britain, the pottery at Thirlings could have been used for the production and processing of foodstuffs. It is unlikely that the pottery was produced 'for' deposition. Rather, complex deposition was the appropriate manner of disposal, or indeed reuse, for a class of material culture that had come to the end of its life in one sphere of activity, and was ready to enter another.

The ceramic evidence from the North-East reinforces the impression that the types of pottery found at Thirlings should not dictate any particular interpretation of the site. We saw in chapter two how Carinated Ware and Impressed Ware (the two dominant types) have been found in a variety of contexts across the region, from barrows to hengiform monuments, and probably represent a multi-purpose technology for a variety of uses. We cannot speculate if the pottery deposited at Thirlings was put to any specific or narrow range of tasks, but given the evidence from the region, and others, it seems unlikely, especially considering that all of the pottery examined during a provenancing study appeared to have a local origin (Gibson 1986). Pottery, similar to organic remains, could be generated by a variety of processes and still be classified in accordance with complex social rules and values that would influence its eventual deposition. Given the range of evidence, and the existence of no pressing reason to question it in this case, it does seem likely that the pottery from the site was utilised for a variety of subsistence activities. It was, therefore, most probably *refuse* from these activities.

Occupation and Settlement

'Occupation' was defined very broadly in chapter four, as the act of occupying a given locale and undertaking non-predetermined tasks. The result of an occupation, archaeologically speaking, is an occupation deposit, which could be a socially complex refuse deposit, but does not have to be. It was also shown how 'settlement' was one form of occupation, and used to describe the variety of tasks and undertakings that characterise the everyday living and functioning of human groups, not necessarily the presence of particular structures or buildings. Pit deposits were therefore interpreted as the deposition of settlement-generated occupation refuse, but without reflecting the actual locale of that occupation – just the complex and socially rule-bound location of its disposal. The evidence from Thirlings fits this definition, and probably represents the disposal of occupation deposits connected with settlement. Following the definition of 'settlement' as the 'act of living in a place', it is entirely correct to term the organic residues and the pottery found within the pits as 'occupation deposits', especially given their likely association with subsistence practices. It would be wrong to try and qualify precisely the specific nature of this occupation because there have been no *in-situ*, non-pit deposits excavated. So, we know that the pit deposits are the material remains of settlement practices disposed of in a complex manner, but we are unable to state the precise nature or location of those practices.

Figure 6.1: Potential circular structure (courtesy Roger Miket 1978)

The possibility must remain open that simple settlement did occur on the site. The single potential circular structure represented by cluster C (figure 6.1) does have parallels in similar structures found at Beckton Farm, Dumfries and Galloway, although associated with Grooved Ware (Pollard 1997); and Cowie, Stirling, which produced evidence for a multi-period accumulation of circular post arrangements (Barclay 2003). Yet this single possible structure does seem rather out-numbered by the remaining pits and the total lack of any further evidence for recognisable 'buildings'. Even the L-shaped clusters cannot have been 'structural' in the sense of supporting a roof because of the variety of the constituent pit types and their fills, even though they are demonstrably *structured* in their arrangement. Perhaps semi-permanent tent structures based around a single supporting pole could have existed on the site, as this would explain the number of individual postholes. Under this system any ancillary ropes or posts would have been secured lightly into the topsoil and now would no longer be present. Yet a possibility only must this remain, because the alternatives are numerous and no less convincing. Equally, Thirlings could have been periodically visited from somewhere in the local area with the specific aim of creating a complex pit deposit; or the entire site could have been settled for an unknown duration and pits created as part of the social fabric; the site could have been temporarily occupied and a pit created each time; decades could have past between depositional event. Indeed, all these situations may have occurred at different periods in the Neolithic, or the site could have experiences variations between the seasons of the same year; quite simply, we will never know.

Discussion

It seems likely that the pits at Thirlings do not differ from the pattern established for pit deposits in general in chapter four. Given the evidence from other sites, pottery studies and Thirlings in particular, the pits probably represent the complex and rule-bound deposition of occupation deposits. The potential for all the material culture to have been utilised in subsistence activities leads to us to define the origin of these deposits in settlement practices. However, the nature of these practices and their actual location must remain a mystery. It may seem odd to have stated all of the above already: surely, the usual end product of archaeological writing is to form just such an interpretation? Perhaps then one could move on to consider why the specific form of deposition occurred in the manner that it did, or in other words, to discuss the meaning of the deposits in relation to the system of occupation. Here we are not concerned with a static interpretation of this sort. The origin of the material culture is important, but only insofar as it provides a starting point for a narrative consideration of the process that brought its particular juxtaposition into being. Stating that the pits contain settlement refuse merely defines a product - the culmination of a sequence. An understanding of social change, of the variety of human practice, and the significances around which this was structured is *only* possible through a consideration of the complex chain of events and contingencies that created these deposits.

Narrative I: Pottery Biographies

This section narrates the social processes into which the pottery at Thirlings was bound prior to its deposition. It was demonstrated in the previous chapter that potsherds were selected for deposition in certain types of pit on the basis of their size. However, how they reached this level of fragmentation was not the product of direct abrasion, such as trampling or other random processes, nor is it likely to have occurred after they were buried (Bradley and Fulford 1980, 90). It appears the sherds were selected from some form of stored resource in which they had been provisionally discarded for a substantial period of time and subject to elemental weathering. The level of fragmentation of the sherds was not a product of these weathering processes and must, therefore, relate to another instance in each artefact's biography. This section represents an attempt to narrate the pre-depositional history of the potsherds, in the belief that it is only through a detailed investigation of what happened (and, indeed, what could have but did not) that an understanding of the complexity and significance of these practices can be understood.

The narrative begins with the breaking of a vessel, at which point there were already choices to be made. The biography proceeds to examine the consequences and alternatives to this and other choices during the three major stages of the pottery's post-break, pre-depositional history: fragmentation, provisional discard, and selection. The decisions that were taken during these three stages hold the key to understanding how the very unusual patterns in pottery abrasion and selective deposition came to exist at Thirlings. This biography will demonstrate the range of potential human actions these practices made possible by also examining those narratives that could have occurred, but ultimately did not, by considering what could have happened instead. The step-by-step narration of the pottery biography highlights particular themes for later discussion: including questions of long-term planning and intentionality in the practices undertaken, the role of post-marking, and importantly, the visibility of different significances in deposition as an alternative to an interpretation of meaning. First, however, some background to the construction of the biography is required.

The Biography

There are a number of possible paths down which potsherds could have travelled between fragmentation and deposition, the totality of these is presented in figure 6.2 (following page). The diagram is divided into three major sections: fragmentation, provisional discard, and selection. These represent the three archaeologically visible instances at which specific choices were made, during the Neolithic, as to the appropriate treatment of the pottery. 'Fragmentation' concerns the choices made at the point the pottery was initially broken, and its immediately subsequent treatment. The potential for deliberate fragmentation is clearly evident here, following the work of John Chapman (2000a), discussed in chapter four, and the possibility of identifying this practice is the primary concern at this point. 'Provisional discard' represents the second point at which choices must have been made in the Neolithic. Following the discussion in chapter four concerning the discard, curation and retrieval of pottery, Schiffer's 'provisional discard' (Schiffer 1987, 99; Needham and Spence 1997, 77) was chosen as the most value-neutral means of labelling this behaviour. This was especially important considering the more specific terms 'curation' and 'middening' form options *within* the category of provisional discard that are considered (and rejected) as part of the narrative. 'Selection' processes represent choices available for the retrieval of provisionally discarded material and its ordering prior to deposition.

As figure 6.2 shows, the two most likely 'routes' for potsherds are highlighted (A & B), but the diagram also contains a large number of alternative choices. These were all possibilities based upon potential practices that have been observed or interpreted elsewhere, or could be imagined. However, the archaeological evidence, as it was presented in the previous chapter, dictates that these other pathways were not taken. They are included to demonstrate the large number of possibilities open to Neolithic depositors, and also to strengthen the case for those that are interpreted as more likely. Nevertheless, it was impossible to identify a single narrative thread that could explain the variation in the patterns of abrasion, fragmentation and deposition. This was because the initial act of fragmentation cannot be archaeologically identified – whether it was accidental or deliberate, and whether, as a result, sherds were further fragmented or left at their original (broken) size. This interpretative dilemma has ramifications for selection processes, so both are considered in their entirety. What follows is a description of every potential practice displayed on the diagram, with a brief note explaining why it has been considered likely, or rejected as evidentially unsound.

Thirlings Pre-Depositional Pottery Biographies

(resulting from the statistical analysis of 523 potsherds)

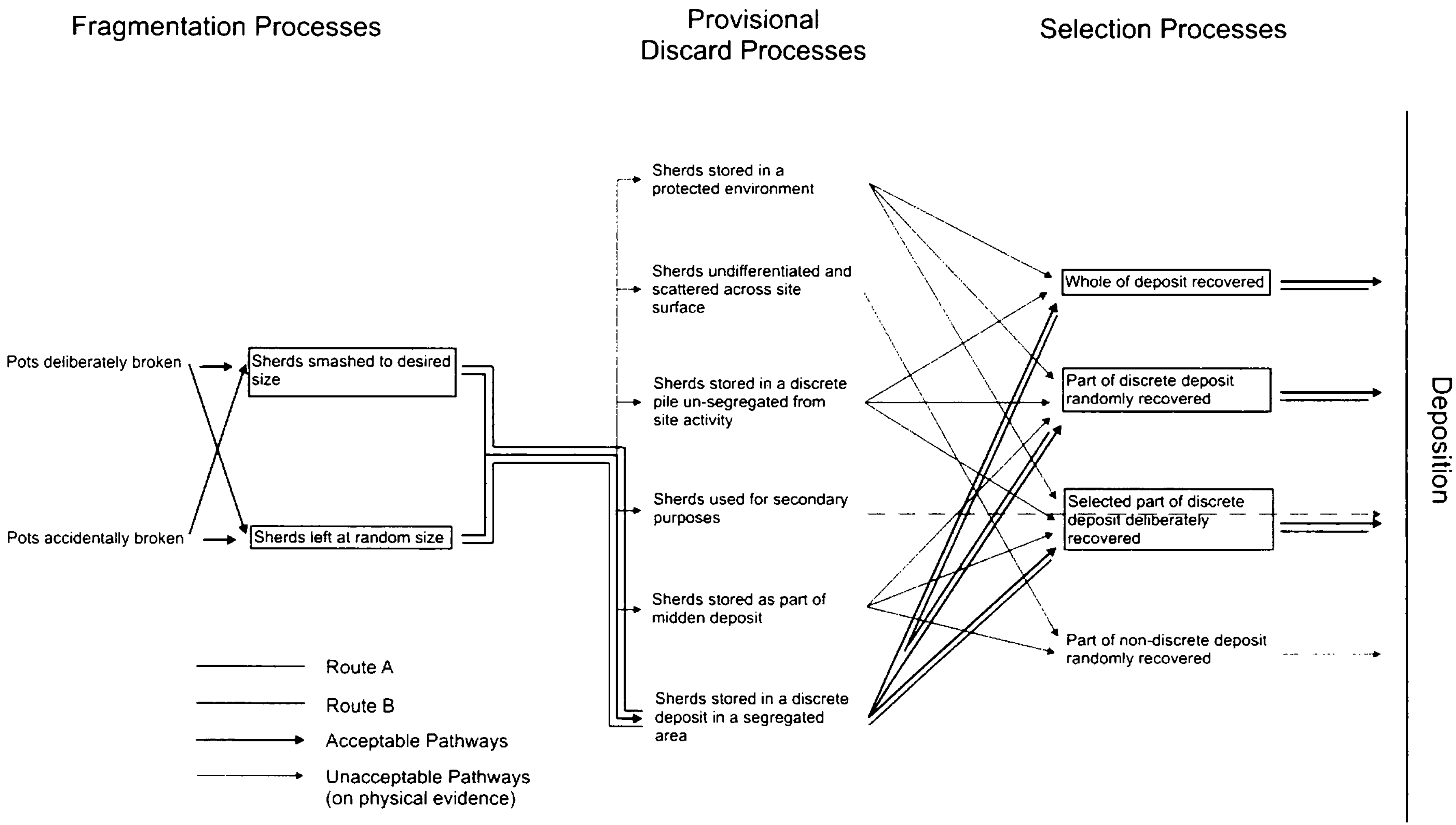


Figure 6.2

Fragmentation Processes

Deliberate versus Accidental Pottery Breakage

All pathways begin with the breakage of a pot, but as we know that the sherds were deposited in a complex manner at the end of the sequence, it is reasonable to question whether they were deliberately broken with later deposition in mind. No certain judgement can be made, but it does seem unlikely that the pottery was deliberately broken; it has been discussed at length that pots were most likely used in subsistence activities for food preparation, and whilst this does not rule out deliberate breakage, it does deny the possibility that the pots were produced specifically *for* later destruction and deposition.

Deliberate Further Fragmentation, Post-Breakage

However, denying deliberate initial breakage does not rule against the possibility that potsherds could be further fragmented, post-breakage, down to a desired size; the diagram leaves this possibility open. Which possibility is accepted here has ramifications in the subsequent biography of the sherds, and on the degree of human intentionality in the process, but this is better discussed later. 'Route A' charts the course of sherds if this possibility is accepted.

Sherds Left at Random Size, Post-Breakage

The alternative to any deliberate fragmentation is that the sherds were left at the sizes the breakage event produced, and then stored. Accepting this proposition, 'Route B' follows the course of the sherds.

Provisional Discard Processes

Sherds Stored in a Protected Environment

This is unlikely because a degree of abrasion exists on the majority of the sherds; if they were stored carefully and protected they should all be fresh and relatively unabraded, but this is demonstrably not the case.

Sherds Undifferentiated and Scattered Across Site Surface

This is rendered unlikely because it has been statistically demonstrated that sherd size is disconnected from abrasion. If sherds were left loose on the site, trampling would both abrade the sherds and fragment them further, and the variables would be co-dependent.

Sherds Stored in Discrete Pile Un-segregated from Site Activity

This scenario envisages that the sherds were kept together but in a position open to trampling and other transformational processes. It is rejected for the same reason as above, that abrasion would be accompanied by further fragmentation; statistically this is not the case.

Sherds Used for Secondary Purposes

In this case, the sherds would be put to some further use following their fragmentation, which could include any number of possibilities from improvisational 'plates' to draft-exclusion. However, it has been demonstrated that most of the sherds from the same pot were abraded to a similar degree, so if this scenario is to be accepted all the sherds must have been treated in the same way, and one must posit the existence of an arbitrary moment in time when the sherds were collected back together and deposited. It is not utterly unseemly, but Occam's Razor surely dictates that another scenario should be given precedence.

Sherds Stored as Part of Midden Deposit

As middens were discussed earlier as a socially significant means of storing refuse it is important to refute their existence here. Most basically, there were no middens identified on the site, and whilst it is recognised that the pottery could have been transported from elsewhere, it is fanciful to begin conjuring possible middens into being unnecessarily. In this scenario it would also be reasonable to expect the sherds to be less abraded overall, and also to show less variation between the pits/pots than the statistics reveal. The lack of refits between different pits also excludes this scenario, as one would expect a certain mixing of the deposits in a midden situation, whereas Thirlings shows evidence of the careful assignment of particular pots to certain pits.

Sherds Stored in a Discrete Deposit in a Segregated Area

This would seem to be the only possibility that could account for the degree of sherd abrasion whilst still allowing for a disconnection between abrasion and fragmentation. In this scenario the sherds are stored in a pile in a position segregated from trampling or other sources of direct percussive abrasion, whilst remaining open to elemental abrasion by wind, rain and steady decay. This also has the benefit of the supporting ethnography from chapter four, but also Tzeltal Maya communities, where potsherds were provisionally discarded in relatively inaccessible places for later disposal or reuse (Deal 1985, 253). In none of these cases were the provisional discard areas described as middens, nor were the sherds treated in a manner that justifies the term 'curation'.

Selection Processes

Whole of Deposit Recovered & Part of Discrete Deposit Randomly Recovered (Route A)

These two possibilities only operate if it is argued that potsherds were fragmented to a desired size before the provisional discard stage. This is important, as it recognises the difference between post-marked and unmarked deposits, especially in the Middle Neolithic, where a greater average weight of more thoroughly fragmented sherds was deposited in post-marked pits, compared to unmarked examples in which a smaller amount of larger sherds were found. So, as sherds were evidently being selected on the basis of size, some form of selection must have occurred; in this scenario, as sherd size was determined before storage, the whole of a stored deposit could be recovered, or a random proportion of it, with the same effect of recovering sherds of the desired size. The second of these two possibilities may be slightly more likely, as in no case have sherds representing an entire pot been recovered at Thirlings.

Selected Part of Discrete Deposit Deliberately Recovered (Route B)

This final possibility could only operate if the sherds were left at a random size after the breakage event. In this case selection occurs at the very end of the process; sherds of random size were stored and those of appropriate size were selected for deposition within a given deposit. This recognises the real sherd-size differences between post-marked and unmarked deposits.

A Question of Intentionality: Route A versus Route B

Relying on their internal logic and the available evidence, there is no means of definitely deciding which of the two routes for pottery fragmentation, provisional discard, and selection is the more likely (see figure 6.3 for summary). The difference is important however, as it represents a difference in intention, and therefore a difference in the operation of human agency. Arguably, in Route A the point of intentionality lies at the beginning of the sequence: the deliberate breakage of pots, or the re-fragmentation of accidentally broken pots marks, a clear intention to later use sherds of a specific size in specific way. This immediately summons notions of predestination and of deliberate planning; this does not necessarily imply that there was a known pit-design in mind for each broken pot, rather that there was foreknowledge that broken pots of a restricted size would be required for a post-marked pit deposit at some point in the future. Yet this does not sit comfortably alongside the relatively lengthy time-interval that abrasion by elemental weathering would have required, unless one is also prepared to argue that depositional practice was so stable and necessary that it generated a forward-looking pottery storage strategy that managed sherds as a 'resource'. This is not a scenario that combines easily with the clear lack of consistency in pit design and, to a lesser extent, the lack of spatial patterning, which indicates a depositional strategy that was more *ad hoc* than deliberately planned.

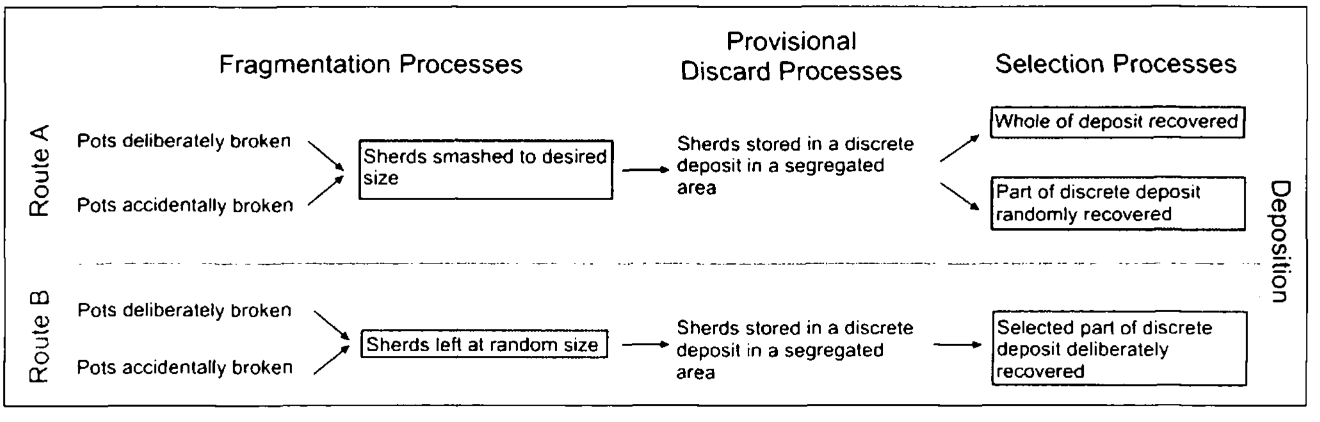


Figure 6.3: The two biographical routes

Alternatively, if the point of intentionality is taken to exist at the selection stage of the sequence, as in Route B, there are fewer implausibles. In this scheme potsherds are still deliberately stored, as they are acknowledged to be of significance for future deposition; however, the nature of this deposition is not so predetermined and it is far more opportunistic.

When the requirement arose to dig and fill a pit, the appropriate repertoire of artefacts was selected from what was available, including potsherds of the appropriate size. This is reflected in the structurally unique design of the pits, and implies that, whilst there was an outline or broad template of appropriate depositional strategy, this was not so prescriptive as to require forward-planning. This scheme accommodates the temporal dimension of abrasion through elemental weathering, which, if one accepts a mobile lifestyle, could have occurred when people were not present at the/a site. A more definite statement cannot be made, and the various scenarios explored here remain as a testament to the variability and potentiality of possible past behaviour; however, if a choice must be made, it seems that Route B represents a more likely scenario.

Post Erection

One of the statistical observations that played a major role in constructing this biography was the connection between sherd size and post erection in the Middle Neolithic. Given this relationship, it would be wrong to try to disconnect post erection from the deposition of pottery. Post-marking became of greater significance during the Neolithic at Thirlings: in the earlier period, the small number of post-marked deposits contained a greater weight of pottery than unmarked examples, whilst in the Middle Neolithic the number of post-marked deposits increased and the pottery they contained was more highly fragmented than in their unmarked counterparts. Both of these situations demonstrate deliberate selection, and provide the strongest example of a 'rule' of pit deposition. However, we cannot state which of the two variables *drove* the process, if either. There are two possibilities: 1) the erection of a post could have been the desired end-product that required pottery deposition for some reason; or 2) post-marking and fragmented pottery both simply represent different elements of pit deposition alongside organic material, the size of the pit, and its eventual shape: items in a repertoire that could be drawn upon to create the unique finished deposit. We cannot know which, and it is probably not important, given that we are simply left with the knowledge that it happened. Yet there is a demonstrable statistical connection between sherd size and post-marking that requires explanation: if they are simply both elements in a repertoire, then they were relatively inseparable. There is no definite answer, but if we accept the 'Route B' hypothesis, that sees the collection of materials as a more contingent than planned process, then it seems more likely that option 2, 'post-marked deposit-as-eventual consequence', is a reasonable scenario. Conversely, seeing post-marking as a desired end product we are forced to accept 'Route A', that saw potsherds as a mere resource within a predestined scheme, with all the attendant criticisms above. Clearly, on those occasions where highly fragmented potsherds were selected, this occurred with the knowledge that post-marking would occur, the statistical relationship proves this; however, we should still view this articulated relationship as a small part of greater, more opportunistic process that led to pits being dug for specific reasons and in a highly contingent manner.

Depositional Pits Without Pottery

Finally, there were those pits that did not yield pottery but which did produce Neolithic material, such as F648 that was dated to 3360 – 3020 cal BC (OxA16103) from carbonised hazelnut shell. Accepting that the organic material in these pits was of the same origin as that from the pottery-bearing pits, we are drawn to the conclusion that pottery was not a requirement in all deposition. This denies ceramics the privileged position of driving the depositional process, and allows for deposition to occur as a social act without the involvement of pottery storage strategies. Organic material itself could have been stored prior to deposition, though we have no proof of this. Naturally, the analysis here has focused on the fragmentation and provisional discard of pottery because it demonstrably was related to the nature of pit deposition, but we should not be so assured of it primacy. As Route B allowed the significance of the pit creation process to rest at any stage, and the role of pottery to be more reflexive, so it also allows pottery to be absent. This is because Route B, whilst primarily a biography for pottery treatment, also expresses a philosophy about the appropriate treatment of material culture: one that denies a concept of pre-destination in the process of pit digging. More than ever, pit digging and filling becomes a sphere of action with few fixed rules, its motivation confusing.

Discussion: Different Significances

This concludes the narrative of a number of possible biographies for the sherds of broken pottery at Thirlings; no distinction was made between Earlier and Middle Neolithic deposition events, as it was felt that the different scenarios were equally applicable to either period. Dependent upon which 'route' is accepted as the most convincing, one is conceptually categorising the significance of the pottery in the overall social process of complex pit deposition. If Route A is preferred, the potsherds occupy the status of a resource, socially meaningful to be sure, but a resource created and used in a predetermined way for a purpose accepted at the beginning. Here the digging of a certain type of pit requires a certain type of material culture, and this need drives fragmentation, storage and deposition. Alternatively, following Route B, the pottery is still a resource but its role in the process of deposition is more reflexive, because the assumption of predestination does not exist. The interpretative extension is that the desired type of pit (post-marked or unmarked) did not necessarily dictate the nature and complexity of deposition, which leaves open the possibility that the inherent properties of the pottery or other material culture dictated the mode of storage, selection and burial. So, just as intentionality differs, so does the relative significance of the acts: under Route A the significance lies in producing a pit that adheres to a given design, whereas Route B allows for the significance to lie in the production of a unique deposit at every stage, as it acknowledges that the material culture could be active in social choice. Route A privileges product, Route B, *process*.

This concludes the pottery biograph*ies*; the plural is stressed because it should be readily apparent that there was as much variation in the treatment of individual sherds, as there were sherds recovered from the site. Even though one biographical route was eventually preferred, the tortuous nature of the interpretation highlights both the degree to which those acts must have been multifaceted, and the potential for individual contingency to effect the selection and treatment of pottery. It is worth remembering that this complexity arose and developed before *any deposition even took place*; every single act, every choice, every piece of material culture was wrapped in a thousand possible symbolic and/or functional meanings that led to their fragmentation, provisional discard and selection.

Narrative II: Pit Biographies

This biography concerns the sequence of choices made over the location of a pit and its place in the context of the site. If the previous narrative eventually revolved around intentionality and significance at different moments, this narrative is concerned with temporality and its contradictions. It begins with the choices that seem to have informed the location of individual pits, but then proceeds to expose how contingent these choices were through a consideration of clustering pits and recutting pits, both practices that seem contradictory initially. The result is an appreciation of Thirlings, not as a complete site, but how it came to be.

Locating a Pit

Having stored and selected specific potsherds and combined them with the organic residues of everyday life, the time came for these materials to be deposited. We have seen how this process left extremely complex individual pits behind, but the earlier analyses also demonstrated particular spatial trends in the location of those pits. It has been statistically demonstrated that the pits at Thirlings have little overall *spatial* patterning. Even clustering behaviour was weak where pits of differing date existed side-by-side. Moreover this pattern, if that is an appropriate term, persisted throughout the Earlier and Middle Neolithic: each pit was an island, the extent of the spatial relationship between them was their location within the same hectare. Yet we know that deliberate thought and planned choices operated in the selection of material culture for deposition, so the spatial relationship between the pits, even if that relationship displays randomness, must also have been the *product of human choice.* At issue here is the temporality of pit digging. It is obvious, but important to state, that the site did not spring into being fully formed, it represents the slow accretion of human action over centuries. Vitally important is the fact that none of the pits intercut: despite the long history of the site throughout the Neolithic the immediate locale of each pit was *always* respected. The apparent randomness of distribution of different pit types was therefore not the product of haphazard activity. Pits were not located deliberately based upon their filling or outward form, but they were thoughtfully placed so as not to interfere with any previous acts of deposition. So, a slight modification to an earlier statement: the extent of the spatial relationship between pits was their existence within the same hectare *and* their deliberate spatial separation.

This deliberate respect cannot have been a direct result of human memory though, as the time spans are too vast, crossing many generations, nor could even the sturdiest of upright posts have resisted the rot of centuries. Perhaps the hollows from soil deflation after the pits were refilled could have remained as a visual prompt, but these too would silt up with time (Garrow 2006, vii). In the Earlier Neolithic on a less crowded site there would have been less risk of intercutting, but having already discarded the idea of random chance, we cannot regard the segregation in later years as mere luck; so it falls to one remaining factor, that of deliberate concern. Clearly a significant amount of care was invested in selecting the material culture for deposition and in the creation of complex deposits, especially those marked with posts. It seems reasonable to posit a similar degree of care invested in the act of pit construction. Perhaps at the start of digging, during turf-cutting, particular trouble was taken to ascertain the existence of an earlier deposit, if one were discovered the location would immediately have been shifted and the process begun again. Such a scenario fits rather neatly with the lack of connection between pits on the basis of their fill, as any location was acceptable provided it was vacant. However, it should not be forgotten that the site as a whole was clearly important for pit deposition, so one is left with a series of competing interests: that a pit should be dug on the site in general, but not in a manner that interferes with pre-existing activity; each pit being an individual statement that could not contradict the statements of others.

Clustering Pits

An obvious contradiction are those cases where pits seem to have been located within deliberately structured clusters, to the extent that they form a regular shape, such as an 'L', encountered twice at Thirlings but repeatedly at other sites, like Kilverstone (Garrow *et al.* 2005). At Thirlings, unlike other sites, there are no proven statistical relationships between the pits within the clusters: they are often of different sizes, dates and types. No pottery refits occurred between any of the pits in any of the clusters except one notable example, pit 366 in cluster A, and this was only a single sherd. It seems likely, therefore, that the pottery placed within the pits originated in discrete temporary deposits, as discussed above. It is also difficult to state whether any of the pits in the clusters were constructed at the same time. Indeed, in a number of cases, pits producing different pottery styles existed side-by-side in a cluster. So, if clustering is the only recognisable connection between individual pits, this relationship did not extend to their preparation or finished form. Even so, this spatial connection is initially difficult to reconcile with the degree of concern and temporal disconnection posited above. Perhaps clusters, rather than being a definitively different form of articulated pit-statement, simply represent activity at the site that occurred within a tighter time-frame. Continuing with the interpretation that each pit was a unique undertaking, clustering may represent pits created when their neighbours were still visible, either with extant posts or disturbed ground; obviously they could also have been dug at the same time, and this is not denied, but the possibility should be left open that a few years could have passed. It has already been observed that the site as a whole was an important place for deposition, so whilst ensuring that a pit did not intercut, clustering may be the means by which a pit was emphatically located within the site, through reference to extant and visible pits, rather then simply a shared knowledge that pits existed in the locale. No physical attributes need share a connection, the fact that they were all pits and dug for broadly similar reasons was enough.

Nor should this interpretation be troubled by cluster 'D', where pits containing stylistically Earlier and Middle pottery existed side by side; firstly, ceramic progression must have occurred at some time, so it is not illogical to expect pits within a cluster to exhibit both forms of pottery if social norms were changing during the period it was constructed. Secondly, if we accept that clusters could develop for the reasons stated above, and over a period of some years, there exists the temporal dimension in which ceramic change could occur. Furthermore, in all probability, potsherds were provisionally discarded for a significant period of time prior to burial, as demonstrated through the pottery biography. If pit digging is envisioned as a personal undertaking, with few fixed rules, it is quite possible that people from different social groups or smaller units within groups would store and deposit their pottery at different times, and this too would blur the distinction between ceramic traditions. People of the Neolithic would not necessarily respect our neat typological distinctions in their choice of pottery, some of which could have been stored for many years, or indeed generations if such a thing is conceivable. Overall, therefore, if clustering is viewed within a framework that emphasises the individual pit as the unit of analysis and maintains its particularity, there is no reason why clusters could not develop in a haphazard, opportunistic and relatively disconnected manner.

Recutting and a Different Temporality

Temporal concerns existed at a smaller scale too. Only thirteen of the 228 pits on the site were recut, but this is distinct from the notion of *inter*cutting discussed above, as in each case the recuts were within the bounds of the pre-existing deposits and *did not cut any layers of silting*. There was also a large number of potsherd refits between contexts in the same pit, sometimes divided by a recut. This implies that the recutting took place with little or no time-interval following the deposition of earlier layers, and therefore formed part of the process of preparing the pit deposit as a whole. These acts of recutting cannot be interpreted separately from the earlier phases of deposition; they were part of a given pit's conception and preparation. The lack of silting between recutting episodes also demonstrates that pits were dug, recut and filled within a short space of time. It seems that these were not monuments that could be altered and changed over long time-spans. Pits were brief interventions, created in a complex manner, but not subsequently altered or developed; that prerogative was vested in the site as a whole. It is also true that recutting was not a regular practice in pit deposition, and seems only to have occurred in the most complex cases, pit 466 being an excellent example. Yet once again it presents us with an interesting contradiction. It has been argued that there was a deliberate effort to avoid later pits disturbing earlier features, yet in specific cases earlier deposits *within* a pit were actively recut. The distinction lies, again, in the temporal scale, as it seems that finished pits were actively avoided, but that recutting during construction could be part of preparing a complex pit, indeed, was essential to creating the character of certain pits.

Perhaps 'evidence of a recut' as the criterion here is unnecessarily restrictive, as it ignores the act of post erection as a form of recutting. Many of the most complex pits, including those that saw recuts, also witnessed the erection of posts; obviously the two practices are distinct, as one ended in a vertical timber and the other did not, but both actively involved the re-disturbance of recently deposited material. What these observations direct us toward is a consideration of attitude. These aspects of temporality involve human intervention in deposited material, and seemingly this intervention was permissible in certain contexts and not in others. A prevailing attitude seems to have existed that allowed the recutting of deposits during the creation of a pit, but not afterwards; therefore, the attitude towards a pit as a *finished expression* of some human need, was very different from that shown towards a deposit or a recut, or a post that *served in the completion* of that finished expression. Any act undertaken during the creation of a pit served in its completion, even if it was a subtractive act such as recutting; all formed part of the chain of events that would end in a pit that could no longer be changed, even if that pit was totally invisible from the surface. This entire process was then further complicated by the set of attitudes and desires surrounding the material culture that formed just a small part of these deposits, but which had a long life-history of its own.

Discussion: Creating Thirlings

We know that huge variation existed in the structure of the pits at Thirlings, but it is also apparent that an individual discussion of every pit will never get us closer to interpreting the site, because every act of deposition was entirely unique. Thus, the narrative here was concerned with charting the development of the site as a whole by establishing the patterns and contradictions that operated in the placement and development of pits. This biography has highlighted themes of immense importance in the process of its creation. From the archaeological evidence we know that pits were individual 'statements' in deposition. One could re-cut a pit as many times as necessary, provided this was undertaken prior to its completion; however, once finished, a pit was never allowed to be damaged. The sheer number of pits and postholes on the site denies that this could be random occurrence. Similarly, clustering appears important in certain instances, but none of the pits can be related beyond this degree of spatial association, indicating again that each pit was an individual, bounded and unique statement. The temporality of pit digging is also revealed by this narrative. Association with previous acts of deposition appears to have been significant, as the site was returned to, and because clusters of pits exist. So, whilst there was long-term, and perhaps generational, chronological continuity, short-term temporal reference between acts of deposition appears to have been insignificant, given the lack of pit-specific connections or statistical associations. In lieu of further discussion, the narrative approach presented here gets us no closer to the meaning of the site or the deposits, but it does demonstrate quite precisely the factors involved in structuring pit deposition: different temporalities, deliberate respect, but also unique and brief interventions.

Conclusions: Contingent Intentions

In narrating the treatment of pottery and the creation of the site, these biographies have highlighted a series of themes that acted as structuring principles in pit deposition. These can be summarised as: differences in relative significance, and contradictions in the temporal ordering of activity. However, the term 'structuring' here is not deployed in the sense of 'structured deposition' with its overtones of symbolism. Instead, what is evident here is a series of associations and contradictions, based upon statistically validated archaeological evidence, which appear to have operated throughout the run of activity on the site. The pottery biography was largely concerned with interpretable differences in intention at given instances in the past, and this section will, first, consider the outcomes of these deliberate choices in relation to significance of different practices or groups of practices. Second, the pit biography will be considered, relating those contradictions in temporality to the metaphysical nature of ritual action, and in turn to the difficulty of interpreting the 'meaning' of the activity. Finally, this section will close with an appreciation of contradiction and contingency – the underlying facts of Neolithic activity at Thirlings.

Significant Choice

In considering 'intention' here, the discussion is not questioning that there was an intention to produce a pit, or an intention to treat material culture in a complex way; this must be beyond doubt; it happened. Rather, intention here relates to the desire to create a pit in a unique manner, or not, and to the method by which this was undertaken. We are concerned, therefore, with deliberate *choice*. So, we should not question the intention to produce a product, this is self-evident, but instead examine whether this was important compared to the desire to produce a particular *process*. Route 'B', in which the selection of various sherds for deposition occurred at the end of the sequence, was selected as the most likely. There was, under this scheme, a choice to begin the procedure of storing sherds, probably linked to the later creation of pits, although not necessarily. People, therefore, also chose to *continue* the practice of storing broken potsherds when a breakage occurred. Other choices became apparent at the end of the process though, when certain sherds were chosen to be combined with organic material, and then juxtaposed with particular structural elements, such as posts, in the creation of a pit deposit. This could be contrasted sharply with the route 'A' hypothesis that stressed the determinant nature of the procedure from the beginning and the pre-destined end for the pottery; it abstracted later agency. Yet we also saw how the pottery itself was not an all-important category of material culture: it was not essential to pit deposition, as many pits failed to receive any. Table 6.1 summarises this comparison of the routes.

Route A	Route B
Sherds are a resource	Sherds are a resource
Choice/intention at the beginning	Choice/intention throughout
Predetermined	Reflexive
Pottery destined for a pit	Pottery used opportunistically
Pits pre-planned	Pits contingent

Table 6.1: Summary of the differences between the A and B biographical routes

Distributing the field of choices throughout the sequence (the 'B' hypothesis), rather than grouping them at the beginning, allows us to examine the relative significance of the different practices that comprised pit deposition. The term 'relative significance' should be contrasted sharply with 'symbolic meaning', criticised in chapter four. Relative significance represents an interpretation of where the stress lay at a particular instance in the past; the instance here is the creation of a pit deposit. It is based on a statistically observed trend in the data. Significance is therefore situated precisely in a given moment as the outcome of meaning, where meaning is understood to relate to 'why' something occurred. Significance must be relative because it is not essentialist or absolute, it does not dictate what somebody must have thought in the past. Instead, significance is based entirely on the differential appreciation of archaeological evidence. For example, we know at Thirlings that the size of potsherds was of extreme importance in relation to the post-marking of deposits, yet relatively speaking, the state of decay of these sherds was insignificant, as there was a random distribution of abrasion values. Saying that something was 'significant' or otherwise, based upon a series of statistical trends is very different from saying why these trends existed because of their 'symbolism'.

Arguably then, there are a limited number of aspects to pits that could be pre-eminent in terms of relative significance: the material that comprises the deposit (what); the process of creating the deposit (how); the finished pit (product); and how that pit relates to other pits (where). It is possible to state which may have been most significant at the *specific instance* in which a given pit was dug. We saw above how route 'B' placed the burden of significance on the process of digging and filling a pit, over the product of the finished pit because intentional human choice was distributed throughout the sequence and acted at the end during selection. Yet this can be supported in other ways too: most pits had no post, so clearly their finished appearance was relatively unimportant, just as it was totally heterogeneous, so there was no desired form. It clearly was significant to locate a pit on the site, but its specific relationship with other pits was relatively insignificant, evinced by a lack of patterns, except in a small number of cases, examined below. Finally, the pottery itself cannot have been of primary significance because it failed to appear in the majority of pits on the site. No category can have been of transcendental importance. At most of the visible, frozen instances of the past at Thirlings, significance was primarily vested in the act of juxtaposing a repertoire of material culture in a unique way. Ultimately, this is the same as privileging process over product, agency over structure, and the importance of contingent human choice in producing 228 unique examples of deposition.

Ritual Temporality

We have seen how the *lack* of patterns or spatial associations between the majority of the pits at Thirlings must be the result of deliberate human choice. Primarily this was the result of a deliberate concern not to interfere with pits that had already been completed. Yet we must contrast this with the fact that once this criterion of non-interference was established, the location of a pit appeared of little significance, as there were no spatial relationships between any of the variables that comprised a pit. Clustering and re-cutting behaviour required this hypothesis to be developed somewhat: clustering was seen to recognise the significance of placing a pit on the site by associating, but not interfering, with previous acts. Re-cutting, as an act of *creating* a deposit, was contrasted with the act of *inter-cutting* and disturbing a finished deposit, which never occurred. Yet, despite this respect for previous deposits, they were only rarely marked in any manner, and most would have become invisible from the surface in a short space of time. This, again, amounts to privileging the greater significance of process over product.

These spatial behaviours allow the definition of three temporal scales that informed the process of pit digging at Thirlings. There was the knowledge that the site was important for deposition and that, by the Middle Neolithic, this had occurred for a long period of time. This influenced the broad strategy of returning to Thirlings. Mindful of our ignorance of settlement location and subsistence regimes in the Neolithic of north-east England, this strategy of return could have been directly linked to the site's use for temporary settlement; though alternatively, if the site was for deposition alone it still would have operated within the framework provided by the settlement rhythm. A closer, perhaps yearly or generational time-scale allowed for clustering to occur. Finally, there was the here-and-now, with pits created in a short period of time, utilising a complex juxtaposition of material culture, architectural components and subtractive excavation: the acts that led to the individuality of every feature and set them together with, but apart from, the others at the locale. The consideration of temporal factors is more than just illustrative, it has focused attention on the way the site may have been used and returned to. We see the consistent use of the site in a similar way, but within that grand scheme are the dozens of unique individual acts.

Contradictions and Contingency: the Interpretation of Thirlings

Thirlings is a site defined by its contradictions:

> the fragmentation of pottery was important BUT its state of preservation was not,
> its pits are highly complex BUT they are spatially simple,
> they are spatially simple BUT they deliberately respect each other,
> they are spatially simple BUT a few cluster,
> they never inter-cut BUT re-cuts exist.

These contradictions have been examined and narrated. We have seen how a biographical approach to their *genesis*, whilst incapable of stating their meaning or why they came about, has freed interpretation from a static appreciation of similarities and differences and has allowed a focus on process. Yet every step of the process was reliant on myriad individual choices and the vagaries of specific human agency – the creation of highly individual pits. Those contradictions are the outcome of these individual choices. The specific motivation for these choices (the 'why') is lost to us, so we are forced to consider one final factor: the role of contingency in past action.

Contingency is the outcome, not of random chance as Hodder seemed to assert in *The Domestication of Europe: Structure and Contingency in Neolithic Societies* (1990), but of human choice – it is the manifestation of agency. Contingency is the description of how every minute individual decision was impinged upon by every other choice ever taken and by every other symbolic meaning ever apprehended as a motivation. It was this contingency that informed the production of each unique pit deposit, and Thirlings as a whole site. Moreover, it is this contingency that renders the 'symbolic meaning' (Hodder 1986, 125) of the pits impossible to interpret. We see only instances of the past, physically frozen in each pit, a relationship of significances only relevant for the instant in which they were articulated. The transitory meanings that created those relative significances changed instantly, just as the meaning of the finished pit must have done, and it impossible now to interpret them. All we can record is a changing series of instances fossilising instantly irrelevant relationships in pit deposits. The accretion of these relationships formed the character of the site as a whole.

A narrative, biographical approach to the interpretation of Thirlings has fulfilled a double function. First it has made sense of a diverse range of contradictory practices by tracing how Thirlings came about, whilst at the same time showing how it *could* have done, but did not. Second, the narrative approach has displayed its strength in opposition to those approaches that adopt the 'why' of symbolic meaning, approaches criticised at the end of chapter four. In demonstrating the potential variability of human choice through unique pit deposition, saying 'why' something occurred is exposed as an essentialist fantasy – an imposition. At the level of agency, contingency rules. So, if contingency defeats contextual archaeology in the race to declare 'why' something occurred, we are left examining *how* people effected changes themselves through an evolving narrative. At Thirlings that narrative saw the use of the site for the complex deposition of a repertoire of material culture, in a manner that stressed performance over product, drawing on refuse with complex life histories, to produce a site where every deposit was respected following the conclusion of its individual biography.

CHAPTER SEVEN
CONTEMPORARY DEPOSITION: THE CONTEXT OF THIRLINGS

Introduction

Chapter six examined the complex biographies of pottery and pits at Thirlings. This chapter explores the context of those practices in the form of activity at contemporary Earlier and Middle Neolithic sites. A range of three very different places and types of deposition are investigated: a complex pit at Yeavering, a deposit of pottery and cremated bone beneath a round barrow at Broomridge, and the activities surrounding the construction of five upland long cairns in the Cheviot and Pennine hills. The aim is to identify common practices that cross-cut divisions of site-type, and which could represent strategies of action that were central to social reproduction in the manner attributed to 'ritual' in chapter four. At their most basic, the analyses here are concerned with statistically valid similarities and differences between the biographies of pottery fragmentation, selection and disposal at the various sites. The intention is to construct comparative narratives similar, if somewhat less detailed, to those undertaken for Thirlings.

Before beginning the analyses, there are two caveats. First, comparisons in pottery treatment and deposition can never be anything more than relative between Thirlings and the other sites. No 'normal' deposit of pottery exists for the Neolithic of north-east England, and there has been an insufficient amount recovered from the region to set up an absolute or comparative collection representing an average background – no site has produced as much pottery as Thirlings. All the analyses in this chapter are, therefore, unashamedly comparative between themselves and with the practices at Thirlings. No attempt is being made to situate the Thirlings material as representative of some kind of baseline 'normal' practice. Second, the situation is complicated somewhat by the differences between the sites. Thirlings was composed of a large number of pits, each containing complex and often large deposits. At both Yeavering and Broomridge only one feature or context is represented, thus many of the analyses undertaken in chapter five are inappropriate here because they compare averages between a large number of features, or their distribution in space. Comparanda are, therefore, only undertaken where appropriate and generally concern single pits or deposits, and the number of tests is limited concomitantly.

This chapter is divided into four sections. The first two treat Yeavering and Broomridge individually, providing a history of investigation, basic structural details, and a series of statistical analyses of the deposited pottery. The third section differs slightly as it concerns the construction of, and deposition at, five long cairns. Each long cairn is briefly described, but the aim is to consider them as a class, rather than attempting to elucidate differences between monuments that have, in some cases, not been subject to the most rigorous of investigations. The final section attempts to trace the similarities and differences in the practices that were undertaken by people at these superficially different locations, considering the issues surrounding the process of depositing both pots and monuments.

The Eastern Pit at Yeavering

The first case study of deposition contemporary with the Earlier Neolithic activity at Thirlings is provided by the 'Eastern Pit' at Yeavering. The aim of this section is to identify trends in deposition that can be compared directly with the activity at Thirlings. Following a brief introduction to the site and its excavation, this section proceeds through a limited number of analyses appropriate to the evidence from a single pit: first examining sherd fragmentation, then its connection with sherd abrasion, and finally the nature of abrasion alone. Despite the limited amount of data provided by a single feature, this section will attempt a comparative pottery biography for the site, stressing points of similarity and difference with the more extensive evidence from Thirlings. In conclusion, the nature of the depositional activity is considered.

The Site and its Excavation

The Eastern Pit at Yeavering was excavated during Anthony Harding's investigation of the henge immediately adjacent to it (A. Harding 1981, 119-129). The feature takes its name from its location six metres beyond the south-eastern entrance of the henge; however, the fact that it contained sherds of Carinated Ware implies that it was in existence substantially before the monument was constructed. It is the quantity of this pottery, some 55 sherds were suitable for analysis, that renders the feature of significance to this study. The pit and later henge lie at 392900, 629500 on the south-western edge of the Milfield basin, Northumberland, (figure 7.1) on a distinctive whalebacked ridge, considerably better known for the Anglo-Saxon palace site that came to be built upon it (Hope-Taylor 1977). The Neolithic activity occurred on the south-east facing slope of the hill. Beyond the western entrance to the henge was another pit and a grave. The grave contained the silhouette of an inhumation burial, but was undatable. The pit was bowl-shaped, 0.81m by 0.62m by 0.31m in size, and contained a large quantity of burnt material, which provided a radiocarbon determination of 3940-3380 cal BC (HAR-3063). The excavator believed that the grave may have been contemporaneous with the henge, given its precise position in the centre of the western entrance, but that the dated pit could be considered of a similar period to the Eastern Pit, examined here (A. Harding 1981, 122). The association of the grave must remain speculative, but the dates from the pit do fit within the currency of Carinated Ware, and thus the two pits indicate a definite Earlier Neolithic presence on the site.

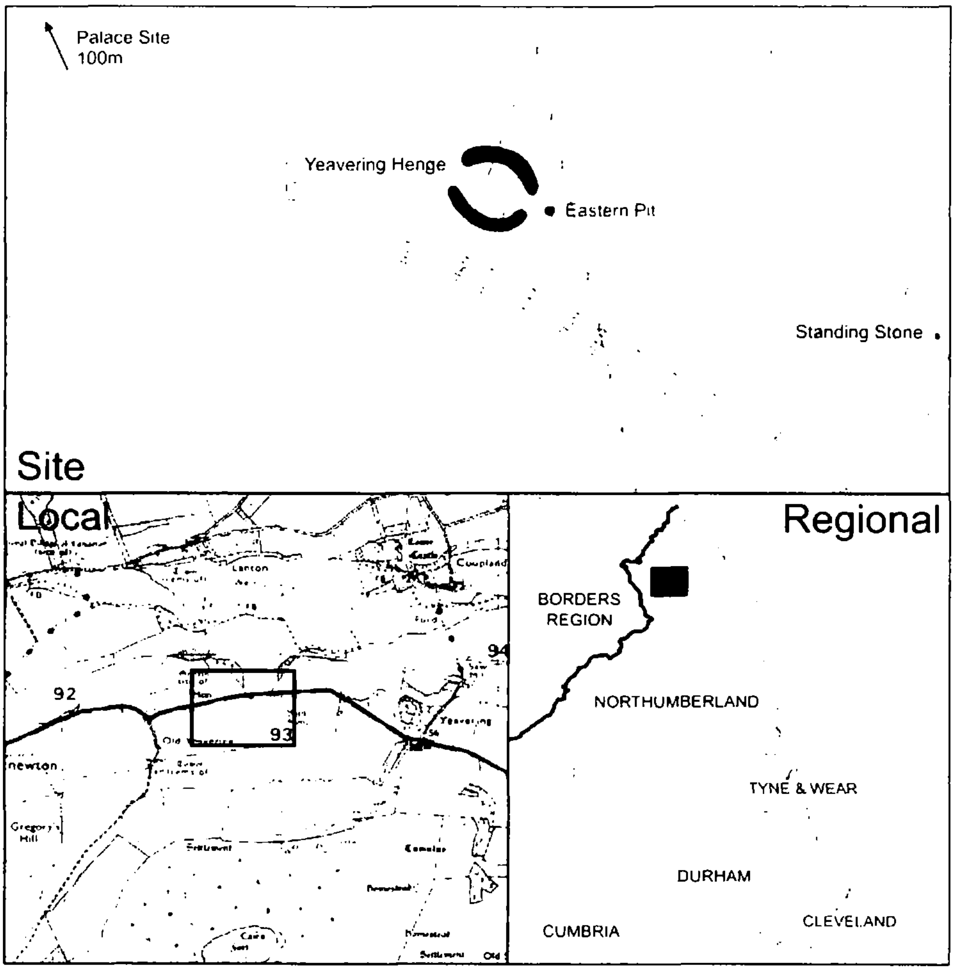


Figure 7.1: The location of the Eastern Pit at Yeavering

The Pit

The Eastern pit was not fully excavated, as it lay partly beneath the southern edge of the excavation trench, and was half-sectioned in this position. Its excavated size was approximately 2.5m by 2m by 0.5m. Also, Harding argued that the irregular form of this 'depression' meant that it was unlikely to have been a deliberately constructed pit (A. Harding 1981, 122). However, its four separate fill contexts, the charcoal, and the quantity of pottery recovered does indicate that it was a focus for depositional activity, whether this occurred in a pre-existing hollow, tree-throw, or indeed a deliberate but irregular pit, such those found at Thirlings. Figure 7.2 is a reproduction of the section drawing of the pit taken from the excavation report. The disturbed nature of the pit fill made the identification of the precise context of the sherds difficult (*ibid.*, 122) and, therefore, a similar situation to that in chapter five exists: sherds can be securely located within the feature, but not to a specific context. However, the types of fills in the Eastern Pit do contrast with those from Thirlings. Here there is evidence of silting in the form of a primary fill of yellow-grey sand and a final fill of grey sand. These could be deliberate deposits, but given the sandy nature of the subsoil and the fact that such silting was almost entirely absent at Thirlings, it seems likely that this pit was left open for a period of time, rather than backfilled immediately. If the majority of potsherds were recovered from the main deposit of 'mixed sandy soil', which seems likely considering the size of the pit and the quantity of sherds, then a further contrast with Thirlings is evident. At Thirlings all the potsherds were found within a matrix of dark, humic soil, despite an identical type of subsoil to Yeavering. At Yeavering the context of recovery appears more sterile. Given the sandy nature of the major fill, it is possible that the pottery was deposited in an open pit that was allowed to silt up gradually. The sandy constituency of these layers also contrasts directly with the very high concentration of burnt material recovered from the second pit, some thirty metres away.

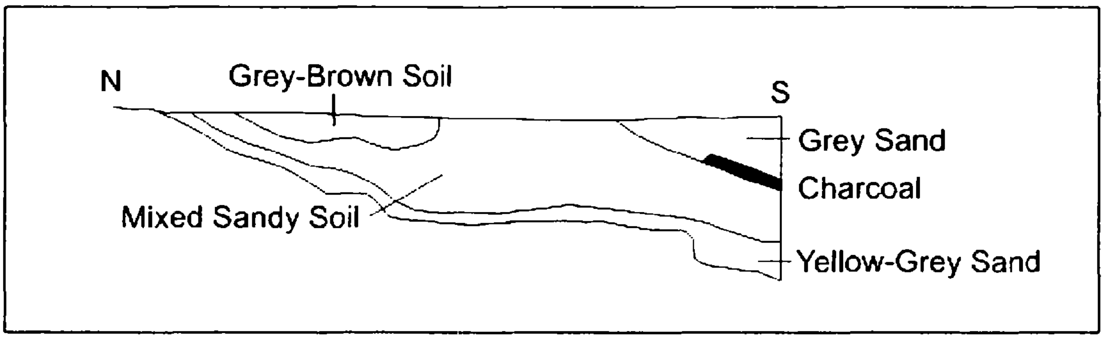


Figure 7.2: Section drawing of the Eastern Pit at Yeavering, no scale on original (after A. Harding 1981, 125)

The Pottery

Almost all the ceramic recovered from the Eastern Pit was Earlier Neolithic Carinated Ware. Of the sixty-four sherds excavated by Harding, representing a minimum of thirteen vessels, fifty-five were of sufficient size to undertake size, weight and abrasion analyses. These examinations take the whole deposit as the sample, rather than breaking it into constituent pots, for two reasons. First, five of the pots are represented by single sherds – unsuitable for statistical testing – and second, the nature of the archive material rendered the potential misidentification of pots likely, which posed too great a risk to the integrity of the testing. The pottery was examined in a single day at the Museum of Antiquities, Newcastle-upon-Tyne. The tests are divided into those concerning pure fragmentation, fragmentation against abrasion, and pure abrasion. When comparison is undertaken with the deposits at Thirlings the most appropriate statistics are selected; i.e. for comparative purposes, the Eastern Pit is classed alongside the Thirlings Earlier Neolithic 'unmarked depositional' examples.

Fragmentation: Sherd Weight and Sherd Size

The total weight of the Carinated Ware analysed here was 417.1g; with an average sherd weight from the Eastern Pit of 7.58g.

	Avg. Sherd Weight (g)	Average Weight per Pit (g)
Eastern Pit	7.58	[417.1 total]
Thirlings (unmarked deposits)	11.77	203.46

Table 7.1: Sherd weights from the Eastern Pit and Thirlings

In order to examine the spread of sherd sizes, so as to classify how consistent the fragmentation levels are, the standard deviation from the mean sherd length is calculated. For comparative purposes, the variance (*V*) of the sherd sizes is then produced by dividing the standard deviation by the mean.

	Sherd Length (mm)	
	Eastern Pit	Thirlings
Mean	30.91	40.21
Median	29	35
Range	86	102
Sd Dev	13.05	16.68
V	0.42	0.41

Table 7.2: Sherd length statistics from the Eastern Pit and Thirlings

Although the sherds in the eastern pit are smaller in size and are correspondingly lighter than those from similar pits at Thirlings, their internal variance (*V*) is very similar. So, the sherds may have been fragmented to a smaller average size at Yeavering, by either human or environmental mechanisms (unimportant at this stage), but as a sample they show a comparable degree of variation from that average size. Figure 7.3 displays this similarity: the range bars exist in different positions representing the differing average sizes, but the median and mean points exist in similar positions relative to the bars, hence the similar internal variability of each sample.

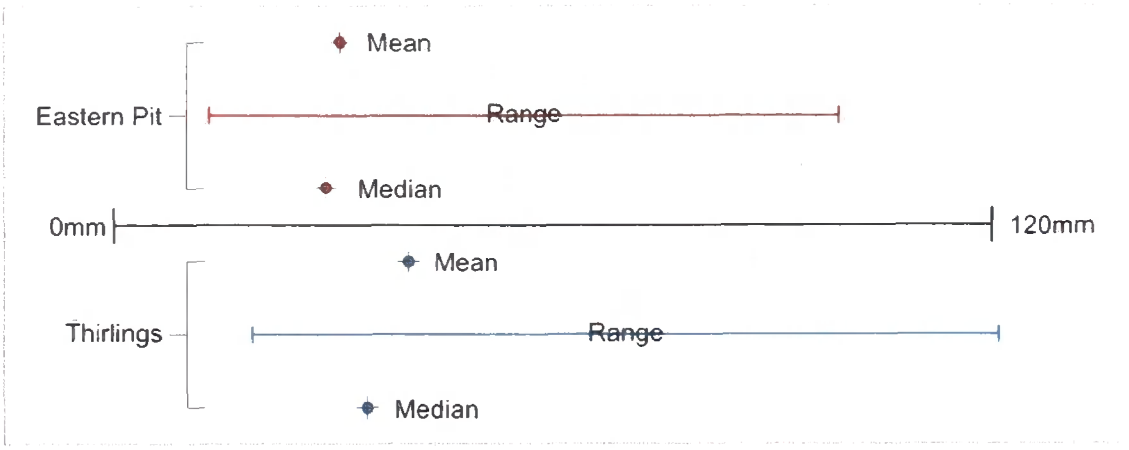


Figure 7.3: Range, median and mode of sherd lengths from the Eastern Pit and Thirlings

The final measure of comparison between the Thirlings and Yeavering data is to test the whole distribution of sherd lengths against each other. Graph 7.1 displays the cumulative frequency percentage distributions of the two samples. Once again, it is evident that the Yeavering sherds are noticeably smaller than those from the unmarked Earlier Neolithic pits at Thirlings. However, these curves can be compared statistically through a Kolmogorov-Smirnov two sample test (Fletcher and Lock 1991, 111). This will establish whether the two distributions of sherd lengths can be considered to originate from the same 'population' or not, i.e. whether the differences between them are enough for us to state categorically that fragmentation levels between the two sites were dissimilar (see appendix 4.3 for the required data tables, and the means by which the critical test value (1551.62) was calculated).

Kolmogorov-Smirnov Two Sample Test

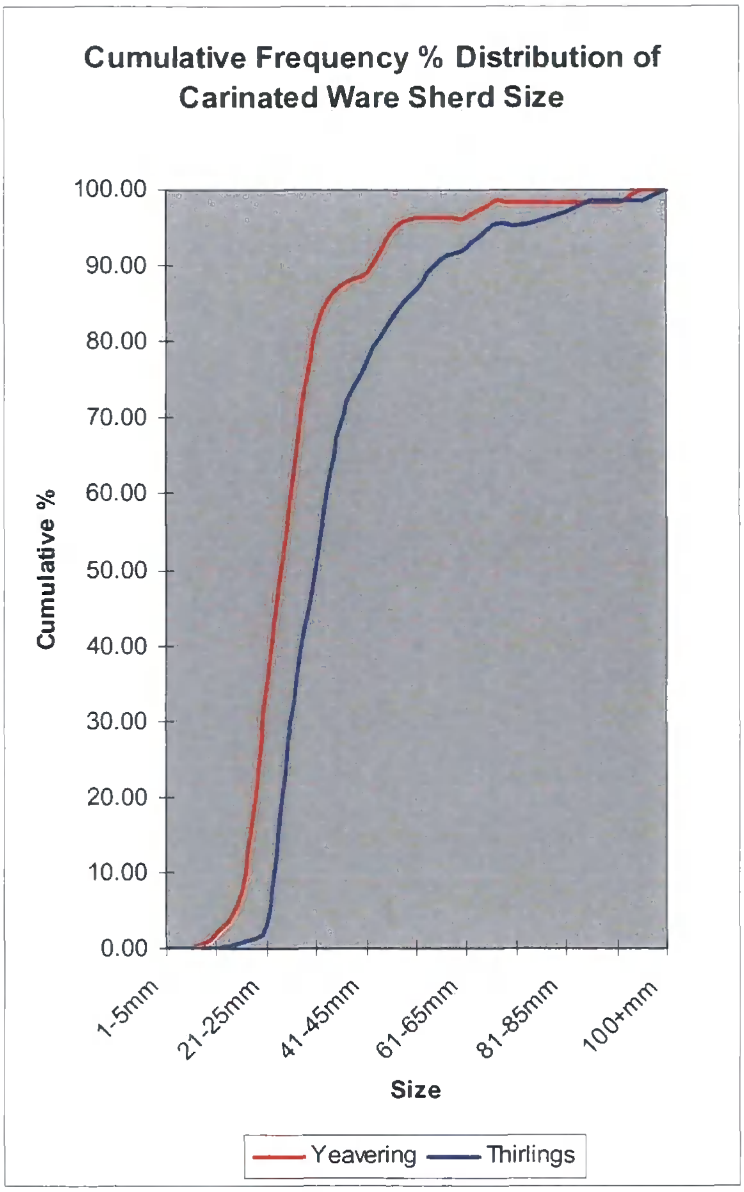
For the two populations to be different, the result must exceed 1551.62

n.A x n.B x D/100

n.A and n.B refer to the size of the Eastern Pit and Thirlings samples (55 & 129)
D = the maximum difference in their cumulative percentage (31.44)

55 x 129 x 31.44/100 = 2230.67 – they are from different populations (95% probability)

The test statistic clearly exceeds the critical value required, and thus the levels of fragmentation on the two sites are fundamentally dissimilar, even if their internal variances are alike.



Graph 7.1: Graph showing the difference in sherd size distribution at the Yeavering Eastern Pit and Thirlings

Fragmentation and Abrasion

Vital to the narrative written for Thirlings was the realisation that the level of abrasion of potsherds was unrelated to their size, indicating that the abrading processes were not responsible for ceramic fragmentation. It is likewise important to investigate this link at the Eastern Pit. Once more, Kendall's Tau test is employed: a test measuring the level of association between two ordinal variables (Fletcher and Lock 1991, 49). Table 7.3 contains the data required. In order to undertake this analysis, both sets of variables must be categorical, thus the length data has been grouped into twenty millimetre units, aside from the upper class, which is larger. Tau-c is used as the table is not square. The full working for this test can be found in appendix 5.2.

	Sherd Length (mm)							
Abrasion Level	11-15	16-20	21-25	26-30	31-35	36-40	41+	**Total**
1	0	0	1	3	2	0	1	**7**
2	0	1	7	6	3	3	6	**26**
3	1	2	6	4	6	0	0	**19**
4	0	0	1	1	1	0	0	**3**
Total	**1**	**3**	**15**	**14**	**12**	**3**	**7**	**55**

Table 7.3: Frequency of abrasion levels within each division of sherd length from the Eastern Pit

Kendall's Tau (τ) Test of Association

A result near 0 indicates no association between the variables, a result near -1 or 1 indicates association

$$\tau = \frac{2k(P-Q)}{n^2(k-1)}$$

n = total frequencies (55)
k = number of rows or columns, whichever is smaller (4 rows)
P = sum of every cell multiplied by the frequencies in every cell below and to the right
Q = sum of every cell multiplied by the frequencies in every cell below and to the left

τ = -0.2 – no association

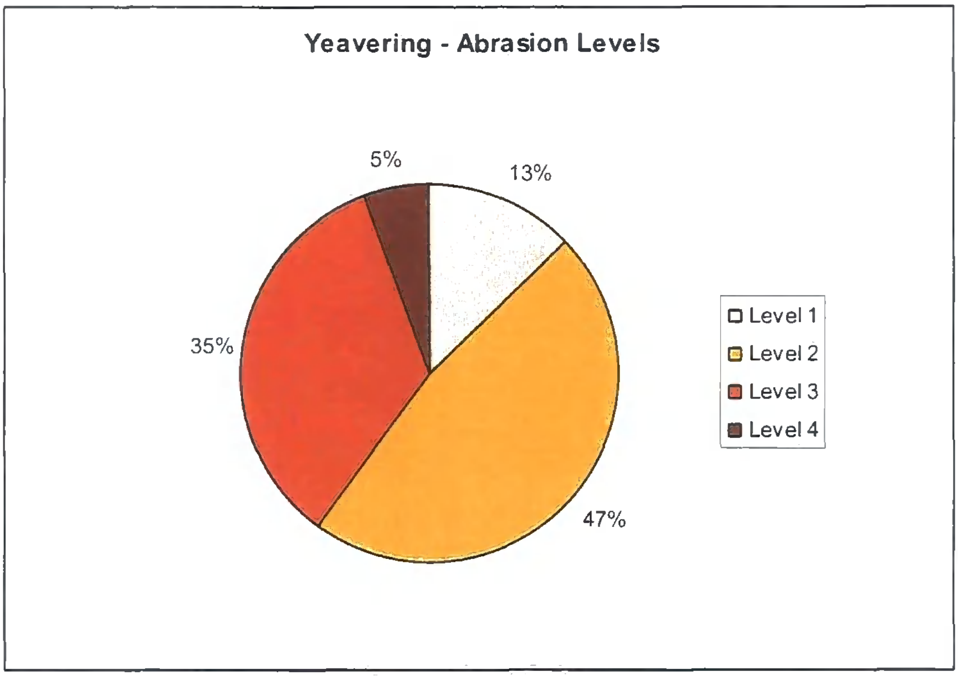
As at Thirlings, there is no association between abrading and fragmenting processes evident on the sherds from the Eastern Pit at Yeavering.

Abrasion

The overall level of abrasion is simple to assess but difficult to compare directly with Thirlings. The most effective manner of displaying the relative frequency of the different abrasion levels present in the Eastern Pit is through simple visual comparison, see table 7.4 and graph 7.2.

Abrasion	**Frequency**	**%**
Level 1	7	12.73
Level 2	26	47.27
Level 3	19	34.55
Level 4	3	5.45
Total	**55**	**100**

Table 7.4: Levels of abrasion present on the potsherds in the Eastern Pit



Graph 7.2: Pie chart showing the levels of abrasion in the Eastern Pit

It is clear that abrasion levels two and three are the most common on the potsherds from the pit, accounting for 82% of the recorded ceramics. Comparison with Thirlings presents a problem, however. First, it was demonstrated in chapter five that no particular level of abrasion characterised the entire dataset from Thirlings. Statistically the average levels of abrasion from the pits were random when the whole site was examined. Yet the dominance of levels two and three at the Eastern Pit at Yeavering does not mean necessarily that the contents represent a different abrasion regime or depositional strategy. This is because the pie chart above represents the contents of one pit – the Eastern Pit – but the statistical randomness at Thirlings was a characteristic of a site composed of *numerous* pits. When single pits and pots were individually examined at Thirlings it was shown that they, too, were dominated by particular levels of abrasion. Clearly, it would be inappropriate to attempt to compare this single pit at Yeavering to all of the Carinated Ware pits from Thirlings. Instead, given the large number of similar pie charts in figure 5.8 (chapter five) it seems fair to state that, like Thirlings, the potsherds at Yeavering were consistently abraded prior to deposition and, therefore, that each sherd from the pit probably underwent similar abrasion processes, under similar conditions, or for a similar amount of time.

Summary and Discussion

The results from this brief analysis can be summarised as follows:

1. The average weight and size of sherds from the Eastern Pit are smaller than for the Earlier Neolithic sherds from unmarked deposits at Thirlings.
2. The distribution of the sherd sizes confirms that the two samples are statistically different in their fragmentation.
3. Despite these differences, the internal variation of each sample is almost identical.
4. The abrasion of sherds from the Eastern Pit is not connected to their fragmentation.
5. Abrasion levels two and three are the most common on the sherds.

First, it should be remembered that the Eastern Pit is precisely that – a single pit – and comparisons with Thirlings, as a site of many pits, must be appropriately refined. In terms of the form and fill of the Eastern Pit, it could be accommodated comfortably by the class of 'unmarked deposits' defined at Thirlings. Its irregularity does not mean it *must* be considered a natural feature (*contra.* A. Harding 1981, 122), because there were a large number of such irregular pits at Thirlings, though it could represent a tree-throw deliberately filled with material (Evans *et al.* 1999). The processes that the pottery was subject to also seem to bear close comparison with Thirlings: the Eastern Pit demonstrates the same consistency in abrasion *within* a deposit as individual pits at Thirlings, and the size of potsherds varies from the average in an almost identical manner between the two sites. Given a similar disconnection between abrasion and fragmentation on the site, it seems reasonable to posit a similar set of circumstances surrounding abrasion. Set against these similarities, however, is the fact that the potsherds at the Yeavering Eastern Pit were demonstrably fragmented to a higher degree. So it seems that different criteria, either for selection or fragmentation, were in operation prior to deposition.

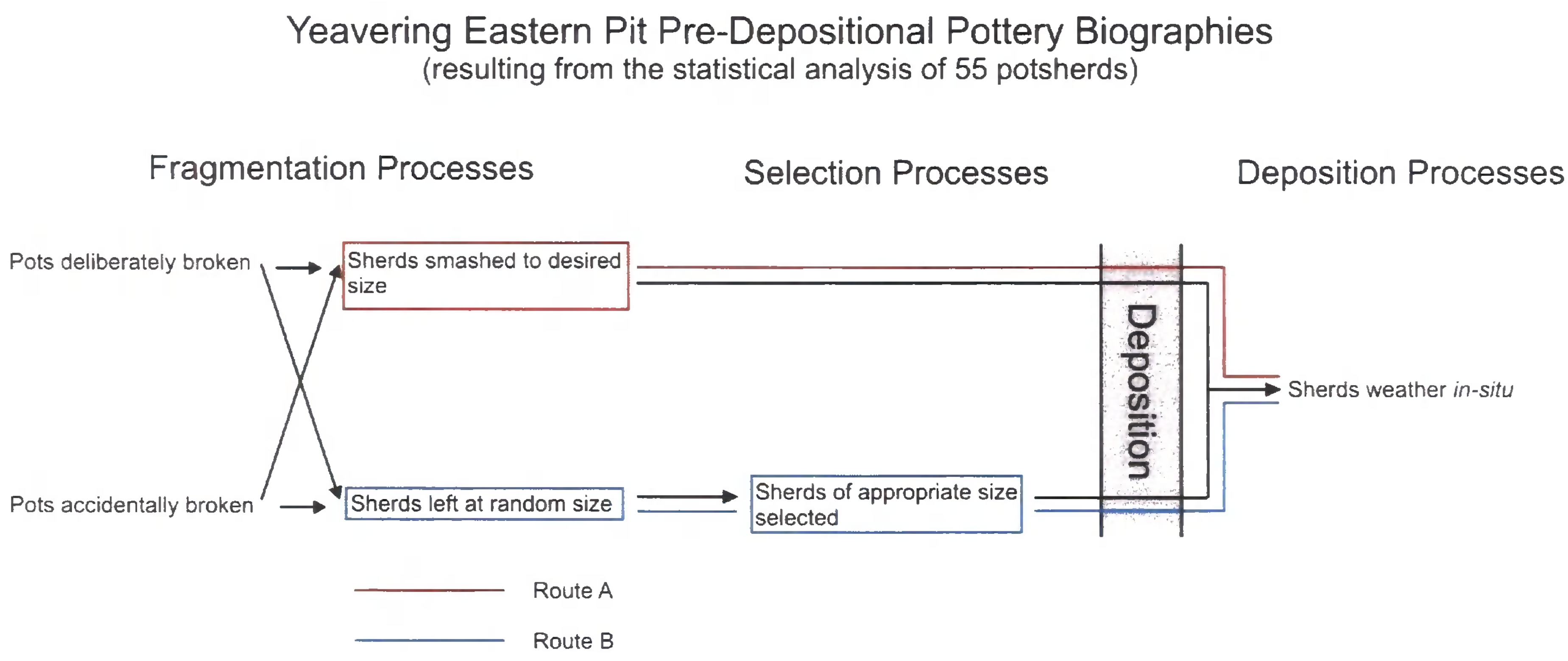


Figure 7.4: Pottery biography for the Eastern Pit at Yeavering

Despite these similarities with Thirlings, we cannot produce an identical pottery biography, because the depositional process itself was different. In the discussion of the form of the pit, above, it was noted that the pottery could have been deposited without immediate backfilling, due to the very sandy matrix, characteristic of the decay of subsoil into the pit. This contrasts directly with the evidence from Thirlings, where pits were backfilled immediately and pottery was held within a matrix of decayed organic material. If pottery was, therefore, spending time in an open pit, the pit *itself* could be the context for abrasion by elemental weathering. Thus, the *processes* of abrasion and fragmentation are likely to be the same as for Thirlings, but at Yeavering the pit may conflate the two *contexts* of provisional discard and final deposition – weathering and abrasion could have occurred *in-situ*. Sherds were still demonstrably selected for their size, but this could have occurred before, rather than after the provisional discard stage. Figure 7.4 (above) is a representation of the potential biography of the sherds. With reference to the Thirlings biography (figure 6.2, chapter six), note the new central position of the selection stage, recognising that provisional discard seems not to have occurred. As the precise nature of fragmentation cannot be ascertained, this diagram still has two possible routes. Route A misses out the selection processes because selection *de facto* occurs during the process of fragmenting a sherd down to the required size – as the sherds were then ready for deposition. Following Route B, the correct sizes of sherds must be recovered from a randomly fragmented pot, prior to being placed in the ground and allowed to weather. In either case, the lack of provisional discard phase makes the temporal scale of these stages far shorter than at Thirlings, with the potential for them to occur in direct succession over a very short period of time.

Finally, whilst the processes surrounding deposition may have been slightly different from Thirlings, there is no reason to posit a different set of practices for the site overall. Nothing in the form or fill of the pit contradicts earlier statements on the activities that generated material culture for deposition. The pottery is still most likely to be socially classified refuse from settlement activity. The presence of another pit a short distance away containing charcoal and hazelnuts strengthens this interpretation, as it indicates that a variety of activities relating to subsistence were occurring in the locality, the results of which were deemed appropriate to deposit in a complex manner. The presence of the later henge is irrelevant to this discussion. As this study rejects simplistic divisions between 'everyday' and ritual activity, there is no reason why a henge could not be built over an earlier occupation site. Indeed, at Coupland, within a kilometre of Yeavering, a later henge was constructed on a site that had seen Earlier Neolithic pit deposition (Waddington 1998b, 23). In summary, the Eastern Pit and its charcoal-filled consort to the west provide evidence for the spread of depositional practices across a landscape. These two pits at Yeavering obviously do not exist in a concentration of features even remotely comparable to Thirlings, but they do prove that the practice of pit-digging, and the complex classification and disposal of refuse were not unique to one site.

The Broomridge Round Barrow

This section examines the deposit of pottery beneath an Earlier Neolithic round barrow at Broomridge, Northumberland. It is of particular interest to this study because it is the only large assemblage of Carinated Ware from a secure non-pit context. The Broomridge barrow also represents the only Earlier Neolithic burial monument that has produced any human remains, and anything other than the most meagre quantity of associated artefacts. The fact that this pottery assemblage is associated with a very different type of architecture (a mound) to the other contexts studied means that it is of particular importance in comparative analysis. A set of statistical tests identical to those undertaken for the Yeavering Eastern Pit are presented below for the Broomridge material. Throughout, the similarities and differences of this material from the Yeavering and Thirlings data are stressed. The section ends with a detailed consideration of the pottery biography, and how this relates to the status of the site as a 'burial' monument. First, however, the site and its history of antiquarian investigation are discussed.

The Site and its Excavation

The barrow at Broomridge is located on the northern periphery of the Milfield Basin, at 396500, 637300 on a sandstone ridge at approximately 150m OD (figure 7.5). The site was excavated by the antiquarian Canon William Greenwell in the mid-nineteenth century, who describes the mound as being sixteen feet in diameter by three feet in height, composed of intermingled earth and large stones; the barrow number in Greenwell's notation is 188 (Greenwell 1877, 410). Greenwell does not provide a diagram or plan, but describes the contents of the mound as follows:

> "Upon the natural surface there was placed a thin layer (about 2 in. thick) of burnt earth with embedded calcined bones and charcoal, and containing an extraordinary quantity of potsherds...the layer of burnt matter did not extend throughout the whole area of the barrow but was found in patches; and there was no place at which it could be said that the entire bones of a burnt body had been laid...The manner in which the bones were disposed was certainly very peculiar, nor do I remember in the course of my experience to have seen anything like it." (*ibid.*)

His surprise is understandable, given that the Early Bronze Age barrows he was used to excavating held cremated human remains in discrete deposits, rather than in a mass distributed beneath the area of the mound. At the time of excavation Greenwell also thought the pottery notable, as it was not the coarse ceramic of the Food Vessels and Collared Urns he usually encountered in barrows. He comments on its 'hard-baked' character and surmises that it may be of domestic origin (*ibid.*). This pottery was not identified as Earlier Neolithic until Nancy Newbigin undertook an examination of it in 1935, classifying it as of Neolithic 'A' type (Newbigin 1935). It maintained this distinction until the publication of the catalogue of the Greenwell archive, now held in the British Museum, by Kinnes and Longworth, where it is classified as Grimston Ware (1985), now redefined as Carinated Ware (chapter two). The mound itself has received little further attention. In his survey of Neolithic round barrows and cairns, Ian Kinnes lists the monument as of the 'pyre' class: a location where an *in-situ* cremation was covered by a low mound (Kinnes 1979, 10; 58). Indeed, on the basis of Greenwell's statement, it does seem likely that the deposit beneath the mound represents either the remains of a large *in-situ* cremation or the redeposition of cremated material from elsewhere.

The Excavation Technique of Canon Greenwell

Before proceeding to examine the pottery from the cremation deposit beneath the mound, it is worth considering briefly any potential bias that may be present in the assemblage due to the means of its excavation and recovery. Greenwell's excavation technique and its ramifications for the interpretative potential of his archive have been considered in detail elsewhere (O'Connor and Edwards forthcoming), but there are a number of points of relevance for this study. The two major problems that arise from the Greenwell's methods are uncertainty over whether he excavated the whole of any given barrow, and whether, regardless of its extent, his excavation reached the level of the original ground surface. Greenwell asserts:

> "My practice has always been to drive a trench, the width of the barrow as it was originally constituted and before it was enlarged by being ploughed down, from south to north, through and beyond the centre. I have not always thought it necessary to remove the whole of the north and west sides, as they are generally found to be destitute of secondary interments; in many cases, however, I have turned over the whole mound". (Greenwell 1877, 27, footnote 1)

In most cases, however, Greenwell did not remove the entirety of the mound (O'Connor and Edwards forthcoming), and we do not know the extent of his excavations at Broomridge. It is safer, therefore, not to treat the potsherds in archive as the complete population from the barrow, though there is no reason to assume they are not a representative sample.

The second problem – whether Greenwell always trenched to the level of the original ground surface – is less of an issue in the case of Broomridge. The suspicion in this case arises because of evidence from re-investigation of certain barrows. For example, within the study area at Old Bewick, upon re-excavation of Greenwell's barrow number 200 (Greenwell 1877, 418), it was found that the last 40cm of mound material remained in place, beneath which two further cists were located (Hewitt and Beckensall 1996, 269). At Broomridge, however, the deposit is definitively stated as being upon the original ground surface. The alternative – that of an extensive spread of material throughout the interior of a barrow, as opposed to beneath it – seems an unlikely possibility. We can also be relatively certain that the material was not disturbed between deposition and excavation. Antiquarians were very good at locating secondary insertions into barrows, the recovery of such material being the primary goal of excavation. The fact that Greenwell located no subsequent modification of the mound indicates that the Earlier Neolithic material probably remained undisturbed.

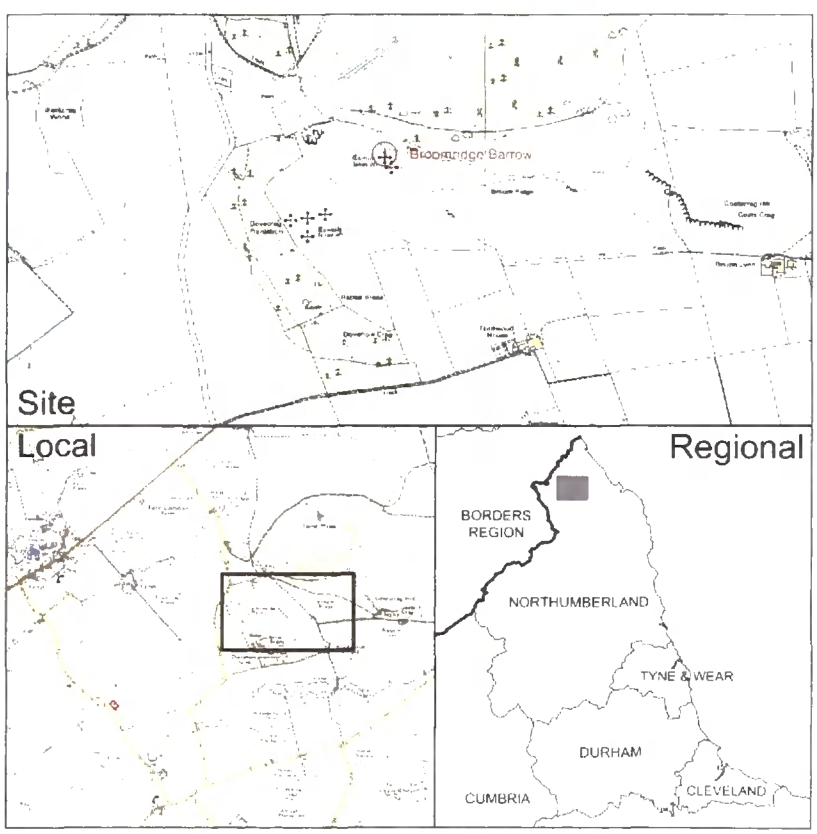


Figure 7.5: The location of the Broomridge barrow

The Pottery

Greenwell recovered 196 sherds of Earlier Neolithic Carinated Ware from beneath the Broomridge round barrow (Kinnes and Longworth 1985, 101), of which 150 were available for analysis at the British Museum. The remaining sherds have been used to reconstruct a carinated vessel or were on display in one of the galleries, which rendered them unsuitable for examination. As with the Yeavering material, the majority of the sherds cannot be assigned to a particular pot, and a minimum vessel number of eighteen appears somewhat speculative; the sherds are therefore studied as a single sample. However, Nancy Newbigin (1935) was able to identify seventeen sherds, of which thirteen could be studied, that belonged to one distinctive vessel. It is rather anomalous in a number of ways, and is studied separately below. Once again the analyses consider fragmentation, its relationship with abrasion levels, and then abrasion alone. Unlike the Eastern Pit at Yeavering, the context of recovery at Broomridge does not bear any close comparison to the pits at Thirlings. These analyses cannot, therefore, compare Broomridge with a particular subset of the Thirlings data, in the manner that its unmarked pits were used for Yeavering. Instead, the whole of the Thirlings sample of Carinated Ware will be used. Also, having recorded the data from the Eastern Pit, it too is included for comparative purposes.

Fragmentation: Sherd Weight and Sherd Size

The total weight of the Carinated Ware analysed here was 1377g; the average sherd weights are as follows:

	Avg. Sherd Weight (g)	Average Weight per Deposit (g)
Broomridge	9.18	[1377 total]
Eastern Pit	7.58	[417.1 total]
Thirlings	17.92	217.27

Table 7.5: Sherd weights from Broomridge, the Eastern Pit and Thirlings

The following table displays the sherd size statistics in comparison with those from Thirlings and Yeavering. As before, in order to examine the spread of sherd sizes, so as to classify how consistent the fragmentation levels are, the standard deviation from the mean sherd length is calculated. The variance (*V*) of the sherd sizes is then produced by dividing the standard deviation by the mean, allowing direct comparison of the two samples.

	Sherd Length (mm)		
	Broomridge	Eastern Pit	Thirlings
Mean	**37.88**	30.91	43.44
Median	**37**	29	36
Range	**46**	86	103
Sd Dev	**10.46**	13.05	18.33
V	**0.28**	0.42	0.42

Table 7.6: Sherd length statistics from Broomridge, the Eastern Pit and Thirlings

The results of this basic comparison are particularly interesting. The mean sherd size at Broomridge falls between those of Thirlings and the Eastern Pit at Yeavering, yet the range of size is far smaller. Correspondingly, the internal variance of the Broomridge is half that of the other two sites. Sherds, therefore, *varied much less in size* at Broomridge. So, whilst the average size of the sherds is unremarkable, consistency in the size of the sherds is twice as pronounced as elsewhere. This is visualised in figure 7.6.

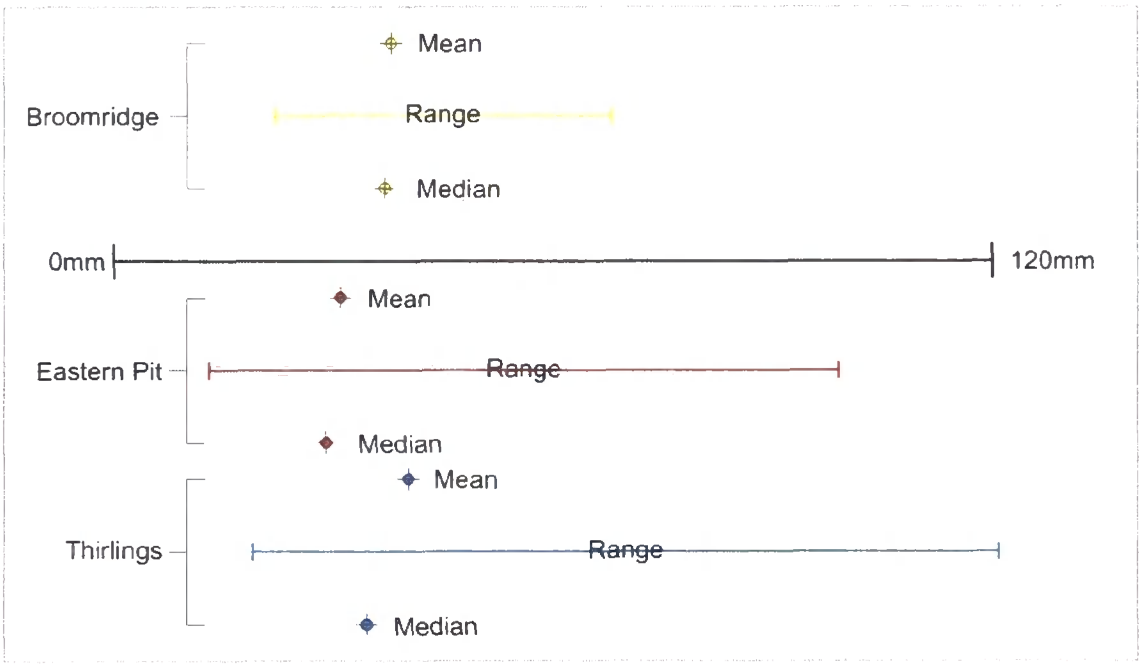


Figure 7.6: Range, median and mode of sherd lengths from Broomridge, the Eastern Pit and Thirlings

The full range of sherd dimensions can, once more, be statistically compared using Kolmogorov-Smirnov tests (Fletcher and Lock 1991, 111), and visualised using a graph showing cumulative percentages of sherd size (graph 7.3). Here, the Broomridge population of sherd lengths is tested against both the Yeavering Eastern Pit and Thirlings Earlier Neolithic unmarked pit samples to assess the levels of difference with each. This will assess the similarity between the fragmentation levels at Broomridge and the other two sites. For the data tables relating to these tests, and for the calculation of the critical value, see appendix 4.4 and 4.5.

Kolmogorov-Smirnov Two Sample Tests

Broomridge and Yeavering Eastern Pit
For the two populations to be different, the result must exceed 1766.05

n.A x n.B x D/100

n.A and n.B refer to the size of the Broomridge and Yeavering Eastern Pit samples (150 & 55)
D = the maximum difference in their cumulative percentage (37.82)

150 x 55 x 37.82/100 = 3120.15 - they are from different populations (95% probability)

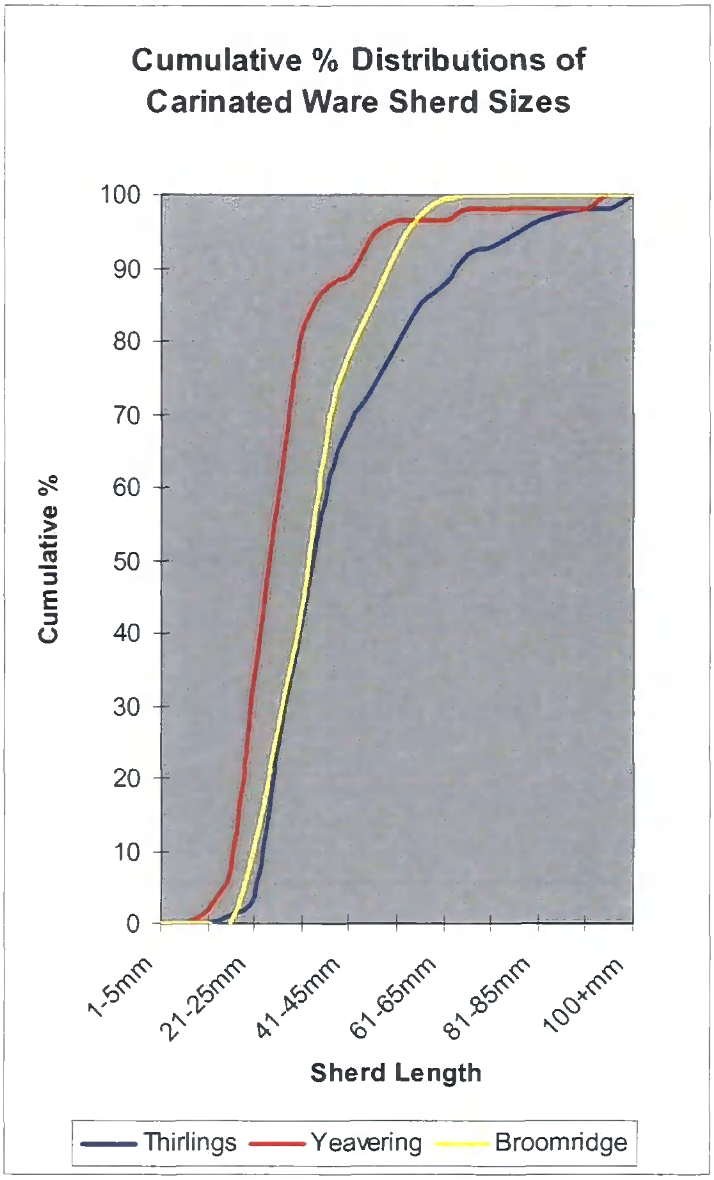
Broomridge and Thirlings
For the two populations to be different, the result must exceed 4348.54

n.A x n.B x D/100

n.A and n.B refer to the size of the Eastern Pit and Thirlings samples (150 & 197)
D = the maximum difference in their cumulative percentage (12.97)

150 x 197 x 12.97/100 = 3832.64 – they are from the same population (95% probability)

These results are interesting. Taken as population, and despite their clear differences in internal variance, the cumulative percentages of the sherd lengths from Broomridge and Thirlings indicate that they could belong to the same statistical population. This means that, the range of sizes they represent, in terms of how many large versus small ones etc, the two sites are directly comparable. However, when compared with the sherds from Yeavering, the Broomridge material is statistically different – the patterns of fragmentation indicate significant variation. So, in terms of fragmentation patterns, Broomridge is different from Yeavering, but similar to Thirlings; Thirlings, as we saw above, is also different from Yeavering. These relationships are illustrated clearly on the cumulative frequency percentage graph (7.3 below), which displays the data upon which the Kolmogorov-Smirnov tests are based. It is not until the top of their respective curves that the Broomridge and Thirlings data differ substantially, as the smaller size-range of the Broomridge material comes into play. The smaller average size of the Yeavering sherds ensures that its cumulative percentage is significantly different for the majority of the curve.



Graph 7.3: Graph showing the difference in sherd size distribution at Broomridge, the Yeavering Eastern Pit and Thirlings

Before going any further, it is worth considering the apparent contradiction between the two preceding sets of analyses. On the one hand, an analysis of variance shows that the Broomridge sherds have a high level of internal consistency as they are tightly grouped around their mean, in sharp contrast to Thirlings. On the other hand, the Kolmogorov-Smirnov test shows that the Broomridge population of sherd sizes does not differ significantly from the Thirlings material, even though the Thirlings sherds have *double* the level of variance. This has occurred because of the nature of the two tests employed. Kolmogorov-Smirnov tests are useful as a means of comparing populations of different sizes directly because they use cumulative percentages that normalise differences in sample size. Yet the test itself only considers one data-point – the size range in the table at which the greatest difference is observed in the cumulative percentages of the two samples (in the case of Broomridge and Thirlings the greatest difference was 12.97%). An analysis of variance, alternatively, uses the standard deviation and the mean, and as these do not rely on sample size, variance is also a useful means of comparing different populations. The difference between the two analyses arises, however, in the fact that variance is entirely *internal* to a sample, whilst the K-S test is specifically designed to compare *externally* to another population. The tests do different things. The analysis of variance shows that the Broomridge sample is more internally consistent than Thirlings; the K-S test does not contradict this result, but it shows that the distribution of size values within this consistent sample *fits within* the run of data from Thirlings. Hence they are from the 'same population'.

Fragmentation and Abrasion

The evidence from both Thirlings and the Yeavering Eastern Pit indicated that fragmentation processes were disconnected from abrasion processes, in that sherd size did not decrease as abrasion levels increased. As in the previous cases, Kendall's Tau-c is used to test this relationship at Broomridge, see table 7.7 (Fletcher and Lock 1991, 49). Full working for this test can be found in appendix 5.3.

	Sherd Length (mm)										
Abrasion Level	21-25	26-30	31-35	36-40	41-45	46-50	51-55	56-60	61-65	66+	**Total**
1	5	10	6	8	2	3	1	3	0	0	**38**
2	1	8	10	14	8	5	7	2	2	1	**58**
3	4	6	6	8	5	3	3	1	1	0	**37**
4	6	1	3	5	1	0	0	1	0	0	**17**
Total	**16**	**25**	**25**	**35**	**16**	**11**	**11**	**7**	**3**	**1**	**150**

Table 7.7: Frequency of abrasion levels within each division of sherd length from Broomridge

Kendall's Tau (τ) Test of Association

A result near 0 indicates no association between the variables, a result near -1 or 1 indicates association

$$\tau = \frac{2k(P-Q)}{n^2(k-1)}$$

n = total frequencies (150)
k = number of rows or columns, whichever is smaller (4 rows)
P = sum of every cell multiplied by the frequencies in every cell below and to the right
Q = sum of every cell multiplied by the frequencies in every cell below and to the left

τ = -0.02 – no association

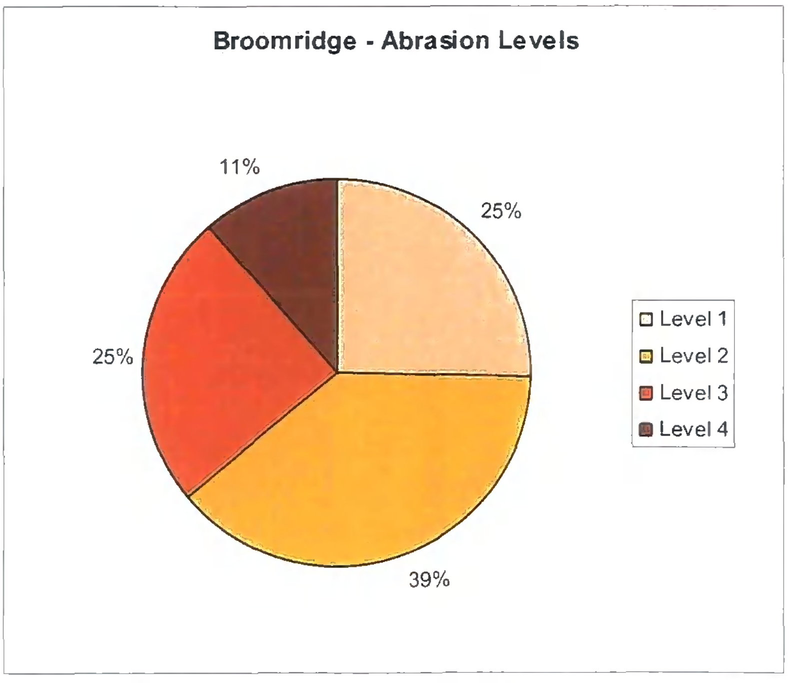
There is, once again, no association between sherd size and abrasion at Broomridge. Thus, abrading processes were different, and must be considered separate from, fragmentation processes.

Abrasion

The abrasion levels at Broomridge can be compared directly to the data from Yeavering as it comes from a single feature (for the purposes of analysis, the Broomridge data must also be considered a single deposit). However, direct comparison with Thirlings will, again, be problematic because random abrasion values characterised the site. Within individual pits at Thirlings abrasion was consistent, but it could be consistent at any of the four different levels. As with the Yeavering data, the purpose of this analysis is to examine whether the abrasion data from Broomridge would fit comfortably within the general run of that from Thirlings. Table 7.8 and graph 7.4 display the abrasion states as percentages of the total.

Abrasion	Frequency	%
Level 1	38	25.32
Level 2	58	38.67
Level 3	37	24.67
Level 4	17	11.32
Total	**150**	**100**

Table 7.8: Levels of abrasion present on the potsherds from Broomridge



Graph 7.4: Pie chart showing the levels of abrasion at Broomridge

Broomridge would seem to be dominated by a lower level of abrasion than Thirlings or Yeavering, with level 1 contributing a far higher proportion than at any other site. However, this picture is complicated by the presence of one anomalous vessel in the assemblage. The vessel in question, pot 'p', was the only individual vessel separately identified within the larger assemblage of potsherds from the site. In total contrast to the rest of the ceramics it is characterised by very high levels of abrasion – table 7.9.

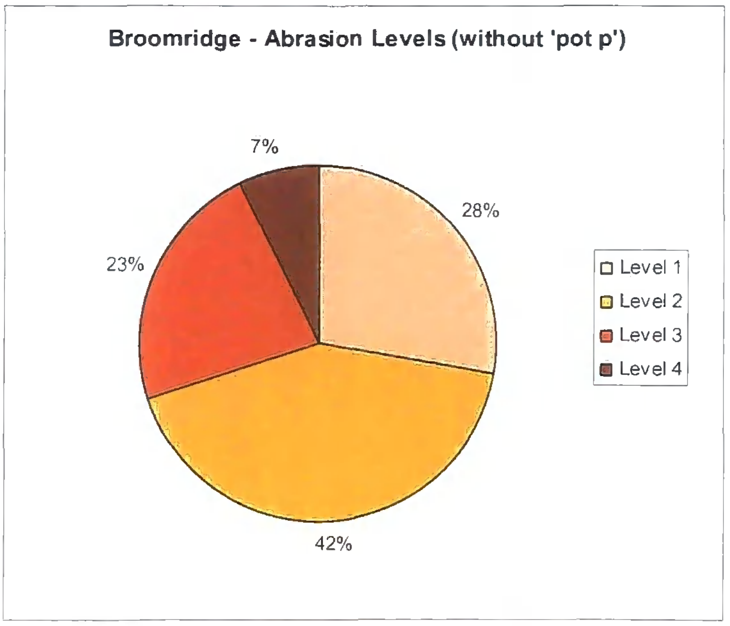
Abrasion	Frequency	%
Level 1	0	0
Level 2	0	0
Level 3	6	46.15
Level 4	7	53.85
Total	**13**	**100**

Table 7.9: Levels of abrasion present on 'pot p' potsherds from Broomridge

It is clear how the sherds from this vessel differ from the others recovered. Concomitantly, the picture changes considerably if the data from this vessel is abstracted, for the present, from the analysis – table 7.10 and graph 7.5.

Abrasion	Frequency	%
Level 1	38	27.74
Level 2	58	42.34
Level 3	31	22.63
Level 4	10	7.30
Total	**137**	**100**

Table 7.10: Levels of abrasion present at Broomridge, 'pot p' removed



Graph 7.5: Pie chart showing the levels of abrasion at Broomridge, 'pot p' removed

With the anomalous influence of pot 'p' removed, the remainder of the data shows more clearly the trend towards a low level of abrasion for the deposit. Now, this manipulation does not, strictly, change the nature of the comparison of this deposit with those at Thirlings. In a similar manner, a particular level of abrasion is seen to dominate at Broomridge, just as a consistent level did in individual pits at Thirlings. The presence of the anomalous vessel 'p' at Broomridge is unusual, at least in this sense, because it breaks the pattern of internal consistency. However, the fact that all the sherds from pot 'p' were abraded to a similar degree does fit with conclusions reached at Thirlings: where sherds from the same pot witnessed similar amounts of abrasion, probably because they were subject to the same processes for a comparable amount of time. Of interest here, therefore, is the juxtaposition of very different abrasion levels within the same feature or deposit, and it remains to be seen whether the particular context of Broomridge has played a determinant role in the situation.

Summary and Discussion

The results from the Broomridge analysis can be summarised as follows:

1. The average weight and size of sherds from Broomridge are less than those of Earlier Neolithic sherds from unmarked deposits at Thirlings, but larger than those recovered from the Eastern Pit.
2. The distribution of the sherd sizes confirms that the Broomridge, as a total population, is statistically similar to Thirlings in its fragmentation, but different from Yeavering.
3. Despite the similarity with Thirlings, the internal variation of the Broomridge sample is far smaller – the sherd length is *much* more consistent.
4. The abrasion of sherds at Broomridge is not connected to their fragmentation.
5. Abrasion levels one and two are the most common on the sherds.

Setting aside, for the present, the fact that Broomridge was a very different type of site from both Thirlings and Yeavering, this discussion will focus on narrating the sequence of events that led to the creation of the pottery deposit, regardless of the status of the monument of which it formed a part. Three points are central to our understanding of the formation process: the consistency of the sherd size, implying deliberate selection for deposition; the low level of abrasion on the sherds, implying either deliberate curation or immediate burial after breakage; and the condition of the sherds, as many do not appear to have been burnt to a very high temperature. These three points form the basis of the following discussion into the genesis, selection and deposition of the pottery, which in turn forms the basis of its biography (figure 7.7).

Despite the very particular context of its disposal beneath a round barrow, the context in which the pottery was broken is far from straightforward and cannot be posited with any certainty. The sherds were recovered from a context containing cremated human bone and charcoal, yet there is no evidence that the sherds themselves were burnt, or that the cremation remains were *in-situ*. We cannot be sure of the latter point because Greenwell does not specify whether the original ground surface showed any evidence of the burning one would expect if it had been beneath a cremation pyre. Of the fact that the sherds were not burnt alongside the bodies, regardless of where it occurred, we can be more certain. The cremation of a human body requires a minimum temperature of 400 degrees centigrade, but may reach as high as 1200 degrees (McKinley 1994, 84). Pottery will over-fire, beginning noticeably to distort and vitrify when the temperature goes above 700 degrees centigrade (A. Barclay 2002, 93; after Rye 1981, 108). Of course, the pyre could have been at a lower temperature and only achieved partial cremation, but as the majority of the pottery from Broomridge displayed no evidence at all of post-breakage burning (no sooting was present on the broken, exposed core fabric), and absolutely no vitrification, it must be assumed that the pottery was not present in the cremation environment. The pottery, therefore, was broken elsewhere and came as a later addition, either to an *in-situ* cremation site later covered by a barrow, or to the remains of a cremation event that had also taken place in another location.

The reason for breakage must also be held in suspension, just as for Thirlings and Yeavering. It is tempting, but would be wrong, at this point, to fall back upon an essentialist and rather mystical set of justifications for pot breakage given the context of their final deposition in a burial deposit. Perhaps pots were broken specifically as part of the burial ceremony. It would explain the low levels of abrasion if they were broken and buried shortly after. From the evidence available, however, it is just as likely that pots were broken accidentally in the course of everyday life, perhaps over the month before the cremation took place; or that they were broken deliberately for some other reason and their sherds curated until required. There is certainly no reason to assume that these pots held any special symbolic associations prior to their breakage; as Carinated Ware, the vessels are indistinguishable from the pottery deposited at Yeavering and Thirlings. Concomitantly, there is no reason to assume that prior to breakage they were used for any special purpose; as with the Thirlings material they could have been used in the everyday activities of food preparation, storage and processing. Whether they were broken through these activities or for some more esoteric reason, must remain unknown.

Breakage elsewhere and later addition to a cremation deposit also allows a more straightforward understanding of sherd selection processes. As we have seen, sherds were demonstrably selected for deposition on the basis of their fragmentation, to the extent that their variation from a mean size was very low in comparison to both Thirlings and Yeavering. In order for this degree of consistency to be present, if a vessel was broken during the cremation event, within the pyre, sherds would have to have been selectively *removed* from the resulting deposit. This sorting would have to have been extremely rigorous to produce the necessary consistency; a rather unlikely situation. Selection for burial after a breakage event elsewhere seems more likely, and more effectively accounts for the low levels of variance. Given the problems surrounding the context and motivation for breakage, discussed above, it would be improper to speculate on the context of selection. Suffice it to say that the sherds could have been selected from the curated results of previous, accidental breakage, chosen from those scattered on the ground following deliberate breakage during the burial ceremony, or any number of myriad other possibilities. The low level of abrasion on the sherds indicates that there is very little chance they were provisionally discarded for any length of time. Selection, therefore, most probably occurred soon after breakage, and this is reflected on figure 7.7 in the absence of a provisional discard phase.

Any assertion for the deliberate selection of potsherds on the basis of their size must confront a counter-argument: that their size distribution could be the result of bias in recovery by Greenwell. This could arise by two mechanisms: the possibility that sherds were missed because the mound was not fully excavated – a spatial bias, and the chance that sherds of particular sizes were missed or discarded – a metric bias. It is relatively easy to discount any spatial bias. Greenwell states that the deposit beneath the mound was unsorted: citing the "scattered way in which the bones were dispersed" (Greenwell 1877, 410). He does not mention discrete deposits of pottery, the existence of which he does report for other barrows. Even if Greenwell did not excavate the entirety of the mound, the nature of the deposit indicates that any sample of its area can be considered representative. The potential for a metric bias is somewhat harder to discount, and we must look to the corroborative evidence from the more recent excavations at Thirlings. Modern standards of recovery and recording at Thirlings produced potsherds between 19mm and 121mm in length; at Broomridge the range was between 22mm and 68mm. First, it seems unlikely that Greenwell would have ignored large potsherds and concentrated on a smaller range, so it is unlikely that large sherds were missed. Second, there is only a three millimetre difference between the Thirlings and Broomridge minima, so if modern recovery by trowel and brush found no smaller sherds, it seems unlikely that Greenwell missed too many. Third and finally, the Kolmogorov-Smirnov test, above, demonstrates that the Thirlings and Broomridge material can be considered of the same population; this would not have arisen if Greenwell had missed a large number of small sherds.

The pottery biography for Broomridge (figure 7.7), is not dissimilar from that created for Yeavering earlier (figure 7.4). Once again, we cannot state whether the pottery was deliberately or accidentally broken, nor does it seem likely that it was put to some special purpose prior to deposition. The diagram can, again, be broken down into either Route A or B, dependent upon the nature of fragmentation, but these two options, owing to a lack of provisional discard, are less determining for subsequent sections of the diagram than they were for Thirlings. The end of the process, where the sherds are combined in one of two ways with the cremated remains, must also remain equal in terms of their probability. The major difference here is that the biography leaves no space for weathering of any sort. At Thirlings, weathering took place during the phase of provisional discard; at Yeavering it took place post-deposition in the open pit. At Broomridge, the low level of abrasion indicates that the sherds were deposited soon after fragmentation, and the mound was raised over the whole deposit soon after that, as there is little trace of environmental weathering. Pot 'p' is a special case, and represents a heavily abraded vessel entering the depositional context. It is difficult to speculate on the reasons for its presence, or the sequence of events that may have produced it. Perhaps it is best to assume a Thirlings-type biography (figure 6.2) for its condition, the sherds having been selected from a context of provisional discard elsewhere. Pot 'p' certainly belies any suggestion that pottery deposition associated with corpse disposal had to conform to a particular model, and throws further doubt on the idea that pots may have been broken specifically for burial.

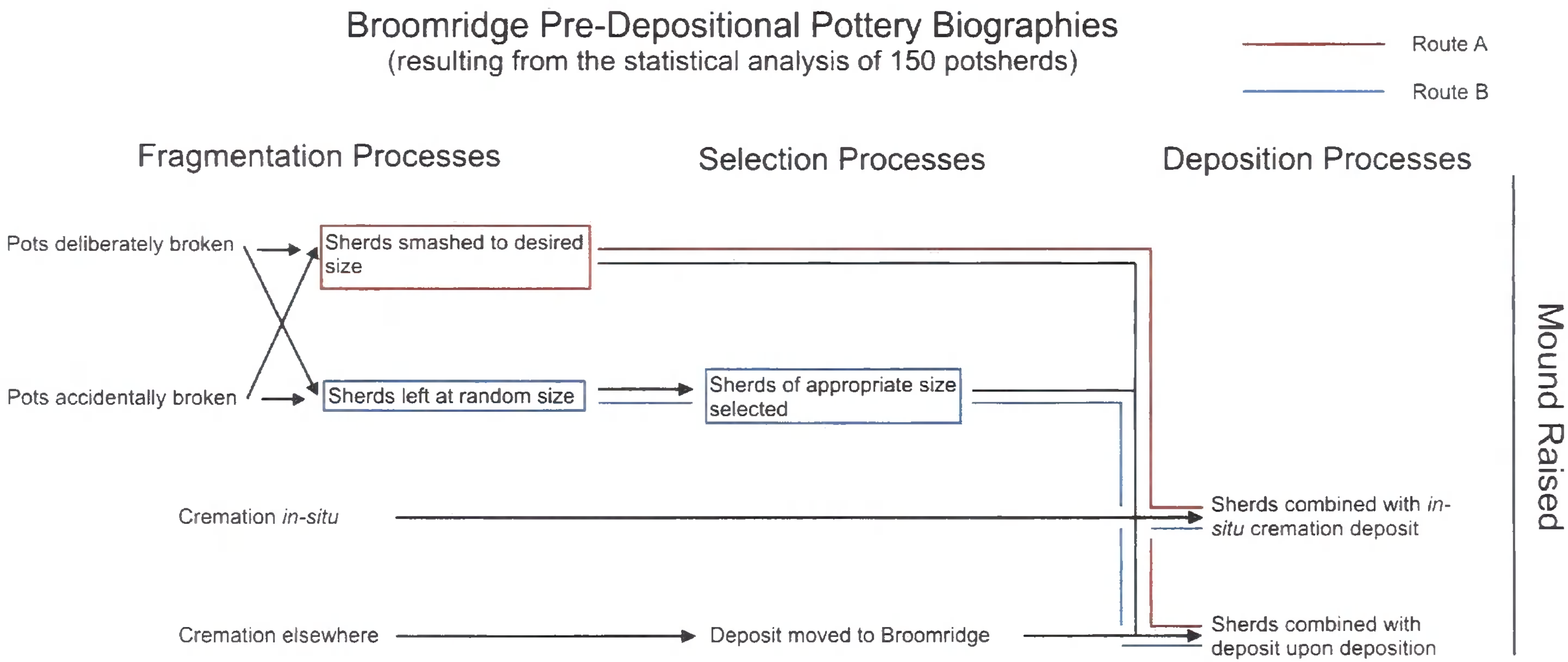


Figure 7.7: Pottery biography for Broomridge

Finally, the ways in which the Broomridge biography are similar to the others, especially Yeavering, has important implications for how we consider the architecture covering the deposit: the burial mound. The status of the mound and its deposits, comprising a 'burial monument', might cause unreflexive assumptions to be made about the fragmentation of pottery – that it might be deliberately broken as part of some rite. This discussion has sought to avoid such essentialist linkages quite deliberately. In reality, the process of the pottery disposal narrated here highlights the similarities with pit deposition – a context usually, wrongly, considered far more quotidian than 'ritualised' burial practices. In the Milfield Basin, similar processes were occurring in both. However, it is also true that the significance of certain factors in pottery deposition seem to have been heightened at Broomridge. The size of sherds selected for deposition appears to have been more tightly controlled, and abrasion less marked.

Yet it is worth considering exactly how 'remarkable' the idea of a mound over a mixed deposit of pottery, burnt human bones and charcoal actually is. In terms of the practices associated with the deposition, the raising of a mound is really rather similar to marking a pit with a post. At Broomridge, the material culture, aside from the human bone, was identical to that deposited at Thirlings. It may not have been provisionally discarded, but its prior use may have been very similar. Just as the material at Thirlings was buried in a pit, which was then rapidly backfilled, the material at Broomridge was deposited on the ground surface and then rapidly covered with a mound. Both prevented any further interaction with the material. A mound is more permanent than a post, but over the temporal scale of, say, half a human lifetime, they will both survive, especially if the post is large. The practice that sets the disposal of human remains apart from pottery, in the Earlier Neolithic of Northumberland, was the presence of an earthen mound, and one that did not play a particularly original role. The major difference between a mound and a post as a means of marking space, looking beyond simple distinctions of material, is that the mound is more emphatic. Ideas surrounding the disposal of dead human matter are considered in more depth in the following section and the subsequent chapter.

Neolithic Long Cairns: Deposition and Architecture

Having examined what could be termed features of 'pure' deposition – pits – and considered the combination of pottery deposition with mound architecture at Broomridge, this section focuses more closely on architectural formations themselves. The concern here is with how architecture relates to acts of deposition, and specifically how, in contrast with Broomridge, a 'burial monument' can be related to a very limited quantity and range of material culture. Five long cairns from Northumberland are considered in detail, none of which produced a large amount of artefactual evidence, but all of which saw the complex juxtaposition of different architectural elements. Of particular interest is the significance afforded to, and sometimes the absence of, the element of mortuary practice in long cairn construction. Five long cairns are studied here, representing those monuments that have seen either adequately recorded excavation or detailed metric survey.

All five of the long cairns in this section are dated to the Earlier Neolithic on the basis of radiocarbon or typological grounds; whilst this is not infallible, the early dates of excavation and the paucity of datable remains force the issue. The monuments are, therefore, broadly contemporary with the Carinated Ware, Earlier Neolithic phase at Thirlings, which spanned the majority of the fourth millennium BC. Concomitantly, the three Neolithic round barrows on the East Durham coastal plateau are not considered here, as they are associated with Middle Neolithic Impressed Ware ceramics. Burial at Broomridge was examined earlier, and comparisons with the site will be made in the conclusion of this chapter. In any case, the purpose of this section is not to examine any individual monument in detail. Rather, this analysis is concerned with the long cairns as a *class*: the variability between cairns and how this relates to patterns of deposition, both of material culture and architectural elements. Discussion begins with an appreciation of the distribution and basic details of the five cairns, before proceeding to examine the types of architectural features encountered at the sites. The section concludes with a consideration of the role and nature of burial deposits.

The Sites and their Investigation

All of the sites studied in this section are located in central and north Northumberland, see figure 7.8. The five long cairns are located exclusively in upland landscapes but overlook directly, or are in close proximity to, major Cheviot valleys. The Broomridge round barrow is also located on a local eminence, the ridge of the same name, but this commands views south toward the lowland of the Milfield Basin. What follows is a brief consideration of the history of investigation and interpretation of each of the long cairns. For comparative plans of the cairns see figure 7.10.

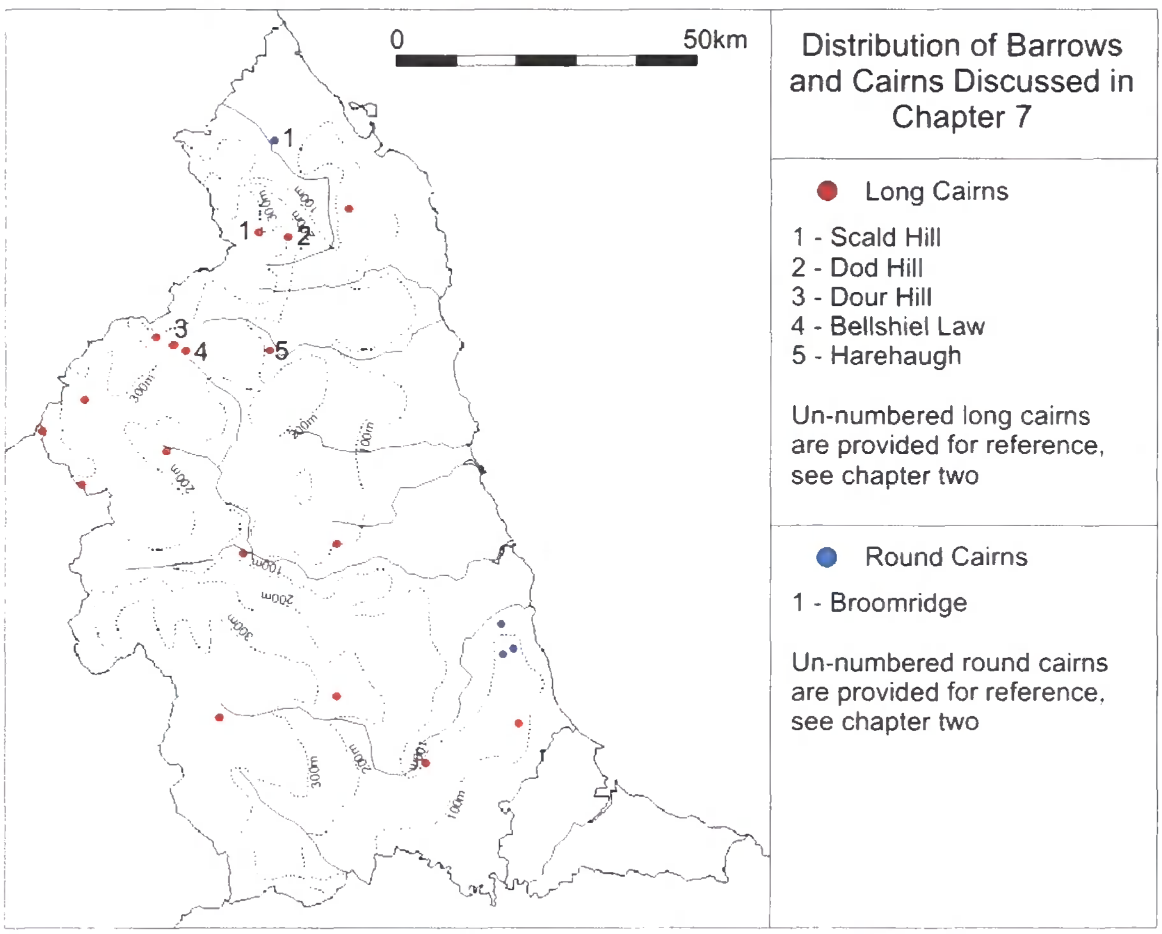


Figure 7.8: The location of the barrows and cairns discussed in chapter seven

Bellshiel Law

Bellshiel Law long cairn is built upon the sandstone hill of the same name forming the northern slopes of the valley of Redesdale; the monument is set back from the edge of a scarp running along the valley side of the hill at 305m OD. Whilst the cairn cannot be seen on approach from downslope directly, it does command wide views of Redesdale to the south-east. To the north the ground dips slightly into one of the peat bogs that overly much of the moorland between Redesdale and Coquetdale. The cairn was excavated in September 1935 by Nancy Newbigin (1936), who opened a trench across the eastern terminal and a narrow trench across the centre, perpendicular to the long axis of the mound, in order to establish the nature of its construction. Having suffered the depredations of stone-robbing, the cairn is currently 112m in length by 18m at the wider eastern end, narrowing to around 12m for the rest of its length, with an average height of 1.2m, orientated east south-east (see figure 7.10 for plan). It is composed largely of stones, with larger rocks forming a core, which seem to have been laid down after the edges were delimited using smaller stones within an earth matrix. In addition, Newbigin reports a line of axial boulders running the length of the centre of the monument on the ground surface (Newbigin 1936, 303), see the reproduction section drawing (figure 7.9). The excavation also uncovered a rudimentary kerb, an irregular horn, and a rock-cut grave. No pottery was recovered, with the only finds being two worked flint flakes, one of which originated in the grave beneath the mound. Due to this lack of finds the monument is assigned to the class of long cairns, and thereby to the Earlier Neolithic, on typological grounds.

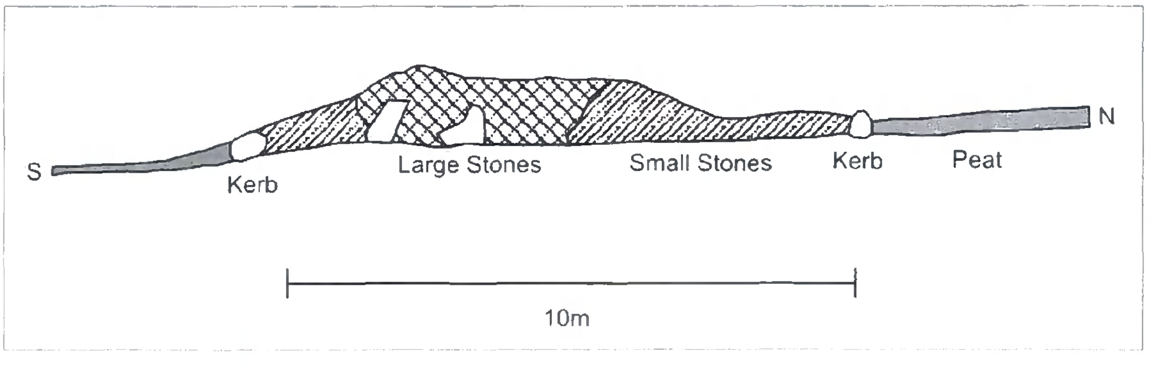


Figure 7.9: Reproduced section through Bellshiel Law long cairn (after Newbigin 1936, plate XXIV)

Harehaugh

The long cairn at Harehaugh lies at 180m OD, in the Coquet Valley, Northumberland, on an open moorland spur some 80m above the confluence of the River Coquet and the Grasslees Burn. The cairn has no immediate view of the rivers however, but possesses a wide vista over the Coquet Valley to the north-east. Its position by the Grasslees Burn situates it immediately above the only low-level route from Coquetdale into Redesdale, the next valley to the south. The site was excavated in 2005 as part of the Coquetdale Community Archaeology Project and directed by Peter Carne (2006). Two trenches were opened over the mound body in the course of excavation. One provided a slot through the monument to the ground surface below, and the other an investigation of a feature at the south-east end. A contour survey was also undertaken to ascertain the precise profile of the monument and its relationship to the immediate topography (*ibid.*, 4). The stone-built mound is 32m in length, aligned NW-SE, trapezoidal in plan, with a maximum width of 14m at the north-western terminus, narrowing to 10m to the south-east; a maximum height of 1.6m is reached at the north-western end (see figure 7.10 for plan). The monument is terraced in appearance, both directly as a feature of its construction, and as it is surrounded by deliberately levelled platforms. The mound features a 'horn' delimiting the western edge of a forecourt area at the north-western terminal.

Most significant, however, was the presence of a cist in the centre of the spine of the monument; this was integral to the mound's construction and was not a later feature (*ibid.*, 7). The cist had been disturbed by antiquarian activity, but an organic deposit in its base remained undisturbed. Charcoal from within this matrix provided a radiocarbon determination of 2500-2290 cal BC (SUERC 8603). As this material was either formed or deposited after the construction of the cist it provides a *terminus ante quem* for the building of the monument. An earlier date was recovered from the pre-cairn ground surface, providing *terminus post quem* dates of 3120-2910 cal BC (SUERC 9154) and 3350-3080 cal BC (SUERC 9158) (*ibid.*, 9). The monument was, therefore, constructed at some point between 3350 and 2290 cal BC. This is a depressingly wide range, but a pre-3000BC date may be favoured given the monument's morphology. Finally, one flint flake was recovered from the spoil of the antiquarian robbing of the cist (*ibid.*, 12).

Scald Hill

Scald Hill long cairn lies at 350m OD in the Harthope Valley, Northumberland on the south-eastern slopes of the hill of the same name, directly above the Harthope Burn. The site sits below the steeper upper slopes of the hill upon a relatively flat plateau, which terminates to the south-east in the defile of the Burn. The cairn was unknown prior to a survey of the monuments on the slopes of Scald Hill in 1999 by the Border Archaeology Society. This led to the excavation of the cairn by the Society between 2000 and 2002, in order to resolve its nature and potentially clarify its date (Miket and Aylett 2006). The cairn is trapezoidal in shape, measuring 11m in length by 6.8m in width by 1m in height, and orientated with the widest end facing east south-east (see figure 7.10 for plan). No burials were located, although at the eastern terminal there was an arc of stones, around which charcoal was recovered to the north and south. A shallow depression partially beneath the cairn produced an unworked flint spall. A retouched flint flake was recovered from the cairn body, and a hammerstone was found within the peat overlying the cairn. The cairn did show evidence of a deliberate structure: there was evidence of a stone kerb; in places a 'skin' of smaller stones overlying the larger cairn body-material; and, flanking the crest, were two irregular lines of boulders that produced a terraced profile to the mound. A horn projects from the side of right side (viewed from the front). The excavators were reluctant to settle on a definite 'type' for the monument, given the lack of burials, though morphologically its resemblance to Harehaugh and Dod Hill is striking (figure 7.10).

Dod Hill

The long cairn at Dod Hill is situated at 325m OD on a south-east facing slope in the valley of the Threestone Burn. The monument remains unexcavated and all the data on the cairn is derived from a survey carried out by Tim Gates (1982). It is trapezoidal in form, measuring 13m in width at its widest end, 24m in length, standing 1.5m tall, and aligned with its widest end north north-west (see figure 7.10 for plan). Interestingly, and in contrast with most other cairns in the region, this cairn is aligned *with* the slope rather than across it; it is demonstrably not an erosion-related feature, as its widest end is upslope, whereas tongues of eroded stone usually spread from the source outwards - downslope. For the purposes of this study, its only outstanding feature is a horn; the monument appears undisturbed and well-defined.

Dour Hill

Dour Hill long cairn sits at 345m OD on the south-western slopes of the eponymous hill, which forms the north-eastern slopes of Redesdale. As the site sits within a Forestry Commission plantation, the immediate landscape context of the site is rather speculative, although it is clear that cairn would command panoramic views to the south-east along Redesdale. The cairn is aligned along the contours of the hillside, and may have suffered from downslope slippage as a result. The monument has a limited history of investigation. Excavations in 1932 identified and cleaned-out a cist at the east end of the monument (Cowen 1934), but since these investigations no further extractive work has taken place. Published work since has been restricted to speculative comment, such as Nancy Newbigin's mention in the Bellshiel Law excavation report, wherein she stated that the mound was most likely natural (Newbigin 1936, 308), an assertion that now seems unlikely. The most recent information on the monument is drawn from a survey by The Archaeological Practice in April 1996, and brought to publication by Waddington, Godfrey and Bell (1998). The cairn is orientated north-west by south-east, is 49m long by 8m at its widest, and stands, at its tallest, to 1.7m. The survey by Waddington *et al* identified the cairn as chambered, and possessing two phases (figure 7.10). A flint scraper was located during Cowen's earlier excavation of the cist.

The presence of a multi-phase chambered cairn at Dour Hill is an extremely interesting possibility; as such it would be the first monument of this type recorded in north-east England. However, unfortunately, this interpretation is not based upon secure excavated evidence, but remains the speculative result of one survey. Whilst the evidence for chambers is superficially convincing, with overhanging stone blocks being described as the remains of collapsed corbelled roofs (Waddington *et al.* 1998, 6), these features could also easily represent the results of antiquarian activity or stone-robbing. The size of the 'passages' accessing these chambers is also problematic: they are extremely small, even allowing for a degree of collapse, to the extent that a child would have difficulty traversing their length. There is also no evidence supporting the existence of two phases of construction at Dour Hill, (*contra* Waddington *et al* 1998). One cannot argue for phasing of this type on the basis of a survey, as it provides no stratigraphic sequence and no "structural" (*ibid.*, 3) evidence for such a conclusion. The idea seems to originate in the fact that the terminals of the monument are slightly narrower than the centre, which could be the result of slippage downslope. The ‘chambers’ are taken, morphologically, to date the first phase to the Neolithic, whilst the second phase, an extension of the cairn, is placed in the Early Bronze Age from the presence of at least one cist (*ibid.*, 12). It is a classically culture-historical perspective that assumes the ‘degeneration’ of the long cairn ‘ideal’ over time, with ‘lower quality’ sections necessarily being later. There is also no evidence that the cists are necessarily Early Bronze Age; the cist from Harehaugh was dated to the Neolithic by a radiocarbon determination from its fill of organic material (Carne 2006, 9). It may be safer to regard the Dour Hill long cairn as a simple dump of stones containing cists or rock-cut graves, and badly damaged by antiquarian activity. As such it is relatively similar to Bellshiel Law, only two kilometres to the east.

The Architecture of the Long Cairns

Each of the five long cairns described above shares some feature of its construction with another. This section examines the repeated architectural devices of the cairns and asks whether there are any common themes. Before proceeding it is worth making the basic observation that the cairns can be divided into two categories based upon the plan form: rectangular and trapezoidal (figure 7.10). The trapezoidal cairns are represented by Harehaugh, Scald Hill and Dod Hill, but have no other parallels amongst the unexcavated cairns in the North East. They are much shorter than rectangular cairns and exhibit a marked narrowing from ‘front’ to ‘back’ – assuming that the widest end is the front based upon the deliberate stone setting at Scald Hill and the presence of a horn. Bellshiel and Dour Hill are rectangular examples, displaying a far greater consistency in width for their entire, substantial length (allowing for downslope movement at Dour Hill). Most probably owing to their size, cairns of this type are the ones that have, traditionally, been recognised as potentially Neolithic, and the remainder of the unexcavated monuments in the region fall into this class, such as the Devil’s Lapful (figure 2.11). With this apparent division in mind, table 7.11 displays the presence or absence of certain architectural features at the five cairns.

	Features						
Cairns	Cist	Flint	Pot	Terracing	Axial Stones	Kerb	Horn
Bellshiel (rec)	•	•			•	•	•
Harehaugh (tzl)	•	•		•		•	•
Scald Hill (tzl)		•		•	•	•	•
Dod Hill (tzl)							•
Dour Hill (rec)	•	•					

Table 7.11: Architectural features of the five long cairns – ‘tzl’ = trapezoidal type, ‘rec’ = rectangular type

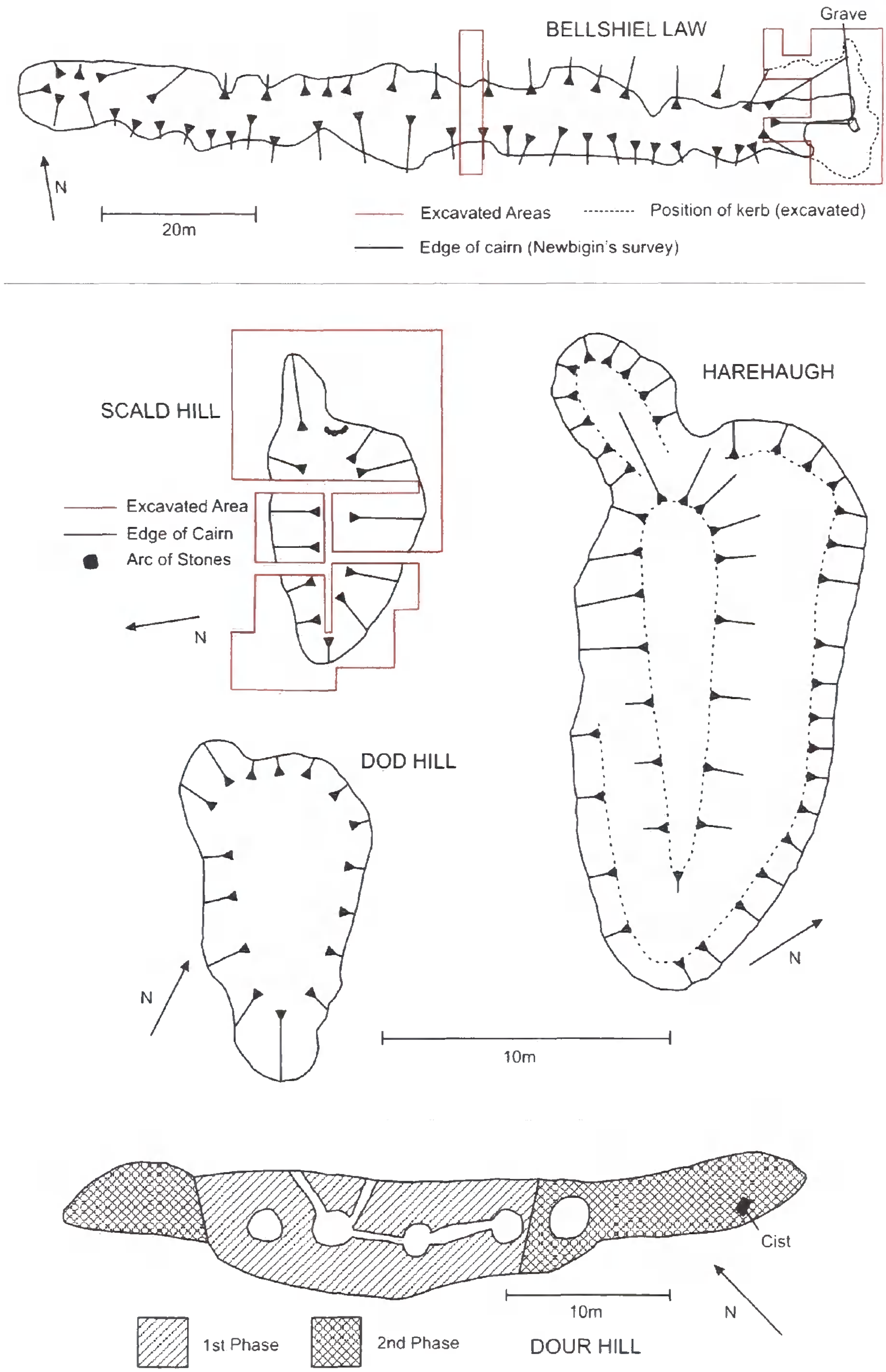


Figure 7.10: Comparative plans of the long cairns discussed in chapter seven: Bellshiel (after Newbigin 1936, plate 14); Scald Hill (after Miket & Aylett 2006, figs. 3&4); Dod Hill (after Gates 1982, fig. 1); Harehaugh (after Carne 2006, fig. 4); Dour Hill (after Waddington *et. al.* 1998, fig. 6).

From table 7.11 it is evident that no simple division of basic features can be made between the two forms of long cairn, and therefore, the nature of these various features will be considered in turn.

Cists and Burial Features

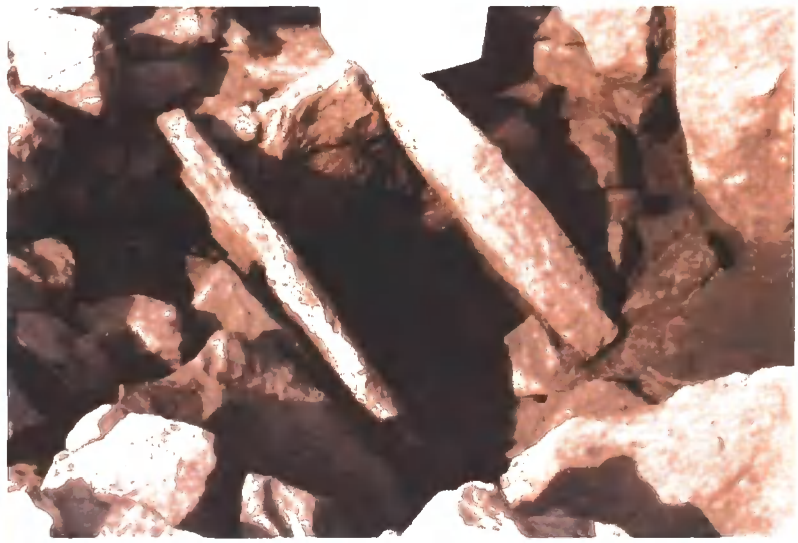


Figure 7.11: The cist at Harehaugh (author's photograph 2005)

Three of the cairns (Bellshiel, Harehaugh and Dour Hill) contained a single cist or similar individual burial feature. If we ignore the questionable 'chambers' at Dour Hill, it shares with Harehaugh a deliberately constructed cist within the mound body. The cist at Harehaugh was integral to the structure of the cairn and not a later addition (Carne 2006, 7), and it produced a Neolithic radiocarbon date, so there is no *a priori* justification for regarding the cist as a later addition. It follows that the same could be true for the undated cist at Dour Hill. The analogous feature at Bellshiel was the rock-cut grave. In each case, these features produced a solitary flint artefact (at Harehaugh, it came from the spoil of the antiquarian robbing of the cist). Due to taphonomic conditions, there is no evidence for the type of burial that took place in these graves, but environmental evidence is available from Harehaugh and Bellshiel. At Harehaugh the base of the cist contained an organic deposit described as 'peaty' in character (the radiocarbon dated context) (*ibid.*, 10). It is unlikely that this deposit represents true, naturally forming 'peat'. The deposit was, indeed, largely composed of heather, typical of peat, but vegetation would have to have covered the entire mound, and the cist left open for a considerable amount of time, for it have formed naturally in the base. Alternatively, this deposit could represent the deliberate deposition of organic material and pine charcoal (providing the date) in the cist, which formed a peat-like matrix through its decay in a waterlogged and acidic environment. At Bellshiel a similar situation may have existed. Nancy Newbigin reports that the organic-derived matrix in the base of the grave exhibited both higher acid-soluble phosphate levels and a wider variety of pollen grains, than the soil recovered from beneath the cairn body (Newbigin 1936, 303). Whether the phosphate resulted from the decay of a corpse or the result of other organic deposition, we cannot know; however, the increased pollen levels cannot be explained by any means other than the deposition of floral material.

Terracing and Embellishment

Harehaugh and Scald Hill, both trapezoidal cairns, exhibit a definite terraced profile. At Scald Hill this was achieved with two lines of larger boulders that flanked the crest of the mound (the axial stones also discussed below) (Miket and Aylett 2006, 5). However, at Harehaugh the two levels of terracing were created both by forming the material that composed the mound body and selectively removing areas of bedrock, which was quarried out and redeposited, creating a stepped profile to the monument (figure 7.12). Where bedrock was not available for alteration, a kerb was erected to give the impression of a line of natural stone (Carne 2006, 13). The 'flat' surfaces of the terraces were formed with smaller stones, contrasting with the more irregular and larger rocks used to construct the other cairns where their body material is exposed for study. The result of this activity is that Harehaugh actually consists of a very small amount of anthropogenic 'construction': the majority of the form of the monument was created by the *removal*, rather than placement, of material. The cairn is as much of an embellishment of a natural feature as it is wholly original.

Figure 7.12: The terracing at Harehaugh, note the line of altered bedrock, centre (author's photograph 2005)

Stone Features: Kerbs, Horns and Axial Stones

Of the three sites that possessed kerb features (Bellshiel, Harehaugh and Scald Hill), none could be said to have fulfilled a truly retaining function for the body of the mound. At both Bellshiel and Scald Hill the stones in question were too small and not bedded into the ground. At Harehaugh the kerb delimited the edge of a final series of terraces around the monument (*ibid.*, 13). Two observations are possible. First, these features do play the role of demarcating the edge of the cairn body, but not in a structural sense: at Bellshiel, cairn material had slipped over the irregular line of boulders that formed the kerb (Newbigin 1936, 297, 303). So it seems that these features were, primarily, of visual significance; at Harehaugh the kerb device was only used on the flatter land to the south of the monument where bedrock could not be quarried out to provide a terraced appearance. Second, they were not designed as a *permanent* visual statement. The fact that they were not substantial enough to prevent the slippage of mound material, of which the builders must have been aware, indicates that the process of creating these structures, or perhaps the brief interlude before collapse began, was more significant than their preservation in a 'perfect' state.

'Horns' appear to be the only common architectural feature amongst the cairns: present on all except Dour Hill, where the damaged state of the monument makes definitive statements difficult. In all cases these horns were placed on the right-hand side when viewed from the front. The fact that Bellshiel has a small, almost vestigial, horn indicates that these features were not the exclusive preserve of the trapezoidal form. Little further interpretation is possible, as the areas to the fore of the cairns demarcated by these single horns were without any particular features or deposits, aside from the small arc of stones placed at the front of Scald Hill. It is unknown whether they represent the location of a 'forecourt' space, common at Cotswold-Severn long cairns, but also present at the Street House long barrow, Cleveland, just beyond the study area (Vyner 1984). Large boulders set along the axis of monuments are the final architectural device employed in stone. They were present at the base of Bellshiel, later covered by mound material and their function unknown, and at Scald Hill, where they were placed so as to be along the centre of the monument. Once again, it is difficult to interpret beyond the basic statement that these stones were deliberately set and for some definite purpose, the nature of which must remain unknown.

Material Culture

Perhaps more accurately entitled the 'lack of material culture', as only a very small number of stone artefacts have been recovered from the cairns. Single flint flakes were found in the grave at Bellshiel, and the cists at Harehaugh and Dour Hill. A retouched flint flake was excavated from within the mound body at Scald Hill, whilst a flint spall was found in a pre-cairn context (Miket and Aylett 2006, 3). Likewise, the body of Bellshiel produced a flint, and a stone Nancy Newbigin describes as a fragment of a 'pot-boiler' (Newbigin 1936, 301). It is, therefore, the relative absence of material culture that is most remarkable. Despite the large volumes of pottery recovered from contemporary lowland pits, absolutely none has been found in a long cairn. Indeed, it is interesting to note that flint artefacts were very rare in the pits studied at Thirlings, but that every excavated cairn produced at least one. This may reflect what was considered the appropriate context for the disposal of different artefact types.

Discussion

Despite the existence of two broad types of long cairn based on plan form, variability in the actual features of the cairns seems to have been the rule. Out of the seven architectural features observed across the class of excavated cairns, no single monument possessed every one. Cairns, like pits, were individual statements of some kind, which drew upon a limited repertoire of constructional elements and raw materials to create a unique monument within a broadly prescribed form (Thomas 1999, 134). As a class, however, it is the restricted and small-scale nature of the burial activity at the mounds that first strikes the observer, and this discussion will focus mainly on their role as 'burial monuments' – the stereotypical interpretation of their existence. The nature of the burial rite will be considered first, followed by a consideration of its role in the wider phenomenon of cairn construction.

We must assume that the small cists and graves present beneath the monuments, with no evidence for cremation, represent the existence of a single inhumation rite of burial. The Cotswold-Severn tomb model, of chambers filled with disarticulated skeletons, is not one realised in every part of Britain. Whilst not strictly rare beneath long barrows and cairns, pre-Beaker burials of single or small numbers of articulated skeletons are regionally restricted, with marked concentrations in the Yorkshire Wolds, the Peak District and the Upper Thames Valley (*ibid.*, 152). The Wolds present the most extensive distribution, where long and round barrows co-exist, with neither architectural form associated exclusively with either articulated or disarticulated burial (J. Harding 1996). In southern England, simple oval mounds seem to be associated with single, articulated burials, such as the examples at Radley, Oxfordshire, dated to pre-3000BC (R. Bradley 1992), and Alfriston, East Sussex (Drewett 1975). The earliest phase of some Cotswold-Severn megalithic tombs may be 'rotunda graves' (Darvill 1987, 63): the feature at Notgrove contained a single cist burial (Clifford 1936). It should be noted, though, that there is scepticism over whether these graves were ever intended to be free-standing, as some appear to have been structurally integral to the covering mound (Scarre 2006, 202). Regardless of the date of these single-burial features, or indeed where they fall in a sequence with multiple or disarticulated rites of disposal, it is clear that a regionally distinctive burial practice in the Pennines and Cheviots of the North-East would not stand at odds with variability witnessed elsewhere.

Miles Russell, in homage to the surrealist work of René Magritte, stated "this is not a burial monument" (2004, 269). He was referring specifically to the fact that burial deposits at long barrows make up a very small proportion of the total volume of the structures, yet they are the element upon which most studies are focused. His point resonates particularly with data from these five Northumberland long cairns: an even smaller proportion of their structure is given over to burial or burial-like deposition. Indeed, there is no secure evidence that any of these structures *ever* saw the deposition of human remains. The most likely explanation for their absence is, admittedly, taphonomic factors, but the demonstrable lack of burial in the cist inside the Milfield North henge (see following chapter) does warn caution over our unproblematic labelling of monuments. Indeed, it is not unusual for earthen long barrows in southern England to lack any sort of burial deposit (Field 2006, 133). Overall, one should admit that these cairns were most likely to have witnessed human burial, but we should not assume that this likelihood automatically renders them 'burial monuments' (Fleming 1973b, 178; Brophy 2005, 9). This amounts to questioning the significance of the burial deposit relative to any of the other architectural features studied above. This idea is not a new one: Gordon Noble has recently stressed the importance of trees in Neolithic society, specifically the role of split tree-trunks in long barrow architecture (Noble 2007). Alternatively, the process of making barrows and cairns could have been just as important as their contents (McFadyen 2007). This admission, that the deposition of human remains may not be the motivation for building cairns, is really the only framework in which we can understand the existence of the cairn at Scald Hill. This monument was very similar in form to two others, one of which, Harehaugh, contained a cist, but Scald Hill contained no evidence of human disposal of any kind, even though it shared an array of architectural features with other monuments that did.

It is not denied that human burial is the motivation for the construction of long cairns and barrows in other regions. Yet this need not imply that the disposal of dead human matter was of equal significance at all times and in all places. Equally, one should not undertake the reverse, and assume that it was unimportant, as this is just as much a construction of contemporary thought; rather, the possibility should remain open that the significance granted human remains could be variable, and may not have exceed the significance of other architectural devices. This attitude could explain the lack of burial at Scald Hill, and why cists could occur at different points in different monuments; not always at the 'front' where the horns created the most obvious foci for attention. Now, importantly, this argument does not advocate the idea that human remains are insignificant to individuals; it seems likely that the death of a loved one will always cause intense emotional effects, regardless of geographical or temporal location. The point, here, is that human burial may not necessarily have been the primary motivation for the construction of cairns, or the only significant feature where it does occur.

What, then, are the constituent parts of the other architectural components of the cairns? Quite simply, they are stones. A first step towards understanding the potential significance of the other features of cairns is accepting their basic *heterogeneity*. Archaeologists are quick to label particular stone artefacts in specific ways, i.e. as a 'quern' or an 'axe', because of definite outward physical properties connected to a perceived function. Yet there is no reason why the many different stones that form cairns cannot be perceived in the same manner. It is not suggested that they should be typologised and named, but at least it should be recognised that, in the construction of cairns, stone could be characterised in different ways. This is to accept that the kerbs are not just composed of stones; kerbs are composed of 'kerbstones'. The use of certain stones to do certain jobs is a product of *contingent choice*, not just the use of a generic, if variably-sized, resource. Take the construction of kerbs as an example: a deliberate choice was exercised by the builders of Bellshiel, Harehaugh and Scald Hill to use kerbstones that would not effectively revet the mound material and prevent slippage. This was not an accident; the particular stones chosen fulfilled the task set for them – whatever that was, bearing in mind the potential for an ideological dimension – which indicates that they were classified in a particular manner. This seems a terribly basic point, and it is. It needs stating because, when one begins to consider cairns as constructed from a series of different *types* of raw material (even if each of these types shares the property of being composed of stone), one is forced to admit the series of choices and significances that must surround even the most quotidian of 'resources'. When stone features are considered in this way it becomes an absurdity to suggest that they could be less significant than, say, a deposited flint, or perhaps even the presence of dead humans. This is not an attempt to argue that people would necessarily view stones and human remains as of the same importance – we can never know. Rather, certain architectural features could have been necessary for the creation of 'long cairns' as *a particular type of monument*. Human burial, where it did occur, would always have carried important associations, but its presence may not have been vital in cairn construction specifically, compared to other architectural components. Ultimately, one is forced to admit that these cairns may not be burial monuments – they may be monuments that contain burials, but the absence of a burial makes them no less a long cairn. To be facetious: given that there are more horns amongst the five cairns than there are burial contexts, perhaps the creation of a stone-built, horned monument was the motivation for construction. Buried human remains may be no more than a significant elaboration.

Conclusions: Depositing Pots, Depositing Architecture

On one level this chapter has been a simple elucidation of similarities and differences between a series of pottery-bearing deposits and Thirlings; and between a small number of long cairns. On another level it has considered where the stress lay in the configuration of particular sites and monuments: whether focused on process or product, or on the role of certain types of deposit, such as human remains. These sites are an odd mix when placed side-by-side, but they share common practices that can be compared. In the case of pottery deposition at Yeavering and Broomridge, features common with Thirlings are quite obvious and relate to the treatment of material culture. Where monuments that experienced a much smaller degree of deposition are considered, comparisons are less obvious. This short section considers the themes that draw these disparate sites together. It begins with the obvious comparisons between Thirlings and the practices operating at Yeavering and Broomridge, but then moves on to demonstrate that, as arrangements of material culture in space, long cairns are directly comparable to other types of deposition.

In the 'Presence' of Artefacts

Yeavering Eastern Pit

The Eastern Pit at Yeavering provided results that are significant in two ways: it demonstrated the continuity of the practice of pit-digging across the landscape, and it illustrated, once again, the variability in the nature of that practice. The fact that a complex pit deposit existed at Yeavering indicates that Thirlings, as a pit-site, was nothing special *per se*, although the sheer number of pits and postholes on the site obviously marks it out as different. The important point is that pit-digging and filling as general activities were not restricted to a single site. Nor, it seems, were some of the pre-depositional activities that surrounded that practice particularly different either. The sherds at Yeavering may have been more fragmented than those at Thirlings but the relationship between fragmentation and abrasion was the same, and the variability in the abrasion of the sherds was identical between the two sites.

Variability, however, was witnessed in the specific activities that created the pit – digging and filling. In total contrast to Thirlings, where no pit was left open and every one was backfilled immediately, the Eastern Pit was left exposed, and may have provided the context where the weathering of sherds took place. The degree of weathering on the pottery may, ultimately, have been the same, but its location was very different. Aside from this lack of backfill, the Eastern Pit would fit neatly in the general run of pits at Thirlings, and thus there exists a very obvious difference in the relative significance of certain practices. At Thirlings, the *process* of digging and filling was deemed more significant than the finished form of the pit, because it was backfilled immediately and its structure consequently made invisible very rapidly. At Yeavering one could argue that it was the *product*, of a visible finished pit, that was more significant. Yet this could also be interpreted as a means of keeping visible the process of *decay*.

Broomridge

The deposit beneath the round barrow at Broomridge presents a different set of comparanda. As with Thirlings and Yeavering the pottery from the site was selected for deposition on the basis of its fragmentation, yet here the criterion must have been more rigorous, because the variability of sherd size was very low in comparison to both the other sites. Abrasion levels were also very low, which implies no time for provisional discard or elemental weathering. The pre-depositional biography for the sherds was therefore very different, and deliberate breakage for burial may be a more likely prospect here than at other sites, though we cannot be certain. If this is accepted, deliberate choices were made about what to *exclude* from the deposit, as much as were made over what was included. We know from the evidence of Thirlings that, once broken, potsherds were stored for later deposition. There is every likelihood, therefore, that a potential resource of abraded sherds existed that *could* have been deposited at Broomridge but were not; the presence of the heavily abraded pot 'p' proves this. We also know from Thirlings that the specific amount of abrasion was unimportant when it came to the selection of pots for deposition, only fragmentation mattered. Yet at Broomridge there was a significant choice to ignore the existing resource of broken pottery and acquire fresh sherds. Whether this was because the abrasion of the sherds was significant, or that for some ideological reason newly fragmented pots had to be used, we cannot know. However, the condition of the material culture at Broomridge was a far more significant factor than at the pit sites.

Clearly, Broomridge was a very different site from Thirlings or Yeavering: there was no pit, there were human remains, and there was a covering mound. It seems likely that the presence of a burial deposit at this site explains the differences in the disposal of the pottery, although we cannot be sure of this fact because no other Earlier Neolithic round barrow has ever been excavated in the region. Yet this is the only difference. It is true that the covering mound prevented access to the deposits beneath, and arguably created a very visible marker, but at Thirlings the deposits were likewise never interfered with and posts marked the location of particularly complex pits. A mound implies a more emphatic statement of non-interference, and may indicate that this was of more significance than at pit sites, but it exists on a clear continuum of practice. Thus, the significance of certain elements of practice was altered when material culture accompanied the disposal of human remains. There was a greater concern with non-interference – this compunction had to be made visible in the form of the mound – and, likewise, an undisturbed (non-abraded) quality to the pottery was of far greater significance.

In the 'Absence' of Artefacts

At first sight, the inclusion of a section on long cairns seems disconnected; none of the monuments contained any deposits of material culture comparable statistically to the other sites examined. Their status as 'burial monuments' has even been questioned – not a situation with any parallels at Broomridge. Yet this view would be mistaken, because it treats monuments as bounded things that deposition occurs *at*, *in*, or *beneath*. Instead, if we see monuments themselves as *deposited pieces of material culture* they are comparable, clearly, with any other act of deposition. Simplistically, there is nothing that separates the deposition of stones in a structured pile, from the deposition of potsherds in a structured pit. The fact that one is visible and the other buried is a difference of context. Both practices involve the juxtaposition of objects in a set of relationships fundamentally different from the ones they occupied previously, whether this is a broken pot no longer being used, or a stone no longer part of an outcrop. This viewpoint has ramifications for how we think about 'architecture' and material culture, which must be considered before comparisons with other sites are made.

The Definition of 'Architecture'

Thinking about monuments as things that are deposited forces us to consider where the boundary exists between 'architecture' and 'artefacts' (R. Bradley 1998, 71). Perhaps there is no boundary, because 'architecture' is not anything *of itself*. 'Architecture' in the sense that we would deploy it to define monuments, is simply a term that describes a *recognisable arrangement of material culture* that acts to structure bodily movement. Thus, built things, like stone circles or long cairns, are architectural arrangements, and we may go so far as to state that these represent certain architectural styles that are adhered to. In these cases, items of material culture such as stones, deposited bodies, and earth are combined to form the architecture in question. Architecture is composed entirely of separate artefacts combined in a particular way to create a named arrangement. Note 'arrangement' and not 'object' or 'thing': these terms would imply that architecture is greater than the sum of its parts – it is not – it is no more or less than the existence of those parts in related space. This is not a revolutionary viewpoint. It simply requires that a definition of material culture is recognised in which almost anything apprehended by a human becomes an artefact, because it is thereby implicated, even at the most infinitesimal level, in the construction of that agent's knowledge of the world, personhood, and/or the construction of that thing as a named 'object'. It is no great leap from recognising as material culture a portable stone bearing a cup-mark, to a one tonne monolith dragged into position from some distant hillside. In this definition, therefore, 'architecture' *cannot* be seen as a transcendental category with some inherent property that sets it apart from 'artefacts' and allows it to be analysed or apprehended in human affairs in a different manner.

So, the definition of architecture is based in material culture, which in turn is formed from apprehended features of the environment, because all that something requires to become an artefact of human perception is for it to be perceived. This being the case, it follows that almost any perceived arrangement of material culture can be recognised as architectural in nature. Therefore, anything 'natural' or 'man-made' (sic) can be considered architectural because of its space-shaping or defining properties (Preziosi 1979, 5); this again is not a great leap when we consider that the role of architecture in the shaping of 'place' is already well-established (Parker Pearson and Richards 1994b, 4), alongside Richard Bradley's work on 'natural' monuments (2000). This is the basis of the argument that sees appropriated flora, such as groves of trees, caves, and even a circle of people sat in a field, as architectural because of the effect they produce (Preziosi 1979, 5). The intention here is not to open the definition of architecture up in order to investigate a diverse range of situations, as the aims of this study are Neolithic constructions made of stone and wood. Rather the purpose of this definition is to eradicate the barriers between artefacts and architecture and allow us, once again, to think about the *process* of building something, not just in terms of the sequence of events but also as a narrative of human engagement with material things.

The Deposition of Long Cairns

We have seen how long cairns do not have to contain burials in order to belong to the 'long cairn' class of monuments in the North-East: there are characteristic properties of the mounds that are more consistent than the presence of human remains. Whilst a human burial at a long cairn would not have been insignificant, it is questionable whether burial was the *motivation* for the construction of the mounds. This stands in stark contrast to the situation at Broomridge, where it is arguable that the presence of cremated remains dictated specific practices affecting the disposal of broken pottery. Broomridge was a 'burial monument', whilst the five long cairns were monuments that sometimes contained burials.

However, if each cairn is broken down into its constituent parts, as a series of artefacts that comprise an architectural configuration and an effect, and the process of depositing these monuments is considered, it is evident that a lack of burials does not limit their potential significance. Take Scald Hill, for example. Here a depression in the ground, which later would be buried beneath the cairn, received a flint flake. The cairn itself was then constructed from large stones and another flint incorporated; an arc of stones was formed at the 'front' of the monument at this point and a horn feature created. Two lines of axial boulders flanked the crest, creating a terraced impression, and finally the whole monument was covered with a 'skin' of smaller stones. No burial event took place, and it is this absence that would normally make the site difficult to interpret, where the deposition of human remains is assumed to be the motivation for the construction of cairns. Yet if each of those different types of stone (flint, axial boulder, stone arc, horn-stones, skin-stones) are different types of artefact, then *their* deposition could be the reason behind construction. If we accept that pits are produced to take part in the complex deposition of pottery, then we must accept that cairns could be constructed to take part in the complex deposition of stone. Both pits and cairns are architectural arrangements. If Scald Hill forces us to consider an alternative way of thinking about cairns, it is clear that we should not privilege human burial as the motivation for construction were it does occur. At the other cairns, burials could be implicated in construction as a particularly emotionally charged type of material culture, but they need not be the *only* thing of significance at a site.

We should, therefore, treat cairns as acts of deposition involving stones that were heterogeneously categorised and utilised in specific ways, just as differentially fragmented pottery was deposited depending on the presence of a post in a pit. Indeed, all of those variables in pit deposition that could be more or less significant are equally applicable to the creation of a cairn. In terms of relative significance, none of the cairns had a complex internal structure, yet many were endowed with kerbs, a horn or large axial boulders. The presence of, or the effect produced by, such features was clearly of more significance than the deposition of more traditionally recognisable artefacts, such as pottery, flint or human remains. This significance could be based in producing a visual effect. Where bedrock was unavailable for terracing at Harehaugh, a kerb of stones was used to delimit space (Carne 2006, 13); the kerb at Bellshiel was largest and most pronounced on the side facing downslope toward Redesdale (Newbigin 1936, 297) – the direction in which the monument was visible for the farthest distance. So whilst this visual *product* may have been of greater significance than we have seen at other sites, this is tempered by the knowledge that this product may not have been of great long-term concern. The kerb at Bellshiel was demonstrably incapable of revetting the mound material, which later collapsed and covered it. This is likely to have been a deliberate choice, however, as Richard Bradley has demonstrated for a similar kerb that was ill-suited to a structural role at Balnuaran of Clava (R. Bradley 2002). So, whilst it is tempting to see cairns as permanent visual statements, as products of particular intention, in truth, at Bellshiel at least, the process of long-term decay was built-in.

Deposition in the Earlier Neolithic: The Significance of Process

In summary, therefore, we have an interesting series of contrasts in the relative significance of different aspects of the depositional process, if different pits, different deposits and different monuments are compared across the Earlier and Middle Neolithic. We saw in chapter six how the process of pit creation, and the fact that once a pit was completed it could not be disturbed, was of more significance at Thirlings than the finished form of a pit or how it was related to other pits. The significance differed for the pit deposit at Yeavering: here the pit was left open, and there was a deliberate choice to allow processes to continue to act on the pottery, as the contents were left visible and the sherds allowed to weather *in situ*. At Broomridge the qualities of the material culture were of far greater significance than at the other sites: more effort was expended ensuring very similar fragmentation levels and low abrasion levels. Here, however, not only were the potsherds unweathered when they entered the deposit, there was a deliberate concern with preventing any further damage, decay or interference, and the mixed deposit was covered with a mound. At the long cairns, process may have been less significant than visual product, with one important qualification; at least one of these monuments was allowed to decay.

All of the above statements favour *processes*, either of human choice or long term change, over the creation of static 'products'. This concern with process can be categorised at the various sites in two ways: both categories were dominated by processes operating in the short-term; differences arise between those that denied the possibility of *long-term* change and those that allowed it. In the first category we must place Thirlings and Broomridge. Clearly, given the complexity surrounding the shorter-term fragmentation and selection of potsherds at the two sites, the practices surrounding material culture were of great importance. However, they also share the distinction of denying any further processes the ability to act on the deposits once completed: at Broomridge this was accomplished by the covering mound and at Thirlings by the prohibition on later interference with finished pits. The second category contains Yeavering and the long cairns. At Yeavering, at least, the short-term processes were less complex, as the sherds were not weathered elsewhere and then selected for deposition, yet they were still deliberately subject to selection based upon their fragmentation; on the processes involved in creating long cairns we can be less definite. Yet at these sites, even though a visual product seemed to be of a certain importance, this product was itself allowed to be subject to long-term processes of change. At Yeavering the sherds were allowed to weather, whilst Bellshiel was allowed to decay. Neither of these products implied a stable permanence. To summarise. The deposition of things in pits and of monuments shared a focus on process over product; whether particular sites allowed or denied long-term change, there can be no doubt that the *acts of creating* were always more significant than their specific outcome.

CHAPTER EIGHT
SUBSEQUENT DEPOSITION: THE MILFIELD HENGES

Introduction

This chapter extends the analysis of deposition beyond the chronological scope of Thirlings, to include activity that occurred in the Later Neolithic henge complex in the Milfield Basin. Six of the nine hengiform monuments in the basin have been excavated and all develop the themes we saw outlined at Thirlings and contemporary Earlier Neolithic sites. The sites considered in this chapter link the two spheres of activity examined in chapter six and seven. At Thirlings, in chapter six, pit deposition was the totality of the architecture considered, whilst in chapter seven, deposition involved standing monuments. Here, complex pit deposition and other forms of upstanding architecture combine to produce composite monuments of a fascinating character. We are concerned with the role architectures of enclosure came to play in the developing narrative of Neolithic deposition.

Before the pits and henges are considered, it will be necessary to provide some background to the investigation of the complex. The broad history of archaeological investigation in the North-East was outlined in chapter two; however, the specific history of work in the Milfield Basin is of particular relevance to current interpretations. The pits inside the henges will then be discussed. Due to their small number, and the relatively small quantities of material culture recovered, statistical analysis of their contents has been impossible. Their narratives are, therefore, concerned primarily with structural development, and empirical comparisons on this basis. The subsequent section then deals with the henges themselves, and their structural development. The section closes with an appreciation of the development of the henge complex as a whole, focusing particularly on interpretations for its form and functions. The themes that emerge from these narratives, concerning the status of material culture; of content, process and product; and the contingency of human action, are then interpreted in light of the nature of 'architecture', and its changing role in the structuring of space.

A Background to Milfield

The Milfield Basin, also known as the Milfield Plain, is located in north Northumberland, centred on grid reference NT966327, and is formed between the uplands of the Cheviot Hills to the west, and the Fell Sandstone ridge to the east, which separates it from the coast. This remarkably flat area of land is bisected by the rivers Glen and Till, whose post-glacial alluvium formed the geography of the basin, and on whose gravel terraces the majority of monuments were constructed. Figure 8.1 displays the location of the many sites that form the complex, but they can be divided into three broad types: pit alignments, hengiform monuments, and pit scatters. Thirlings is an example of a pit site *par excellence*, but smaller pit scatters have been excavated at Woodbridge Farm (Muncaster 2003) and Cheviot Quarry (Johnson and Waddington forthcoming). Like Thirlings, these seem to be a Neolithic phenomenon. The hengiform monuments in the basin date slightly later and seem to shade from the Later Neolithic into the Early Bronze Age, with excavated examples at Yeavering, Milfield North, Milfield South (A. Harding 1981), Coupland (Waddington 1999), and Whitton Hill (Miket 1985). There are a large number of pit alignments visible from aerial photographic evidence, but only two have been excavated, near Milfield North, and at Ewart I (A. Harding 1981; Miket 1981). Finally, an anomalous linear monument links the unexcavated henge at Marleyknowe with those at Coupland and Milfield South; the nature of this cursus-like construction is a subject of some debate, but it has been referred to both as an 'avenue' (A. Harding 1981; Edwards 2007) and alternatively a 'droveway' (Waddington 1999).

Excavating the Milfield Henge Complex

This section is intended to convey the basic structural detail, evidence recovered, and an appreciation of the interpretation of each of the sites in the complex. The archaeological activities can be divided into three periods of investigation: Brian Hope-Taylor's work at the Yeavering palace site; Anthony Harding's and Roger Miket's extensive enquiry into a range of sites; and Clive Waddington's more recent work at Coupland and various other locations, through commercially funded projects. A brief history of these excavations is provided below, followed by a consideration of the available dating evidence, before later sections consider the resulting interpretations.

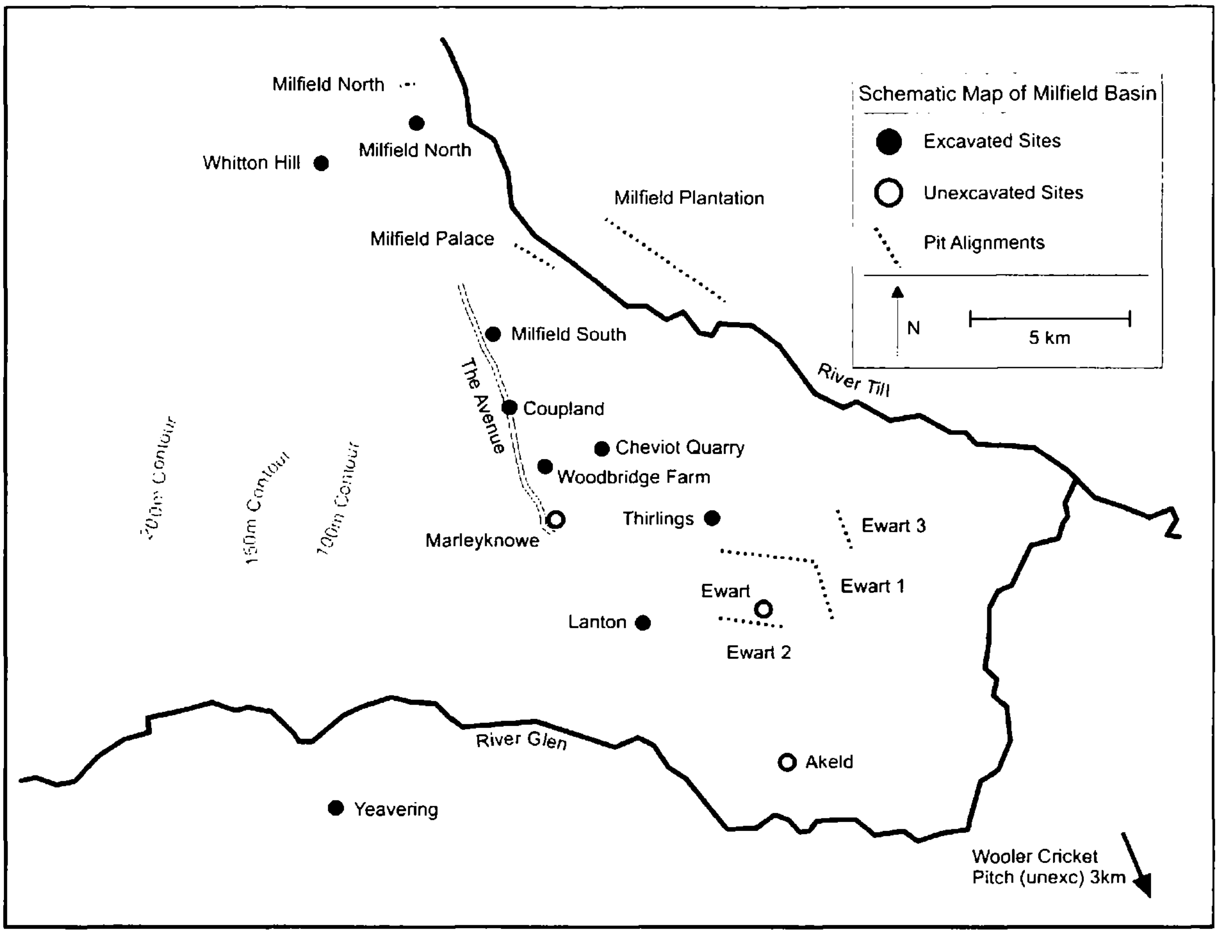


Figure 8.1: The monuments of the Milfield Basin

Brian Hope-Taylor

Aside from the excavations at Thirlings, which have been reported in detail in previous chapters, the earliest excavation of a Neolithic monument under 'modern conditions' was the 'Western Ring Ditch' at Yeavering, which was uncovered by Brian Hope-Taylor during his investigation into the Anglo-Saxon palace site (figure 8.2). The excavations also uncovered a 'ritual pit' containing the sherds from six Grooved Ware vessels (Hope-Taylor 1977, 345); whilst the site produced Impressed and Grooved Wares from 'domestic' contexts (Ferrell 1990, 34-36).

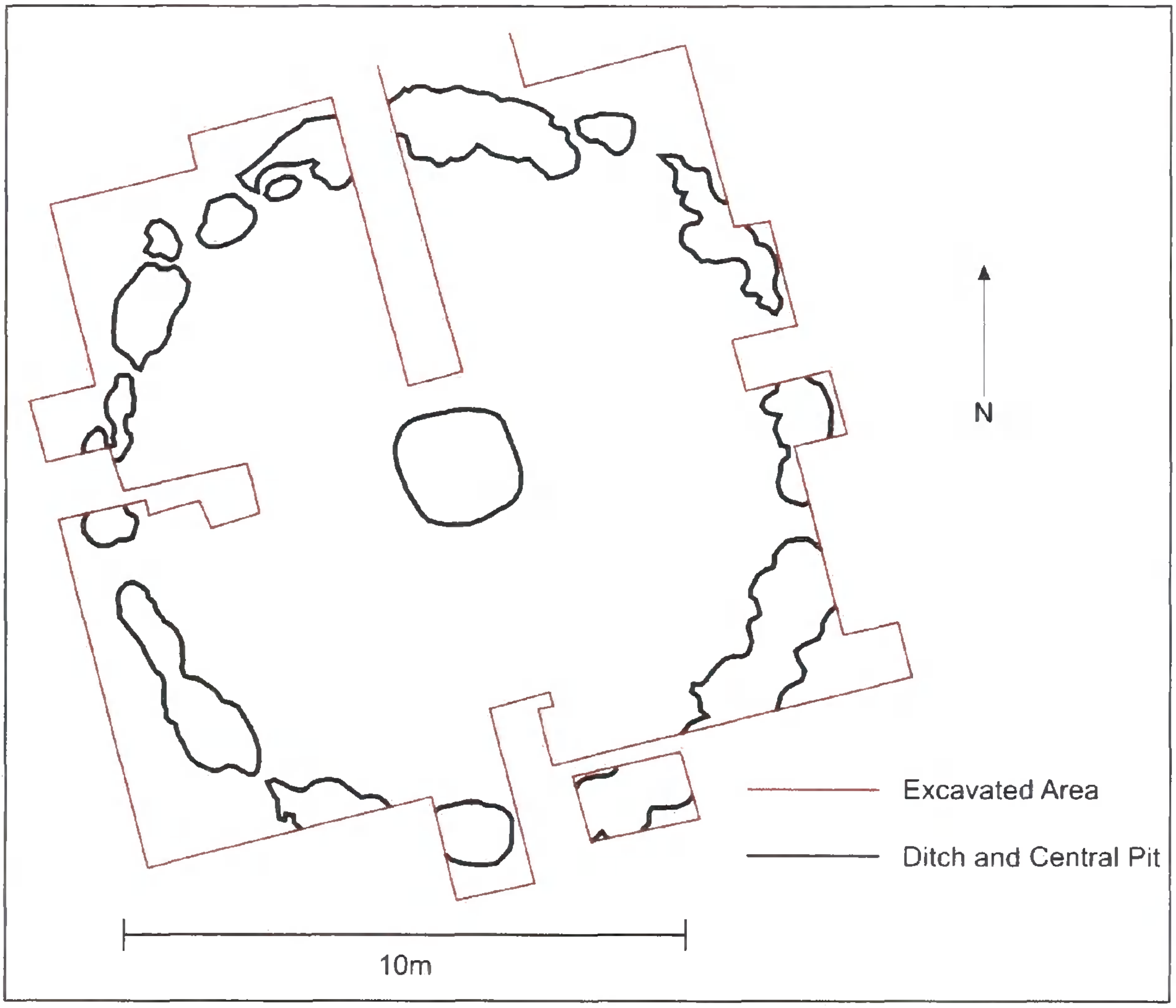


Figure 8.2: Plan of the Western Ring Ditch at Yeavering

Anthony Harding and Roger Miket

The most extensive programme of research into the monument complex was undertaken by Anthony Harding, with the excavation of the Milfield North henge; sections across the 'avenue'; various pit features; and the partial excavation of the Milfield South and Yeavering henges. The avenue was demonstrated to post-date at least two of the monuments on the basis of their structural relationship with it. From its origin to the south, it swerves noticeably to the west of the Marleyknowe henge on its northward course (A. Harding 1981, 89). As it passes directly through the Coupland enclosure the western avenue ditch breaks to avoid the south-western ditch terminal then bends to respect the northern entrance to the henge (figure 8.3). Harding speculated that this interesting arrangement of ditches could represent contemporary construction episodes, with the intention that the avenue should have run uninterrupted through the centre of the enclosure, but poor communication between work-gangs resulted in misalignment and forced modification to the course of the avenue (*ibid.*, 91).

Harding's excavation of the henges at Milfield North, Milfield South and Yeavering, alongside aerial photography, established that, although similar in size, the architectural devices within the henges diverged widely. Milfield North was argued to contain a number of burials, a ring of internal pits, and a ring of external pits; the ditch is described as segmented, with an anomalous third entrance, and causeways that did not reach to surface level. Yeavering is associated with a grave just beyond its western entrance, but no internal or external pit features. An outlying pit containing an extant standing stone may suggest an alignment through the henge entrance (A. Harding 1981, 130), strengthened by the presence of a cropmark to the northwest that may represent a similar feature in the opposite direction. The partial excavation of Milfield South revealed a central pit, which was later marked by a substantial post; the ditch here could also be segmented, but as the whole of the henge was not exposed the number of entrances cannot be quantified (*ibid.*, 95). See figure 8.4 for comparative plans. The remaining henges at Akeld and Ewart have not benefited from any excavation but from aerial photographic evidence they too seem to contain a central pit; interestingly, the anomalous enclosure at Marleyknowe appears to have a truly segmented ditch, with at least nine causeways (McCord & Jobey 1971, 124).

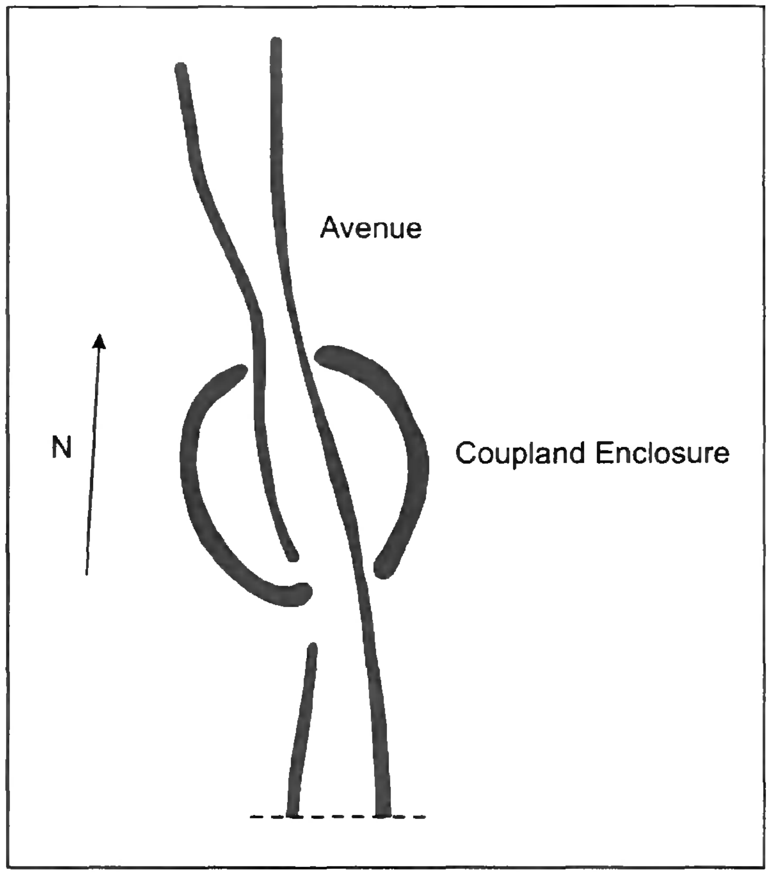


Figure 8.3: Schematic plan showing relationship between Coupland enclosure and the Avenue (after A. Harding 1981, 90)

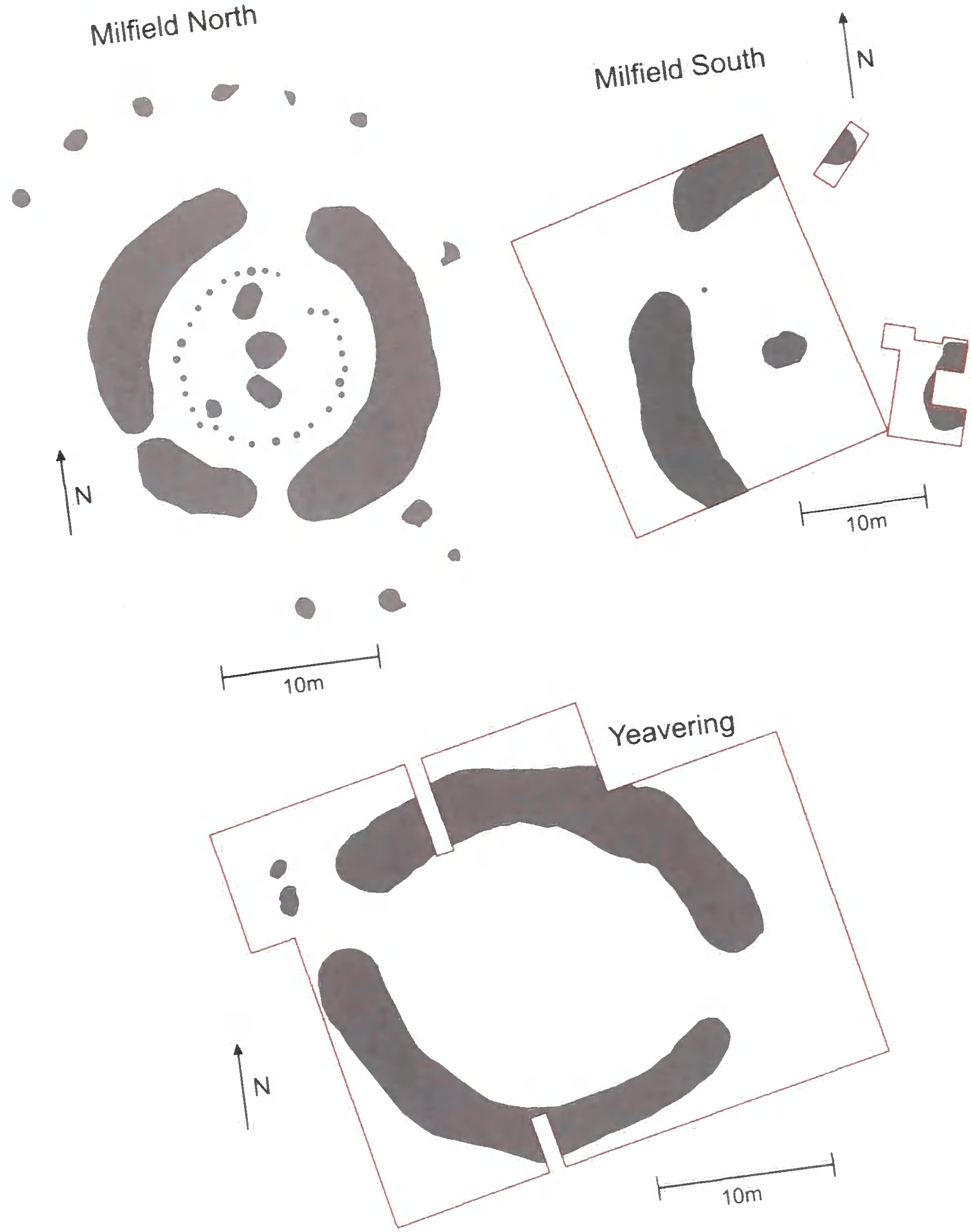


Figure 8.4: Comparative schematic plans of the three henges excavated by Harding (after A. Harding 1981, 95, 103, 121)

In 1977 Roger Miket excavated part of a pit alignment that encloses the Ewart henge on three sides, seeming to mark the approach to the monument. Of the six pits excavated, all averaged three by two metres in plan by between 0.6 and 0.8 metres deep. With posts placed in the centre of each pit, the distance between them would average 2.4 metres (Miket 1981, 143-145). Importantly, Grooved Ware was associated with the lower fills of the pits, indicating probable contemporaneity with the other Later Neolithic/Early Bronze Age monuments of the basin, including the excavated Yeavering henge, Milfield North and South henges, and the Whitton Hill ring-ditches. It should be noted however, that Northumberland and the Borders currently lacks a fine Grooved Ware typology (A. Harding *et al.* 1996, 195), and therefore no statement on the relative chronology of these monuments can be made with certainty; unfortunately no radiocarbon determination was possible from the pit fills of the alignment. However, Anthony Harding excavated two pits forming one of the pairs in a double alignment 180 metres north of Milfield North henge. Both pits had held a post c.20cm in diameter, whilst one yielded 16 sherds of Grooved Ware and three radiocarbon dates of 2300-1980 cal BC (BM-1650), 2400-2030 cal BC (BM-1652), and 2200-1750 cal BC (BM-1653), indicating broad contemporaneity with the activity at Milfield North henge; indeed, Harding observes that standing at the end of this curving pit alignment, one could look south through the opposed entrances of Milfield North and be aligned on the summit of Yeavering Bell on the horizon (A. Harding 1981, 115-119).

Roger Miket also excavated two of the eleven ring-ditches at Whitton Hill, referred to as sites I and II, some 400 metres from the henge at Milfield North (see figure 8.5 for comparative plans). Site I comprised V-shaped ditches with four causeways, around the centre was a circle of pits that appear to have held posts (Miket 1985, 140). Interestingly, the ditch held charred timbers but no evidence of post-pipes; the excavator interpreted these timbers as originally comprising part of an inclined roof, the timbers of which sat upon stone packing in the base of the ditch, with the opposite ends resting on the timbers held in the central posts, or a lintel running between them (*ibid.*, 143). A pit was located in the centre of the enclosure that held a cremated adult in an inverted pot, identified as a Borders variant of the Impressed Ware tradition; fifteen other cremations were located within the enclosure. Site II was somewhat simpler: it had only one entrance, a ring of inner pits and a central burial deposit. The cremation in this pit contained a minimum of twenty-three individuals, of which fifteen must have been over the age of twelve (*ibid.*, 145).

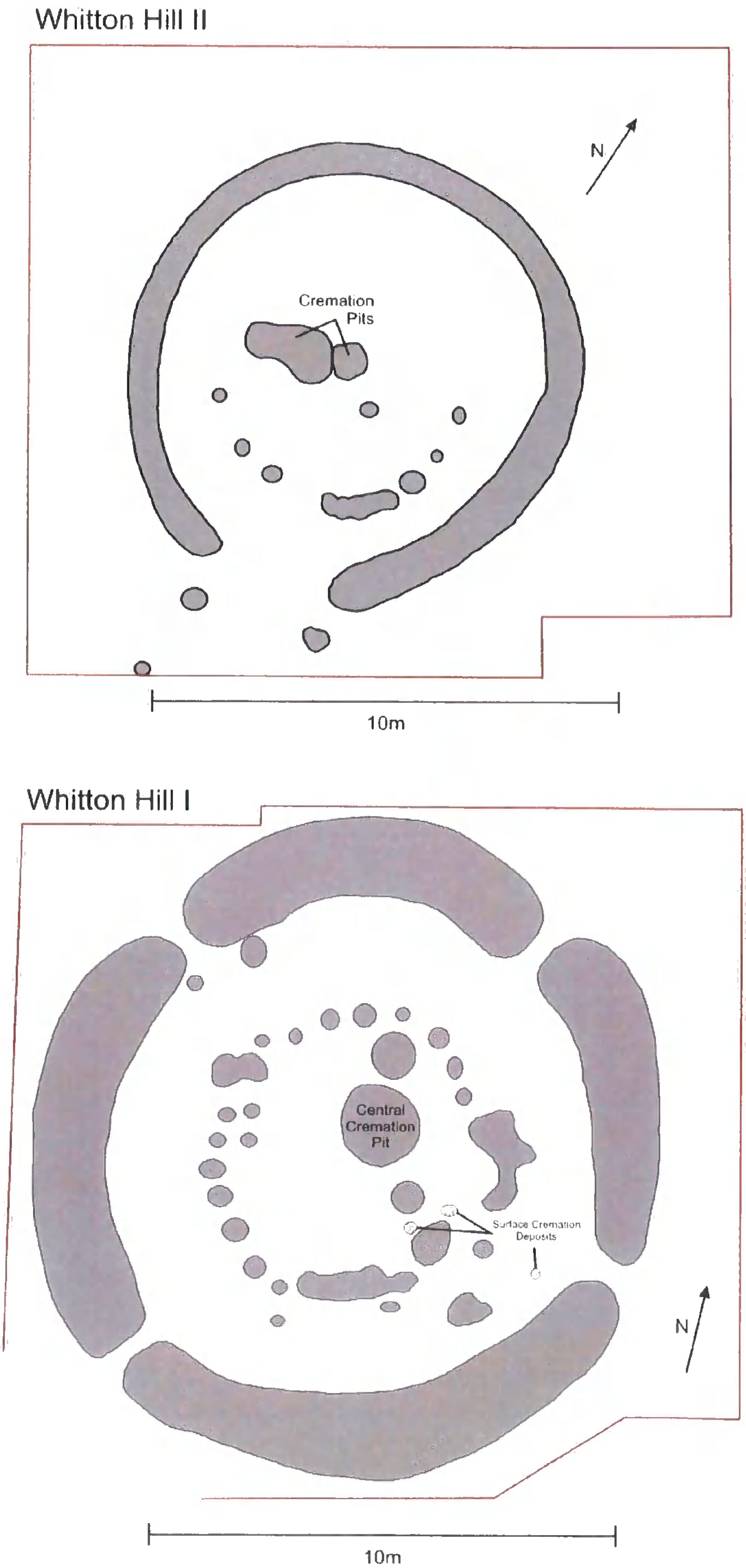


Figure 8.5: Whitton Hill Sites I & II (after Miket 1985, 138, 144)

Clive Waddington

The most recent piece of large-scale research in the Milfield Basin was undertaken by Clive Waddington, beginning in 1995 and culminating in the publication of a substantial work on the archaeological landscape, which attempted to link the diverse threads of evidence described above into a synthetic scheme (Waddington 1999). This comprehensive study examined many aspects of the prehistoric occupation of the area, from the Mesolithic to the Early Bronze Age. Waddington's most notable contribution to knowledge of the monument complex was the excavation of an entrance to the Coupland enclosure and its associated avenue. Contrary to Harding's interpretation, Waddington argued that his radiocarbon dates from these two monuments indicated that they were far from associated with the other henges of the basin. Ditch deposits from the avenue, which is structurally later than the enclosure through which it runs (figure 8.3), were dated to 3850/3800 cal BC (Beta-96128/96130) (*ibid.*, 147), placing both monuments firmly in the Earlier Neolithic; see figure 8.6 for a dating summary. These ditches revealed a stone-packed slot at their base, interpreted as the bedding trench for a plank fence some 1.5 metres tall. Based upon this new data Waddington assigned the Coupland enclosure the function of an Earlier Neolithic cattle corral, and Harding's avenue became a 'droveway' associated with this enclosure. These components were integrated into an elaborate landscape scheme of transhumance agriculture, assigning the 'domestic' occupation at Yeavering (Hope-Taylor 1977), Bolam Lake (Waddington & Davies 2002) and Thirlings (Miket 1976) the role of transitory camps, on the paths of stock movement into the Cheviot uplands. The many rock-art sites surrounding the basin were said to mark 'inscribed grazing areas' where the pastoralists herded their cattle during the summer months (Waddington 1996a).

Dating the Milfield Complex

These interpretations of Coupland and the other monuments are examined later when the architecture and development of the complex are considered, but for the purpose of this introduction there is a significant caveat: the extent to which we can be certain Coupland is actually Earlier Neolithic in origin. It should be made absolutely clear that this is not meant to be construed as a criticism of the excavators or their technique, simply that the amount of absolute dating evidence we possess is rather limited. The Coupland enclosure is placed in the Earlier Neolithic by its structural association with the avenue, which it must pre-date, but the avenue date is based on only two radiocarbon determinations of c.3800 cal BC (BETA-

96129 and BETA-96130). These dates are described as originating from charcoal in a 'sealed' context in the base of the western droveway ditch (Waddington 1996b, 11; 1998, 23). Whilst there are no section drawings published for this excavation, photographs are available (Mercer 1997, 93-94), from which it is difficult to state that these contexts were definitively 'sealed', although it is accepted that a more informed interpretation may be possible upon the full publication of the site. The photographs reveal typical ditch stratigraphy, with no evidence for any features that would inhibit the action of animals, particularly worms, or prevent the downward leaching of material through fluvial action. Thus these contexts cannot provide the required *terminus ante quem* for the construction of the ditch. Charcoal is obviously viable dating evidence, yet if the burning that created this charcoal was not in-situ, and nothing is reported to this effect, then the possibility remains that it represents earlier, residual activity. Such material could become included in the fill by a number of processes: the ditch could be cut through earlier deposits; the remnants of such activity could have silted into the ditch from the land surface; or earlier material could be incorporated into backfill taken from sources other than ditch spoil.

Earlier activity did occur on the site: two pits within the enclosure returned dates of c.3880 cal BC (OxA-6832/33) (Waddington 1998, 23). Moreover, an upper fill of the Coupland enclosure ditch produced charcoal with an Early Bronze Age date of 1910-1530 cal BC (Beta-117294), which, when allied with the fact that the enclosure does present the outward characteristics of a Later Neolithic henge, could throw doubt upon the Earlier Neolithic date. The matter therefore rests upon the extent to which we can date the avenue from the charcoal samples in the base of the ditch. It is admitted that further excavation, or the full publication of the site, could throw new light upon Coupland and indeed the whole complex. For the purposes of this study, the specific date of Coupland need not be an insurmountable problem, especially when the monuments of the basin, and deposition within them, are considered in isolation; however, it will be an issue in the interpretation of the architecture of the entire complex.

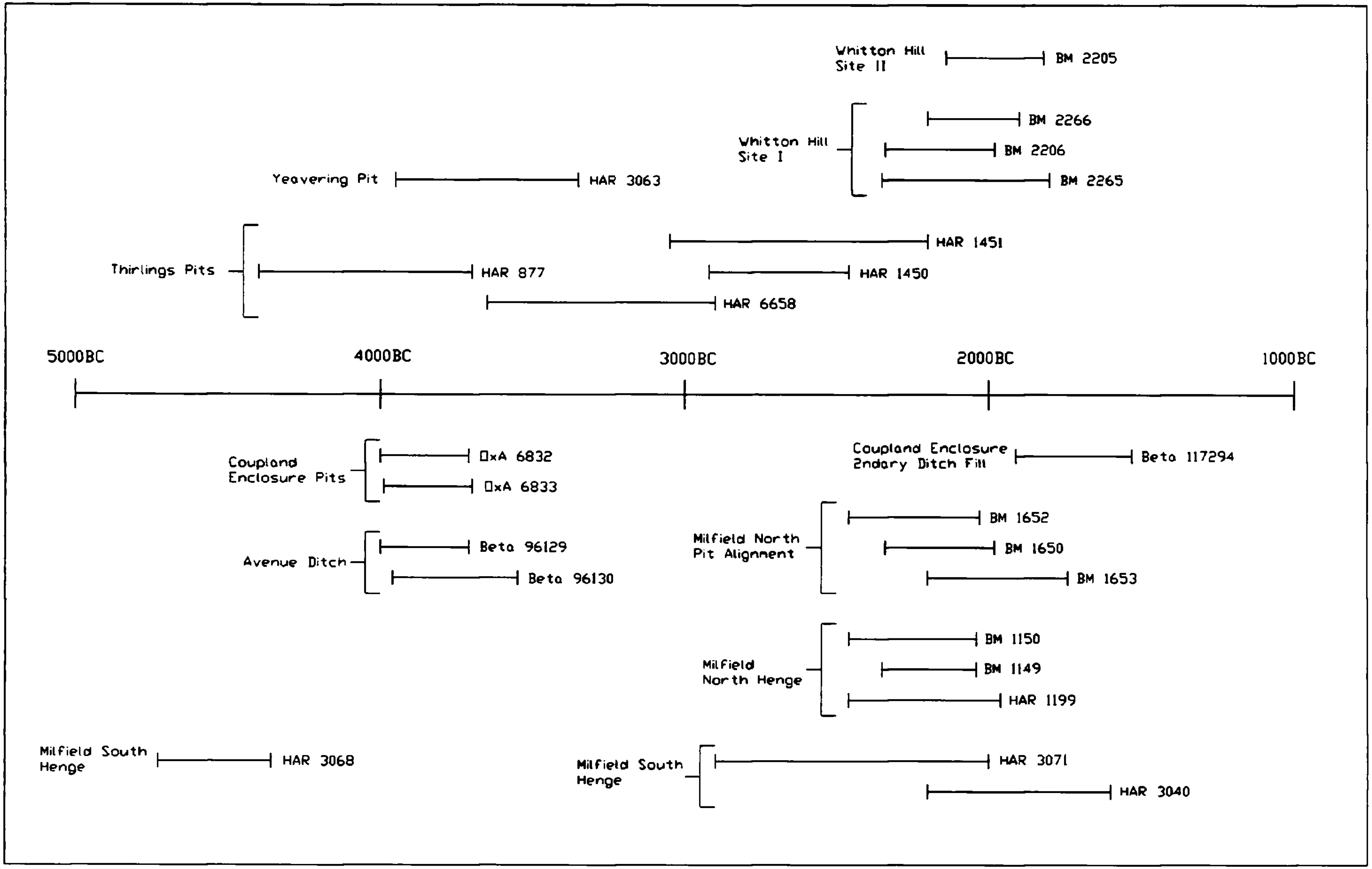


Figure 8.6: Radiocarbon dates from the Neolithic and Early Bronze Age monuments of the Milfield Basin

The excavations at Milfield thus have a long history, and indeed are still ongoing, but it is instructive to consider the relative dating of all of these monuments before proceeding, whilst bearing in mind the caveat advanced for the dating of Coupland. Using only the plan of the basin's monuments (figure 8.1), it appears that the components of the complex articulate together quite closely. The henges of Milfield North and South seem associated with the ring-ditches at Whitton Hill, and the pit alignment that joins these monuments. However, as the timeline (figure 8.6) clearly demonstrates, only Whitton Hill, the pit alignments, and Milfield North can be considered contemporary with any reliability; the dates for Milfield South stretch from the Mesolithic (4730-4360 cal BC, HAR-3068), to the imprecise 2900-2000 cal BC and 2200-1600 cal BC ranges (HAR-3070/3040). This casts doubt upon attempts to interpret the Milfield complex of monuments as an articulated whole, especially considering that the dating of the other unexcavated henges must rely on analogy with the excavated examples, whose chronology seems far from straightforward. This is considered in more detail later, when a narrative for the development of the whole is discussed, but it is sufficient to state that contemporaneity between the various Milfield sites looks unlikely.

Depositing Inside Henges

Introduction

This section is focused upon building narratives for the depositional behaviour within the Milfield Henges. As there are so few pits within the henges, containing so little pottery, they cannot be examined statistically for quantitative trends. However, their small number does allow a more detailed analysis of individual pits and therefore more specific narratives; a mode of investigation denied by the sheer size of the record at Thirlings. Yet this section does not seek to equate the empirical recording of the pits with the rigorous statistical analysis undertaken for Thirlings, as this would weaken the validity of any interpretation; rather, the henge pits are studied *in light* of the conclusions from chapter six. In this manner the pits are examined as part of the context of Thirlings for comparative purposes, to identify qualitative differences or similarities in broad behaviour. It should also be made clear that the interpretations here are written with a conscious effort not to privilege the pits within the henges, in an interpretative manner, simply because they *are* within the henges. The henge monuments of the British Isles are a large, complex, but also very *visible* class of site, and it would be easy to explain-away uncritically the complexity of the pit deposition within them by a simplistic appeal to the surrounding ditches and banks. With this in mind, and perhaps in contrast to the manner in which our knowledge of monuments is usually constructed through excavation reports, the interpretations here begin with the pits and end with the henges in a later section, rather than the reverse. The narration first considers the four pits inside Milfield North and proceeds to examine contradictory and contingent themes within the other enclosures at Milfield South and Whitton Hill I and II. The material culture from each pit is studied empirically alongside the pit itself. As at Thirlings, the interpretation will turn upon the different classes of material culture present in the pits and its juxtaposition.

Deposition at Milfield North

Upon excavation, the henge at Milfield North was found to contain four large pits within a ring of small internal pits (A. Harding 1981, 109-112); these four pits were not of regular shape nor were they placed in arrangement that can be considered structured or structural. However, each pit did contain a complex series of deposits, which the excavator interpreted as indicative of burial in every case. Milfield North thereby came to be interpreted as a monument whose interior was specifically reserved for the pit-deposition of human remains. What follows is a brief account of the interpretation of each of the four pits. Their locations within the henge can be found on figure 8.4, and a reproduction of their plans and sections at relevant points below.

Milfield North Pit A (A. Harding 1981, 109)

The smallest of the four pits, Pit A was also the westernmost, and lay just within the ring of small internal pits. It contained a homogeneous upper fill which concealed the cover slab of a well-constructed cist, formed from four slabs set partially within the natural gravel subsoil, and measuring 0.46m long by 0.32m wide by 0.34m deep. The cist was, however, totally empty, lacking even a soil fill because of the quality of its construction. The soil analysis by Michael Alexander concluded that it was unlikely a burial was ever present, due to the average levels of phosphate recovered from the small amount of material in the base (*ibid.*, 134). The pit was still interpreted as a grave: one that had been intended for a child, due to its relatively small size, but as a function that was never fulfilled.

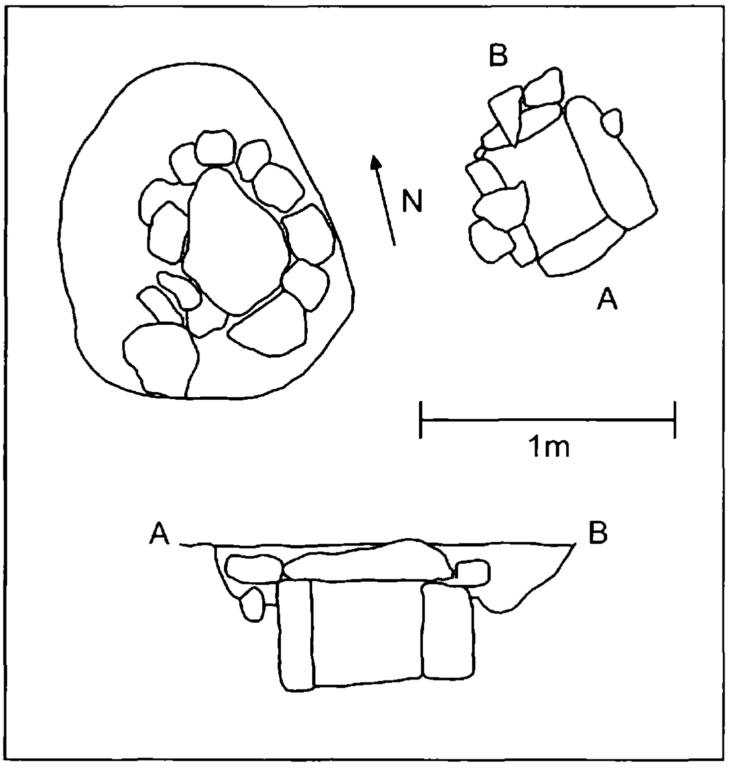


Figure 8.7: Plan and section of Milfield North Pit A (after A. Harding 1981, 110)

Milfield North Pit B (A. Harding 1981, 109)

Pit B was larger and deeper than Pit A, with a substantial deposit of stones extending down its section from 0.4m to 1m in depth; from amongst these stones was recovered the fragmented remains of an atypical pot that might represent either a Beaker or Food Vessel as its form is irregular (*ibid.*, 114-5). Most interesting interpretatively, however, was the setting of two stone slabs at opposing ends of the long axis of the pit, which lay beneath the large stone deposit. Anthony Harding interprets these as a head and foot stone respectively, demarcating the limits of an inhumation burial that had since decomposed in the harsh taphonomic environment of the Milfield gravels. A flint scraper was also recovered from this, the lowest level.

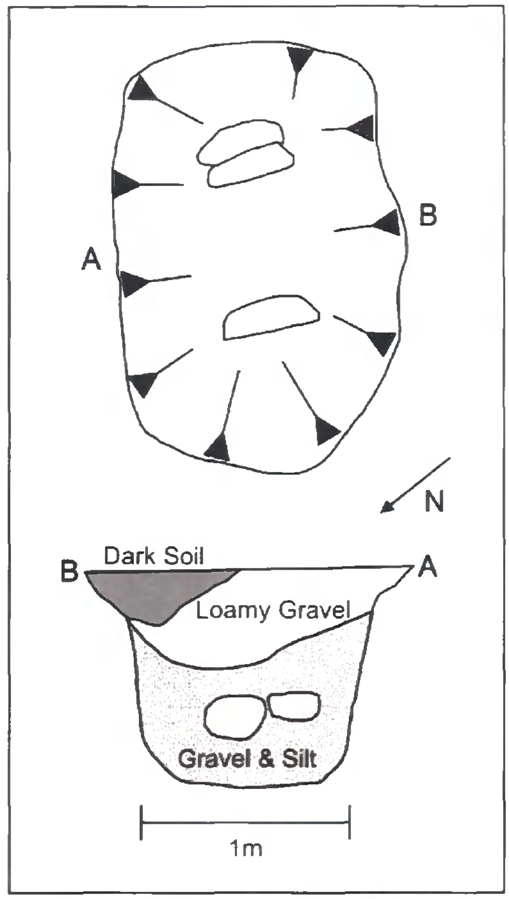


Figure 8.8: Plan and section of Milfield North Pit B (after A. Harding 1981, 110)

Milfield North Pit C (A. Harding 1981, 111)

Pit C was a large pit, but one which contained a less visually structured set of deposits: beneath a loam containing large stones was a deposit of charcoal, which provided the only date from the four pits (2460-1950 cal BC, HAR-1199), under this was a complete Food Vessel pot (*ibid.*, 115). Harding speculates that the slumping of the deposits above this pot, visible in the section, could have been due to the decomposition of a wooden feature such as a coffin; this, too, was therefore interpreted as a grave arrangement.

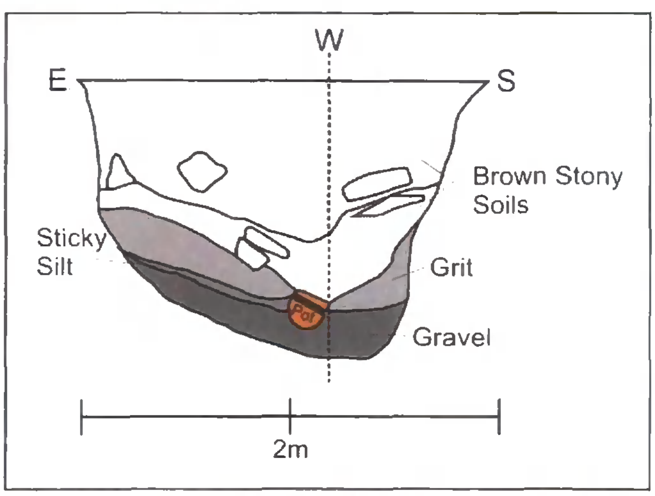


Figure 8.9: Pseudosection of Milfield North Pit C (after A. Harding 1981, 111)

Milfield North Pit D (A. Harding 1981, 112)

The final pit of the four was also the simplest. Setting aside the later disturbance of the upper layers of the pit, its fill was almost entirely a gravely brown soil; however, within this layer and near the base was a rectangular deposit of charcoal, measuring 1.3m by 0.2m, which Harding interprets as a charred plank. Though unusual, this deposit is not unique: Llandegai B produced two pits, each containing a burnt plank (Lynch and Musson 2001, 64). However, owing to spatial proximity with the other three pits, Pit D was also interpreted as a grave.

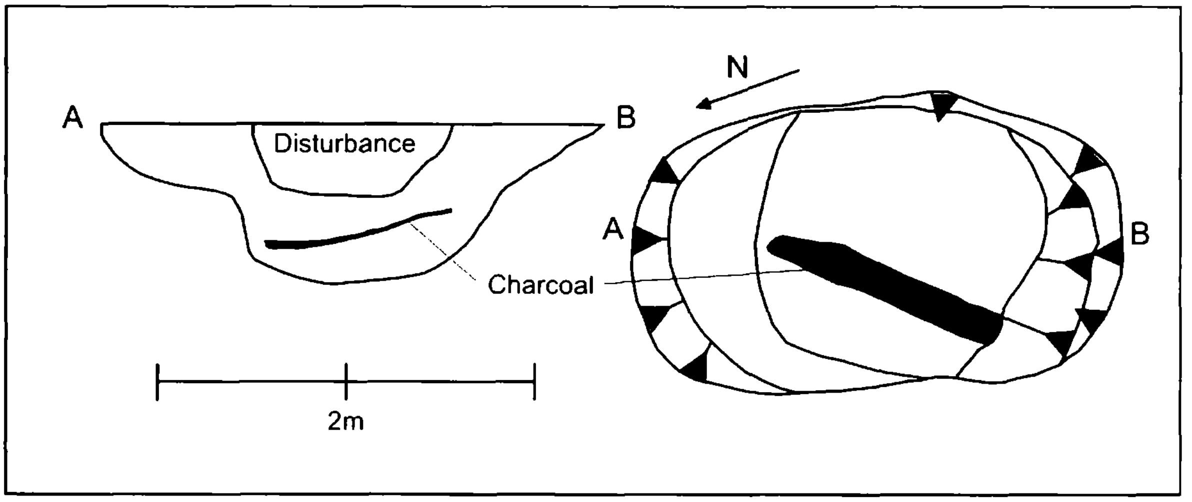


Figure 8.10: Plan and section of Milfield North Pit D (after A. Harding 1981, 112)

Burial Architecture? Deconstructing the Pits

As a starting point for the interpretation of these pits, and indeed for the henge complex as a whole, it is worth reconsidering the assumption that they were associated with burial. The chain of reasoning that leads to a burial interpretation for the pits is straightforward to follow. It begins with the discovery of the cist in Pit A; this is a type of feature that is commonly associated with inhumations, and the burial of urned and unurned cremations in the Early Bronze Age. Anthony Harding's statement that, due the small size of the cist, "This had presumably been intended as a grave for a child" (A. Harding 1981, 109) appeared therefore relatively un-contentious. However, we are also faced with evidence that actual burial was unlikely owing to the average phosphate reading from the base of the cist. Unusually for the Milfield gravels, this is *not* a situation in which taphonomic factors can be invoked to explain the lack of evidence, because the cist was so well-built that little infiltration of water seems to have occurred; we can have greater confidence in the phosphate measurement. The problem lies, therefore, in an interpretation of burial without burial evidence.

The interpretation of Pit B follows that of Pit A, where two stones are interpreted as being "as if at head and foot" (*ibid.*, 109), and the pit as a whole as "presumably a grave pit" (*ibid.*, 111); there was, however, no evidence of a grave or burial aside from the two stones. One is drawn to the conclusion that this interpretation may not have been offered if the cist had not been discovered in Pit A, although the adverb '*presumably*' is employed. Pit C contained nothing other than a spread of charcoal and a Food Vessel, a pottery type associated with Early Bronze Age cremation burial. By this point the interpretation of burial has become implicit: "There were no other indications of a grave arrangement" (*ibid.*, 111), whilst slumping is attributed to a decayed wooden coffin (a form of grave architecture), for which there was no physical evidence. Once again there was no burial in evidence, and the Food Vessel contained no cremated remains. Finally, Pit D, containing a charred plank is similarly interpreted: "in view of the situation in pits A, B and C, it is likely that this, too, was a grave." (*ibid.*, 112); this is despite the fact that no evidence of burial was recovered, and that the deeper part of the pit was dug to such a size that it would be precisely the correct length to receive the burnt plank (figure 8.10).

Whilst such arguments are interesting, they are relatively insignificant when taken in isolation, they become more significant when it is recognised that Pit A forms an essential part of the contexts of pits B, C and D. With these three pits the question of a symbolic meaning of 'burial' becomes more problematic, because there is *no structural evidence that can be contextually associated exclusively with burial*: in this case there are no cists. Thus the interpretation of the pits relies on the initial proposition that Pit A was intended for burial; the remaining three discussions build upon this premise until epistemic certainty is attained upon reaching Pit D. No burial evidence or associations are visible in Pit D and the material remains contradict such an interpretation, yet it is secured by reference to the preceding three examples. Therefore, if one questions the interpretation of Pit A, the grounds for a burial interpretation of the subsequent pits must likewise be doubted, as their referents disappear. It must be remembered that Harding was aware of the lack of a burial and is driven to state that the cist was *intended* (*ibid.*, 109) for the burial of a child. What if it was not? Upon what grounds do this and the succeeding interpretations rest? They rest upon an assertion of *meaning* in the past: that an empty cist can be intended to signify burial so that it can be a symbol of it in lieu of burial actually occurring. There is no desire here to argue that cists cannot be linked with burial, as the vast majority clearly are, and this is a valid contextual association. Yet alternative and equally plausible interpretations are instantly available: the cist may have never been intended to receive a burial; it may have held a body for a very short while whilst open; it may have meant to symbolise burial but never be implicated in it; it may never have symbolised burial *at all*; we cannot know. There are as many other interpretations for the intention behind the deposits as there are people now and in the past to make them, all would be equally arbitrary, and all would be justifiable based upon the contextual information available.

At Milfield North, a modern interpreter has impressed a meaning of 'grave' into the minds of past agents because three pits are close to a fourth that holds ambiguous evidence for burial. Even if a burial interpretation is *not* questioned for Pit A, it would still be wrong to assume that its meaning could be imposed upon the remaining pits. Fundamentally speaking, no burials took place in the henge at Milfield North, so assuming that one pit 'meant' burial and therefore that three others also did, without any physical evidence, is problematic. Importantly, it in turn leads to the reason *why* the pits (and therefore by extension the henge) exist, the linkage is encapsulated in Harding's statement that functional differences (use for burial) can be attributed to morphological differences (has 'burial' pits) (A. Harding 1981, 130). The imposition of this symbolic meaning thereby leads to an interpretation for an entire monument that is neither supported by the evidence, nor the inferences linked by the evidential chain.

A Narrative for the Milfield North Pits

As with all these narratives, the process begins at Milfield North with the digging of a pit. The situation is similar to that at Thirlings ten kilometres away, in that there is no stratigraphic information available to determine which pit is the first of the four to be created, so it is necessary to treat them as a group. All the pits appear to have been dug and then filled almost immediately: there is no evidence of silting, or collapse of the gravel sides, as one would expect if they had been left open for any length of time. Thus the activity at the pits appears to have been temporally restricted; once again the process of pit creation leads us toward the idea of a single unmodified statement in deposition, a series of acts undertaken within a short space of time, as was true of the majority of the pits at Thirlings.

It is in the selection of material culture, however, that the pits within Milfield North become distinct from those at Thirlings: it appears that, discounting any association with burial, very different *types* of artefact were selected for deposition in each of the four pits. Pit A saw the creation of an empty, almost sealed cist; Pit B the deposition of one flint scraper at its base, and pottery fragments in the fill; Pit C the deposition of a whole pot; and Pit D a charred wooden plank. It is important to recognise that the conceptual categories we recognise for these artefacts may not have been valid in the past; so that there may have been little distinction between a broken pot and a whole one, for example; or that a 'cist' was a specific class of burial architecture, as discussed above. However, it is certainly true that these artefacts were made of different materials, and it seems likely, if not certain, that this is a reasonably secure basis upon which to qualitatively distinguish them, whatever their other conceptual associations. This selection could be attributed to mere chance, especially as the sample size is small; however, at Thirlings there was a huge volume of pottery deposited in a very complex manner but almost no flint whatsoever, so it seems that material culture was rarely chosen at random. This relationship of difference between the four pits also has the potential to add a degree of temporality to their interpretation, because the relationship implies almost contemporary deposition, or at least acts occurring within living memory of one another; and once again the pits do not inter-cut, yet they are closely spaced.

Similarly, deliberate choice seems to have been exercised in relation to the matrix in which these artefacts were deposited. In contrast with Thirlings, the pits at Milfield North showed very little evidence of highly organic deposition in their fill; indeed other features in the henge, such as the damaged bank and certain ditch fills, produced greater chemical evidence of organics (A. Harding 1981, 134). The organic matrixes at Thirlings were interpreted in relation to the deposition of what was termed settlement or subsistence-related material. Whatever the origin of that material, it was deliberately excluded from the pits at Milfield North; clearly people produce organic debris constantly as a product of being human, so its lack of inclusion here must represent a deliberate difference in strategy between the two sites, either because attitudes changed over time, or because it was not deemed appropriate.

Thus we must interpret the differences in the material culture between the four pits as the result of deliberate human choice. This allows them to operate in relationships of relative significance with other acts of deposition, both geographically and temporally separate. If at Thirlings the narrative led to an interpretation that the *process of creating pit deposits* was more significant than their location, their contents, or their finished design; then at Milfield North it seems that *content* had become more significant: there is evidence of the deliberate differentiation between artefact types, and moreover, their careful placement: Pit D was excavated to fit its plank almost exactly. It must be stressed, however, that *process* certainly did not diminish in significance, because it is clear that deliberate care was undertaken in relation to the production of the individual deposits, the quality of the cist construction is an excellent example. Also in common with Thirlings, the finished visual 'product' was once again rather insignificant, because the pits were dug and filled quickly, not kept open, and left unmarked by a post subsequently; though this is not a situation found at every henge in the basin, it is shared by the complex deposits at Llandegai A and B, one of which produced similar burnt-plank-deposition, see above (Lynch and Musson 2001).

Deposition at Milfield South

The henge at Milfield South yielded only one feature of interest in this discussion: its large, complex central pit. The narrative of deposition here is very different from the pits at Milfield North. No pottery was deposited in this pit, but a stone setting was constructed at its base; charcoal from the fill of this setting produced a date of 2840-2040 cal BC (HAR-3071) and 2190-1620 cal BC (HAR-3040). At the same level a cup-marked stone was deposited within the stone setting. The pit then appears to have been left open for a time before a post was inserted and packed with large stones; banding of the gravels around the post may indicate that erosion of the pit sides continued to accumulate material around the packing. Finally, the post was removed, shown by pronounced tip-lines in the later contexts higher up the section (A. Harding 1981, 97). Calcined bone fragments were found in association with the insertion of the post, species identification was usually impossible, but they were certainly non-human; some appear to have been avian in origin (*ibid.*, 132).

The narrative here leads to a very different interpretation of the practices involved in pit deposition. In contrast to every other pit studied in the Milfield basin, the central pit at Milfield South appears to have been left open. Even if temporarily covered, by planks for example, the stone setting and the cup-marked stone deposited within it would have been visible, or made visible, for an unknown period. Whatever the duration, it was certainly longer than the pits at Milfield North or Thirlings, which were filled immediately. Moreover, when the time came for the pit to be filled, its location was still marked with a substantial post. In these practices there is demonstrated yet another distinct difference in significance. Here a deliberate choice is made to maintain a visual effect: thus we can suggest that the *finished visual product* was more significant than at Thirlings and Milfield North, where the stress fell more upon the *process* of pit creation. The significance of post erection here is also potentially different, because it follows after a lengthy interval, unlike the Thirlings pits where posts played a role in finishing a pit as part of the immediate process of its creation.

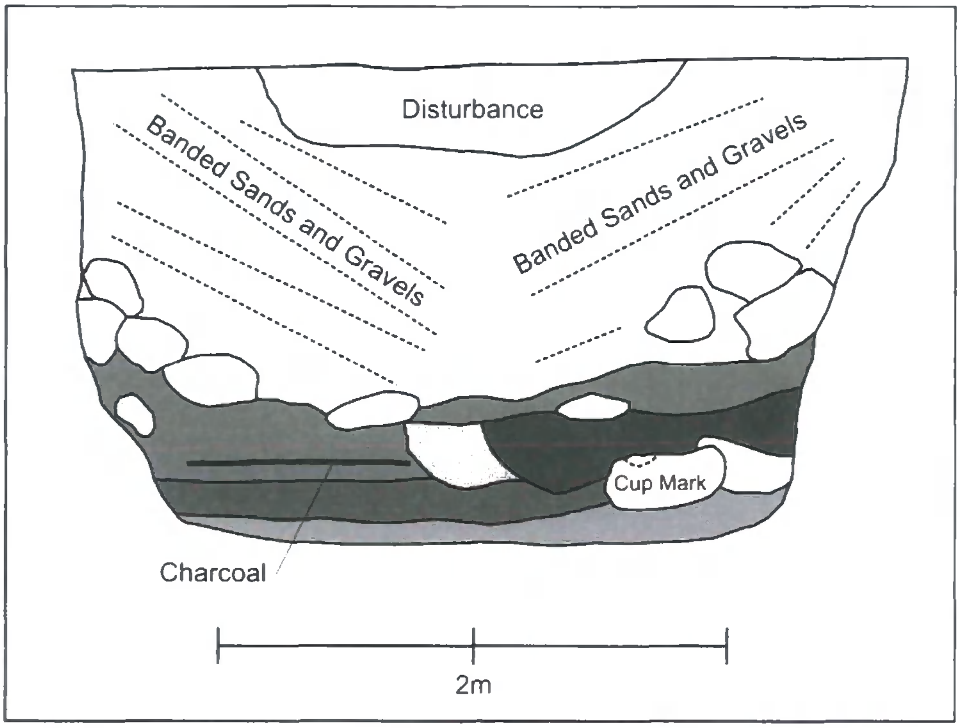


Figure 8.11: Section through the internal pit at Milfield South (after A. Harding 1981, 98)

Deposition at Whitton Hill I & II

Whitton Hill I and II, whilst exhibiting some differences from the other excavated henges, are undoubtedly hengiform monuments, and they are broadly contemporary. Moreover, the deposition within the circuits of these monuments is directly comparable to that within Milfield North and South. Of importance here are the pits within each of the enclosures: one major pit in each. Pit 28 at Whitton Hill I contained the cremated remains of a single adult inside an inverted Impressed Ware vessel placed on a sandstone flag, within a dark and highly organic fill, surmounted by a faced V-shape of large stones; sherds of a Grooved Ware vessel were placed over all (Miket 1985, 140). Pit Y at Whitton Hill II contained the multiple cremation burial of 23 individuals, of whom 15 were under 12 years old; this burial was found under a capstone on which five quartz pebbles were placed (*ibid.*, 145). Both pits seem to have been backfilled immediately after the cremated remains were introduced, although Pit

28 was left open for a short period before any deposition took place. The existence of human remains should not automatically classify these sites as ring-ditches; as mentioned above, they share morphological similarities with the other henges, and human burial within them is a relatively common phenomena. Aldwincle, Northamptonshire contained inhumation burials between postholes, interpreted as a 'mortuary house' by the excavator (Jackson 1976, 24); Llandegai A contained a cremation burial under a flagstone (Lynch and Musson 2001, 45) remarkably similar to Pit Y at Whitton Hill II; a Beaker associated cremation was present at North Mains, Perthshire (Barclay 1983, 184); a Beaker inhumation at Balfarg, Fife (Mercer 1981a, 72); and human bones are a commonplace find in Wessex henge ditches such as Maumbury Rings (R. Bradley 1975, 16-17), and Wyke Down (Barrett *et al.* 1991, 101). In most cases it is difficult to establish whether the burials are earlier, later or contemporary with the henges, but this is relatively unimportant – it is the repeated association of burial with the architectural form that we are concerned with.

Yet, these pits obviously do stand out because Whitton Hill I & II are the only sites where human remains have been recovered from within the Milfield complex. Concomitantly it would be easy to fall into a mode of interpretation that granted an increased 'potency' or meaning to the deposits because they produced burial evidence. Similarly, the association of Impressed and Grooved wares with the Whitton Hill I burial may cause us to confer upon these pots increased significance simply because of their 'burial' context. However, upon what is based the interpreted primacy of human remains as the foremost form of material culture to inculcate meaning? In reality, there is *no such basis* in the Neolithic and Early Bronze Age of North-East England; for example, in terms of pit deposition, human remains are just as rare as flint finds, and some of the long cairns of the region have refused to yield any evidence of burial (chapter seven). Simply, we do not know the symbolic importance or meaning of human remains in statements of deposition, but often interpretations focus upon features which produce them. This is rather a reflection of current attitudes to what constitutes certain classes of material culture, as chapter four demonstrated for the social categorisation of 'refuse'. Chris Fowler has explored the alternatives to a simplistic categorisation of the body and body parts in the Neolithic, with a detailed study of the complicated interplay between body parts and other forms of material culture in burials on the Isle of Man (Fowler 2002). Indeed, the possibility that body parts may have been circulated between different contexts during the Neolithic (Wysocki and Whittle 1998, 173-6; R. Bradley 2007, 352), suggests that they should be treated in a manner similar to portable artefacts. The contemporary observer automatically and unreflexively assumes that, depending on context, our distaste for or veneration of dead human matter is an atemporal transcendental given, and therefore these remains must always be of primary importance. Yet attitudes toward corpses have not even been consistent over the last two hundred years in Britain, with the horror of mortality a relatively recent development (Tarlow 2002, 94). An excellent example of the stress contemporary observers place on the human body is provided by the report on the henge at Montcrieffe, Perthshire, where burials within the henge circuit were later disturbed:

> Then came the final indignity. That a group of commercial craftsmen should have selected what they must have recognized as a site of sacred antiquity and turned it over to such mundane activities as smelting and casting is a commentary on a way of life culturally devoid of imagination. These people destroyed and desecrated and seemed to have taken a particular pleasure in smashing burial urns and obliterating a memory (Stewart 1983, 142).

Yet we should consider the possibility that cremated human remains may have been no more significant than, say, the potsherds they are deposited with; they could have been just another physical resource with which to make specific and contingent statements in deposited form (Pluciennik 2002, 227). We can neither infer an inherently increased 'meaning' for the deposits, just as it would be improper to make an attempt at interpreting the symbolic dimension behind the structured placement of certain stones in relation to the remains. In terms of narrating the changing significance of practices at Whitton Hill, very little can be said about the human material. We cannot compare it with similar deposits because there are no other excavated contemporary sites or deposits associated with Impressed Ware or Grooved Ware that contain human remains: this is the first instance in which we find the burial of any human remains in north Northumberland after the hiatus of the Middle Neolithic. Interpretation must therefore be confined to the observation that the pits share a focus on *process* in keeping with Milfield North and Thirlings as they were backfilled immediately, despite the inclusion of a novel form of material culture in the deposition of cremated remains.

Discussion – Pits for Themselves

This section has dealt deliberately with the pits inside the hengiform monuments of the Milfield Basin without considering the architecture that surrounds them. This approach has allowed their discussion *as pits* rather than as integral, important, or inconsequential components of a larger monument. As a tradition of practice that continued beyond the time of Thirlings, pit deposition developed and changed at Whitton Hill, Milfield North and Milfield South. Milfield North saw a definite increase in a concern with *content* and in *references* between those different contents, though it seems the *process* of filling a pit with a complex juxtaposition of elements remained as significant as it had been through the Earlier and Middle Neolithic at Thirlings. Milfield South, conversely, demonstrates a shift in the emphasis of pit-practice. In contrast to earlier forms of deposition, the large central pit was left open, its contents visible, and when silting had occurred it was further marked by a large post. Continued visibility of a finished *product* appears to have become significant here. Whitton Hill I and II are more difficult to interpret. On the one hand the pits were dug and then filled in a complex manner in a similar way to those at Milfield North, and earlier at Thirlings. Yet on the other hand, human remains were deposited within them. These deposits are impossible to interpret of themselves. We saw in chapter four how preconceptions concerning classes of material culture have been hugely problematic in the history of pit interpretation. We must not, therefore, privilege the Whitton Hill pits just because they contain human remains – we cannot know the meaning of cremated human material in the Later Neolithic. Given the lack of any particular special treatment afforded human remains, and indeed their absence from classic 'burial' monuments in chapter seven, we should regard the deposits here as merely another form of material culture utilised in a complex manner. If the remains are classified in this manner, in comparison to the deposition of the quern at Thirlings, or the cup-marked stone at Milfield South, there is nothing remarkable about their burial whatsoever.

Depositing Whole Henges

Introduction

The pits in the Milfield Basin were not deposited in a vacuum, and for their narratives to be more fully understood the henges they occur within must be discussed. This section is dedicated to identifying the common threads that run from the deposition of pits into the deposition of whole henges, and finally to the creation of an entire complex of monuments. As in the previous section, Milfield North provides the most evidence for any narrative about henge development, thus the discussion begins with the manner in which the pits in the henge relate to the development of the rest of its architecture. Consideration will then proceed with Milfield South, the Whitton Hill ring ditches, the empty henge at Yeavering, and the other unexcavated henges in the basin, before the section closes with a brief analysis of the gradual development of the monument complex at Milfield.

Abridged Narratives: The Structure of the Milfield Henges

Milfield North

It is impossible to stratigraphically determine the temporal relationship between the four pits in the centre of Milfield North, yet evidence of phasing is present in the structure of the henge itself. It seems likely that the ring of large, external postholes lay below the henge bank. Due to agricultural truncation the bank no longer survives over any of the features except shaft III, but here the admittedly shallow stratigraphy indicates that the post was still *in-situ* when the bank was constructed, and thus either protruded into or through it (A. Harding 1981, 101). There is no means of establishing the amount of time between the erection of the post ring and the construction of the henge ditch and bank: they could easily have been part of the same unbroken sequence of construction. However, Harding observes that the distance of the postholes from the ditch varied between six and eight metres (*ibid.*, 105), and it is instructive to compare the central points of the arc formed by the henge, and the arc formed by the ring of postholes (figure 8.12). The centres of the two rings are clearly different. If this observation is considered alongside the anomalous existence of shaft VIII, which contained evidence of post removal, and yielded a cache of six barbed and tanged arrowheads (*ibid.*, 103), then it seems reasonable to posit a pre-henge phase of activity. The external post-ring may have begun as a separate conception from the succeeding development of the henge, and this situation fits well within the wider context of henge architecture. For example, the post-ring at Cairnpapple, no great distance to the north-west, may pre-date the rest of the monument (Barclay 1999, 39). So, if the depositional pits A to D are grouped with the henge itself, then it seems they constitute a later phase of activity than the external post-ring.

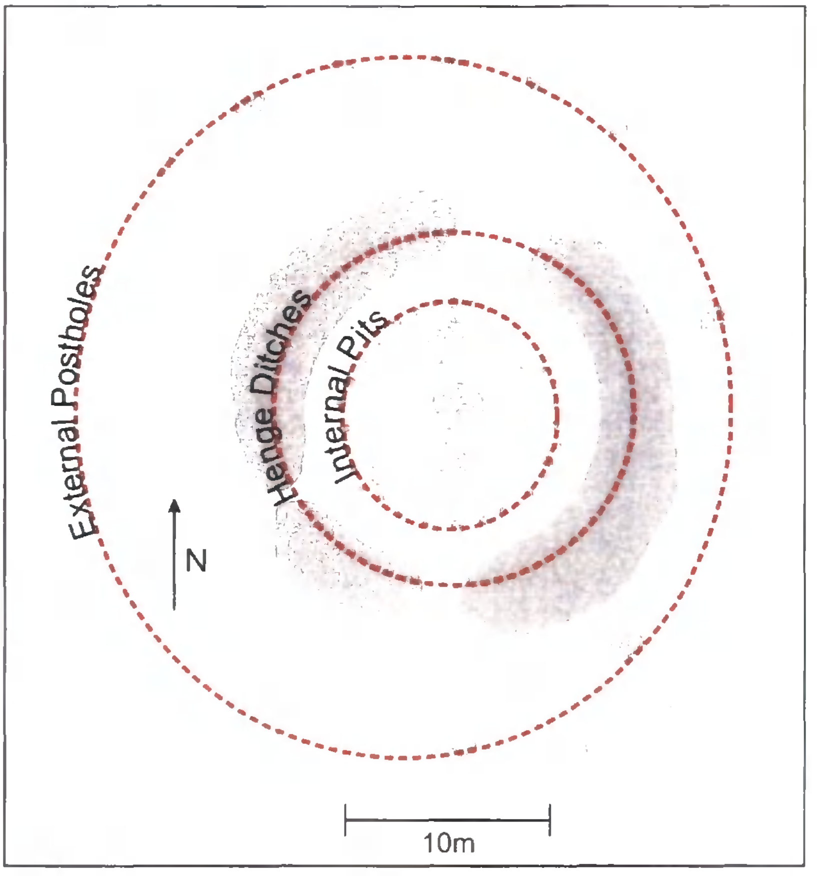


Figure 8.12: Ellipses (best fit) of the structural components of Milfield

The activity within the henge proper can also be broadly phased: there is structural evidence for the relationship between the ring of small internal pits and the four large depositional pits in the centre. It appears that pit 17 deviates from the reasonably regular course of the ring to accommodate the position of Pit A (that which contained the empty cist), and thus the digging of Pit A is likely to predate the construction of the pit-ring (figure 8.13). As these small pits also mirror the arc of the henge ditch it seems that these two concentric features must have been constructed in some relation to each other, though once again we cannot state which construction preceded the other, or whether the events were contemporary. Indeed, the potential exists for the four pits in the centre to predate the entire monument, or only predate the internal pit-ring. The radiocarbon dates from the site are of insufficient precision to aid in this matter, and the internal pit-ring was devoid of datable material, akin to the identical ring of pits discovered at Montcrieffe, Tayside a monument of similar size (Stewart 1983, 131).

The sequence of events surrounding the construction of the henge ditch was also far from straightforward. Harding found evidence that once the ditch had been excavated it was rapidly backfilled, yet this backfill did not comprise the original natural gravels that had been extracted shortly before. Instead, it seems that material, including fragments of burnt bone and discrete layers of charcoal, was deliberately dumped into the ditch in specific episodes. The two very similar radiocarbon dates of 2335-2040 cal BC (BM-1149) and 2460-2040 cal BC (BM-1150) from charcoal layers at different heights in the ditch section indicate that potentially no great length of time separated the acts comprising this initial back-fill (A. Harding 1981, 108, 134). Although the problems inherent in dating ditch fills are acknowledged, as are the error ranges of the corresponding dates, when this evidence is combined with the lack of primary water and wind-born silts, it does seem that the ditch was opened and filled in a reasonably rapid fashion. Interestingly, the ditch was not fully filled by this activity: Harding records a ledge halfway up the section, which corresponds with the appearance of iron objects in the ditch section, and the beginning of more regularly sloping, eroded sides. Thus he concludes that this was the depth to which the ditch was backfilled but then left open until the monument went out of use and became the focus of later deposition (*ibid.*, 108). Whilst deposition in henge ditches is very common and is recorded at many sites (chapter three), deliberate backfilling on top of deposited artefacts is not so common, but it did demonstrably occur in the base of the deep shafts at Maumbury (R. Bradley 1975).

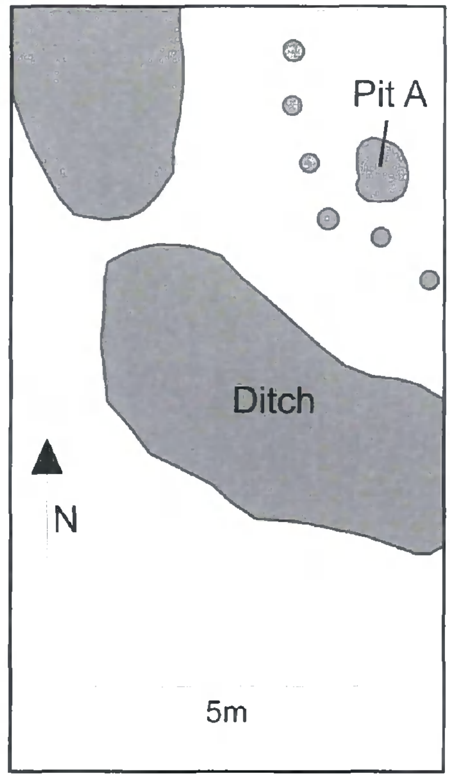


Figure 8.13: Milfield North internal pit ring and deviation around Pit A (after A. Harding 1981, 103)

There is a striking similarity between the sequence of events that formed the pits in the centre of the henge and the henge ditch; both the pits and the ditch were dug and deliberately backfilled in quick succession, and both seem to have been the focus of complex depositional practices, but the speed of the backfilling indicates these deposits were not intended to remain visible, in common with the practices at Thirlings. This also strengthens the idea that the pits were as integral to the existence and purpose of the enclosure as were the stereotypical ditch and bank arrangement that defined its circuit.

Milfield South

As with the discussion of the pits in the preceding section, the henge at Milfield South provides less stratigraphic and structural evidence than its counterpart at Milfield North. However, there are still interesting points of comparison. The large internal pit, which contained the cup-marked stone, was surrounded by a series of much smaller pits, comparable in size to those from the inner ring of pits at Milfield North, although not nearly so regularly arranged (*ibid.*, 97). Similarly, they held no evidence of post-pipes. It is the ditch at Milfield South, however, which contrasts sharply with Milfield North, because it was left open from the moment of its completion. There was no evidence of any of the backfilling practices that so characterised the ditch discussed above, just the gradual in-washing of silt deposits; nor was there any evidence of a recutting to keep the ditch open (*ibid.*, 96). A growing distinction between the two henges discussed so far seems to be in practices associated with any extractive modification of the ground. At Milfield North the pits were dug and filled in a structured manner within a short space of time, as were the ditch sections; yet at Milfield South, the stress was laid more upon the continuing visibility of the features: the pit was left open for a time, and similarly the ditch was never backfilled.

Whitton Hill I & II

The necessity for a more value-neutral approach to the interpretation of pits containing deposits of human remains was discussed above, making the argument that dead human matter may be no more meaningful as a resource than a selection of broken pottery. The extension of that assertion is that Whitton Hill I and II should not automatically be classified as 'burial monuments' simply because of the fortuitous discovery of cremated human remains within their ditch circuits (Pollard 1992, 222); indeed, the excavator, Roger Miket, chose to avoid just such a problematic assumption, preferring to describe them as 'ritual' in character (Miket 1985). Whilst this study may question equally problematic divisions of ritual behaviour, the important point here is that, despite falling comfortably into the class of Early Bronze Age ring ditches, especially Site II, they are actually almost indistinguishable from the 'henge monuments' of the rest of the basin (*ibid.*, 143). Whitton Hill I shares the multiple entrances of Milfield North and potentially Milfield South (figures 8.4 & 8.5); both Sites I and II contain a ring of internal pits, supporting posts and small upright stones respectively; and whilst both enclosures have somewhat smaller ditches than the two excavated Milfield henges, Site II possesses an external bank (*ibid.*, 145). In common with Milfield North, Miket interprets off-centre Pit 28, containing the cremation at Site I, as later than the construction of the enclosure, whilst at Site II, central Pit Y occupied the very centre of the monument, and may therefore have been integral to its construction (*ibid.*, 143 &147). Thus, despite enclosing pits that held the buried and cremated remains of humans, both of these sites are totally unremarkable as part of the general run of hengiform monuments in the Milfield Basin; even the radiocarbon dates are almost indistinguishable (figure 8.6).

Yeavering, Coupland, and the Unexcavated Henges

Rather less can be said of the remaining monuments in the complex, other than to stress their own individuality and the range of forms of the activity that took place within them. No internal features were recovered from the henge at Yeavering, although an undated inhumation burial was recovered from beyond the western entrance, alongside a pit that produced a date of 3940-3380 cal BC (HAR-3063), and a pit from beyond the eastern entrance yielded a large number of Carinated Ware sherds (A. Harding 1981, 122-128). These two features should not be taken to date the henge monument itself, as they remain neither structurally nor stratigraphically associated, and they rightly belong in the Earlier Neolithic (see chapter seven for their analysis). However, the existence of these features in close proximity to a henge that is, in all probability at least, a Later Neolithic monument, finds close parallels in the situation at Coupland. Here, at the largest henge monument in the basin, a series of dates were obtained from pits within the circuit of enclosure, and from the fill of the Avenue that ran through it, which indicated an Earlier Neolithic presence. These were: 4000-3710 cal BC (OxA-6832) and 3990-3700 cal BC (OxA-6833) for the pits, whilst the avenue fill provided dates of 3990-3700 cal BC (Beta-96129) and 3960-3540 cal BC (Beta-96130). However, despite these dates, it is not suggested that these features represent an early genesis for the henge (*contra* Waddington 1999, 134); this will be examined in detail below. It is more likely that the henge monument post-dates an earlier phase of activity.

Finally, the remaining unexcavated henges of the basin, at Ewart, Akeld Steads and Marleyknowe provide us with some evidence from aerial photography. This stresses that there were few rules to the composition of the henges, with Akeld possessing a ring of internal pits, and Marleyknowe a truly segmented ditch – beyond even that of Whitton Hill I. Table 8.1 summarises this evidence.

Henge	Type	Int. Dia.	Orientation	Burial	Central Pit	Int. Pit Ring	Ext. Pit Ring	Seg. Ditch
M.knowe	I	c.19m	SW	?				•
Coupland	II	c.65m	NNW-SSE	?				
M. South	I?	20-25m	W		•			•
M. North	II	15m	N-S		•	•	•	•
Yeavering	II	16-19m	NW-SE					
Akeld	II	c.24m	NW-SE	?	•	•		
Ewart	II	c.18m	NW-SE	?	•			
W. Hill I	III	10m	NW,SE,NE,SW	•	•	•		•
W. Hill II	I	8m	SSE	•	•	•		

Table 8.1: The structural components of the Milfield henges (after, and edited from, A. Harding 1981, 130)

At this scale then, the scale of the construction of individual monuments, the narratives turn upon the existence of *difference*: the construction of henges seems to have been a highly contingent act. No two monuments are alike, and the deposits they enclose are similarly unique, so it would be wrong to try and attempt to unify these monuments around a common theme (Burl 1969; Whittle *et al.* 1992, 191). Whilst each monument has internal coherency, as motifs from the pit deposits run beyond themselves into the construction of the surrounding enclosures, different types of practice were deemed significant at different places.

Open-Ended Narratives: Structuring the Entire Henge Complex

If the narratives of the individual henges stress their remarkable differences, then it is hard to find a common thread that might link them together and articulate their involvement in the monument complex as a whole. It is tempting to search for an underlying schema that might explain why the henges, the pit alignments and the avenue are so arranged, but it is an impossible task. One such attempt has been made, and this section will begin with a discussion of its strengths and weaknesses, before considering a less determined and more flexible, contingent means of interpretation.

The Synchronic Interpretation: Meaning through Ritual

One interpretation that has been advanced for the development of the complex concerns the operation of a ritual processional connection between the many henges (Waddington 1999). This is based upon the assumption that the distinctive summit of nearby Yeavering Bell was a point of some significance in the landscape; a special 'place' that was the ultimate destination for processions of a ritual nature. The interpreted significance of Yeavering Bell was developed from the ideas of Harding, who suggested that the henges of the basin may have been orientated on specific horizon views with sacred associations (A. Harding 1981, 131). Processions began with unknown rituals concerning the dead at the Whitton Hill ring ditches in the north, before proceeding through the Milfield North pit alignment, south through the Milfield henges, Marleyknowe, Ewart, and Akeld Steads, crossed the river Glen, and then proceeded west to terminate at Yeavering henge, with the summit of Yeavering Bell a short climb from this position (figure 8.14). The other pit alignments of the basin, including those associated with the Ewart henge excavated by Miket (1981), were designed to demarcate the sacred ground of the monuments from the rest of the basin (Waddington 1999, 162-164). Thus there existed a ceremonial complex in the truest sense of the term: an entire landscape of monuments was linked together in the name of ritual.

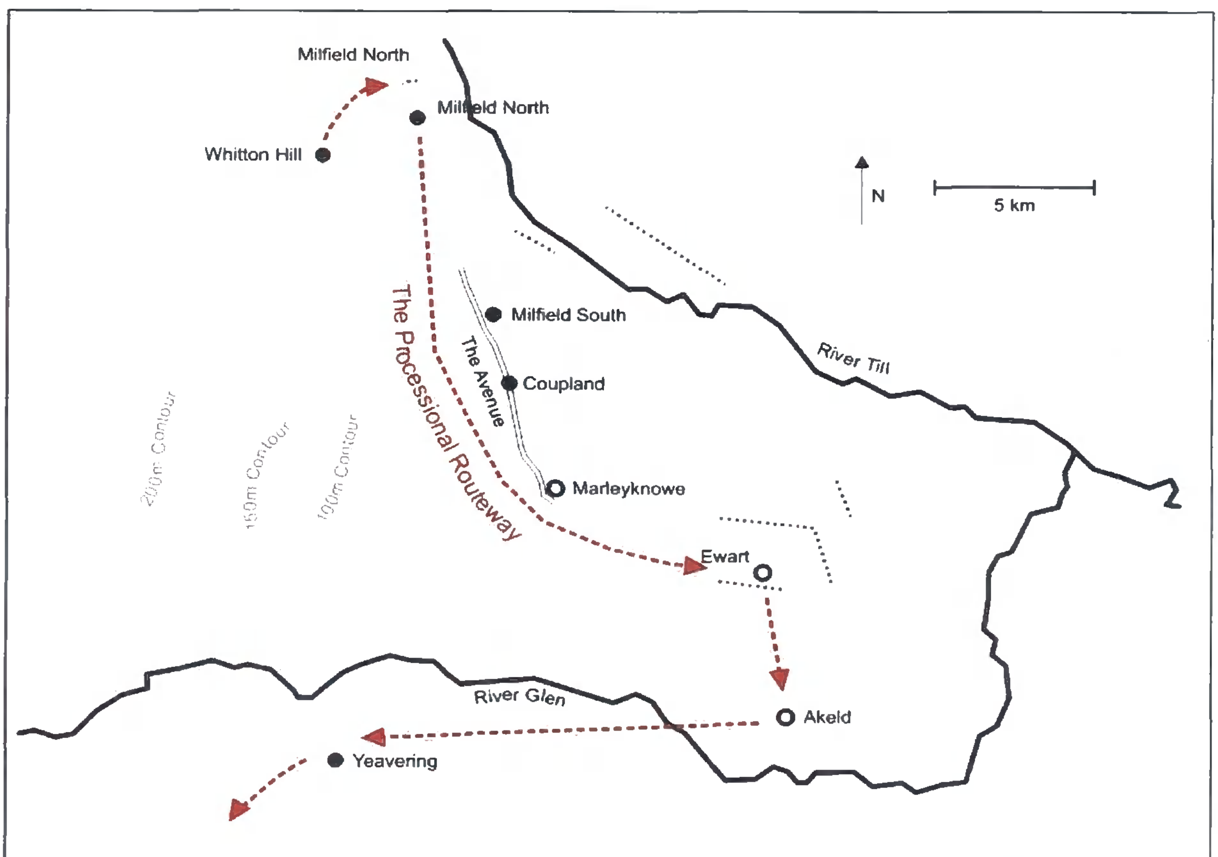


Figure 8.14: Clive Waddington's processional route through the Milfield henges (after Waddington 1999, 162-164)

Beyond the fact that there is no structural evidence linking the majority of the enclosures, this interpretation is problematic because of haphazard dating and a groundless assumption that all the monuments were contemporary. Yet, as we saw above, the level of contemporaenity between these monuments is far from obvious. The radiocarbon error ranges are far too wide to associate reliably any monuments aside from Milfield North, the nearby pit alignment, and Whitton Hill; and these are not definite by any means. Moreover, Akeld Steads, Yeavering and Ewart have not been dated, and none of these sites has a direct structural relationship with any other. Indeed, Ewart sits on a radically different alignment, amidst a three-sided post setting that segregates it from the rest of the basin; there is literally no evidence for a connection through ritual processions.

The situation is further complicated by the problematic dating of the Coupland enclosure, which was interpreted by Waddington as an Earlier Neolithic monument associated with cattle herding (Waddington 1999, 134). This relies on two insecure dates from the base of the avenue ditch as it runs through Coupland of 3990-3540 cal BC (Beta-96129 & 96130) (Waddington 1999, 147), which would place both monuments in the Earlier Neolithic, because the avenue structurally post-dates the enclosure. This interpretation is necessarily incompatible with a Later Neolithic scheme focused on ritual movement. However, as seen above, it is unlikely that the dates from the avenue are from *in-situ* material and it is much more likely that, given the recorded early pits from the area, it represents residual eroded, cut, or backfilled material. This issue is treated in more depth by the author elsewhere (Edwards 2007), but as an alternative, it might be more plausible to see Coupland as a Later Neolithic henge monument in common with every dated example from the basin, the potential of which is confirmed by one other (though admittedly as insecure) date from the Coupland henge ditch of 1910-1530 cal BC (Beta-117294) (Waddington 1998b, 23).

Even if Coupland, and Marleyknowe by extension, are accepted as Later Neolithic/Early Bronze Age, which on the surface would seem to strengthen Waddington's interpretation, the specifics of the processional hypothesis are also problematic. Wherever monuments have been interpretatively linked to form ritual complexes there have usually been definite arguments for contemporary use. No such case exists for the contemporaneity of the Milfield henges. The three Thornborough henges are, remarkably, almost identical in size with an equal spacing of 550m and a shared alignment on the same NW/SE axis; no claim is being made for processionality at Thornborough, but the existence of a recursive relationship can hardly be doubted (J. Harding 2000). Elsewhere, processional connections between contemporary monuments are usually articulated through definite avenues: at Avebury the henge was connected to The Sanctuary and the Beckhampton Cove through two such megalithic alignments (Gillings & Pollard 2004, 77-81). Yet at Milfield the avenue only passes through a single henge, running past Marleyknowe and Milfield South. Avebury and Stonehenge have featured in interpretations concerning the processional movement and then deposition of the dead (Parker Pearson & Ramilisonina 1998), but at Milfield the posited connection *begins* with the deposition of 'ancestral remains' at the Whitton Hill enclosures before proceeding south (Waddington 1999, 162-169). Ultimately, there is no structural or temporal link between the henges and, quite fundamentally, no compelling reason why there should be.

Diachronics: An Alternative Interpretation

If it is denied that the monuments that form the Milfield complex could ever have taken part in a synchronic and essentialist scheme based upon ritual processions, an alternative interpretation is more difficult. However, it is pertinent to question whether such an interpretation ever *should* be realised, as there is no reason *a priori* why every monument has to be integrated in this manner. We have seen how the deposition that occurred within the henges was essentially unique, and if this is taken to represent the use of these sites, then it is clear that, whilst co-existing in space, they could have been used for very different purposes at very different times. Co-existence in space, though, may also have been rather more fortuitous than designed, because the range of radiocarbon dates available is insufficient to confidently interpret contemporaenity, and only excavation will confirm the dates of many of the monuments. It is, of course, perfectly plausible that such a large number of henges could co-exist and be unrelated beyond their proximity and broad physical similarity. Just as causewayed enclosures were the accepted form of enclosure in earlier times, the internal ditch-external bank arrangement of henges became the accepted means of delimiting a given area of space. Specific internal features and their development, therefore, represent the appropriate use of that *particular* monument: their variation in structure representing a variation in purpose (Edmonds 1995, 123). A similar interpretation has been advanced for the Big Rings henge in the Dorchester group, where a diverse range of hengiform monuments seem to reflect different priorities for enclosure at different times during the construction and life of the complex. Whatever the reasons for the variation, they led to the selective use of a wide range of potential structural elements, combined in different ways as specific monuments were constructed (Whittle *et al.* 1992, 191). Richard Bradley has argued for the existence of 'founder' monuments within a complex, which acted as the focus for later development (R. Bradley 1993, 103). This concept is useful in explaining the similarities between the henges, such as their size and orientation (A. Harding 1981, 131). Whichever of them was constructed first, subsequent henges would share the basic form of this initial construction, yet this similar form would not constrain the idiosyncratic development of their structural details, as their use and social role evolved (Barrett 1999, 257). So the fundamental structure of the monuments would conform to the socially accepted norm, whilst the interiors were adapted toward whatsoever purpose was desired.

Perhaps we should be wary of assigning too much of the variation in the henges to random chance, or indeed to the haphazard decisions of communities, themselves contingent upon other factors. There is scope for Milfield to be understood as a planned sequence of monuments, though this is not to suggest that the layout of the entire complex was designed in advance. Instead, the structural specifics of individual henges could have been planned as the need arose for their construction. It is quite possible that as social concerns changed, or as the use-life of certain henges ended, it became necessary to construct new monuments. These monuments would not be merely empty henge-shaped shells to fill with the random debris of activities. Rather, just as Bradley has noted at Tomnaverie and Balnuaran of Clava (R. Bradley 2002), specific features could be incorporated to reflect specific requirements; thus the association between the Ewart henge and the post alignments that enclose it on three sides (Miket 1981) was the planned response to a defined need. New enclosures and new forms of use reflected changing social challenges and the appropriate responses to meet them.

Conclusions: Issues of Enclosure

This chapter deliberately set out to think about the Milfield complex in a different way: not to privilege any deposit or monument because of the material it produced, but to attempt an analysis at different scales and to view the creation of monuments as an ongoing process. The narratives sketched out for each pit and each henge drew attention to one particular theme. Whilst the deposits, and indeed the henges, were unique, there was a remarkable similarity between the manner in which deposits were made within the henges, and the manner in which the henges themselves were constructed. The boundaries shared characteristics with the interior. It was argued that Milfield North contained no evidence for burial, but instead the four pits reflected deliberate selection of different types of material culture, unlike those at Thirlings, which just contained pottery. As the Milfield henges likely post-date the Thirlings activity, it seems that the deposits at Milfield North reflected an increased concern with the *contents* of pits whilst building upon the concern with the *process* of creating pits established at Thirlings. This can be contrasted with the situation at Milfield South, where the stress falls on the visual *product* of the completed pit, which was left open, with its material culture visible, and then later deliberately marked with a post. The situation at Whitton Hill I & II is somewhat more complex because of the presence of cremated human remains. An attempt at a value-neutral approach necessitates that these are treated no differently from any other form of material culture. As a *class* of material culture, no human remains have been excavated anywhere else in the study area in a Later Neolithic context, so comparisons are problematic. However, it is fair to say that the deposits themselves were treated in a similar manner to those at Milfield North, with rapid backfilling, and there is no evidence for any attendant practices that might set the treatment of cremated remains apart from, for example, a buried fragmented pot.

The pit narratives fit within the larger histories of the construction of the henges themselves. It was at this level that striking similarities became apparent between the pits and their encircling enclosures, with the ditch at Milfield North being rapidly backfilled with organic material, whilst Milfield South's was left open, in reflection of the treatment of its central pit. It is also noteworthy that Yeavering and Milfield North saw pre-henge activity, and whilst the pit activity was almost certainly associated with the henge architecture, this does draw distinct parallels with Thirlings, which saw repeated activity that spanned at least a thousand years. So, if the monuments are unique and in some cases had reasonably complex histories, then the preceding discussions urge us not to see 'henge-with-pits' as some transcendent category of site, and leads us to question why primacy should be given either to the form of the enclosure or the pits within them. These monuments could easily be regarded as a form of enclosed pit deposit, and while this, too, is an over-simplification it does highlight the very situated nature of the categories we use to interpret these sites; the problems of regarding the Whitton Hill enclosures as 'burial monuments' are a further example. With this problem in mind, the following conclusions will examine the narrative devices that run through the history of the complex, focusing on contingent and significant enclosure, before the chapter closes with a consideration of the implications of this discussion on henge 'architecture'.

Two Narrative Devices

Contingent Enclosure

There are two clear themes running through the structural data from the henges and the manner they articulate together to form the Milfield complex; the first of these is an emphasis on contingency and specificity, the second is the changing significance of the ordering of space. Just as the pits within the henges were created unique, and just as the pits at Thirlings were individual statements toward an unknown end, the henges themselves and the manner they were structured in the landscape was specific and contingent. The wide variety of activities that were undertaken within the henges, as represented by the very different depositional practices, and the variation in the morphology of the monuments themselves, seem to posit a disconnection between the sites. Each henge was a separate concern, for a separate purpose and only loosely related to the others in the locality. So, if we deny the existence of a synchronic scheme that binds every monument in the area into one static model, then we are left with merely a large number of enclosures, all of which are distinctive due to their widely differing uses and histories of development. The pits at Thirlings were correspondingly unique and seemed to have operated in a likewise manner, with almost no shared characteristic beyond a similar basic premise (they were all dug into the ground), and a very broad spatial association (deposited within the same hectare). In Milfield we see a set of monuments structurally unrelated beyond a similar basic premise (they are henges), and a broad spatial association (they occur within the same basin). Yet it is important not to overlook that initial basic premise: they *are* all henges, and most of them are a similar size. Thus, we must separate the idea of the broad architectural form of the 'henge' from the specific form of each monument. If a 'henge' was just an appropriate form for the enclosure of an elliptical space, each individual example exists as the result of the contingent and specific needs of a particular community at a particular instant in their history.

Significant Enclosure

This interpretation of idiosyncrasy carries a contradiction at its heart however, because it fails to account for the structured nature of two aspects of the record: the fact that a choice was regularly made to place pits (whatever their specific contents) within henges; and the fact that the complex became more structured over time, with the construction of the later avenue and the existence of the pit alignments. Given that the activity at Thirlings had ceased or was in its final phases when the henges were constructed, the Milfield Basin contains an unbroken history of pit activity from the earliest to the very terminal Neolithic (using pottery as the limits of the period). Using this information, one can narrate the changing significance of the ordering of space around pits; or more specifically, the manner in which pits were structured in relation to each other, their surroundings and how this developed over time. At Thirlings it was demonstrated that, beyond those few examples that existed in clusters, acts of deposition could not be spatially related to one another using any combination of variables. Yet with the development of the henges, space became very structured around pits at Milfield North and South, and encounters with the locales of pit activity must concomitantly have changed. What began at Thirlings as individual and bounded statements in deposited form became less so, because when enclosed inside henges a closer spatial relationship was formed. It is perhaps unsurprising, therefore, that the four pits at Milfield North are also the first evidence from the basin for the *contents* of pit deposits being related to one another, with the deliberate selection of different types of material culture for each pit: a relationship in content occurring alongside a more overt relationship in space.

Naturally, this is not to argue that the reason for the existence of henges was simply to structure space around pits. As stated, henges were the products of specific and contingent actions separated as much in their motivations as they probably were in time. Focusing on pits has allowed the narration of the changing significance of practices that surrounded a single architectural form (the pit), which transcended the millennia between the Earlier Neolithic and the beginning of the Early Bronze Age. It became more significant through time to structure space around pits, to make more specific references between pits, and in some cases, such as Milfield South, to make these pits more lastingly visible. We still cannot know why this occurred, only record that the *references* between different things became more visible and more structured by the end of the Later Neolithic.

Finally, we can cast the relationship between the henges themselves in this light. Whilst they remained very specific monuments in their own right, the space around them became more structured over time. If the reinterpretation of the dating evidence from Coupland is accepted, the avenue is potentially the latest monument to be constructed in the complex. This linear feature would have more overtly structured the approach and engagement with certain henges if one passed along its length. Similarly, although they lack either absolute or relative chronologies, the pit alignments of the basin articulate the same premise: space across the basin became more overtly structured through time. So, the same processes operate at all levels across the complex: the style of henge construction mirrors the method of digging and filling their respective pits, and the manner in which those henges structure space around the pits is reproduced in the manner that the complex structures space around individual monuments.

Depositing Architecture

Contingent choices created the specific manner in which the architectural style of 'henge' was realised in each of its different iterations, yet architecture is also, and perhaps more importantly, an effect; it affects the manner in which people perceive space. Henge architecture juxtaposed with pit architecture is very important in this regard. Given this conception of architecture, the pits at Thirlings clearly had an architectural effect, as they demonstrably affected the manner in which people undertook certain practices on the site. We have seen how existing pits were deliberately avoided for hundreds of years to avoid recutting episodes, and how certain pits were endowed with posts that physically marked their position. Thus perception and action were affected as a consequence. Therefore, it would be wrong to state that the encapsulation of pits within henge architecture was the first instance in which perception and movement were affected in relation to pits; it had been happening for a millennium. Rather, the excavation of pits within henges, or potentially the excavation of henges around pits, is the first instance of perception and movement being *explicitly* affected by architecture. The existence of the henge bank restricted the choices available for access to, and movement around, places of deposition. Similar arguments have been advanced for the restriction of movement and visibility at Avebury (Watson 2001), but more specifically by the deliberate placing of posts and stones at the post circles sites of The Sanctuary (Pollard 1992), and Woodhenge (Pollard 1995). Alternatively, henges have been interpreted in terms of 'containment' of pre-existing features, or of something threatening, such as those at Balfarg, or the burials at North Mains (Barclay 2005, 92; after Warner 2000). Whatever the motivation, the development of this structuring demonstrates the increased relative significance of the physical nature of the locales of pit deposition, in contrast to the earlier situation at Thirlings, which was not so ordered. Henge architecture, by its monumental nature, restricted the choices of agents who wished to interact with places of deposition. Thus the limit of interpretation is reached: Later Neolithic enclosure sees an increase in the relative significance of physically limiting architectures around and through material culture, in contrast to the implicit nature of this effect in earlier periods.

Chapter Nine
Discussion and Conclusions

Introduction

The aim of this doctoral thesis was to examine the link between depositional practice and Neolithic social life. The previous eight chapters have considered a number of different issues and datasets, varying in size and scope, and have resulted in a series of narratives or biographies of practice. The idea of 'deposition' has been a constant, if somewhat mutable, thread throughout the various narratives. The aim of this final chapter is to tie those different threads back together into a coherent whole. We must begin by considering the method of investigation. Yet 'method' does not simply refer to the investigative means by which deposits were characterised, such as the statistical techniques employed to interrogate the Thirlings dataset, but also the theoretical and interpretative devices adopted. These were not the concern of any particular chapter, but provided guides to the way in which both analytical methods and descriptive tools were employed. The second section considers the findings of this research in relation to the specific trajectory of social change and reproduction in the North-East. Three general trends are identified from the data analysed: first, a progression from the significance of 'processes' toward a concern with visual 'product'; second, the increasingly referential nature of depositional events; and finally, a growth in the overt use of architectural devices to structure depositional space. The final section places these developments in their context, in terms of regional settlement and subsistence practice, and their place in the Neolithic of the British Isles as a regionally specific trajectory of social life.

In Search of a Method: Interpreting Deposition

A basic principle of this thesis has been that archaeological evidence for depositional practices provides a lens through which to examine social change in the Neolithic of Northumberland. The strength of this category of evidence, and of pottery deposits in particular, was its extent in both time and space. The decision to utilise deposition exclusively was the result of constraints imposed by the breadth and quality of the archaeological record in the region. It was clear from the find-spot, palynological and site data described in chapter two that human activity in the Neolithic spanned nearly every type of landscape, but also that the investigation of this wide-ranging activity has been hampered by a lack of similarly representative excavation. Yet data on depositional practices cut across typological boundaries of site types and, consequently, was available from pit sites, henges, and burial monuments. In truth, this necessary focus on deposition emerges as a strength rather than as an unfortunate effect of the record, because the universal presence of deposited material culture has allowed the direct comparison of practices at sites that would usually be divorced from one another by our standard and limiting monument typologies. Depositional practices provide comparanda between sites as different as simple pits and barrows. This section summarises some of the pitfalls of interpreting deposits before considering the alternative approach adopted in this study.

From Deposition to Assumption

The category of 'deposit' need not be as limiting as it first appears. An important element of this study has been the demonstration that built monuments can be appreciated in exactly the same manner as a pit containing pottery. This idea was first introduced in chapter seven, where a means was required of comparing the activity at upland long cairns with the deposits at Thirlings and Yeavering, and further developed during the consideration of henge construction in chapter eight. This was possible when it was recognised that built monuments are not distinct categories of evidence in their own right simply because contemporary observers classify them as 'architectural'. Rather, every stone, post, terraced alteration to a hillside, and mound of earth is an artefact, the same as a flint flake or potsherd. They may often be larger, but the components of 'monuments' are still pieces of material culture because they have been altered, and therefore perceived as separate, by people. 'Henge' or 'long cairn', even 'pit', describe specific architectures only insofar as they express a label for a particular *arrangement of material culture* in space. 'Architecture', here, is defined as elements of material culture juxtaposed in a certain manner, which in turn affects the human appreciation of a given space (after Preziosi 1979, 5).

Chapter four was a lengthy discussion of the impact that contemporary classifications of practices and artefacts have had upon the interpretation of deposition. We saw how the modern bounded categories of material culture, such as 'rubbish' versus 'symbolic object', and of practices, such as 'ritual' versus 'domestic', has led to the imposition on past lives of preconceived notions of symbolic meaning and motivation. These were expressed through constructed oppositions between Grooved Ware and earlier styles of pottery, where Grooved Ware was important and meaningful *in its own right*, whilst Carinated Ware was insignificant as a 'meaningful object' but bound into symbolic methods of disposal. This was often linked to a simplistic opposition between the 'domestic' rubbish disposal of Carinated Ware, and the meaningful, structured, 'ritualised' deposits associated with Grooved Ware. In reality, chapter three exposed how Earlier Neolithic deposition was often highly complex in terms of the spatial arrangement of material culture. The only change with the introduction of Grooved Ware was its association with a wider array of artefact types, which added a degree of complexity in juxtaposition, but *no* increase in the inherently complex spatial arrangement of the deposits. So, by taking everything examined in the study area as a form of deposited material culture, alongside a conscious attempt to avoid any pre-given categorisation - especially avoiding ideas of 'symbolic artefacts' and 'ceremonial monuments' - this study has attempted to free itself from the more interpretatively debilitating influences of contemporary thought.

Central to the interpretative approach adopted in this study was the recognition that, for the evidence studied here, it is impossible to say *why* deposition occurred in the manner that it did throughout the Neolithic. In the concluding sections of chapter four we saw how the post-processual ideal of interpreting the symbolic meaning of human action was directly linked to idea that archaeologists have the ability to read the thoughts of past agents and define their, entirely mental, motivations. Those pre-conceived classifications of material, as meaningless rubbish or meaningful artefacts, stemmed directly from this particular belief. The fallacy of interpreting past symbolic meaning was exposed, with the conclusion that the contingency of past action defeats the ability of 'context' to limit the plurality of past thought and, concomitantly, past motivations.

Alternatives: Biographies and Relative Significances

A result of the foregoing was that an alternative means of discussing past practices without resorting to un-qualifiable statements of past meaning was required. This was because, in denying the authority of explanations that purported to understand 'why' deposition occurred in a certain manner, this study also denied the validity of the particularist mode of explanation that characterises so much of the post-processualist literature on the Neolithic of Britain. By implicitly claiming the ability to understand individual meaning, interpreters could study individual features, such as the Coneybury anomaly (Thomas 1999, 70; Pollard 2001, 325; after Richards 1990), or single architectures, such as the houses at Barnhouse in Orkney (Parker Pearson and Richards 1994a), and definitively interpret the human motivations behind their contents and form. Clearly, if one cannot interpret individual meanings, it becomes difficult to sustain ideals of particularism whilst still having *anything interpretative to say.*

The alternative to particularism was to fall back upon the true strength of archaeological evidence, its geographical and temporal distribution, and study the measurable variation of activity over time. In short, to examine *how* archaeologically visible human practices developed and changed. The stimulus for the development of this position came from early work on contextual archaeology by John Barrett (1987), and more specifically from Lesley McFadyen's 'archaeology of how' (McFadyen forthcoming). This was not an attempted regression into the 'objective' study of bounded past systems of activity. Nor is such an approach content with charting the quantified rise and fall of particular depositional practices – a return to culture history. Rather, the aim was to interpret the changing *significance* of certain types and elements of practice in the *longue durée.* The means was via the narration of the biographies of individual deposits, sites, monuments and landscapes. Now, the manifestation of the biographical project, in the form of chapters five, six, seven and eight, undoubtedly represents a particularist dimension in this research, but it has surely been noted that interpretation, in every case, only occurs *relative* to similar practices at other sites/pits/monuments. The 'particular', a given pit at Thirlings, for example, only finds its interpretative value in relation to other pits of the same date, which only find their value in relation to pits of other dates on the site, which only finds its value in relation to other sites, and so on. If this description seems strikingly like the definition of contextual archaeology –

it is, and for good reason. It is context precisely that permits the interpretation of changing significances.

Thus, the method adopted for this research was as follows. By quantitatively examining deposition at a range of sites, a series of narratives of practice could be formulated that traced the specific activities that created (and also could not have created) those deposits. These biographies of activity permitted an interpretation of the *significant* elements in a given set of practices. For something to be significant it had to be the outcome of recurring non-random processes, demonstrated statistically; in other words, the result of repeated human *choice*. For example, we saw that the specific abrasion of potsherds was unimportant at Thirlings but that the size to which they became fragmented was central to the type of pit being produced, whilst at Broomridge both the fragmentation and abrasion/preservation of the sherds were of importance. None of these relationships of significance were formulated without direct comparison with something else, be it fragmentation versus abrasion, or Thirlings versus Broomridge; all significance is therefore *relative*. To move into the realm of wider-scale interpretation, these relationships could also be recast as differences in significance between the process and product – this was most evident in the comparisons between the Milfield North and South henges in chapter eight. It is here that narratives move beyond the specificities of practices and begin to interpret in terms of larger, longer-term currents in human agency, which form the bulk of the conclusions later in this chapter.

On Significance

It is worth considering the idea of 'significance', in the sense intended here, a little more deeply, not least to set it apart from the particularist notions of symbolism and the interpretation of individual meanings. Significance is the visible outcome of symbolic meaning. It is that which, in a given situation, is taken as more important in comparison to something else; of fragmentation being more significant than abrasion in the structuring of pit deposits for example. Now, because this is an *archaeologically visible outcome* it cannot be based upon mere speculation. Rather, any statement of relative significance must be evidentially based, preferably in a quantifiable manner – hence the importance of the statistical validity of the findings in chapters five and seven. It could be argued that significance is prey to the same criticism as symbolic meaning: that we are assuming a certain element of practice is more important than another, a judgement only made within the mind of a past agent. This is not the case. As relative significance is based upon the *repeated* demonstration of certain relationships in physical terms, it is not about interpreting at the level of the individual. Relative significance does not make any assumptions as to why a particular person chose to do something in a certain way; i.e. why one person chose to put x potsherds in a pit marked by a post. It simply recognises that, over a wide space and time, a large number of people chose to do something in a similar manner; i.e. enough people put a larger number of sherds in post-marked than unmarked pits to make it a statistically viable relationship. The fact that *something happened that often* is remarkable enough for us to interpret that it was of significance to the people involved, without speculating specifically why.

The value of speaking in relationships of significance is that the particular is not necessarily subsumed beneath the general, or vice versa. In accepting the un-interpretable plurality of individual motivation, human agency is kept alive. Now, people may not exercise a conscious choice every time a practice is undertaken in a broadly similar manner – potsherds are placed in a pit – this is the nature of *habitus* (Bourdieu 1972, 72). Yet within this framework we can be certain that a myriad of further *intentional choices* dictate that that particular pit will be unique – a certain number of potsherds, from a certain pre-depositional context, are placed in a certain number of layers, in a certain matrix of organic material. Of course, the meanings behind these choices are lost, but at the level of the general we can study the *effects* of these choices in the slow change and development of certain practices – people place smaller sherds in post-marked pits in the Later Neolithic. It is in this development of practices that the forces of social reproduction behind repetition and change become relevant; they are considered below in a discussion of ritual. The remainder of this chapter will, therefore, be spent summarising and interpreting more fully the relationships of significance from the various biographies and narratives of this research. Most importantly, it will be shown that even in the abandonment of 'why' deposition happened, an appreciation of 'how' it did can be of great importance in interpreting the social development of both the Neolithic of Northumberland, and the whole of the British Isles.

A Biography of Deposits in the Neolithic of Northumberland

This section draws together the results of all the narratives undertaken for the various sites and periods throughout chapters six, seven and eight. The aim here is to examine the changing relative significance of different depositional practices over time and space. The specifics of these differences are related to more general categories of practice, such as the emphases on process and product, which form identifiable trajectories of social action over the *longue durée*. Finally, the degree to which these changes were intentional or even explicit is examined. First, however, a summary of the narratives seen so far:

The Earlier Neolithic (Carinated Ware Deposition)

The process of creating a pit was more significant than its finished backfilled appearance
- the pits at Thirlings were quickly backfilled despite complex arrangements of material within them
- even when left open, the pit at Yeavering allowed the depositional process to continue through the weathering of sherds

The fragmentation of pottery was the most significant aspect of its physical condition
- potsherds were selected for deposition on the basis of their fragmentation at Thirlings, Yeavering and Broomridge, but abrasion states were random at Thirlings

There were no spatial relationships between deposits beyond basic clustering behaviour and a criterion of non-interference
- no patterns existed in the distribution of any variable of deposition at Thirlings
- pits did form clusters at Thirlings but no pit was ever inter-cut by another

The deposition of human remains was not automatically the most significant aspect of depositional practice
- long cairns placed no particular stress on human remains – they were not present at every monument
- other architectural devices were more prevalent amongst long cairns than burial features – these monuments represent the appropriate form in which to deposit stones

Where of primary importance, the presence of human remains increased the emphasis of earlier significances
- compared to Thirlings and Yeavering, in association with burials at Broomridge pottery fragmentation was more tightly controlled, pottery was less abraded, and non-interference ensured by the covering mound

The processes of creating architecture were analogous to those of pits
- long term effects of decay were not prevented despite knowledge of appropriate architectural devices, such as revetting kerbs.

The Middle Neolithic (Impressed Ware Deposition)

Deposition at Thirlings follows the same patterns as the Earlier Neolithic, except the post-marking feature of pits become more referential to other variables

- post-marked deposits now contain more pottery (as in Earlier phase) but now composed of smaller sherds than in unmarked deposits

The Later Neolithic (Deposition at Henges)

References between deposits become of greater significance

- the ditches of henges are dug/backfilled in the same manner as the pits they enclose
- the pits within Milfield North each contain exclusively a different type of material culture

The visual product becomes as significant as the process of creation

- the Milfield South pit is left open and then marked with a post when it becomes too silted

Architecture begins to structure space around deposition more overtly

- henges structure the approach and experience of pits
- the avenue and post-alignments structures the approach and experience of the Milfield henges

Burial is still not necessarily the most significant aspect of deposition

- the Whitton Hill enclosures do not differ particularly from the other henges
- Milfield North contains no burials despite the presence of burial architecture

This can be further summarised into three points that describe changing significance throughout the Neolithic: 1) practices exclusively associated with *process* develop into those which also start to focus on *product*; 2) the boundedness and exclusivity of deposits develops into a concern with greater reference between individual deposits; 3) architecture develops from the implicit to explicit ordering of space. These will be discussed in turn.

Creating Processes, Creating Products

The Earlier and Middle Neolithic

Process and product do not exist in a dichotomous relationship. It would not be fair to state that the increase in the significance of the 'finished product' of deposition – usually the visual existence of a thing – occurred at the expense of the significance invested in the process of its creation. Rather, an Earlier Neolithic focus on process, to the extent of denying the visual existence of certain actions, develops to include the creation of a definite visual statement by the end of the Later Neolithic. The process of *achieving* something, be it a finished pit or a monument, was therefore more significant than the specific details of the thing *achieved*. This was evident in the pits from both the Earlier and Middle Neolithic at Thirlings. Many and varied structures of pits existed, representing different intentions, different juxtapositions of material, different sequences of cutting, recutting and post-marking, but the majority of these pits were backfilled immediately and went unmarked on the site. There was clearly some motivation to create a unique pit, but it is apparent that providing long-term evidence in the landscape that this action was undertaken was relatively unimportant compared to *doing it*.

Exactly the same set of significances is evident in the treatment of the pottery prior to deposition. In every case, the fragmentation of pottery was disconnected from the processes that weathered and abraded it. This was interpreted as evidence of some form of provisional discard in a context where the pottery was protected from erosive damage by percussion and fragmentation, but subject to elemental weathering that would randomly abrade and perhaps fragment the sherds. This process would have required an investment of time. The evidence from Thirlings demonstrates that no particular level of abrasion characterises the site, as the distribution of average abrasion values by pit is statistically random. So, it was clearly significant to include potsherds in pit deposits that had been provisionally discarded and thereby subject to weathering. The amount of weathering itself, however, appears incidental, of less significance, and a side effect of having stored the pottery prior to deposition. Once again, importance is vested in the pottery having experienced a particular set of processes, not the final appearance of that pottery.

The importance of processes of creation was also evident at a variety of scales. From the Thirlings deposits, as we have seen there was the long-term process of pottery weathering and the short-term process of pit creation. Yet this pattern of behaviour was not fixed necessarily. At Yeavering the short preceded the long, with pit creation occurring prior to weathering of the sherds, the pit becoming the context of abrasion as it was never backfilled. Similarly, at Bellshiel long cairn the (relatively) short-term process of depositing the stones to form the monument was succeeded by a deliberately planned or accepted long-term decay. The kerb of the monument, a significant factor in construction by its common presence at other monuments, was not designed to securely revet the mound, which collapsed over it. Only the Broomridge burial deposit appears to have actively denied long-term processes of change. A more tightly prescribed series of short-term choices than witnessed in other contexts appear to have created the Broomridge deposit, with very limited variation in fragmentation. Yet the possibility of decay is avoided at the site: the potsherds were well-preserved prior to deposition, and the raising of the mound prevented any further damage.

The Later Neolithic

It is in the later Neolithic, after Thirlings falls out of use, that the significance of creating a finished visual product appears to increase. This is most evident at Milfield South, where the central pit is left open with the deposit of a cup-marked stone in the base. This silts up slowly but is later marked by a post. As both monuments were not altered subsequently, it could be argued that the Milfield South and Yeavering henges share this stress on the visible. Yet it is equally clear that the general Neolithic stress on process has by no means disappeared. The pit at Milfield South is allowed to silt up, rather than being kept open; the pits at Milfield North, despite containing very complex deposits, are backfilled immediately; and none of the henge ditches are ever recut to maintain their visual effect. Furthermore, it is apparent that the development of visual significance, as an element of practice, was not the sole preserve of the Later Neolithic. As we have seen, the burial mound at Broomridge abbreviated almost all the processes of deposit creation, leaving only an unalterable monument; the pit at Yeavering was left open, and post-marking became a more common practice at Thirlings during the Middle Neolithic.

From the Bounded to the Referential

In tandem with visual products becoming of greater concern there was a development towards greater degrees of referencing between deposits or elements of sites. 'Referencing' refers to the idea that an aspect of a particular deposit could be constructed so as to share common features with those deposits around it. In the Earlier and Middle Neolithic at Thirlings, it was statistically demonstrated that there was no visible connection between any of the pits aside from a few instances of structured clusters and their existence in the same hectare. There were no spatial patterns in any aspect of the internal features, fills or artefacts across the site. Each pit was a unique statement in deposition. Moreover, this boundedness extended to a prohibition on disturbing any previous act of deposition: no pits ever intercut, despite the very large number on the site by the end of its use. The only element of referencing between these deposits was, therefore, an emphasis on locating new deposits near old ones; and it is in this context that the clusters of pits were interpreted. Deposition in the Earlier and Middle Neolithic was self-consciously unique, and spatially and temporally bounded.

In contrast, the Later Neolithic sees the development of referencing between acts of deposition. This is most obvious in the striking parallels between the formation of the Milfield henge ditches and the pits within their circuits. At Milfield North the four pits were excavated, saw deposition, and were backfilled very rapidly; similarly, the henge ditch was excavated and then almost immediately backfilled with a variety of different materials up to about half its depth (A. Harding 1981, 108, 134). However, at Milfield South, the central pit was, as we have discussed, allowed to silt up naturally; the henge ditches were likewise excavated and then left to accumulate sediment with no further interference. This referencing also existed within the Milfield North henge. Following the discussion in chapter eight, it seems unlikely that the pits within the monument represent any form of burial deposit (*contra* J. Harding 1981, 109-112) despite the presence of a cist, which in fact remained resolutely empty. Yet the four pits did exhibit what appeared to be deliberate categorisation in their respective fills. Pit A contained the stone cist, Pit B a flint scraper and potsherds, Pit C a whole pot, and Pit D a charred plank. If there were only two pits, a pair of material oppositions of this kind would be questionable, but with four pits, each containing a different type of artefact, deliberate human agency in opposing the pits to one another seems plausible. The depositional activity within, and as part of the architecture of, henges represents a deliberate move towards more overt references between deposits.

Structuring Space

In the previous section 'architecture' was defined as an arrangement of material culture that has a particular effect on the perception of space. Now, because architecture is the juxtaposition of artefacts of various types in space, almost any piece of material culture can cause what can be described as an 'architectural effect': i.e. any artefact can affect perception and movement. Furthermore, just as long cairns and henges are pieces of architecture because they are various items of material culture (stones, earth, posts etc) arranged in space, pits, as similar combinations of artefacts (potsherds, organic material, post etc), can also cause the same type of architectural effect. This is an important point, because it allows the comparison of very different sites in a similar manner. Pits, even those without posts, demonstrably affect the perception of space and its utilisation. We saw at Thirlings how pits were never disturbed once they had been completed: they were never inter-cut by later pits. This is evidence of their bounded nature as unique statements, but it is also proof that, even in their invisibility, they have an effect on human activity. As we saw in chapter six, to avoid intercutting, people must have ceased excavating a pit if, on removal of the turf, a previous deposit was located – the site for the new pit was then changed. With an increase in the number of pits with posts into the Middle Neolithic, this implicit architectural effect became, to a limited extent, more overt – posts prevented disturbance more directly.

It is with advent of henges, however, that the architectural effect becomes truly explicit. By placing deposits within the circuit of the banks and ditches of henges (or alternatively by enclosing deposition within a henge), the perception of and movement around a feature is overtly affected. The direction from which a deposit can be approached, moved around and seen is limited. Now, it is not denied that either social taboo or lost temporary structures could have affected the experience of the Thirlings pits in a similar manner, but it must be admitted that henge architecture achieves the end in a particularly permanent and emphatic manner. Indeed, one sees echoes of the difference between Thirlings and Broomridge in this regard. People never interfered with the Thirlings pits due to social convention, whereas the deposits at Broomridge were sealed beneath a mound – explicit, but also emphatic. The significance of the architectural effect was to continue to grow, however. The final section of chapter eight showed how the construction of the Milfield monument complex structured movement around the henges, just as henges did around pits. The avenue and the large number of pit alignments in the basin all imply particular paths of movement around the monuments, as Harding demonstrates for the double alignment at Milfield North (J. Harding 1981, 132).

Discussion: Contingency

None of the foregoing is intended to imply that the sole function of the henges was to structure space around pits, or that pit alignments fulfilled the same function for the henges themselves. As we saw in chapter eight, it is likely that henge architecture merely represented the appropriate manner of enclosing space in the Later Neolithic, and did not prescribe any particular function or set of activities within. Each henge in the Milfield Basin was so different that a scheme of identical use seems improbable (*contra* Waddington 1999). The architectural effect of overtly structuring space around deposits could have been an unintentional consequence of the adoption of the henge form, and the varied uses to which henges were put – one such use evidently resulted in pit deposits within Milfield North. The fact that this architectural effect was unforeseen does not render it invalid, however.

This research has studied changes in practice in the *longue durée*, but this does not mean that trends identified in relative significance have to be the result of deliberate long-term planning (given the unique nature of each act of deposition, this idea is unfounded). The fact that visual product should grow in significance, or that space should become more structured around deposits was not pre-ordained – it was the result of thousands of individual, contingent choices that, in sum, produced a set of changing social conditions. Through an undirected series of choices, *and not by design*, the outcome of nearly two thousand years of human agency was the change in significance described here. Yet it cannot be denied that change did occur. If this change was not directed, but the result of lots of individual choices, what were the wider social trends and conditions that rendered these outcomes *possible* and allowed this trajectory to develop, even if it was never predetermined? The next section examines this question with reference to the context of deposition in Neolithic Northumberland.

Social Change and the Context of Deposition

Depositional practice underwent a series of quite fundamental changes throughout the Neolithic. The new developments in deliberate visual production, referential deposition, and the overt structuring of space did not replace preceding elements of practice, but they did add complexity to an arena of practice that was already intricately structured. This section places these changes in their wider context, both of Neolithic Northumberland and the rest of Britain. The aim is twofold: to explain the mechanism by which such changes in practice are possible, and to identify the broader social trends that shape, and are shaped by, such change. We are concerned, therefore, with determining what role depositional practice fulfils, and how such practice relates to the everyday life of people. We begin with a consideration of the ritual nature of depositional practice, before proceeding to discuss its importance in relation to everyday life, and the context of these life-ways in the Neolithic of the British Isles.

Ritual Practice and Mechanisms of Change

Identifying 'Ritual' and its Uses

Chapter four examined in some detail the problems associated with the definition of 'ritual practice' and its uses as an explanatory device. It was accepted that something called 'ritual' does not operate as a separate arena of practice, but that its references permeate all activity and can render rational (Brück 1999) the most esoteric of actions through its overt symbolic content. However, despite the difficulties in identifying ritual, this study has made a deliberate attempt to retain it as an interpretative tool. This is because of the value of ritual in structuring the 'necessary' characteristics of a person's world, and in the transmission of this metaphysical knowledge (Schilbrack 2004, 131). The structure of ritual practices provides the medium through which social change can also be effected. Rituals leave space for performative difference, and it is in the accretions of these differences that gradual changes in practice occur. Now, if the other function of ritual is the inculcation of metaphysical knowledge, with direct bearing upon social reproduction, then it is clear how these gradual changes in ritual practice could effect overall change in the society involved.

Despite the fundamental importance of ritual, the drawback of its use in archaeological interpretation has always been its identification. This study sought to move away from the transposition of ritual with something inexplicable in functional terms – 'odd' behaviour

(Hill 1995, 96) – whilst recognising that the lack of a performative context hampered its definition in the terms of philosophers of religion: archaeology lacks that all-important "manner of saying and doing" (Rappaport 1999, 38). We were left, therefore, with *repeated action* as the only criterion upon which ritual could be judged. This had its own problems: how can one argue believably that in the repetition of a common action, such as depositing a pot, we see the reflection of metaphysical belief or some underlying social necessity? The response was twofold. First, a rejection of the particular: it is not in the unique or unusual acts of pot deposition that one sees ritual at work, it is in the fact that huge numbers of *pots in general* are deposited that the suspicion of ritual practice arises. Second, and more importantly, is the idea of *multi-context* repetition. We can identify a particular type of deposition as containing an element of ritual when the principles that structure it in one context are present and structure practice in another very different context. For example, if pottery in pits is always associated with cattle bones, and we see the same association between pottery and cattle bones in the ditches of causewayed enclosures and beneath round barrows, we could argue for a degree of repetition *beyond* the original context of identification (the pit). The fact that pottery-with-cattle bones, in this hypothetical example, structures practice across time, space and in a variety of very different contexts indicates that the practice had a ritual, metaphysical or ontological element. This would *not* mean that the deposits were 'ritual', but that a degree of ritual practice could inform *one aspect* of their creation.

Deposition and Ritual

On the terms defined above, pit-deposition alone cannot be defined as a ritual practice. Yet practices associated with the deposition of pottery and stone *can* be. One of the most interesting results of this research has been the recognition that similar depositional practices, bound by similar rules, occurred at a wide variety of different sites. For example, there was deliberate concern with the fragmentation of pottery, the idea of non-interference, and the process of long-term decay, at sites as different as an unmarked pit at Yeavering, several Later Neolithic henges, and an Earlier Neolithic round barrow. These common 'rules' exhibit the structuring role of a ritual element in practice because of their commonality across context, time and space. A 'pit' or a 'henge' is *not* a ritual site, but the depositional activities that occurred within them share elements of ritual practices. Certain common principles structure activity in a similar manner at every one of the sites examined in this thesis.

The deposition and juxtaposition of material culture in a complex manner had a metaphysical dimension that ascribed the necessary characteristics of existence onto people and things. It was absolutely central, literally, to the continued social reproduction of the groups involved. Here we are interpreting the broad sweep of acts that saw pottery fragmented, provisionally discarded, selected, spatially arranged and deposited; in other words, we are concerned with the creation of deposits *in general* when they are defined as vital constituents of a world-view. We are able, therefore, to identify what practices were necessary to maintain ontological security, without ever being able to state why this was the case, nor what the precise meaning of these practices was within the specific Neolithic world-view. To summarise: the constant repetition of the *process* (not product) of deposition, including every aspect of the pottery biographies, was of significance in maintaining the ontological security and social reproduction of Neolithic groups. In doing so they utilised occupation refuse from settlement practices in a complex and rule-bound manner to create unique acts of deposition.

Ritual Change

The identification of a ritual element to certain practices is no explanation of their social relevance or the manner of their long-term change, however. How does the idea of ritual help us to understand the three trends identified in the previous section (process to product, the bounded to the referential, the implicit to the overt)? How does ritual function as a mechanism for change? First, the unique nature of single acts of deposition must be re-emphasised; its existence as a ritual practice in no way determines the specific nature of individual deposits. Provided that those rules concerning fragmentation were observed there were no strictures on how deposits were composed, and the bizarre complexity of some of the pits at Thirlings are testimony to this. However, certain general rules demonstrably did exist in the pits and later in the henges. Every act of deposition that reproduced these rules first drew upon, then reproduced and reinforced the structures of the underlying ritual elements, the *habitus* (Bourdieu 1972, 72) that informed the creation of deposits. Yet it is also clear that these rules were not so fixed that they were immune to long-term change.

The beauty of a ritual characterisation of these elements is that social or ontological change can be explained and accommodated. In chapter four we saw how rituals are not overdetermining – they leave space for individual interpretation, also known as abductive reasoning or 'musement' (Raposa 2004, 116). These musings, clearly visible in the unique nature of individual deposits, accumulate and gradually change the underlying rules. Through tiny accretions in creative practices, whole ritual forms gradually change and so do their associated ontologies. This is the mechanism whereby post-marked pits, which had always held more pottery since the Earlier Neolithic, came to possess smaller, more fragmented sherds by the Middle Neolithic, whilst maintaining their greater quantity. Such changes are the result, in the *longue durée*, of those incredibly complex individual acts of deposition, such as the clay-lining and post-marking of pit F466. Each unique act of deposition, totally uninterpretable in its singularity, contained within it an element that would continue beyond that single instance, accrete, add to and infinitesimally change the overall ritual process of deposition. The increasing elaboration of such specific practices also led, in an identical manner, to the longer-term trends identified earlier. Change in the ritual elements of practice led to those three trends: process to product, boundedness to reference, and implicit to explicit structure.

Deposition and the Everyday: The Regional Context

As it has been redefined in this thesis, the 'ritual' element of deposition is the component which ensured the long term survival and gradual change of depositional practices. Yet this conclusion will be of little significance to our understanding of the Neolithic unless the changes can be contextualised. Quite simply, for an interpretation of ritual to be of any relevance, it must be linked to the wider context of Neolithic social life. If ritual is seen to transmit (and gradually change) metaphysical knowledge – the fundamentals of people's place in the world – and if we truly wish to speak of world-views and the *longue durée*, what reflections of these practices can we see in other areas of activity? This section examines the link between the ritual element of depositional practice and the everyday undertakings of settlement and subsistence that it operated alongside and within. Particularly important in this regard is the place of practices in the North-East in the wider context of the Neolithic of the British Isles.

The Ritual Element and the Everyday

We cannot separate the ritual elements of practice from the 'everyday' lives of Neolithic people. It has been argued throughout this thesis that the material deposited in pits and at monuments does not comprise some rarefied material fit only for symbolic disposal. Carinated Ware, Impressed Ware and Grooved Ware have all been the subject of studies that confirm their use in the everyday processing and storage of foodstuffs (Dudd *et al.* 1999; Copley *et al.* 2005a; Copley *et al.* 2005b; Mukherjee *et al.* 2007); and the highly organic and charcoal bearing matrix, in which the pottery is often found, is most convincingly explained as the disposal of refuse from settlement activity – perhaps even human biological waste. It was shown in chapter four how this everyday, common material can become socially classified in highly complex ways and be deposited with attendant symbolic connotations. The origin of the material culture does not deny it the right to be implicated in practices bearing distinctly ritual elements. Indeed, it is probably this direct connection with the lives of people that rendered the material suitable for disposal in a meaningful manner. It was for these reasons a simplistic division between the 'domestic' nature of Carinated Ware and a more ritualised, later, Grooved Ware tradition was rejected in chapter four. Through this link with everyday life, whatever the meanings behind the flexible constants of depositional practice, we can be assured that they were relevant to Neolithic society beyond some imaginary 'symbolic sphere'. The linkage between deposits and everything else, in turn, dictates that those gradual changes in depositional practice would have influenced, and been influenced by, the everyday lives of people. If we accept that a function of the ritual elements of these practices was to impart metaphysical knowledge, this would be relevant everywhere and at all times – ritual used to ascribed the 'necessary' characteristics of existence (Schilbrack 2004, 131).

Settlement and Subsistence Practices

The greater significance afforded to process over product, seen in the activities that prepared for and were part of deposition, can be linked to interpretable patterns in the everyday lives of people, particularly the probable settlement regime. We should consider, therefore, the nature of the Neolithic occupation of the landscape, particularly the relationship between settlement practices, deposition, and monuments. Despite several attempts to identify permanent or even semi-permanent Neolithic houses in the north-east of England (Waddington and Davies 2002; *The Times* 03/11/2005), none have met with unequivocal success. The only indication of a recognisable structure is the sub-circular ring of small and insubstantial postholes at Thirlings (figure 5.15, chapter five), dated to 3640-2890 cal. BC (HAR-6659) (Miket and Edwards forthcoming). It was discussed, in chapter three, how pit sites in the lowlands of East Anglia, such as Kilverstone (Garrow *et al.* 2005), Barleycroft and Hinxton (Evans *et al.* 1999) have been interpreted as the only remaining physical traces of temporary, shifting settlements, the pits representing the appropriate disposal of refuse from settlement activities. A similar situation could be envisaged for Thirlings throughout the Earlier and Middle Neolithic, with the depositional pits providing the context for the rule-bound disposal of socially classified refuse from settlement activity. The precise form of this activity must remain speculative as, aside from the ring of postholes described above, there is no evidence for dwelling structures from the site. Thirlings could, therefore, have been a site where it was appropriate to deposit material related to settlement but not necessarily the locus of that activity. Alternatively, the 67 postholes on the site could be the ephemeral remains of temporary tent-like structures, supported by a single central pole; but this must remain speculative.

The ephemerality of structural evidence from Thirlings and the widely excavated Milfield Basin more generally, fits well with the wider picture from lowland Britain. Not too far-afield similarly slight circular arrangements were located at Beckton Farm, Dumfries and Galloway, although associated with Grooved Ware (Pollard 1997); and Cowie, Stirling, produced evidence for a multi-period accumulation of circular post arrangements (Barclay 2003). Setting aside the evidence for a widespread house-building tradition in Ireland (Armit *et al.* 2003), the established general trend in interpretation is to recognise that permanent settlement in 'houses' was not a feature of most of the lowland British Neolithic, and England in particular. This has taken a series of extreme views, with Julian Thomas taking a very sceptical line on their permanence and use as dwelling structures, preferring a model of communal use and residential mobility (Thomas 1996a, 4), a theme developed in his theories on Neolithic subsistence in southern England, (see below, Thomas 1999, chp 2). Conversely, Timothy Darvill was more positive in his categorisation of house structures, identifying 109 possible examples, many of them represented by loose scatters of postholes (Darvill 1996). Some of these identifications have been criticised subsequently as a very optimistic interpretation of questionable ground-plans (Gibson 2003, 138), and it may be that the structures in Darvill's class Ei are better interpreted as timber circles. Gordon Barclay likewise stresses the differences between the permanent stone buildings of Orkney and the Shetlands and the less well-defined post-built structures of the lowland east of Scotland (Barclay 1996, 61; 2003). The very large Scottish longhouse-type structures, such as Claish (Barclay *et al.* 2002), Balridie (Fairweather and Ralston 1993), and Balfarg Riding School (Barclay and Russell-White 1993), also probably do not represent 'houses' (Brophy 2007, 92). Regardless of the specifics of individual sites, the important point here is that Neolithic dwelling structures, aside from specific regional trajectories such as the Scottish timber-hall tradition, the South-West (Mercer 2003) and the Northern Isles, are best characterised as relatively small, light-weight, and probably not long-lasting, though it may be unfair to describe many of the known examples as 'temporary' in nature. This is likely to be true for the north-east of England, and it fits especially well with the evidence from Thirlings.

It is impossible to ignore the link between the nature of Neolithic settlement, in its broadest sense, and the modes of subsistence of which it formed a part. Neolithic subsistence practices have been touched upon on more than one occasion during this study, but it is worth briefly considering the type of subsistence patterns that may have characterised the Neolithic of the North-East. There is no specific regional evidence for either animal husbandry or arable agriculture and so we are left considering models produced for other areas of Britain. Without going into excessive detail, there are two extreme views, those of total mobility-cum-nomadic herding versus settled agriculture, joined by a continuum of intervening opinion. Julian Thomas expresses the high-mobility of the Wessex model most succinctly in *Understanding the Neolithic* (1999). Under this system, Neolithic populations maintained a high degree of mobility and broad-scale use of wild resources, probably herding cattle and, later, pigs, whilst undertaking garden-plot horticulture opportunistically in clearings (*ibid.*, 29). Work by Joshua Pollard was in broad agreement with Thomas' scheme, although he pointed out that Wessex should not be seen as archetypal of subsistence practices across Britain (Pollard 1999, 78; 2000, 363), echoing an earlier statement by Alasdair Whittle to the same effect (Whittle 1997, 19). It is noteworthy that, in both cases, Whittle and Pollard either go on to exclusively use Wessex evidence to support their interpretation, or make a contrast with only one other regional trajectory, that of the Orkney; a subsistence pattern so different as to make comparison obvious, but also relatively meaningless.

The opposing view, disagreeing with the Wessex model to the extent of caricature, argues for the very rapid adoption of full mixed farming across Britain: the 'wave of advance/disruption model' (Zvelebil 1986). Under this scheme, Neolithic populations were not primarily nomadic, did not rely heavily on wild resources, and there was an abrupt shift from Mesolithic subsistence practices (Rowley-Conwy 2004, 97). An important plank in this argument is the existence of a widespread tradition of Neolithic house-building, yet unfortunately the evidence can be criticised in a similar manner to Darvill's (1996) optimistic identification of dwellings, above. However, the built structures at Balbridie (Fairweather and Ralston 1993) and Lismore Fields (Garton 1991) did contain thousands of burnt cereal grains.

Similarly, the pollen evidence from a Balbridie-type structure at Warren Field, Aberdeenshire (Murray *et al.* 2006) suggests that cereal agriculture was occurring in the immediate vicinity of the building, but not further afield (Tipping *et al.* 2009, 148). So, the existence of cereal agriculture cannot be denied, though its extent could be questioned. The rapid-adoption model is also supported by dietary isotopic evidence from the west of Scotland, which shows a sudden shift from marine to terrestrial protein at the beginning of the Neolithic (Schulting and Richards 2002). Setting aside the debate on cereal introduction, this coastal evidence does support the view that the adoption of domesticated animals may not have required an intense ideological transformation (Richards 2003), and became widespread relatively quickly. The Earlier Neolithic assemblages of domesticated faunal remains from Windmill Hill (Whittle *et al.* 1999) and Hambledon Hill (Legge 1981), and the evidence for dairying in Earlier Neolithic ceramics (Copley *et al.* 2005b), also supports this view.

How, then, to characterise Neolithic occupation and subsistence in the North-East in light of this research into deposition? The evidence is equivocal. There are no large cereal assemblages from the region (Huntley and Stallibrass 1995), though very small numbers of barley and emmer wheat grains were recovered from various excavations in the Milfield Basin (J. Harding 1981, 133; Miket 1985, 143,147; Johnson and Waddington forthcoming). The lack of built structures has also already been discussed. Whilst the 'Wessex model' has been criticised for its, potentially unrepresentative, high level of mobility (Pollard 2000, 363; Rowley-Conwy 2004), it cannot be denied that permanent dwelling structures are exceedingly rare within the study area until the middle Bronze Age. Yet it is also naïve to assume that the cereal exploitation we do have evidence for could have occurred as part of a nomadic pastoralist economy: it is still true today that cereal crops require constant attention if they are to flourish. Alasdair Whittle outlined six potential models for Neolithic settlement mobility, one of which represented full nomadism and another full sedentism (Whittle 1997, 21). Between these two extremes there were a variety of options, all characterised by degrees of semi-permanent settlement, but Whittle, rightly, found it impossible to fit one of these to the evidence, and left a range of possibilities (*ibid.*, 22). Importantly, none of the four models of semi-mobility would have excluded the possibility of cereal agriculture.

The problem with the evidence from deposition is that it excludes none of the possibilities. However, given the combination of settlement, faunal and botanical evidence it seems reasonable to posit a system of tethered mobility (Whittle 1997, 21), with established, if seasonal, settlement at particular locations for the period required to grow cereals or undertake particular tasks. Movement could be undertaken by particular groups within a community at certain times, in order, for example, to take cattle to summer pastures, but this would not necessitate the total abandonment of a settlement and the relocation of all people. This must remain total speculation, but if the lives of people were, therefore, dictated by repeated and predictable seasonal movements, one finds parallels in the depositional evidence. The focus on the process of deposition, rather than finished visibility or product, mirrors the process of movement around the landscape. The 'tethered' or perhaps socially partial nature of this mobility is reflected in the exceptionally long time-span over which Thirlings was used as a location for deposition. The settlement and subsistence system was stable, and change was gradual, just as we have characterised the nature and speed of change in depositional practices themselves. The development of henges, the attendant alterations in depositional practices, and the increasingly overt architectural influence on perception and movement during the very terminal Neolithic, may represent an increasing rigidity in the movement of people. It is not argued that henge architecture was an attempt to formalise or ritualise the place of people in the landscape; this would be a simplistic interpretation, and one that homogenised the role of henges whilst ignoring their considerable internal variability. Rather, this study has detected an increased level of overt architectural control in relation to practices of deposition interpreted as possessing a ritual element – insofar as they have the potential to reproduce the metaphysical or 'necessary' characteristics of existence. This may be because they were reflecting/reproducing the existence of similar relationships in other areas of human practice.

The Role of 'Burial' Monuments

Neolithic burial monuments, especially long cairns and barrows, have been ascribed a number of particular roles as a result, variously, of their distinctive form, contents and/or landscape position. This is neither the time, nor is there space, to consider the great variety of these interpretations. However, one explanation for the existence of long cairns is pertinent here: their role in establishing claims to the land and, latterly, in locating an ancestral presence within a landscape. Colin Renfrew was among the first proponents of the view that Neolithic burial monuments could be related to land ownership. He argued that the distribution of megalithic tombs on the isle of Arran, in western Scotland, and on Rousay in the Orkney Isles, could be used to identify territorial units belonging to different farming communities (Renfrew 1973a, 146-156; also see Renfrew 1976; or for an alternative conception of the 'corporate group': Fleming 1973a). This was later elaborated so that claims to territory gained legitimacy through reference to an ancestral presence in the landscape, provided by the remains of the community's dead (R. Chapman 1981; R. Bradley 1984, chp 2). As we have seen in previous chapters it is now difficult to sustain the existence of a settled farming Neolithic. Concomitantly interpretations that favour the existence of Neolithic 'territories' have also declined. However, despite arguments to the contrary (Whitley 2002), the idea of tombs locating ancestors in the landscape has remained persistent (Jones 2008, 193). Ian Hodder stressed the ancestral role of tombs in the competition between lineages for productive and reproductive resources (Hodder 1992, 76). Richard Bradley linked them to different conceptions of time between Mesolithic and Neolithic populations (1998, chp 4); Julian Thomas identified them as locations where the intercession of the ancestors in daily events could be secured (1999, 136); whilst a large number of phenomenological interpretations have stressed their importance in a multitude of landscape positions (Tilley 1994; Cummings *et al.* 2002; Tilley 2004).

This 'ancestral' role is hard to interpret for the long cairns of the North-East. As we have seen, burial was not necessarily their primary function, so it is difficult to sustain a link to the ancestors. The Broomridge *round* barrow is one of very few secure contexts for Neolithic burial in the region, and as a single, poorly-recorded example it is inadequate for the identification of long-term trends in the meaning of mortuary deposition. Given, first, the lack of a burial in one long cairn and, second, the greater occurrence of other architectural features in their various designs, it may be more appropriate to interpret them as the acceptable manner in which to *deposit stones*, whatever the specific meanings the individual arrangements may have held. This research has exhaustively considered the manner in which pottery was deposited in various different contexts across the study area. Certain details of this deposition could be condensed into a set of slowly-developing trends. The specific reasons why these trends exist are lost to us; it has been sufficient to state that such behaviour was considered appropriate, and to unpack the manner in which the deposits were created. So, if the depositional trends observed here represent the appropriate way to deposit socially significant pottery and the Broomridge round barrow represents the appropriate way to deposit cremated human remains, then it is no great leap to interpret long cairns as a context for the structured deposition of stones. It may be mere coincidence, but very few flint or stone artefacts have been recovered from pits in the region, yet have been present at every single excavated long cairn in a primary context. Now, it is not denied that long cairns may have had more complex associations – from chapter four it is clear that deposition of any kind is surrounded by many contingent meanings. However, just as the architectures of pits realised constantly changing meanings, so did the deposition of material culture that resulted in the architecture of long cairns.

An ancestral hypothesis is hard to justify because the long cairns were also not necessarily designed with a focus on permanence. In one case, at Bellshiel, a structurally unsound kerb was deliberately incorporated that allowed the monument to decay. In this way, long cairns were bound into the same association with 'process' and 'product' as Earlier Neolithic pits, as we have seen. Of course, none of these comments denies that long cairns could physically represent the presence of certain groups of people in the landscape, particularly in the context of the mobile settlement and subsistence pattern interpreted above. What is denied is the necessary primacy of burial in the realisation of this role (see chapter four and Brophy 2005, 9). It is a simple and somewhat banal fact that any architecture in any kind of landscape ties people to certain places – indeed, in the North-East it probably did. As a physical representation of the labour and effort of people it could do little else. To argue that this was the *most important* aspect of any kind of architecture, however, is unnecessarily reductive. So, if it is clear that long cairns were neither primarily 'for' burial, nor 'permanently' establishing ties to the land, we are left with the fact of their existence and little else. Without greater excavation it is difficult to interpret the social role of long cairns. However, if the settlement and subsistence regime was one of tethered mobility (Whittle 1997, 21), it is plausible to see long cairns existing in the upland landscapes of the mobile element of this lifestyle. For reasons we cannot comprehend it was appropriate to create structured arrangements of stone, in the form of long cairns, in these landscapes at such times, and perhaps incorporate a token burial. An architectural effect of this creation may have been to physically mark the presence of the group who built the monument, but we should see this as a potential consequence, not only a cause. If Earlier Neolithic groups were concerned with depositing things like pottery and stones in complex ways, and it is clear from this research that in the lowlands they were. Then it is the social importance of this depositional activity that produced the conditions of existence in which long cairns could be created, rather than a belief in the ancestors.

Discussion: The 'Regional Neolithic'

Throughout this thesis, various references have been made to specific regions of the British Isles whose Neolithic occupation possesses some unique set of characteristics. In this chapter, the 'Wessex model' of settlement and subsistence has been contrasted with the built dwellings of the Orcadian Neolithic; in chapter two, the Impressed Ware pottery style in the North-East was said to bear similarity to either the Meldon Bridge or East Yorkshire material depending upon whether one looked at northerly or southerly sites respectively. The idea of regionality in the Neolithic is by no means a new one (J. Harding 1997; Barclay 2000), and this is not the place for a history of regional interpretation. For our purposes it is sufficient to ask the following question: given that data from other regions has been vital in constructing interpretations of Neolithic social practice for the North-East, what claim to a regional Neolithic can this study make? One must consider exactly what evidence one requires to argue that one region differs from another. Monument typology is the classic means of distinguishing one regional trajectory from another: take the names of monument classes, especially cairns, such as 'Cotswold-Severn' or 'Clava'. Yet north-east England is not suited to this sort of characterisation. The physical form of upland long cairns is relatively common throughout the Pennines; the round barrows, especially of the County Durham limestone, are very similar to those found on the Yorkshire Wolds; pit sites such as Thirlings are found across lowland eastern England; and the Milfield monument complex is not unique in its extent or its complexity.

We can, however, detect the unique signature of a regional Neolithic in the evidence from the North-East, and it is this that makes the conclusions of this study relevant to the study of the British Neolithic in general. This is not to be found in the finished form of the sites and monuments, but in the processes that created them. The manner in which deposition was undertaken in the region, and the way in which it linked the everyday lives of people to a ritual form of action and a set of rules that governed that life, sets it apart from the social trajectories of other regions. There are extensive examples of pit deposition from southern and eastern England, but the processes that created those deposits bear no comparison with the data examined in this study, and thus the social processes involved in creating those deposits must have been different also. For example, the 'rules' surrounding deposition at Kilverstone, Norfolk, were completely different: pits deliberately inter-cut and whole flint reduction sequences were found in stratigraphic 'stacks' of pits (Garrow *et al.* 2005); both practices that were absent at Thirlings. Moreover, pottery is deposited in a variety of locations and ways in various parts of the country, but nowhere else is there a common link in the pre-depositional treatment of that material across an array of different types of site. Regionality cannot be defined only by the differing finished forms of the most visible types of site. It must be constructed from the very specific manner in which people went about their daily lives. Just as has been argued for significant aspects of the Neolithic in and around the Milfield Basin, it is process, not product that is of importance at the level of the individual agent, and which builds a distinctive pattern of social reproduction at the level of the community. Comprehended as a set of regionally distinct processes, the conclusions here have relevance for the whole of the British Neolithic, because they force us to consider how things come to be. Consider the standard progression of enclosure types in southern England: causewayed enclosure to cursus to henge. Causewayed enclosures are epitomised by the process of deposition; they are created entirely by and for the depositional process. Cursuses embody the process of moving through the landscape, but by this point process is becoming controlled – movement is channelled and directed. By the Later Neolithic, the visual product becomes more important. Now enclosure becomes the arena for deposition, rather than being constituted by its processes. In other regions, these monuments may have been maintained, their ditches recut, and it is in these actions that regionality can be made manifest, but the narratives of their events are beyond the scope of this study.

In Conclusion

This study set out with a series of aims: to characterise the social trajectory of the Neolithic of north-east England through an examination of depositional practice, and to undertake this investigation in such a way that contemporary meanings and classifications did not come to be imposed uncritically upon past agents. It became clear that many contemporary interpretations of deposition often relied on discredited oppositions between the symbolic and the functional, rooted in a desire to explain the specific nature of individual acts. Despite an explicitly regional data-set, the intention here was always to avoid this type of particularism, and focus upon means of investigating past practices that established quantifiable trends across time and space. This research was designed to find the place of the specific (individual potsherds and single pits) in the overall field of the general (social change over time) and subsume neither within the other. Building a narrative of events was a powerful means of meeting the study's aims in the required manner. The biographies of pottery treatment, pit creation and monument construction were built entirely from the particular, but form a story of events that could only have come about through repeated general practice. Through an explicitly narrative form of interpretation, avoiding impositions of 'why' something occurred, the myriad complexities of how communities undertook certain types of practice has exposed the truly vast scale of individual agency in the past. Through the reconsideration of ritual practice, it has also been shown how an individual agent can maintain or infinitesimally change the world-view of their entire community and, moreover, that such a thing demonstrably did occur.

In the Neolithic of north-east England the superficiality of visual product may have been less significant than the manner in which something was achieved, despite how hard it may be for us to conceive of such a world-view. We have seen how complex chains of activity were undertaken repeatedly over millennia with no concern for their lasting visibility. Life was defined by its processes, from the movement of people to the production of pits. Things were created and things were allowed to decompose. Potsherds abraded and monuments decayed. This was not a Neolithic of ancestral power and ritually-induced stasis. The Neolithic of the North-East was subject to change.

APPENDICES

1. Database 1: The Pits at Thirlings

This database contains basic information on each of the 225 pits at Thirlings, including those pits that were un-datable and held no material remains. These details are primarily utilised in the spatial analyses undertaken in chapter five, whilst description of the contents of this table can be found in chapter five of the main volume.

Feature Number	Length (m)	Width (m)	Depth (m)	Shape	Type of Pit	Organic/Burnt Material	Re-cut
366	2	1	0.4	Irregular	Deposition	Yes	No
367	0.1	0.1	0.08	Regular	Post-hole	Yes	No
369	0.4	0.44	0.2	Regular	Post-hole	Yes	No
385	0.48	0.24	0.18	Irregular	Deposition	Yes	No
403	1.1	0.4	0.1	Irregular	Post-hole	Yes	No
409	0.6	0.5	0.15	Irregular	Unknown	No	No
410	0.25	0.2	0.05	Regular	Unknown	No	No
411	1	0.5	0.15	Irregular	Deposition	No	No
413	0.2	0.18	0.2	Regular	Post-hole	No	No
414	0.16	0.16	0.1	Regular	Unknown	No	No
415	1.7	0.5	0.15	Irregular	Deposition	Yes	No
416	0.15	0.15	0.02	Regular	Unknown	No	No
421	0.2	0.2	0.1	Regular	Unknown	No	No
422	5.7	2.8	1.2	Irregular	Marked Deposition	Yes	Yes
423	1.5	0.75	0.5	Irregular	Unknown	No	No
424	0.1	0.1	0.05	Regular	Unknown	No	No
425	0.8	0.2	0.1	Irregular	Unknown	No	No
426	0.2	0.15	0.1	Regular	Post-hole	Yes	No
427	0.7	0.6	0.1	Regular	Deposition	Yes	No
428	1.5	1.4	0.25	Irregular	Deposition	Yes	No
429	0.15	0.15	0.08	Regular	Post-hole	Yes	No
430	0.12	0.12	0.1	Regular	Post-hole	Yes	No
431	0.2	0.2	0.1	Regular	Post-hole	Yes	No
432	0.27	0.21	0.12	Regular	Post-hole	Yes	No
433	0.25	0.15	0.08	Irregular	Deposition	Yes	No
434	0.9	1	0.15	Regular	Deposition	Yes	No
435	0.3	0.3	0.1	Regular	Post-hole	Yes	No
436	0.12	0.12	0.1	Regular	Post-hole	Yes	No
466	1	0.9	0.42	Regular	Marked Deposition	Yes	Yes
467	0.6	0.6	0.3	Regular	Marked Deposition	Yes	No
468	0.5	0.6	0.24	Regular	Post-hole	Yes	No
469	0.3	0.2	0.1	Regular	Post-hole	Yes	No
470	0.6	0.6	0.24	Regular	Marked Deposition	Yes	No
557	0.2	0.19	0.08	Irregular	Deposition	Yes	No
561	0.26	0.14	0.05	Regular	Unknown	No	No
563	1.6	0.8	0.2	Irregular	Marked Deposition	Yes	No
568	0.75	0.35	0.05	Irregular	Unknown	No	No
569	0.45	0.35	0.05	Irregular	Unknown	No	No
571	0.16	0.06	0.05	Regular	Unknown	No	No
572	0.1	0.06	0.08	Irregular	Unknown	Yes	No

573	0.1	0.06	0.06	Irregular	Unknown	No	No
574	0.34	0.18	0.05	Irregular	Unknown	No	No
575	0.2	0.05	0.05	Irregular	Unknown	No	No
576	0.22	0.16	0.05	Irregular	Unknown	No	No
577	0.2	0.08	0.05	Irregular	Unknown	No	No
581	2.8	1.5	0.28	Irregular	Marked Deposition	Yes	No
585	0.9	0.3	0.15	Irregular	Unknown	No	No
587	0.65	0.65	0.4	Square	Post-hole	Yes	No
589	1.6	0.8	0.2	Irregular	Deposition	Yes	No
594	0.22	0.16	0.05	Irregular	Unknown	No	No
598	0.2	0.1	0.05	Regular	Unknown	No	No
604	0.7	0.5	0.15	Irregular	Unknown	No	No
609	0.22	0.24	0.22	Regular	Post-hole	No	No
610	0.18	0.2	0.05	Regular	Unknown	No	No
614	0.56	0.12	0.05	Irregular	Unknown	No	No
615	0.75	1	0.2	Irregular	Deposition	Yes	No
617	0.5	0.15	0.05	Irregular	Unknown	No	No
618	0.5	0.45	0.25	Regular	Deposition	Yes	No
620	0.2	0.15	0.08	Irregular	Deposition	Yes	No
623	0.5	0.32	0.12	Irregular	Unknown	No	No
624	0.92	0.24	0.05	Irregular	Unknown	No	No
625	0.4	0.36	0.2	Square	Post-hole	Yes	No
626	0.2	0.15	0.15	Irregular	Post-hole	Yes	No
627	0.28	0.2	0.12	Regular	Deposition	Yes	No
628	1	0.75	0.4	Regular	Marked Deposition	Yes	No
640	0.5	0.5	0.35	Irregular	Post-hole	Yes	No
641	0.15	0.15	0.12	Regular	Post-hole	No	No
643	1	1	0.4	Irregular	Marked Deposition	Yes	No
644	0.6	0.5	0.15	Irregular	Marked Deposition	Yes	No
646	0.16	0.12	0.05	Regular	Unknown	No	No
648	0.8	1	0.2	Irregular	Deposition	Yes	No
655	0.6	0.3	0.2	Irregular	Unknown	Yes	No
657	0.6	0.5	0.1	Regular	Post-hole	Yes	No
658	0.35	0.25	0.05	Irregular	Unknown	No	No
661	0.5	0.3	0.05	Irregular	Unknown	No	No
662	0.5	0.4	0.05	Irregular	Unknown	No	No
668	0.8	0.4	0.2	Irregular	Deposition	Yes	No
670	0.5	0.3	0.05	Irregular	Unknown	No	No
700	0.5	0.25	0.05	Regular	Post-hole	No	No
709	0.35	0.4	0.15	Regular	Post-hole	No	No
719	0.8	0.4	0.05	Irregular	Unknown	No	No
722	0.32	0.4	0.05	Irregular	Unknown	No	No
725	1	0.6	0.35	Irregular	Post-hole	Yes	No
728	0.25	0.4	0.05	Irregular	Unknown	No	No
729	0.44	0.25	0.05	Irregular	Unknown	No	No
738	0.7	0.5	0.1	Irregular	Unknown	No	No
750	0.8	0.6	0.15	Irregular	Unknown	No	No
752	0.75	0.5	0.1	Irregular	Unknown	No	No
754	1.5	0.55	0.1	Irregular	Unknown	No	No
759	0.7	0.4	0.05	Irregular	Unknown	No	No
760	0.9	0.45	0.05	Irregular	Unknown	No	No
761	0.65	0.5	0.05	Regular	Unknown	No	No

764	0.7	0.45	0.05	Regular	Unknown	No	No
771	0.3	0.25	0.05	Regular	Unknown	No	No
773	0.2	0.2	0.05	Regular	Unknown	No	No
774	0.2	0.2	0.05	Regular	Unknown	No	No
775	0.15	0.15	0.2	Regular	Post-hole	No	No
778	0.45	0.3	0.15	Regular	Unknown	No	No
836	1.7	0.2	0.05	Irregular	Unknown	No	No
847	0.25	0.16	0.08	Regular	Unknown	No	No
891	0.16	0.16	0.1	Irregular	Post-hole	No	No
912	0.6	0.4	0.2	Regular	Unknown	Yes	No
923	0.35	0.35	0.05	Regular	Unknown	No	No
931	0.4	0.3	0.15	Regular	Deposition	Yes	No
966	0.4	0.35	0.12	Regular	Post-hole	Yes	No
967	0.3	0.2	0.15	Regular	Post-hole	No	No
970	0.2	0.16	0.1	Regular	Post-hole	No	No
972	0.25	0.2	0.1	Regular	Post-hole	No	No
975	0.4	0.45	0.07	Regular	Post-hole	Yes	No
976	0.4	0.4	0.1	Regular	Unknown	Yes	No
979	0.14	0.08	0.03	Regular	Unknown	Yes	No
981	0.5	0.2	0.2	Regular	Post-hole	Yes	No
990	0.12	0.8	0.05	Regular	Unknown	No	No
991	0.7	0.5	0.1	Irregular	Marked Deposition	Yes	No
995	0.2	0.25	0.1	Regular	Post-hole	No	No
1001	0.4	0.5	0.15	Regular	Post-hole	No	No
1002	0.25	0.25	0.1	Regular	Post-hole	No	No
1003	0.36	0.16	0.08	Irregular	Deposition	Yes	No
1004	0.4	0.4	0.05	Regular	Deposition	Yes	No
1006	1.6	0.6	0.05	Regular	Unknown	No	No
1012	0.55	0.25	0.05	Regular	Unknown	No	No
1014	0.3	0.25	0.05	Regular	Unknown	No	No
1015	0.15	0.15	0.1	Regular	Post-hole	Yes	No
1020	0.2	0.2	0.15	Regular	Post-hole	No	No
1024	0.2	0.05	0.07	Irregular	Unknown	Yes	No
1029	0.2	0.05	0.05	Irregular	Unknown	No	No
1032	3	1.6	0.4	Irregular	Unknown	Yes	No
1033	0.6	0.5	0.05	Regular	Unknown	Yes	No
1034	0.9	0.8	0.3	Regular	Deposition	Yes	Yes
1036	0.6	0.3	0.1	Irregular	Unknown	Yes	No
1039	1	1	0.3	Regular	Deposition	Yes	Yes
1041	0.3	0.15	0.05	Regular	Unknown	No	No
1042	0.5	0.2	0.1	Irregular	Post-hole	No	No
1045	0.4	0.35	0.25	Regular	Post-hole	No	No
1046	0.45	0.25	0.22	Regular	Post-hole	Yes	No
1048	0.7	0.6	0.4	Regular	Post-hole	Yes	No
1055	0.4	0.4	0.35	Regular	Post-hole	Yes	No
1084	0.7	0.65	0.15	Regular	Unknown	No	No
1101	0.65	0.35	0.1	Irregular	Unknown	No	No
1105	0.25	0.2	0.3	Regular	Post-hole	Yes	No
1107	0.45	0.27	0.1	Regular	Unknown	No	No
1116	1.3	1	0.35	Irregular	Deposition	Yes	Yes
1117	0.85	0.8	0.2	Regular	Deposition	Yes	No
1120	1	0.8	0.6	Regular	Deposition	Yes	Yes

1130	0.4	0.4	0.2	Regular	Post-hole	Yes	No
1137	0.55	0.35	0.2	Regular	Post-hole	Yes	No
1140	0.6	0.6	0.3	Regular	Post-hole	Yes	No
1150	1.15	0.65	0.15	Regular	Deposition	Yes	No
1193	0.2	0.2	0.1	Regular	Deposition	Yes	No
1195	0.32	0.3	0.1	Regular	Post-hole	No	No
1196	0.45	0.4	0.15	Irregular	Unknown	No	No
1199	0.35	0.25	0.1	Regular	Post-hole	No	No
1200	0.5	0.2	0.07	Regular	Unknown	No	No
1203	2	1	0.2	Irregular	Deposition	Yes	Yes
1210	0.15	0.1	0.19	Regular	Post-hole	Yes	No
1235	1.1	0.7	0.2	Regular	Deposition	Yes	Yes
1236	0.7	0.6	0.1	Regular	Unknown	No	No
1275	0.8	0.75	0.4	Irregular	Deposition	No	No
1383	0.25	0.2	0.2	Regular	Post-hole	Yes	No
1402	0.6	0.45	0.15	Regular	Post-hole	No	No
1403	0.4	0.25	0.8	Irregular	Unknown	No	No
1407	0.35	0.33	0.05	Regular	Unknown	No	No
1413	0.2	0.2	0.1	Regular	Post-hole	No	No
1417	0.6	0.42	0.12	Irregular	Unknown	No	No
1418	0.35	0.35	0.05	Regular	Unknown	No	No
1419	0.3	0.25	0.05	Regular	Post-hole	No	No
1420	0.25	0.2	0.15	Regular	Post-hole	No	No
1421	0.25	0.2	0.05	Regular	Unknown	No	No
1424	0.65	0.35	0.18	Irregular	Unknown	No	No
1428	0.2	0.15	0.05	Irregular	Unknown	No	No
1431	0.1	0.05	0.08	Regular	Post-hole	Yes	No
1433	0.12	0.12	0.05	Regular	Unknown	Yes	No
1436	0.3	0.2	0.12	Irregular	Unknown	No	No
1472	0.3	0.15	0.15	Irregular	Deposition	Yes	No
1473	0.15	0.15	0.1	Regular	Post-hole	No	No
1474	0.1	0.1	0.05	Regular	Unknown	Yes	No
1475	0.3	0.15	0.15	Irregular	Deposition	Yes	No
1476	0.15	0.15	0.05	Regular	Unknown	Yes	No
1477	0.1	0.1	0.05	Regular	Unknown	Yes	No
1478	0.15	0.15	0.05	Regular	Unknown	Yes	No
1700	0.6	0.3	0.25	Regular	Deposition	Yes	No
1701	0.55	0.55	0.2	Regular	Unknown	No	No
1702	0.35	0.35	0.15	Regular	Unknown	Yes	No
1704	0.5	0.5	0.15	Regular	Post-hole	Yes	No
1705	1.2	0.5	0.1	Irregular	Deposition	Yes	No
1707	0.7	0.7	0.35	Regular	Unknown	No	Yes
1708	0.25	0.25	0.05	Irregular	Deposition	Yes	No
1709	0.2	0.2	0.2	Regular	Post-hole	No	No
1710	0.5	0.5	0.2	Regular	Unknown	Yes	Yes
1711	0.3	0.15	0.1	Regular	Post-hole	Yes	No
1795	0.5	0.5	0.1	Regular	Unknown	No	No
1796	0.5	0.4	0.15	Regular	Unknown	No	No
1797	1	1	0.1	Regular	Unknown	No	No
1798	0.4	0.4	0.15	Regular	Unknown	No	No
1827	4	1.5	0.6	Irregular	Deposition	Yes	No
1832	0.8	0.8	0.3	Regular	Deposition	Yes	No

1833	0.4	0.4	0.1	Regular	Unknown	No	No
1834	0.25	0.25	0.15	Regular	Unknown	No	No
1850	0.25	0.25	0.1	Regular	Unknown	No	No
1851	0.35	0.35	0.1	Regular	Post-hole	No	No
1852	0.6	0.6	0.1	Irregular	Deposition	No	No
1853	0.35	0.35	0.1	Regular	Post-hole	No	No
1854	0.55	0.55	0.2	Regular	Post-hole	No	No
1855	0.85	0.85	0.2	Regular	Deposition	Yes	Yes
1856	0.3	0.3	0.15	Regular	Post-hole	No	No
1857	0.7	0.7	0.25	Regular	Deposition	Yes	No
1858	1.4	1	0.3	Regular	Deposition	Yes	Yes
1859	0.5	0.3	0.25	Regular	Post-hole	No	No
1892	0.2	0.3	0.1	Regular	Post-hole	No	No
1894	1.5	1.1	0.3	Irregular	Deposition	Yes	No
1895	0.25	0.25	0.25	Regular	Post-hole	No	No
1898	1.15	1.15	0.2	Regular	Deposition	Yes	Yes
1899	0.5	0.5	0.2	Regular	Unknown	No	No
1900	0.5	0.5	0.15	Regular	Unknown	No	No
1901	0.8	0.8	0.25	Regular	Deposition	Yes	No
1910	0.35	0.35	0.1	Regular	Unknown	No	No
1911	0.3	0.3	0.15	Regular	Unknown	No	No
1912	0.6	0.4	0.25	Regular	Post-hole	No	No
1913	0.4	0.4	0.1	Regular	Post-hole	No	No
1914	0.35	0.35	0.15	Regular	Unknown	No	No
1915	0.35	0.35	0.15	Regular	Unknown	No	No
1916	0.3	0.3	0.2	Regular	Post-hole	No	No
1917	0.6	0.35	0.25	Regular	Post-hole	No	No
1918	0.2	0.2	0.1	Regular	Unknown	No	No
1920	0.5	0.3	0.25	Regular	Unknown	No	No

2. Database 2: Datable Pits at Thirlings

This database contains detailed information on the pits at Thirlings that produced datable material. This information is utilised throughout the statistical analyses presented in chapter five. Note, the specific details of the potsherds recovered from each of these pits can be found in the database three (3) of this appendix.

Name	Length(m)	Breadth(m)	Depth(m)	No. Fills	Period	No. Stone Artefacts	Stone Artefacts	Number Potsherds	Type of Pottery	Min No. Pots	Burnt Material?	Shape	Post?	Pit Type
F366	2	1	0.4	3	Earlier	1	Chert waste flake	80	Carinated Ware	12	Yes	Irregular	No	Unmarked Deposit
F369	0.4	0.44	0.2	2	Earlier	0		10	Carinated Ware	3	Yes	Regular	Yes	Post-hole
F428	1.58	1.27	0.23	2	Earlier	0		1	Carinated Ware	1	No	Irregular	No	Unmarked Deposit
F563	1.6	0.8	0.2	10	Earlier	1	Flint Flake	18	Carinated Ware	4	Yes	Irregular	Yes	Post-Marked Deposit
F581	2.8	1.15	0.28	2	Earlier	0		67	Carinated Ware	3	Yes	Irregular	Yes	Post-Marked Deposit
F587	0.65	0.65	0.4	3	Earlier	1	Flint	3	Carinated Ware	1	Yes	Regular	Yes	Post-hole
F663	0.5	0.5	0.3	3	Earlier	0	Flints	8	Carinated Ware	2	Yes	Regular	Yes	Post-hole
F422	5.7	2.8	1.2	9	Middle	1	Knife/Scraper	8	Impressed Ware	2	Yes	Irregular	Yes	Post-Marked Deposit
F466	1	0.9	0.42	10	Middle	2	Flint Blade, Flint Flake	24	Impressed Ware	8	Yes	Regular	Yes	Post-Marked Deposit
F467	0.6	0.6	0.3	4	Middle	9	Waste Flakes, Burnt Flake	2	Impressed Ware	1	Yes	Regular	Yes	Post-Marked Deposit
F615	0.75	1	0.2	3	Middle	3	2 Flint Flakes, 1 Burnt Fabricator	40	Impressed Ware	7	Yes	Irregular	No	Unmarked Deposit
F621	1	0.5	0.15	2	Middle	0		25	Impressed Ware	2	Yes	Irregular	No	Unmarked Deposit
F628	1	0.75	0.4	4	Middle	0		6	Impressed Ware	2	Yes	Regular	Yes	Post-hole
F643	1	1	0.4	3	Middle	1	Flint Blade	52	Impressed Ware	5	Yes	Irregular	Yes	Post-Marked Deposit
F1858	1.4	1	0.5	7	Middle	0		22	Impressed Ware	2	Yes	Regular	No	Unmarked Deposit
F468	0.5	0.6	0.24	2	Middle	0		3	Impressed Ware	1	Yes	Regular	Yes	Post-hole
F470	0.6	0.6	0.24	3	Middle	0		1	Impressed Ware	1	Yes	Regular	Yes	Post-Marked Deposit
F749	1.2	1	0.5	5	Middle	0		3	Impressed Ware	1	Yes	Irregular	Yes	Post-hole
F994	0.3	0.3	0.15	1	Middle	0		2	Impressed Ware	1	No	Regular	Yes	Post-hole
F1898	1.15	1.15	0.2	5	Middle	0		22	Impressed Ware	2	Yes	Regular	No	Unmarked Deposit
F403	1.1	0.4	0.1	2	Earlier	0		1	Carinated Ware	1	Yes	Irregular	Yes	Post-hole
F411	1	0.5	0.1	1	Earlier	0		30	Carinated Ware	1	No	Irregular	No	Unmarked Deposit

F429	0.15	0.1	0.08	1	Earlier	0		1	Carinated Ware	1	No	Regular	Yes	Post-hole
F627	0.28	0.2	0.12	1	Earlier	0		2	Carinated Ware	1	Yes	Regular	No	Unmarked Deposit
F644	0.6	0.5	0.15	2	Earlier	0		1	Carinated Ware	1	Yes	Irregular	Yes	Post-Marked Deposit
F577	0.2	0.08	0.03	1	Earlier	0		2	Carinated Ware	1	No	Irregular	No	Unmarked Deposit
F1827	4	1.5	0.6	2	Earlier	0		35	Carinated Ware	1	Yes	Irregular	No	Unmarked Deposit
F1032	3	1.6	0.4	1	Earlier	0		6	Carinated Ware	1	Yes	Irregular	No	Unmarked Deposit
F1039	1	1	0.3	4	Earlier	0		2	Carinated Ware	1	Yes	Regular	No	Unmarked Deposit
F1130	0.4	0.4	0.2	2	Earlier	0		1	Carinated Ware	1	Yes	Regular	Yes	Post-hole
F1235	1.1	0.7	0.2	5	Earlier	1	Knife	2	Carinated Ware	1	Yes	Regular	No	Unmarked Deposit
F1004	0.4	0.4	0.05	1	Middle	0		3	Impressed Ware	1	Yes	Regular	No	Unmarked Deposit
F1020	0.2	0.2	0.15	1	Middle	0		1	Impressed Ware	1	No	Regular	Yes	Post-hole
F1034	0.9	0.8	0.3	4	Middle	0		21	Impressed Ware	1	Yes	Regular	Yes	Post-hole
F1120	1	0.8	0.6	6	Middle	0		1	Impressed Ware	1	Yes	Regular	No	Unmarked Deposit
F1203	2	1	0.2	1	Middle	1	Retouched flake	1	Impressed Ware	1	Yes	Irregular	No	Unmarked Deposit
F1275	0.8	0.75	0.4	1	Middle	0		12	Impressed Ware	1	No	Regular	No	Unmarked Deposit
F1029	0.2	0.05	0.07	1	Middle	0		1	Impressed Ware	1	No	Irregular	No	Unmarked Deposit
F1033	0.6	0.5	0.05	3	Middle	0		3	Impressed Ware	1	No	Regular	No	Unmarked Deposit

3. Database 3: Individual Sherd Data

This database holds information on every potsherd from Thirlings existing in the site archive at the time of analysis. It does not include a large number of fragments, which were too small to accurately measure and assess for abrasion. This data is used extensively throughout the data analysis in chapter five, and especially in the abrasion analysis section.

Ref	Site Name	Pot No.	Feature No.	Pottery Type	Type	Length (mm)	Width (mm)	Thickness (mm)	Weight (g)	Nature of Fabric	Level of Edge Abrasion
19	Thirlings	48	366	Carinated Ware	Body	60	40	10	26.7	Medium	2
20	Thirlings	48	366	Carinated Ware	Body	50	30	8	16.9	Fine	2
21	Thirlings	48	366	Carinated Ware	Body	40	35	11	22.2	Fine	2
22	Thirlings	48	366	Carinated Ware	Body	33	26	9	9.3	Fine	2
23	Thirlings	48	366	Carinated Ware	Body	47	32	10	22.7	Fine	3
24	Thirlings	48	366	Carinated Ware	Body	40	30	13	18	Medium	3
25	Thirlings	48	366	Carinated Ware	Body	40	23	18	10.4	Fine	2
26	Thirlings	48	366	Carinated Ware	Body	45	31	8	13.6	Fine	1
27	Thirlings	48	366	Carinated Ware	Body	31	26	11	11.6	Medium	2
28	Thirlings	48	366	Carinated Ware	Body	39	30	11	9.7	Fine	2
29	Thirlings	48	366	Carinated Ware	Body	34	22	15	10.1	Medium	1
30	Thirlings	48	366	Carinated Ware	Body	29	18	6	7.4	Medium	1
31	Thirlings	48	366	Carinated Ware	Body	32	24	9	6.4	Medium	1
32	Thirlings	48	366	Carinated Ware	Body	31	29	11	10.4	Fine	2
33	Thirlings	48	366	Carinated Ware	Body	32	29	14	22.8	Fine	2
34	Thirlings	48	366	Carinated Ware	Body	36	22	12	7.9	Fine	2
35	Thirlings	48	366	Carinated Ware	Body	26	24	19	6.7	Fine	1
36	Thirlings	48	366	Carinated Ware	Rim	26	24	12	7.9	Fine	2
37	Thirlings	48	366	Carinated Ware	Body	30	22	10	6.1	Fine	2
38	Thirlings	48	366	Carinated Ware	Body	29	24	9	7.1	Medium	1
39	Thirlings	48	366	Carinated Ware	Body	29	19	11	7.3	Fine	1
40	Thirlings	48	366	Carinated Ware	Body	28	18	8	6.6	Fine	2
41	Thirlings	48	366	Carinated Ware	Body	29	24	12	7.1	Fine	1
42	Thirlings	48	366	Carinated Ware	Body	22	14	9	4.9	Fine	2

43	Thirlings	48	366	Carinated Ware	Body	26	20	7	4	Fine	1
44	Thirlings	48	366	Carinated Ware	Body	19	17	7	3.3	Fine	3
45	Thirlings	48	366	Carinated Ware	Body	69	57	11	58.8	Fine	2
46	Thirlings	48	366	Carinated Ware	Body	49	37	11	16.9	Fine	2
47	Thirlings	48	366	Carinated Ware	Body	36	29	12	13.9	Fine	1
48	Thirlings	48	366	Carinated Ware	Body	55	46	8	26.1	Fine	2
49	Thirlings	48	366	Carinated Ware	Body	46	29	9	12.3	Fine	2
50	Thirlings	48	366	Carinated Ware	Body	40	37	9	15.1	Fine	3
51	Thirlings	48	366	Carinated Ware	Body	39	34	9	11.1	Fine	3
52	Thirlings	48	366	Carinated Ware	Body	36	24	10	9.2	Fine	2
53	Thirlings	48	366	Carinated Ware	Body	37	30	7	7.3	Fine	2
54	Thirlings	48	366	Carinated Ware	Body	36	27	7	7.6	Fine	2
55	Thirlings	48	366	Carinated Ware	Body	36	24	10	8	Fine	3
56	Thirlings	48	366	Carinated Ware	Body	32	22	4	4	Fine	3
57	Thirlings	48	366	Carinated Ware	Body	28	24	11	8.5	Fine	2
58	Thirlings	48	366	Carinated Ware	Body	31	28	7	5.4	Fine	3
59	Thirlings	48	366	Carinated Ware	Body	44	31	8	9.6	Fine	2
60	Thirlings	48	366	Carinated Ware	Body	34	31	12	9.2	Fine	1
61	Thirlings	48	366	Carinated Ware	Body	38	24	9	8.3	Fine	1
62	Thirlings	48	366	Carinated Ware	Body	32	29	9	6.8	Fine	1
63	Thirlings	48	366	Carinated Ware	Body	29	25	12	7.2	Fine	2
64	Thirlings	48	366	Carinated Ware	Body	31	25	10	7.5	Fine	2
65	Thirlings	48	366	Carinated Ware	Body	28	18	7	3.3	Fine	1
66	Thirlings	48	366	Carinated Ware	Body	29	25	6	4.6	Fine	3
67	Thirlings	48	366	Carinated Ware	Body	29	22	7	4	Fine	2
68	Thirlings	48	366	Carinated Ware	Body	45	29	9	3.8	Medium	2
69	Thirlings	48	366	Carinated Ware	Body	32	19	6	3.9	Fine	2
70	Thirlings	48	366	Carinated Ware	Body	36	22	7	6.5	Fine	2
71	Thirlings	48	366	Carinated Ware	Body	52	36	7	15	Medium	4
72	Thirlings	48	366	Carinated Ware	Body	36	21	7	5.1	Fine	2
73	Thirlings	48	366	Carinated Ware	Body	31	27	6	4.9	Fine	3
74	Thirlings	48	366	Carinated Ware	Body	29	22	8	5.9	Medium	1
75	Thirlings	48	366	Carinated Ware	Body	30	22	11	5.9	Fine	2
76	Thirlings	48	366	Carinated Ware	Body	29	19	9	6.2	Fine	2

77	Thirlings	48	366	Carinated Ware	Body	29	23	13	6.5	Fine	1
78	Thirlings	48	366	Carinated Ware	Body	26	26	3	4.6	Fine	1
79	Thirlings	48	366	Carinated Ware	Body	26	23	9	5.7	Fine	2
80	Thirlings	48	366	Carinated Ware	Body	29	25	11	6.7	Fine	3
81	Thirlings	48	366	Carinated Ware	Body	26	16	6	3.1	Fine	3
82	Thirlings	48	366	Carinated Ware	Body	29	20	8	4.3	Fine	2
83	Thirlings	48	366	Carinated Ware	Body	23	21	7	4	Fine	2
84	Thirlings	114.1	1858	Impressed Ware	Rim	75	55	8	38	Fine	2
85	Thirlings	114.1	1858	Impressed Ware	Body	45	21	7	9.1	Fine	2
86	Thirlings	114.1	1858	Impressed Ware	Body	36	22	8	7.4	Fine	2
87	Thirlings	114.1	1858	Impressed Ware	Body	44	29	9	11.6	Fine	3
88	Thirlings	114.1	1858	Impressed Ware	Body	21	18	7	3	Fine	2
89	Thirlings	114.1	1858	Impressed Ware	Body	22	12	7	1.6	Fine	1
90	Thirlings	72.2	643	Impressed Ware	Body	48	31	11	15.1	Medium	1
91	Thirlings	72.2	643	Impressed Ware	Body	36	24	13	9.3	Medium	1
92	Thirlings	72.2	643	Impressed Ware	Body	54	29	9	15.1	Medium	1
93	Thirlings	72.2	643	Impressed Ware	Body	55	48	13	28.8	Medium	3
94	Thirlings	72.2	643	Impressed Ware	Body	49	32	13	15.3	Medium	1
95	Thirlings	72.2	643	Impressed Ware	Body	35	26	12	12.8	Medium	1
96	Thirlings	72.2	643	Impressed Ware	Base	80	35	16	44.6	Medium	1
97	Thirlings	72.2	643	Impressed Ware	Body	35	29	8	9	Medium	2
98	Thirlings	72.2	643	Impressed Ware	Body	62	39	11	30.7	Medium	1
99	Thirlings	72.2	643	Impressed Ware	Body	33	32	12	8.2	Medium	1
100	Thirlings	72.2	643	Impressed Ware	Body	56	49	16	38	Medium	1
101	Thirlings	72.2	643	Impressed Ware	Rim	50	32	14	17.8	Medium	1
102	Thirlings	72.2	643	Impressed Ware	Body	39	29	12	11.7	Medium	1
103	Thirlings	72.2	643	Impressed Ware	Body	34	24	13	7.8	Medium	1
104	Thirlings	72.2	643	Impressed Ware	Body	32	16	8	9	Medium	1
105	Thirlings	72.2	643	Impressed Ware	Body	50	40	10	18.3	Medium	1
106	Thirlings	72.2	643	Impressed Ware	Body	42	38	9	9.8	Medium	1
107	Thirlings	72.2	643	Impressed Ware	Body	47	39	12	20.9	Medium	1
108	Thirlings	72.2	643	Impressed Ware	Body	41	24	12	10.7	Medium	1
109	Thirlings	72.2	643	Impressed Ware	Base	92	44	17	54.2	Medium	1
110	Thirlings	72.2	643	Impressed Ware	Body	39	34	13	14.5	Medium	1

111	Thirlings	72.2	643	Impressed Ware	Body	38	19	11	8.7	Medium	2
112	Thirlings	72.2	643	Impressed Ware	Body	33	29	9	10.8	Medium	1
113	Thirlings	72.2	643	Impressed Ware	Body	44	34	9	16.8	Medium	2
114	Thirlings	72.2	643	Impressed Ware	Body	37	26	14	12.3	Medium	2
115	Thirlings	72.2	643	Impressed Ware	Body	37	25	9	9	Medium	2
116	Thirlings	72.2	643	Impressed Ware	Body	34	22	11	6.2	Medium	1
117	Thirlings	114.2	1858	Impressed Ware	Body	65	38	10	35.2	Fine	2
118	Thirlings	114.2	1858	Impressed Ware	Body	47	22	9	13.6	Fine	2
119	Thirlings	114.2	1858	Impressed Ware	Body	48	36	8	14.2	Fine	2
120	Thirlings	114.2	1858	Impressed Ware	Body	57	26	9	14.2	Fine	2
121	Thirlings	114.2	1858	Impressed Ware	Body	30	23	16	9.5	Medium	2
122	Thirlings	114.2	1858	Impressed Ware	Body	25	19	9	4.4	Fine	3
123	Thirlings	48.1	366	Carinated Ware	Body	34	27	10	9.1	Medium	2
124	Thirlings	48.1	366	Carinated Ware	Body	55	33	7	11.2	Medium	3
125	Thirlings	48.1	366	Carinated Ware	Body	45	39	8	15.3	Medium	2
126	Thirlings	48.1	366	Carinated Ware	Body	34	33	8	10	Medium	3
127	Thirlings	48.1	366	Carinated Ware	Rim	90	50	9	41.3	Medium	3
128	Thirlings	48.1	366	Carinated Ware	Body	39	23	7	8.1	Medium	4
129	Thirlings	48.1	366	Carinated Ware	Body	43	37	8	15.7	Medium	1
130	Thirlings	48	366	Carinated Ware	Body	70	45	9	38	Fine	1
131	Thirlings	48	366	Carinated Ware	Body	49	39	7	18.7	Medium	1
132	Thirlings	48	366	Carinated Ware	Body	29	24	5	4.1	Fine	1
133	Thirlings	48	366	Carinated Ware	Body	39	31	9	7.9	Fine	2
134	Thirlings	69.1	615	Impressed Ware	Body	70	55	14	55.4	Coarse	1
135	Thirlings	69.1	615	Impressed Ware	Body	59	52	9	16.9	Medium	2
136	Thirlings	69.1	615	Impressed Ware	Body	64	45	10	35.4	Coarse	1
137	Thirlings	69	615	Impressed Ware	Body	43	34	10	17.2	Medium	1
138	Thirlings	69.1	615	Impressed Ware	Body	56	30	13	32.4	Coarse	3
139	Thirlings	69	615	Impressed Ware	Body	42	27	8	14.9	Fine	1
140	Thirlings	69	615	Impressed Ware	Body	44	28	9	13.1	Coarse	2
141	Thirlings	69	615	Impressed Ware	Body	41	31	9	14.3	Medium	1
142	Thirlings	69.2	615	Impressed Ware	Body	56	45	9	23.8	Medium	2
143	Thirlings	69	615	Impressed Ware	Body	49	37	8	24.6	Medium	2
144	Thirlings	69	615	Impressed Ware	Body	38	37	9	16.7	Medium	1

145	Thirlings	69.2	615	Impressed Ware	Body	53	36	10	22.4	Medium	1
146	Thirlings	69.1	615	Impressed Ware	Body	50	36	14	20.9	Coarse	1
147	Thirlings	69	615	Impressed Ware	Body	52	40	9	18.5	Coarse	1
148	Thirlings	69.1	615	Impressed Ware	Body	51	30	12	24	Coarse	2
149	Thirlings	69	615	Impressed Ware	Body	50	46	13	22.4	Coarse	1
150	Thirlings	69.1	615	Impressed Ware	Body	53	44	18	30.5	Coarse	1
151	Thirlings	69.1	615	Impressed Ware	Body	44	28	14	16.4	Coarse	2
152	Thirlings	69.1	615	Impressed Ware	Body	35	21	14	14.2	Coarse	2
153	Thirlings	69.1	615	Impressed Ware	Body	33	21	12	9.6	Coarse	1
154	Thirlings	69	615	Impressed Ware	Body	39	25	8	9.6	Medium	1
155	Thirlings	69	615	Impressed Ware	Body	35	26	9	8.3	Medium	3
156	Thirlings	69	615	Impressed Ware	Body	33	27	16	10	Coarse	1
157	Thirlings	69	615	Impressed Ware	Body	25	21	11	6.2	Medium	2
158	Thirlings	66.2	621	Impressed Ware	Body	46	35	10	17.5	Coarse	1
159	Thirlings	66.2	621	Impressed Ware	Body	48	38	11	21	Coarse	2
160	Thirlings	66.2	621	Impressed Ware	Rim	23	19	10	17.9	Coarse	2
161	Thirlings	57.6	466	Impressed Ware	Body	80	42	15	65.1	Medium	2
162	Thirlings	57.9	466	Impressed Ware	Rim	77	51	10	50	Medium	2
163	Thirlings	57.1	466	Impressed Ware	Body	83	81	22	121.4	Coarse	4
164	Thirlings	57.1	466	Impressed Ware	Body	50	37	12	24	Coarse	1
165	Thirlings	57.1	466	Impressed Ware	Body	45	32	12	18.6	Coarse	2
166	Thirlings	57.9	466	Impressed Ware	Body	42	28	9	13.9	Medium	2
167	Thirlings	57.9	466	Impressed Ware	Rim	62	54	15	47.9	Medium	2
168	Thirlings	57.9	466	Impressed Ware	Body	48	33	8	22.4	Medium	2
169	Thirlings	57.5	466	Impressed Ware	Rim	42	36	11	11.5	Medium	2
170	Thirlings	48.11	366	Carinated Ware	Rim	45	34	9	22.7	Fine	3
171	Thirlings	48	366	Carinated Ware	Rim	26	20	4	3.9	Fine	3
172	Thirlings	48	366	Carinated Ware	Rim	87	59	9	39.6	Fine	2
173	Thirlings	48	366	Carinated Ware	Rim	46	30	6	17.3	Fine	2
174	Thirlings	48.4	366	Carinated Ware	Body	121	110	6	116.9	Fine	2
175	Thirlings	48.2	366	Carinated Ware	Base	22	16	6	3.4	Medium	1
176	Thirlings	48.2	366	Carinated Ware	Body	36	30	6	9.3	Fine	2
177	Thirlings	48.2	366	Carinated Ware	Rim	44	36	7	25	Fine	2
178	Thirlings	48.2	366	Carinated Ware	Body	60	42	8	29.9	Fine	2

179	Thirlings	48.2	366	Carinated Ware	Rim	47	24	6	8.2	Fine	2
180	Thirlings	53	421	Impressed	Body	22	20	8	3.6	Fine	1
181	Thirlings	53	421	Impressed	Body	15	10	4	1.3	Fine	3
182	Thirlings	55	428	Carinated Ware	Body	35	27	12	9.7	Fine	3
183	Thirlings	54	422	Impressed	Base	34	22	10	12.1	Medium	3
184	Thirlings	54	422	Impressed	Body	28	25	14	9	Medium	3
185	Thirlings	95.1	1300	Impressed Ware	Body	106	65	20	160.1	Coarse	3
186	Thirlings	95.1	1300	Impressed Ware	Body	47	44	20	48.2	Coarse	2
187	Thirlings	95.1	1300	Impressed Ware	Body	31	20	15	15.9	Coarse	2
188	Thirlings	95.1	1300	Impressed Ware	Body	45	26	13	15.5	Medium	3
189	Thirlings	95.1	1300	Impressed Ware	Body	56	35	6	13.2	Medium	2
190	Thirlings	95.1	1300	Impressed Ware	Base	41	36	18	31.9	Coarse	2
191	Thirlings	95.1	1300	Impressed Ware	Body	35	24	15	10.2	Coarse	1
192	Thirlings	95.1	1300	Impressed Ware	Body	32	20	15	9.4	Coarse	3
193	Thirlings	95.1	1300	Impressed Ware	Body	28	26	7	7.1	Coarse	2
194	Thirlings	95.1	1300	Impressed Ware	Body	29	22	14	11	Coarse	3
195	Thirlings	95.1	1300	Impressed Ware	Body	30	22	5	5	Coarse	3
196	Thirlings	95.2	1300	Impressed Ware	Body	70	52	13	46.7	Coarse	2
197	Thirlings	95.2	1300	Impressed Ware	Body	35	28	20	14.2	Coarse	1
198	Thirlings	95.2	1300	Impressed Ware	Body	31	20	10	6.1	Coarse	1
199	Thirlings	48.6	366	Carinated Ware	Body	110	105	11	132.4	Medium	2
200	Thirlings	48.6	366	Carinated Ware	Body	85	55	12	60.4	Medium	2
201	Thirlings	48.6	366	Carinated Ware	Body	60	45	15	60.9	Medium	2
202	Thirlings	48.6	366	Carinated Ware	Body	70	58	10	44.5	Medium	2
203	Thirlings	48.6	366	Carinated Ware	Body	70	45	12	34.2	Medium	3
204	Thirlings	48.6	366	Carinated Ware	Body	45	40	11	22.7	Fine	3
205	Thirlings	48.6	366	Carinated Ware	Body	34	29	8	10	Fine	4
206	Thirlings	48.6	366	Carinated Ware	Body	40	25	14	12.6	Coarse	3
207	Thirlings	48.6	366	Carinated Ware	Body	30	25	11	10.5	Medium	3
208	Thirlings	80.2	628	Impressed Ware	Body	39	25	11	12	Coarse	1
209	Thirlings	80.2	628	Impressed Ware	Body	21	17	10	2.7	Coarse	4
210	Thirlings	80.1	628	Impressed Ware	Rim	52	41	13	32.3	Medium	3
211	Thirlings	80.1	628	Impressed Ware	Rim	92	50	11	50.4	Medium	3
212	Thirlings	80.1	628	Impressed Ware	Body	62	36	11	22.1	Medium	1

213	Thirlings	80.1	628	Impressed Ware	Body	34	34	12	15.5	Medium	3
214	Thirlings	52	411	Carinated Ware	Rim	65	40	11	27.3	Medium	2
215	Thirlings	52	411	Carinated Ware	Body	44	29	7	11.7	Medium	2
216	Thirlings	52	411	Carinated Ware	Body	32	26	9	10.3	Medium	2
217	Thirlings	52	411	Carinated Ware	Body	34	19	7	5.7	Medium	2
218	Thirlings	52	411	Carinated Ware	Body	29	28	7	6.2	Medium	3
219	Thirlings	52	411	Carinated Ware	Body	36	26	8	6	Medium	2
220	Thirlings	52	411	Carinated Ware	Body	36	21	8	6	Medium	3
221	Thirlings	52	411	Carinated Ware	Body	33	24	7	6.4	Medium	2
222	Thirlings	52	411	Carinated Ware	Body	30	18	10	5.6	Medium	2
223	Thirlings	52	411	Carinated Ware	Body	31	25	8	5.8	Medium	3
224	Thirlings	52	411	Carinated Ware	Rim	33	17	10	5.1	Medium	2
225	Thirlings	52	411	Carinated Ware	Body	28	22	8	5.4	Medium	2
226	Thirlings	57.1	466	Impressed Ware	Body	84	80	15	126.2	Medium	4
227	Thirlings	46.3	407	Carinated Ware	Body	85	59	12	63.2	Coarse	2
228	Thirlings	46.2	407	Carinated Ware	Body	56	49	9	21.3	Medium	3
229	Thirlings	46.3	407	Carinated Ware	Body	48	48	7	17.8	Fine	2
230	Thirlings	46.3	407	Carinated Ware	Body	34	28	9	12.3	Medium	3
231	Thirlings	46.3	407	Carinated Ware	Body	29	29	7	6.5	Fine	3
232	Thirlings	46.3	407	Carinated Ware	Body	36	21	6	4.6	Medium	2
233	Thirlings	94.1	1275	Impressed	Body	118	76	13	132.8	Coarse	3
234	Thirlings	94.1	1275	Impressed	Rim	78	51	14	82.7	Coarse	2
235	Thirlings	94.1	1275	Impressed	Body	41	25	13	13.1	Coarse	3
236	Thirlings	94.1	1275	Impressed	Body	132	120	10	174.2	Coarse	3
237	Thirlings	94.1	1275	Impressed	Body	173	116	11	396.8	Coarse	3
238	Thirlings	94.1	1275	Impressed	Body	52	41	12	27.2	Coarse	2
239	Thirlings	94.1	1275	Impressed	Body	90	67	12	99.7	Coarse	3
240	Thirlings	57.1	466	Impressed Ware	Body	60	29	16	37.7	Coarse	3
241	Thirlings	57.1	466	Impressed Ware	Body	57	31	18	34.8	Coarse	4
242	Thirlings	57.1	466	Impressed Ware	Body	55	55	12	43.8	Medium	3
243	Thirlings	57.1	466	Impressed Ware	Body	50	32	11	17.1	Coarse	2
244	Thirlings	57.1	466	Impressed Ware	Body	36	30	11	11	Medium	2
245	Thirlings	57.1	466	Impressed Ware	Body	36	26	9	7.6	Medium	1
246	Thirlings	57.6	466	Impressed Ware	Body	58	27	10	20.5	Coarse	2

247	Thirlings	57.1	466	Impressed Ware	Body	31	25	12	9.2	Coarse	3
248	Thirlings	57.6	466	Impressed Ware	Rim	84	74	15	88.1	Coarse	1
249	Thirlings	57.1	466	Impressed Ware	Body	55	38	9	19.4	Medium	3
250	Thirlings	57.7	466	Impressed Ware	Body	30	20	9	4.6	Medium	2
251	Thirlings	57.3	466	Impressed Ware	Body	36	21	14	12.2	Fine	3
252	Thirlings	57.3	466	Impressed Ware	Body	28	20	6	4.4	Medium	2
253	Thirlings	57.3	466	Impressed Ware	Body	31	20	5	3.4	Fine	2
254	Thirlings	84	1034	Impressed Ware	Body	46	39	10	20.7	Medium	3
255	Thirlings	84	1034	Impressed Ware	Body	37	32	16	16.9	Medium	3
256	Thirlings	84	1034	Impressed Ware	Body	35	30	12	11.8	Medium	3
257	Thirlings	84	1034	Impressed Ware	Body	48	38	14	26.7	Medium	3
258	Thirlings	84	1034	Impressed Ware	Body	34	25	11	7.8	Medium	3
259	Thirlings	84	1034	Impressed Ware	Body	39	25	12	10.1	Medium	3
260	Thirlings	84	1034	Impressed Ware	Body	40	21	7	6.9	Medium	3
261	Thirlings	84	1034	Impressed Ware	Body	33	22	11	5.4	Medium	2
262	Thirlings	84	1034	Impressed Ware	Body	34	22	8	6.8	Medium	3
263	Thirlings	84	1034	Impressed Ware	Body	32	22	10	7.2	Medium	3
264	Thirlings	80	1235	Carinated Ware	Rim	43	32	9	18.1	Fine	3
265	Thirlings	90	1235	Carinated Ware	Rim	54	35	8	16.8	Fine	3
266	Thirlings	89	1120	Impressed Ware	Body	60	46	12	44.8	Coarse	2
267	Thirlings	48.8	366	Carinated Ware	Rim	80	38	10	57.6	Medium	2
268	Thirlings	48.7	366	Carinated Ware	Rim	28	24	7	11.8	Fine	2
269	Thirlings	86	1044	Impressed Ware	Body	55	38	11	31.1	Coarse	3
270	Thirlings	86	1044	Impressed Ware	Body	50	44	14	34.8	Coarse	3
271	Thirlings	86	1044	Impressed Ware	Body	26	21	11	9.1	Coarse	3
272	Thirlings	86	1044	Impressed Ware	Body	27	22	16	8.3	Coarse	3
273	Thirlings	86	1044	Impressed Ware	Rim	60	41	12	40	Medium	3
274	Thirlings	31.1	369	Carinated Ware	Body	54	40	8	23	Medium	1
275	Thirlings	31.1	369	Carinated Ware	Body	42	32	4	12.2	Medium	2
276	Thirlings	31.1	369	Carinated Ware	Body	40	22	11	10.9	Medium	2
277	Thirlings	31.1	369	Carinated Ware	Body	67	47	11	52.2	Medium	1
278	Thirlings	31.1	369	Carinated Ware	Body	39	26	11	14.9	Medium	2
279	Thirlings	31.1	369	Carinated Ware	Body	36	27	10	14.3	Medium	1
280	Thirlings	31.1	369	Carinated Ware	Body	34	22	12	8.2	Medium	2

281	Thirlings	31.2	369	Carinated Ware	Body	80	42	12	70.6	Coarse	2
282	Thirlings	59	467	Impressed Ware	Rim	45	38	8	11.3	Medium	2
283	Thirlings	59	467	Impressed Ware	Rim	24	28	8	5.4	Medium	2
284	Thirlings	88	1203	Impressed Ware	Body	32	30	10	10.5	Medium	4
285	Thirlings	58	468	Impressed Ware	Body	35	25	14	17.9	Medium	4
286	Thirlings	58	468	Impressed Ware	Rim	35	25	19	12	Medium	2
287	Thirlings	58	468	Impressed Ware	Body	30	21	13	6.8	Medium	3
288	Thirlings	112	1781	Impressed	Rim	46	32	21	32.1	Medium	3
289	Thirlings	117	1898	Impressed Ware	Body	67	46	7	25.1	Medium	2
290	Thirlings	117	1898	Impressed Ware	Rim	41	28	11	12.5	Medium	3
291	Thirlings	117	1898	Impressed Ware	Body	55	29	10	18.5	Medium	2
292	Thirlings	117	1898	Impressed Ware	Body	38	31	11	10.9	Medium	2
293	Thirlings	117	1898	Impressed Ware	Body	39	34	9	14.4	Medium	2
294	Thirlings	177	1898	Impressed Ware	Body	105	82	12	107.3	Medium	3
295	Thirlings	36.2	383	Carinated Ware	Base	69	42	8	38.6	Fine	2
296	Thirlings	36.2	383	Carinated Ware	Body	69	37	9	28.5	Fine	3
297	Thirlings	36.2	383	Carinated Ware	Body	29	19	8	6	Fine	3
298	Thirlings	36.2	383	Carinated Ware	Body	34	22	5	5.3	Fine	3
299	Thirlings	78	644	Carinated Ware	Body	35	29	6	6.8	Fine	3
300	Thirlings	35	403	Carinated Ware	Body	24	20	11	8.7	Fine	2
301	Thirlings	31.3	369	Carinated Ware	Body	36	24	7	5.8	Fine	4
302	Thirlings	31.1	369	Carinated Ware	Body	59	42	12	34.4	Medium	2
303	Thirlings	31.1	369	Carinated Ware	Body	52	38	9	25.9	Medium	2
304	Thirlings	101	1037	Impressed Ware	Body	32	23	13	11.4	Coarse	3
305	Thirlings	101	1037	Impressed Ware	Body	18	15	5	2.5	Coarse	4
306	Thirlings	102	1029	Impressed Ware	Body	29	20	8	6.4	Coarse	3
307	Thirlings	111	1756	Impressed Ware	Body	47	25	16	20.8	Coarse	2
308	Thirlings	111	1756	Impressed Ware	Body	38	25	13	11.9	Coarse	3
309	Thirlings	111	1756	Impressed Ware	Body	32	26	10	9.5	Coarse	3
310	Thirlings	72.3	643	Impressed Ware	Rim	41	34	9	13	Medium	4
311	Thirlings	72.1	643	Impressed Ware	Body	42	36	10	16.9	Medium	3
312	Thirlings	69.2	615	Impressed Ware	Body	51	34	11	24.2	Medium	3
313	Thirlings	81	1021	Impressed Ware	Body	40	34	9	22.6	Coarse	4
314	Thirlings	75	749	Impressed Ware	Rim	76	32	16	35.5	Medium	4

315	Thirlings	113	1827	Carinated Ware	Body	45	26	7	10.3	Fine	3
316	Thirlings	113	1827	Carinated Ware	Body	28	20	5	4.8	Fine	2
317	Thirlings	113	1827	Carinated Ware	Body	34	31	7	6.4	Fine	4
318	Thirlings	113	1827	Carinated Ware	Rim	51	32	7	9.8	Fine	3
319	Thirlings	113	1827	Carinated Ware	Body	26	23	6	5.4	Fine	2
320	Thirlings	113	1827	Carinated Ware	Body	34	23	6	5.6	Fine	2
321	Thirlings	113	1827	Carinated Ware	Body	39	31	5	7.1	Fine	4
322	Thirlings	113	1827	Carinated Ware	Body	29	19	8	7.2	Fine	3
323	Thirlings	113	1827	Carinated Ware	Body	28	21	6	6.1	Fine	3
324	Thirlings	113	1827	Carinated Ware	Body	31	26	6	5.4	Fine	2
325	Thirlings	72.1	643	Impressed Ware	Rim	50	45	15	43.6	Coarse	1
326	Thirlings	81	1020	Impressed Ware	Body	49	28	10	17.6	Medium	2
327	Thirlings	78	644	Carinated Ware	Body	43	26	4	6.8	Fine	3
328	Thirlings	83	1032	Carinated Ware	Rim	56	29	11	28.3	Fine	4
329	Thirlings	83	1032	Carinated Ware	Body	36	30	8	8.4	Fine	4
330	Thirlings	74.2	615	Impressed Ware	Body	46	45	10	21.6	Medium	2
331	Thirlings	74.2	615	Impressed Ware	Body	36	27	8	12.1	Medium	2
332	Thirlings	74.2	615	Impressed Ware	Body	28	23	6	6.1	Fine	3
333	Thirlings	79	625	Carinated Ware	Body	93	60	9	71	Fine	4
334	Thirlings	76.2	663	Carinated Ware	Body	75	49	5	23.8	Fine	3
335	Thirlings	65	577	Carinated Ware	Rim	63	42	10	28.5	Fine	2
336	Thirlings	65	577	Carinated Ware	Rim	60	29	8	17	Fine	2
337	Thirlings	76.1	663	Carinated Ware	Body	49	32	9	19.8	Medium	2
338	Thirlings	76.1	663	Carinated Ware	Body	56	31	5	15.8	Fine	2
339	Thirlings	76.1	663	Carinated Ware	Body	37	33	9	11.7	Medium	2
340	Thirlings	76.1	663	Carinated Ware	Rim	28	19	10	5.4	Medium	1
341	Thirlings	76.1	663	Carinated Ware	Body	29	24	9	7.2	Medium	3
342	Thirlings	76.1	663	Carinated Ware	Body	34	26	6	6.6	Medium	1
343	Thirlings	77	627	Carinated Ware	Body	36	23	5	5.5	Fine	3
344	Thirlings	110	1605	Carinated Ware	Body	42	32	8	12.9	Fine	2
345	Thirlings	108	1603	Carinated Ware	Rim	27	10	10	3.7	Fine	4
346	Thirlings	109	1603	Carinated Ware	Rim	18	12	8	1.5	Medium	1
347	Thirlings	107	1603	Carinated Ware	Rim	22	24	10	5.4	Fine	2
348	Thirlings	116	1887	Impressed Ware	Body	40	27	8	12.3	Fine	3

349	Thirlings	119	1922	Impressed Ware	Body	43	27	13	16.9	Fine	2
350	Thirlings	73	587	Carinated Ware	Rim	28	17	11	16.3	Fine	2
351	Thirlings	73	587	Carinated Ware	Body	64	50	8	28.5	Fine	3
352	Thirlings	69.1	615	Impressed Ware	Body	79	66	13	83.9	Coarse	4
353	Thirlings	69.1	615	Impressed Ware	Body	56	47	11	39.1	Coarse	4
354	Thirlings	69.1	615	Impressed Ware	Body	47	47	10	32.1	Coarse	1
355	Thirlings	69.1	615	Impressed Ware	Body	33	22	12	11.4	Coarse	4
356	Thirlings	69.1	615	Impressed Ware	Body	26	19	9	3.9	Medium	1
357	Thirlings	61.2	615	Impressed Ware	Body	31	25	11	7.5	Coarse	2
358	Thirlings	69.2	615	Impressed Ware	Body	58	49	9	28.4	Medium	3
359	Thirlings	69.4	615	Impressed Ware	Rim	45	41	7	24.7	Fine	3
360	Thirlings	69.3	615	Impressed Ware	Body	47	32	8	12.2	Medium	2
361	Thirlings	69.3	615	Impressed Ware	Rim	69	18	7	10.5	Medium	1
362	Thirlings	69.3	615	Impressed Ware	Body	22	19	9	5	Medium	2
363	Thirlings	69.3	615	Impressed Ware	Body	30	22	5	4.7	Medium	1
364	Thirlings	97	1039	Carinated Ware	Body	27	21	11	7.3	Medium	4
365	Thirlings	97	1039	Carinated Ware	Body	33	16	9	6.5	Medium	4
366	Thirlings	64	994	Impressed Ware	Body	25	19	6	5	Fine	3
367	Thirlings	71.1	581	Carinated Ware	Rim	62	59	10	52.2	Fine	2
368	Thirlings	71.1	581	Carinated Ware	Body	44	32	5	9.4	Fine	1
369	Thirlings	71.1	581	Carinated Ware	Body	60	41	5	15.2	Fine	2
370	Thirlings	71.1	581	Carinated Ware	Body	26	23	4	5.4	Fine	2
371	Thirlings	71.2	581	Carinated Ware	Body	46	31	7	10	Medium	4
372	Thirlings	71.3	581	Carinated Ware	Body	106	75	13	119.9	Medium	1
373	Thirlings	71.3	581	Carinated Ware	Body	71	52	11	42.9	Medium	2
374	Thirlings	71.3	581	Carinated Ware	Body	51	36	11	24.7	Medium	2
375	Thirlings	71.3	581	Carinated Ware	Body	41	27	10	12.5	Medium	3
376	Thirlings	71.3	581	Carinated Ware	Body	40	26	8	11.2	Medium	1
377	Thirlings	71.3	581	Carinated Ware	Body	36	30	12	14.2	Medium	2
378	Thirlings	71.3	581	Carinated Ware	Body	43	31	7	12.2	Medium	1
379	Thirlings	71.3	581	Carinated Ware	Body	32	24	10	9.6	Medium	1
380	Thirlings	71.3	581	Carinated Ware	Body	34	24	7	9.5	Medium	1
381	Thirlings	71.3	581	Carinated Ware	Body	36	24	8	8.6	Medium	1
382	Thirlings	71.3	581	Carinated Ware	Body	81	58	12	72.2	Medium	2

383	Thirlings	71.3	581	Carinated Ware	Body	62	36	11	27.4	Medium	2
384	Thirlings	71.3	581	Carinated Ware	Body	55	45	11	19.9	Medium	3
385	Thirlings	71.3	581	Carinated Ware	Body	59	53	11	34.3	Medium	2
386	Thirlings	71.3	581	Carinated Ware	Body	53	28	11	19.6	Medium	1
387	Thirlings	71.3	581	Carinated Ware	Body	54	36	9	25.6	Medium	2
388	Thirlings	71.3	581	Carinated Ware	Body	54	40	10	19.1	Medium	1
389	Thirlings	71.3	581	Carinated Ware	Body	82	80	11	100.9	Medium	3
390	Thirlings	71.3	581	Carinated Ware	Body	105	70	10	92.6	Medium	2
391	Thirlings	71.3	581	Carinated Ware	Body	56	52	13	49.8	Medium	1
392	Thirlings	71.3	581	Carinated Ware	Body	68	59	9	40	Medium	1
393	Thirlings	71.3	581	Carinated Ware	Body	76	49	9	44	Medium	2
394	Thirlings	71.3	581	Carinated Ware	Body	36	25	9	10.3	Medium	2
395	Thirlings	71.3	581	Carinated Ware	Body	39	22	12	9.3	Medium	1
396	Thirlings	71.3	581	Carinated Ware	Body	31	23	8	6.7	Medium	2

4. Kolmogorov-Smirnov Tests

This section presents the workings and reference tables for the various Kolmogorov-Smirnov tests of distribution undertaken in this study.

4.1. One-Sample Test for Randomness – Average Abrasion Values at Thirlings

This test was undertaken to identify whether the statistical distribution of average abrasion values of the potsherds from Thirlings could be considered random. This was to ascertain whether sherds were selected for deposition on the basis of their abrasion, or factors that caused certain amounts of abrasion, such as weathering-time. The test statistic here is *D* – the largest difference between observed and expected (random) cumulative percentages, which must be less than the required value from the KS table (below).

Earlier Neolithic

Range	Freq	Cum. Freq	Cum. %
1.0-1.49	0	0	0
1.50-1.99	2	2	14.29
2.0-2.49	4	6	42.86
2.50-2.99	2	8	57.14
3.0-3.49	4	12	85.71
3.50-4.0	2	14	100

Expected Cum. %	Difference (*D*)
16.67	16.67
33.33	19.05
50.00	7.14
66.67	9.52
83.33	-2.38
100.00	0.00

For a random distribution D must be less than 34.9 (95% probability)

D = 19.04 – the distribution is random

Middle Neolithic

Range	Freq	Cum. Freq	Cum. %
1.0-1.49	0	0	0
1.50-1.99	2	2	11.76
2.0-2.49	6	8	47.06
2.50-2.99	3	11	64.71
3.0-3.49	4	15	88.24
3.50-4.0	2	17	100

Expected Cum. %	Difference (*D*)
16.67	16.67
33.33	21.57
50.00	2.94
66.67	1.96
83.33	-4.90
100.00	0.00

For a random distribution D must be less than 31.8 (95% probability)

D = 21.56 – the distribution is random

4.2. Two-Sample Test for Association – Average Abrasion Values at Thirlings

This test was undertaken to establish whether the distributions of average abrasion values, tested above, could be considered to belong to the same population. Here the result of the test must exceed the value given in the KS two sample table (below).

Range	Earlier Cum. %	Middle Cum. %	Difference
1.0-1.49	0.00	0.00	0.00
1.50-1.99	14.29	11.76	-2.52
2.0-2.49	42.86	47.06	4.20
2.50-2.99	57.14	64.71	7.56
3.0-3.49	85.71	88.24	2.52
3.50-4.0	100.00	100.00	0.00

For the two populations to be different, the result must exceed 111

n.A x n.B x D/100

n.A and B refer to the size of the Earlier and Middle samples (14 & 17)

D = the maximum difference in their cumulative percentage (7.56)

14 x 17 x 7.56/100 = 18 – they are from the same population (95% probability)

4.3. Two-Sample Test for Association – Carinated Ware Sherd Sizes at Thirlings and Yeavering

This test was undertaken to establish whether the sizes of the Carinated Ware sherds from Yeavering and Thirlings (recovered from unmarked pits only) indicated they were fragmented in a similar manner. Here the result of the test must exceed the value provided by the formula given below.

Size	Yeav. Cum %	Thirl. Cum. %	Difference
1-5mm	0.00	0	0.00
6-10mm	0.00	0	0.00
11-15mm	1.82	0	-1.82
16-20mm	7.27	0.775193798	-6.50
21-25mm	34.55	3.100775194	-31.44
26-30mm	60.00	30.23255814	-29.77
31-35mm	81.82	50.3875969	-31.43
36-40mm	87.27	68.99224806	-18.28
41-45mm	89.09	77.51937984	-11.57
46-50mm	94.55	82.94573643	-11.60
51-55mm	96.36	86.82170543	-9.54
56-60mm	96.36	90.69767442	-5.67
61-65mm	96.36	92.24806202	-4.12
66-70mm	98.18	95.34883721	-2.83
71-75mm	98.18	95.34883721	-2.83
76-80mm	98.18	96.12403101	-2.06
81-85mm	98.18	96.89922481	-1.28
86-90mm	98.18	98.4496124	0.27
91-95mm	98.18	98.4496124	0.27
96-100mm	100.00	98.4496124	-1.55
100+mm	100.00	100	0.00

For the two populations to be different, the result must exceed 1551.62. This is not given in the table as the sample sizes are too large. It is calculated in the following manner:

$1.358\sqrt{n.A \times n.B \times (n.A+n.B)}$

n.A and B refer to the size of the Yeavering and Earlier samples (55 & 129)

$1.358\sqrt{55 \times 129 \times (55+129)} = 1551.62$

so, the test then proceeds in the given manner:

n.A x n.B x D/100

D = the maximum difference in their cumulative percentage (31.44)

55 x 129 x 31.44/100 = 2230.67 – they are from different populations (95% probability)

4.4. Two-Sample Test for Association – Carinated Ware Sherd Sizes at Yeavering and Broomridge

This test was undertaken to establish whether the sizes of the Carinated Ware sherds from Yeavering and Broomridge indicated they were fragmented in a similar manner. Here the result of the test must exceed the value provided by the formula given below.

Size	Broom. Cum %	Yeav. Cum. %	Difference
1-5mm	0.00	0.00	0.00
6-10mm	0.00	0.00	0.00
11-15mm	0.00	1.82	1.82
16-20mm	0.00	7.27	7.27
21-25mm	10.67	34.55	23.88
26-30mm	27.33	60.00	32.67
31-35mm	44.00	81.82	37.82
36-40mm	67.33	87.27	19.94
41-45mm	78.00	89.09	11.09
46-50mm	85.33	94.55	9.21
51-55mm	92.67	96.36	3.70
56-60mm	97.33	96.36	-0.97
61-65mm	99.33	96.36	-2.97
66-70mm	100.00	98.18	-1.82
71-75mm	100.00	98.18	-1.82
76-80mm	100.00	98.18	-1.82
81-85mm	100.00	98.18	-1.82
86-90mm	100.00	98.18	-1.82
91-95mm	100.00	98.18	-1.82
96-100mm	100.00	100.00	0.00
100+mm	100.00	100.00	0.00

For the two populations to be different, the result must exceed 1766.05. This is not given in the table as the sample sizes are too large. It is calculated in the following manner:

$1.358\sqrt{n.A \times n.B \times (n.A+n.B)}$

n.A and B refer to the size of the Yeavering and Broomridge samples (55 & 150)

$1.358\sqrt{55 \times 150 \times (55+150)} = 1766.05$

so, the test then proceeds in the given manner:

n.A x n.B x D/100

D = the maximum difference in their cumulative percentage (37.82)

55 x 150 x 37.82/100 = 3120.15 – they are from different populations (95% probability)

4.5. Two-Sample Test for Association – Carinated Ware Sherd Sizes at Thirlings and Broomridge

This test was undertaken to establish whether the sizes of the Carinated Ware sherds from Thirlings and Broomridge indicated they were fragmented in a similar manner. Here the result of the test must exceed the value provided by the formula given below.

Size	Broom. Cum %	Thirl. Cum. %	Difference
1-5mm	0.00	0	0.00
6-10mm	0.00	0	0.00
11-15mm	0.00	0	0.00
16-20mm	0.00	1.02	1.02
21-25mm	10.67	3.55	-7.11
26-30mm	27.33	24.87	-2.46
31-35mm	44.00	42.13	-1.87
36-40mm	67.33	59.90	-7.43
41-45mm	78.00	68.53	-9.47
46-50mm	85.33	73.60	-11.73
51-55mm	92.67	79.70	-12.97
56-60mm	97.33	85.28	-12.05
61-65mm	99.33	87.82	-11.52
66-70mm	100.00	91.88	-8.12
71-75mm	100.00	92.89	-7.11
76-80mm	100.00	94.42	-5.58
81-85mm	100.00	96.45	-3.55
86-90mm	100.00	97.46	-2.54
91-95mm	100.00	97.97	-2.03
96-100mm	100.00	97.97	-2.03
100+mm	100.00	100	0.00

For the two populations to be different, the result must exceed 4348.54. This is not given in the table as the sample sizes are too large. It is calculated in the following manner:

1.358√n.A x n.B x (n.A+n.B)

n.A and B refer to the size of the Thirlings and Broomridge samples (197 & 150)

1.358√197 x 150 x (197+150) = 4348.54

so, the test then proceeds in the given manner:

n.A x n.B x D/100

D = the maximum difference in their cumulative percentage (12.97)

197 x 150 x 12.97/100 = 3832.64 – they are from the same population (95% probability)

4.6. Kolmogorov-Smirnov One-Sample Table for Uniformity (Randomness)

n	10%	5%	1%
1	95.0	97.5	99.5
2	77.6	84.2	92.9
3	63.6	70.8	82.9
4	56.5	32.4	73.4
5	50.9	56.3	66.9
6	46.8	51.9	61.7
7	43.6	48.3	57.6
8	41.0	45.4	54.2
9	38.8	43.0	51.3
10	36.9	40.9	48.9
11	35.2	39.1	46.8
12	33.8	37.5	44.9
13	32.6	36.1	43.3
14	31.4	34.9	41.8
15	30.4	33.8	40.4
16	29.5	32.7	39.2
17	28.6	31.8	38.1
18	27.9	30.9	37.1
19	27.1	30.1	36.1
20	26.5	29.4	35.2
21	25.9	28.7	34.4
22	25.3	28.1	33.7
23	24.8	24.5	33.0
24	24.2	26.9	32.3
25	23.8	26.4	31.7
26	23.3	25.9	31.1
27	22.9	25.4	30.5
28	22.5	25.0	30.0
29	22.1	24.6	29.5
30	21.8	24.2	29.0
31	21.4	23.8	28.5
32	21.1	23.4	28.1
33	20.8	23.1	27.7
34	20.5	22.7	27.3
35	20.2	22.4	26.9
36	19.9	22.1	26.5
37	19.7	21.8	26.2
38	19.4	21.5	25.8
39	19.2	21.3	25.5
40	18.9	21.0	25.2
41	18.7	20.8	24.9
42	18.5	20.5	24.6
43	18.3	20.3	24.3
44	18.1	20.1	24.1
45	17.9	19.8	23.8
46	17.7	19.6	23.5
47	17.5	19.4	23.3
48	17.3	19.2	23.1
49	17.2	19.0	22.8
50	17.0	18.8	22.6
55	16.2	18.0	21.6
60	15.5	17.2	20.7
65	14.9	16.6	19.9
70	14.4	16.0	19.2
75	13.9	15.4	18.5
80	13.5	15.0	18.0
85	13.1	14.5	17.4
90	12.7	14.1	16.9
95	12.4	13.8	16.5
100	12.1	13.4	16.1

(Fletcher and Lock 1991, 182)

4.7. Kolmogorov-Smirnov Two-Sample Test Table

n_A	n_B	5%	1%
5	5	25	25
5	6	24	30
5	7	28	35
5	8	30	35
5	9	35	40
5	10	40	45
5	11	39	45
5	12	43	50
5	13	45	52
5	14	46	56
5	15	55	60
5	16	54	64
5	17	55	68
5	18	60	70
5	19	61	71
5	20	65	80
5	21	69	80
5	22	70	83
5	23	72	87
5	24	76	90
5	25	80	95
6	6	30	36
6	7	30	36
6	8	34	40
6	9	39	45
6	10	40	48
6	11	43	54
6	12	48	60
6	13	52	60
6	14	54	64
6	15	57	69
6	16	60	72
6	17	62	73
6	18	72	84
6	19	70	83
6	20	72	88
6	21	75	90
6	22	78	92
6	23	80	97
6	24	90	102
6	25	88	107
7	7	42	42
7	8	40	48
7	9	42	49
7	10	46	53
7	11	48	59
7	12	53	60
7	13	56	65
7	14	63	77
7	15	62	75
7	16	64	77
7	17	68	84
7	18	72	87
7	19	76	91
7	20	79	93
7	21	91	105
7	22	84	103
7	23	89	108
7	24	92	112
7	25	97	115
8	8	48	56
8	9	46	55
8	10	48	60
8	11	53	64
8	12	60	68
8	13	62	72
8	14	64	76
8	15	67	81
8	16	80	88
8	17	77	88
8	18	80	94
8	19	82	98
8	20	88	104
8	21	89	107
8	22	94	112
8	23	98	115
8	24	104	128
8	25	104	125
9	9	54	63
9	10	53	63
9	11	59	70
9	12	63	75
9	13	65	78
9	14	70	84
9	15	75	90
9	16	78	94
9	17	82	99
9	18	90	108
9	19	89	107
9	20	93	111
9	21	99	117
9	22	101	122
9	23	106	126
9	24	111	132
9	25	114	135
10	10	70	80
10	11	60	77
10	12	66	80
10	13	70	84
10	14	74	90
10	15	80	100
10	16	84	100
10	17	89	106
10	18	92	108
10	19	94	113
10	20	110	130
10	21	105	126
10	22	108	130
10	23	114	137
10	24	118	140
10	25	125	150
11	11	77	88
11	12	72	86
11	13	75	91
11	14	82	96
11	15	84	102
11	16	89	106
11	17	93	110
11	18	97	118
11	19	102	122
11	20	107	127
11	21	112	134
11	22	121	143
11	23	119	142
11	24	124	150
11	25	129	154
12	12	84	96
12	13	81	95
12	14	86	104
12	15	93	108
12	16	96	116
12	17	100	119
12	18	108	126
12	19	108	130
12	20	116	140
12	21	120	141
12	22	124	148
12	23	125	149
12	24	144	168
12	25	138	165
13	13	91	117
13	14	89	104
13	15	96	115
13	16	101	121
13	17	105	127
13	18	110	131
13	19	114	138
13	20	120	143
13	21	126	150
13	22	130	156
13	24	140	166
13	25	145	172
14	14	112	126
14	15	98	123
14	16	106	126
14	17	111	134
14	18	116	140
14	19	121	148
14	20	126	152
14	21	140	161
14	22	138	164
14	23	142	170
14	24	146	176
14	25	150	182
15	15	120	135
15	16	114	133
15	17	116	142
15	18	127	152
15	19	127	152
15	20	135	160
15	21	138	168
15	22	144	173
15	23	149	179
15	24	156	186
15	25	160	195
16	16	128	160
16	17	124	143
16	18	128	154
16	19	133	160
16	20	140	168
16	21	145	173
16	22	150	180
16	23	157	187
16	24	168	200
16	25	167	199
17	17	136	170
17	18	133	164
17	19	141	166
17	20	146	175
17	21	151	180
17	22	157	187
17	23	163	196
17	24	168	203
17	25	173	207
18	18	162	180
18	19	145	176
18	20	152	182
18	21	159	189
18	22	164	196
18	23	170	204
18	27	180	216
18	25	180	216
19	19	171	190
19	20	160	187
19	21	163	199
19	22	169	204
19	23	177	209
19	24	183	218
19	25	187	224
20	20	180	220
20	21	173	199
20	22	176	212
20	23	184	219
20	24	192	228
20	25	200	235
21	21	189	231
21	22	183	223
21	23	189	227
21	24	198	237
21	25	202	244
22	22	198	242
22	23	194	237
22	24	204	242
22	25	209	250
23	23	230	253
23	24	205	249
23	25	216	262
24	24	240	288
24	25	225	262
25	25	250	300
26	26	260	313
27	27	270	324
28	28	308	364
29	29	319	377
30	30	330	390
31	31	341	403
32	32	352	416
33	33	396	462
34	34	408	476
35	35	420	490
36	36	432	504
37	37	444	518
38	38	456	570
39	39	468	585
40	40	520	600
41	41	533	615
42	42	546	630
43	43	559	688
44	44	572	704
45	45	585	720
46	46	644	736
47	47	658	752
48	48	672	768
49	49	686	833
50	50	700	850

For large values of n_A and n_B use:

5%	1%
$1.358\sqrt{n_A n_B (n_A + n_B)}$	$1.628\sqrt{n_A n_B (n_A + n_B)}$

(Fletcher and Lock 1991, 183)

5. Kendall's Tau Tests

This section presents the workings for the Kendall's Tau tests undertaken to quantify the relationship between edge abrasion and sherd size.

5.1. Abrasion and Sherd Size at Thirlings

A result near 0 indicates no association between variables, near -1 or 1, association

$$\tau = \frac{2k(P-Q)}{n^2(k-1)}$$

n = total frequencies (198 & 180 respectively)

k = number of rows or columns, whichever is smaller

P = sum of every cell multiplied by the frequencies in every cell below and to the right

Q = sum of every cell multiplied by the frequencies in every cell below and to the left

Earlier Neolithic

	Sherd Length						
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+	**Total**
1	1	26	9	3	1	0	**40**
2	0	54	25	11	6	1	**97**
3	1	29	12	4	2	0	**48**
4	0	9	3	0	1	0	**13**
Total	**2**	**118**	**49**	**18**	**10**	**1**	**198**

n = 198

k = 4

Table for the Calculation of p

	Sherd Length					
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+
1	157	1690	225	30	1	0
2	0	1188	175	33	0	0
3	13	116	12	4	0	0
4	0	0	0	0	0	0

p = 3644

Table for the Calculation of q

	Sherd Length					
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+
1	0	26	837	399	148	0
2	0	54	975	594	348	61
3	0	0	108	48	24	0
4	0	0	0	0	0	0

q = 3622

so $\tau = \frac{2*4(3644-3622)}{198^2(4-1)}$

$\tau = 0.001$ – **no association**

Middle Neolithic

	Sherd Length						
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+	**Total**
1	0	22	21	6	2	0	**51**
2	0	24	29	8	0	0	**61**
3	1	27	20	0	5	2	**55**
4	1	5	3	2	2	0	**13**
Total	**2**	**78**	**73**	**16**	**9**	**2**	**180**

n = 180

k = 4

Table for the Calculation of p

	Sherd Length					
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+
1	0	1562	399	54	4	0
2	0	816	319	72	0	0
3	12	189	80	0	0	0
4	0	0	0	0	0	0

p = 3507

Table for the Calculation of q

	Sherd Length					
Abrasion Level	1-20mm	21-40mm	41-60mm	61-80mm	81-120mm	120mm+
1	0	44	1218	660	240	0
2	0	48	986	456	0	0
3	0	27	120	0	55	26
4	0	0	0	0	0	0

q = 3880

so $\tau = \frac{2*4(3507-3880)}{180^2(4-1)}$

$\tau = -0.031$ – **no association**

5.2. Abrasion and Sherd Size at Yeavering

A result near 0 indicates no association between variables, near -1 or 1, association

$$\tau = \frac{2k(P-Q)}{n^2(k-1)}$$

n = total frequency (55)

k = number of rows or columns, whichever is smaller

P = sum of every cell multiplied by the frequencies in every cell below and to the right

Q = sum of every cell multiplied by the frequencies in every cell below and to the left

	Sherd Length							
Abrasion Level	11-15mm	16-20mm	21-25mm	26-30mm	31-35mm	36-40mm	41-100mm	**Total**
1	0	0	1	3	2	0	1	**7**
2	0	1	7	6	3	3	6	**26**
3	1	2	6	4	6	0	0	**19**
4	0	0	1	1	1	0	0	**3**
Total	**1**	**3**	**15**	**14**	**12**	**3**	**7**	**55**

n = 55

k = 4

Table for calculation of p

	Sherd Length						
Abrasion Level	11-15mm	16-20mm	21-25mm	26-30mm	31-35mm	36-40mm	41-100mm
1	0	0	30	57	18	0	0
2	0	19	84	42	0	0	0
3	3	6	12	4	0	0	0
4	0	0	0	0	0	0	0

p = 275

Table for calculation of q

	Sherd Length						
Abrasion Level	11-15mm	16-20mm	21-25mm	26-30mm	31-35mm	36-40mm	41-100mm
1	0	0	4	54	58	0	42
2	0	1	21	60	45	66	132
3	0	0	0	4	12	0	0
4	0	0	0	0	0	0	0

q = 499

so $$\tau = \frac{2*4(275-499)}{55^2(4-1)}$$

τ = -0.02 – **no association**

5.3. Abrasion and Sherd Size at Broomridge

A result near 0 indicates no association between variables, near -1 or 1, association

$$\tau = \frac{2k(P-Q)}{n^2(k-1)}$$

n = total frequency (150)

k = number of rows or columns, whichever is smaller

P = sum of every cell multiplied by the frequencies in every cell below and to the right

Q = sum of every cell multiplied by the frequencies in every cell below and to the left

	Sherd Length									
Abrasion Level	21-25mm	26-30mm	31-35mm	36-40mm	41-45mm	46-50mm	51-55mm	56-60mm	61-65mm	66-100mm
1	5	10	6	8	2	3	1	3	0	0
2	1	8	10	14	8	5	7	2	2	1
3	4	6	6	8	5	3	3	1	1	0
4	6	1	3	5	1	0	0	1	0	0
Total	**16**	**25**	**25**	**35**	**16**	**11**	**11**	**7**	**3**	**1**

n = 150

k = 4

Table for calculation of p

	Sherd Length									
Abrasion Level	21-25mm	26-30mm	31-35mm	36-40mm	41-45mm	46-50mm	51-55mm	56-60mm	61-65mm	66-100mm
1	505	860	402	320	52	54	8	12	0	0
2	44	296	280	210	72	30	21	2	0	0
3	44	60	42	16	5	3	3	0	0	0
4	0	0	0	0	0	0	0	0	0	0

p = 3341

Table for calculation of q

	Sherd Length									
Abrasion Level	21-25mm	26-30mm	31-35mm	36-40mm	41-45mm	46-50mm	51-55mm	56-60mm	61-65mm	66-100mm
1	0	110	156	360	144	258	94	312	0	0
2	0	80	170	364	312	225	336	102	106	54
3	0	36	42	80	75	48	48	16	17	0
4	0	0	0	0	0	0	0	0	0	0

q = 3545

so $$\tau = \frac{2*4(3341-3545)}{150^2(4-1)}$$

τ = -0.02 – **no association**

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