Yorkshire Archaeological Research Framework: resource assessment

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ABSTRACT

This report represents the outcome of research undertaken into the archaeological resources of Yorkshire, using data gathered by SMRs, museums and commercial contractors. It describes the background to the project and its objectives, and the methods used to draw evidence from these diverse sources into a single database. It then proceeds to describe patterning in the data thus collected and collated, first at a general level across the region, then on a chronological basis from the Palaeolithic to Early Modern periods. In each period, the implications of this patterning for archaeological understanding of Yorkshire are drawn out.

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CHAPTER 1: PROJECT BACKGROUND

This opening chapter presents the background to our project, dedicated to generating a Yorkshire Archaeological Research Framework (henceforth YARF). The opening section outlines the context within which regional research agendas have been generated (1.1). We then consider the definition of the study area for our project (1.2) and describe in brief the topography and geology of our region (1.3). The final section presents a short historical overview of the development of archaeological research within Yorkshire (1.4).

1.1 Regional Research Agendas

The last decade has seen significant changes in the archaeological profession. A series of dichotomies have become evident, some entirely new to the discipline, others embedded in its operation in earlier years but now more visible. Thus, in the first category, we have seen the divorce of curatorial and fieldwork practice since the issuing of PPG16 in 1992. In the interstices thus created, archaeological consultants have taken on the role of advising commercial clients. In addition, the development of competitive tendering for commercial work has set organisation against organisation in the rush to obtain contracts with developers. Equally the archaeological discipline has suffered from the increasing divorce of rescue and research – the gathering of data set apart from its analysis and interpretation. This distancing, although in existence since the creation of the fieldwork profession in the 1970s, has become a gulf of late.

Beneath these changes there has been a change of principle: the prioritisation of site protection over investigation. Under the influence of European legislation and its 'polluter pays' principle, material remains are now portrayed as a problem for which commercial development must find a solution. Hence the archaeological heritage has become something to define and quantify in order that modern impacts can be avoided, or at least minimised by means of mitigation strategies. As a result, the next generation of archaeologists – mostly individuals who entered universities keen to uncover the secrets of the past – now graduate into a professional world in which any encounter with those material remains is to be avoided at all costs (literally, in the case of commercial contracts).

And yet there remains a contradiction at the heart of the present operation of our discipline. The impulse to cater for archaeology in the development process is based on common agreement as to its social value. Guidance such as PPG16 was issued due to a widely-held belief that material remains are significant simply because they elucidate past societies, and so deserve to be taken into account when modern changes are planned. Of course, the nature of that *significance* varies between people: the value of the past which we study does not inhere, timelessly, in the remains themselves, but is defined in relation to the goals and interests of various groups. Yet the past as a whole remains important to present-day society, and the populace supports archaeology on that basis.

How are the values placed on that past to be defined? Most recent discussions of this issue still follow, fundamentally, the lead of Lipe (1984) who distinguished between the symbolic, aesthetic, economic and information values of archaeology. However, what is not sufficiently acknowledged is the way in which the last category underpins the other ones. Thus monuments which are seen as *symbolising* a common culture do so because a group believes that they have a provable link to 'their' past; the *aesthetic* value of an object derives from the fact that it is really ancient – a fake would not have the same value; the *economic* power of an ancient building to attract visitors is based on the belief that it actually represents an aspect of the past, not a reconstruction or pastiche. In essence, then, information value is the source of all other values. Hence we can only establish the archaeological significance of any site, monument or find if we can explain its academic potential – and this is just as true of curatorial practice as it is of any dedicated research project. It is also true independent of the argument over whether this potential is something to be exploited immediately, or protected for future investigation.

Two elements are needed to ascertain such information value. First, we have to have some knowledge of the archaeological resource with which we are dealing. This involves the definition, gathering and processing of the data presently available to the archaeological community (see below, Chapter 3.2-3.4) and considering the factors which affect its patterning across the region (Chapter 4). Secondly, this database must be assessed in relation to current research (Chapters 5-7). Carrying out the quantification involved in the first sphere, and the qualitative work involved in the second, has been pivotal to our project. Before each can be discussed, however, issues concerning the spatial resolution and chronological focus of the project must be addressed. Date parameters are discussed in the next chapter (see 2.2 below), but the former needs more immediate justification.

In theory, one could carry out an archaeological resource assessment at any geographical level, from the very local (in effect, a site assessment, of the sort undertaken daily in advance of a specific commercial development under PPG-16) to the European-wide, or even world-wide (or beyond, if one takes account of the material culture floating around the earth and that embedded in a few other planets beyond!). However, from its inception, this project was conceived as a *regional* assessment (see Project Design: Appendix 1). This was for three reasons, encompassing both practical and intellectual dimensions.

Firstly, regional government has played an increasingly important role generally within the UK, and this trend is to be continued as a matter of policy (hence, for example, the devolution of certain functions within English Heritage to regional offices, including that now at York). Secondly, the changes in the structure and operation of archaeological fieldwork noted above mean that curatorial responsibilities and advice need to be made consistent across wider areas, especially as they are applied to commercial contracting units are no longer limited to county, let alone city, boundaries. Finally, academic arguments suggesting that archaeological evidence is best understood at a regional level are now commonplace. Taken together, these factors have ensured that the definition of research priorities within a regional framework has become a crucial task (and not just within the UK – Marquardt 1977 shows that regionality has been on the agenda in US for some time, albeit at a different scale from here).

Frameworks for Our Past (Olivier 1996) signalled this need within England and set out a structure for their development across the country.

Yorkshire was clearly one region which had to be considered in this process. Important archaeological research into all periods has been undertaken here for some time (see 1.4 for details), whilst groups such as the Yorkshire Archaeological Society have provided a structure for those endeavours. Further, archaeological curators here have played a significant role in developing Sites and Monuments Records (henceforth SMRs) and in urban deposit modelling, influencing national, as well as regional, policy making. Indeed, it was this curatorial group, in particular Neil Campling in North Yorkshire, which provided the impetus to found the Yorkshire Archaeological Research Frameworks Forum (YARFF) in 1996. This linked local government and museum curators, commercial fieldwork units, consultants, universities and a variety of voluntary groups. It was the group's conference on *The Archaeology of Yorkshire* (Manby *et al.* 2003a) that led to the current project. Finally, the three Ridings have a clear, existing sense of their own identity (at least topographically and geologically: see 1.3, below. In this they differ from some other candidates chosen for regional assessment: see 2.1 below).

Thus it was essential that a regional assessment be undertaken in Yorkshire, and a project design (Appendix 1) was formulated and put forward to English Heritage for partial funding. Their agreement to support the work has resulted in the current report. The exact geographical definition of Yorkshire used in our work is considered next (1.2), followed by an outline of the region's topography and geology (1.3), then a historical overview of archaeological research here (1.4), before considering the approaches undertaken by regional studies outside Yorkshire (1.5)

1.2 Definition of Study Area

Any detailed geographical definition of what constitutes 'Yorkshire', undertaken for the purpose of defining that region's archaeological resources, is likely to be contentious, as testified by continuing objections to the re-definition of the county's boundaries implemented by the Local Government Act of 1974. Indeed, the history and development of a specific 'Yorkshire' identity would be an interesting study in its own right. Thus the adoption of any specific county boundaries risks upsetting some amongst the audience for a survey of this type. Set against that, it can fairly be argued that the county as a geographically-bounded entity has existed for no more than *c.*1,000 years – perhaps a tenth of the time period covered by this survey – and that meaningful 'allegiance' to that county is evident for considerably less than that.

Furthermore, *all* of the regions defined within the programme of Regional Research Assessments represent compromises between geographical entities considered to have some degree of unity and 'meaning' in terms of their archaeological study, and the divisions of modern local government. The latter are organised in accordance with demographic criteria which usually bear little relationship to the situation even 200 years ago (hence the often-maligned changes introduced in 1974), let alone earlier, and the organisation and collation of archaeological information is integrated within the structures of local government (as county SMRs) with reference to the *modern* geographical boundaries.

Yorkshire is no exception to these generalisations. It will be argued, below, that the territory encompassed by the modern counties of North, West, South and the East Riding of Yorkshire represents a more topographically, and by extension archaeologically, coherent unit than many of the other regions defined for archaeological resource assessment. But *topographical* coherence is, in any case, only one way of defining a region for archaeological purposes, and by no means necessarily the most useful one (see further below). As outlined in the preceding section, most archaeologists are aware that investigation and interpretation is best undertaken with reference to a spatial 'field' which extends beyond a given site or restricted locality, but is more constrained than the entire country – hence the need to define an intermediate spatial unit – the 'region'. Yet *any* such definition will have shortcomings, and adjustments made to accommodate arguments relevant to one period may be irrelevant, or counter-productive, with reference to another.

The organisation of archaeological data within local government structures has taken precedence in defining the 'Yorkshire' of this Research Framework, and comprises the post-1974 counties of North Yorkshire, West Yorkshire, South Yorkshire and the East Riding of Yorkshire. Omitted from these modern counties is the subdivision of South Humberside which once, together with what is now the East Riding of Yorkshire, formed Humberside, one of the four modern Yorkshire counties. Hence, although the Humberside SMR utilised by this project included entries for South Humberside, the latter is so evidently a component of the Trent Basin, in terms of its topography and geographical limits, that it was regarded as belonging to the East Midlands region (even though, in fact, excluded from the latter's survey: http://www.le.ac.uk/ar/east_midlands_research_framework.htm). This decision on the definition of Yorkshire is also in accordance with the scope of the volume *The Archaeology of Yorkshire* (Manby *et al* 2003a) generated by the *Forum* responsible for setting up the project.

Finally it is worth returning, briefly, to the point raised above regarding the usefulness of topographical definitions of regions for archaeological research. The notion of topographic units being coincident with discrete, bounded communities and societies is, at the very least, naïve and simplistic, and is belied by artefact distributions of many periods. How, for example, does the definition of 'Yorkshire' as a region for study in its own right accommodate the localised variants of Beaker pottery, a distinctive artefact type whose distribution extends across much of continental Europe? How does such a landscape block fit into characterisations of the Roman province of *Britannia*? What significance did this geographically-defined region have to Mesolithic hunter-gatherers whose over-wintering sites now lie beneath the North Sea (under International, as well as British Coastal, Waters!)? There are clear limits to the utility of topographically-defined units in the understanding of ancient societies. Regions are largely constructs of the organisation of modern society, within which framework archaeological fieldwork is enacted and information held, and that framework for Yorkshire was therefore taken as the basis for defining it as a region.

1.3 Topography and Geology of Yorkshire

A detailed discussion of the topography and geology of Yorkshire is provided by the chapter by Gaunt and Buckland (2003) in *The Archaeology of Yorkshire* volume, and it would serve little purpose to cover the same ground here. It is, however, worth commenting on the coherence of Yorkshire as a topographic region, and adding some observations to those made by Gaunt and Buckland regarding the effects of topography and geology on archaeology and our knowledge of it.

The eastern and south-eastern limits of our Yorkshire region are clearly defined, by the North Sea coastline and the north shore of the River Humber respectively. To the north, the middle reach of the River Tees forms the boundary, with Cleveland and Teesside having been interpolated across the old county boundary further downstream. The western boundary traces an irregular course north-south along the Pennine uplands, descending to the lower Trent valley and heading north-eastwards to the confluence of the Trent with the River Ouse. The topographic logic of these boundaries is less immediately obvious on a map, but is nevertheless compelling and will be returned to.

Within these limits the region can be divided into eight more-or-less distinct zones. The 'central lowlands' of the Vales of York and Mowbray (1) are bounded to the west by lower-lying, 'piedmont' zone of the eastern Pennines (2), rising to the true uplands of the Yorkshire Dales and the northern Peak District (3). To the east of the central lowlands lie the uplands of the North York Moors (4), with their associated 'piedmont' of the Tabular Hills (5). To the south of these uplands, the Vale of Pickering (6) separates them from the ridge of the Howardian Hills and Yorkshire Wolds (7), the eastern dip slope of the Wolds gradually descending towards the coast into the lowlands of the Hull valley and Holderness (8).

The essential unity to these distinct landscape blocks is provided by three river systems, all of which drain into the River Humber from the north – those of the River Hull, the River Derwent and, most significantly, the River Ouse, the Hull - the Derwent drains the eastern uplands and the rivers of the Ouse system drain the central Pennines. It is here that the topographic logic of the seemingly arbitrary western and south-western boundaries of the region can be appreciated – they encompass the headwaters of *all* of the rivers of the Ouse catchment with the sole exception of its most southerly tributary, the River Dove. Yorkshire as a topographic region can thus be seen as three discrete upland blocks integrated by the convergent river systems which drain them. As such it might be expected to exhibit some sort of unity.

Gaunt and Buckland (2003) suggest that these topographic characteristics, and the geological formations which underlie them, will have had a marked effect on the resources and environmental conditions encountered by earlier inhabitants of the region, and this is undoubtedly true. This notion can, however, be taken further, to encompass an even more significant issue: the degree to which different geological zones, and the patterns of land-use and management which they have favoured in the recent past, have determined and biased the *visibility* of archaeology, and therefore our awareness and understanding of it. Thus the chalk and limestone bedrocks of the Wolds and Pennine foothills, and the extensive arable agriculture practised on them over the past two centuries, have led to the recognition of archaeological sites both on the ground and from the air. By the same token, ancient landscapes in the high gritstone

and limestone uplands, away from intensive modern cultivation, survive as upstanding earthworks to a degree which is becoming increasingly apparent through both aerial reconnaissance and terrestrial survey. In contrast, large areas of drift geology in the lowlands, and swathes of 'piedmont' gritstone landscapes, used primarily for pasture and often subject to extensive re-organisation in the 18th and 19th centuries, are far less well researched and understood archaeologically.

These characteristics have, in turn, been influential in the establishment of research traditions in some parts of the region, and their absence elsewhere. Such combined effects are clearly seen in any detailed overview of our knowledge of Yorkshire, most obviously that undertaken at the close of the 20th century (Manby *et. al.* 2003a). Given the significance, argued above, of the Ouse river system in defining the region, the continuing intractability and slow progress in our understanding of many aspects of the archaeology of the 'central lowlands' is understandable, though none the less regrettable for that.

1.4 Historical Overview of Archaeological Research in Yorkshire

Addyman's recent (2003) outline of the development of archaeological research in Yorkshire describes the origins of archaeological study of the region with antiquarians of the 16th, 17th and 18th centuries; the growth of learned societies in the 19th century, culminating in the creation of the Yorkshire Archaeological Society; and the exponential increase in research in the second half of the 20th century in terms of personnel and the organisational and financial resources to support them. Such a summary could, arguably, be applied to virtually every region in England and his subsequent advocacy of Yorkshire's particular archaeological significance, rather than an objective argument for its inherent strengths, may be more an oblique allusion to the inequity – actual or perceived – in the resources historically made available to the county, and the north of England more generally, in comparison with the south.

A detailed historiography of the development of archaeology in Yorkshire, set against its changing social and economic context, is yet to be written but would undoubtedly be of great interest, not least in illuminating the causes of geographical and period imbalances in our knowledge which are evident today. Further, if it could be set beside corresponding work in other regions, a more meaningful understanding of the region's specific research trajectory could be provided. By way of example, it is instructive to compare the balance of archaeological knowledge in two regions, one in Yorkshire and the other in the adjacent region of the East Midlands, which share a markedly similar topography: the Yorkshire and Lincolnshire Wolds. Each range of hills lies adjacent to central, riverine lowland belts which separate them from the Pennine uplands to the west (the River Ouse catchment and the River Trent, respectively). In Yorkshire, the Wolds have been, and remain, one of the core areas of regional, indeed of national, archaeological research (as have the Yorkshire Pennines, with their own tradition of fieldwork), whereas the intervening Ouse lowlands have been far less studied. In the East Midlands the situation is reversed. It is the Trent lowlands which have provided much of the archaeological evidence for the region and the main focus for its discussion. In contrast, the Lincolnshire Wolds have seen comparatively little research and are usually marginalised in interpreting the region's development.

The different types and character of archaeological data deriving from contrasting landscapes across any region are both an outcome of specific traditions of research there, and a factor shaping those same research agendas. In turn, these data sets themselves have been heavily influenced, if not determined, by patterns of population growth and settlement, the construction of economic and communications infrastructure, and differences in rural economy and agrarian practice across the 19th and 20th centuries. The influence of these factors becomes evident when one compares the direction and character of archaeological research in the upland areas of the North York Moors and the Yorkshire Wolds with the intervening lowland of the Vale of Pickering. Traditions were established early on the Moors, with its relict surviving landscapes of field monuments, and especially on the Yorkshire Wolds, where its combination of upstanding field monuments and extensive ploughing of the shallow chalk soils brought innumerable buried artefacts to the surface. These activities, both a legacy of post-medieval agricultural practice, drew the attention of antiquarians.

In contrast, the significance of the Vale of Pickering throughout prehistory only began to be fully appreciated in the economic boom after the Second World War, when demand for sands and gravels for rapidly expanding urban, suburban and transport infrastructure, both in the region and beyond, led to the extensive quarrying of glacial and post-glacial deposits. This process revealed sites of the regional, national and international significance, starting with that of Star Carr, then Wykeham, Crossgates and Seamer, and led on to the ongoing project at West Heslerton (Powlesland 2003). Modern agricultural practices remain a significant threat to archaeological remains in the area, as evidenced by the recent preparation of an archaeological management plan for Star Carr and its environs.

To evaluate and appreciate fully the significance and impact of the history of research on our current understanding of Yorkshire's archaeology would require more detailed study than could be pursued within the compass of this project - the initiative by the Yorkshire Archaeological Society to commission a study of the contribution of early archaeological researchers, referred to by Peter Addyman (2003, 13), certainly provides one way forward. There are at this stage, nevertheless, some basic observations which may be made which are of direct relevance to modern study.

The first of these concerns the apparent *absence* of a Yorkshire-wide research focus across the 20th century. Addyman (*op. cit.*) cites the Elgee's *The Archaeology of Yorkshire* of 1933, and Richard Muir's *The Yorkshire Countryside: a landscape history* published in 1997 as milestones in the archaeological investigation of the county. For the most part, however, research has been undertaken with reference to more limited geographical units than the historic county as a whole. Thus the formative works of Greenwell and Mortimer are associated mainly with the Wolds and the Howardian Hills in the east of the region (and, as Manby *et al*. note (2003b), these *still* form the bedrock of modern understanding of the prehistoric archaeology of eastern Yorkshire). Slightly later in the 20th century, Raistrick laid the foundations for archaeological research in the Pennines, and the subsequent researches of Raymond Hayes drew attention to the extent and quality of archaeological remains on the North York Moors and Cleveland Hills. Although the lowlands received less attention, the work of Boynton in the Humber wetland zone foreshadowed the more recent efforts devoted to river valley and wetland archaeology undertaken by Robert Van de Noort and his team (see Van de Noort and Ellis 2000 for their survey of the Hull Valley, together with references to

previous work on the Holderness, the Humberhead Levels, Ancholme and Lower Trent Valleys and the Vale of York. See also Van de Noort 2003).

What is marked throughout is the extent to which each area was treated as a unit of study in its own right, only slight reference being made to other parts of the county, except in the most general terms. There emerges a simple division between eastern and western Yorkshire or, perhaps more accurately, a possible threefold division comprising the Yorkshire Wolds, the North York Moors and associated uplands, and the Pennines. Beyond these, lowland areas comprise a separate, much less well-understood zone. These territorial divisions are clearly long-standing, and derive from the intimate familiarity of early researchers with their own locality, compounded by less ready movement across the region than is possible today.

Secondly, the latter point emphasises the unusual *size* of the County of Yorkshire. The three Ridings of the historic county, and indeed its post-1974 successors, cover a total area similar to that of Wales. It is therefore unsurprising, in such a large region, that early researchers, of necessity, concentrated their energies within a more restricted compass than the county as a whole - working in areas defined more by landform than by the boundaries of the traditional Ridings. The significance of these factors has been emphasised by Vyner, in a poignant observation which merits direct quotation:

> *"Raymond Hayes followed directly upon the researches of Frank and Harriet Elgee…It comes, then, as a surprise to learn that Raymond Hayes never actually met Frank Elgee, who died in 1944. From 1932 the Elgees lived at Guisborough, without transport of their own, while Raymond Hayes lived at Hutton-le-Hole; the moorlands which provided a common archaeological interest kept them apart."*
> (Vyner 1995b, 1)

Such isolation of research effort is unthinkable today, but the legacy of these largely discrete areas of research may still be seen. In terms of social and economic development, the different upland blocks must have been connected via the (for the most part less extensively-investigated) lowland zones. Yet it is only comparatively recently that separate traditions of study across the county are being bridged. Peter Halkon, for instance, has argued (Halkon and Millett 2000) for the control of the Iron Age iron-working in the Foulness valley in the Vale of York by élites represented by the broadly contemporary furnished burials on the Wold top. Jeremy Evans' survey of sub-regional Iron Age ceramic traditions across Yorkshire (Evans 1995) appears to be the first study which seeks to knit together in detail over 60 years of research in the different areas of Yorkshire – and even this does not extend up the rivers of the Ouse system into the higher uplands in the west of the county (although the sparseness of material from the latter area may account, in part, for this *lacuna*).

It is unsurprising, but still worth noting, that Yorkshire-wide treatments become more apparent in the archaeology of proto-historic and historic periods. This is due largely to their research agendas having been driven, ultimately, by historically-derived narratives, for example the Roman military conquest and consolidation of the north in the later 1st and 2nd centuries AD, or the British, Anglian and Anglo-Scandinavian kingdoms of the later 1st millennium (Elmet and Deira, Northumbria and the kingdom of Jorvik). These later periods encouraged thinking beyond the discrete 'geographical zones' generally applied to prehistoric research because their material remains was

perceived, and so treated, as part of a national historical narrative. Archaeological evidence could, it was thought, be related to places and events 'known' from written sources. Furthermore, research in general included the participation of academics from Classics and History whose job it was to view their subject from a national perspective.

In detail, however, it might be argued, the Roman and post-Roman periods have rather different *potential* for writing archaeology on a wider scale in Yorkshire and beyond. For the former, there is a considerable volume of archaeological material to work with; consistent and clear similarities of artefact form across the region; tighter chronologies allowed by coin-dated contexts and associations; and direct infrastructural linkages between settlements in different areas in the form of Roman roads. All of this facilitates interpretation on a regional and supra-regional scale. By contrast, in the post-Roman period, the comparative *scarcity* of sites arguably required a regional perspective to allow any substantiated conclusions to be drawn at all. This situation remained the case as recently as Margaret Faull's (1974) article on settlement patterns in Yorkshire. The same continues to be true for much of the rural historic county to this day for the Anglo-Scandinavian period, the exception possibly being the stone sculpture first recorded systematically by W.G Collingwood in a series of articles in the Yorkshire Archaeological Journal in the early decades of the 20th century. Tellingly, in terms of the present discussion, these publications were still organised and summarised by the three Ridings of the historic county. Equally, the extent to which the sub-regional research zones remained as frameworks of *archaeological* study even in the Roman period is indicated by the title of Mary Kitson Clark's seminal *Gazetteer of Roman Remains in **East Yorkshire*** (1935: our emphasis).

In conclusion it may be argued that, for much of its history, archaeological research in Yorkshire has been organised around a series of 'core' areas, characterised by exceptional archaeological preservation and/or visibility. Further, these areas have generated their own distinct traditions of research, and of individual and institutional researchers. This very fact itself indicates the need for a *regional* research agenda for Yorkshire and, more specifically, for a GIS-based resource which allows the county to be viewed 'in the round'. In this way we can both illustrate the impacts of these discrete, sub-regional research 'zones', and then point the way for research and interpretation to transcend them. By connecting and integrating work across Yorkshire, perhaps we can finally start to redresses those imbalances in knowledge and research effort which remain as a legacy of the origins of modern archaeological study in the region.

CHAPTER 2: PROJECT OBJECTIVES

Below we will consider in detail the objectives of the YARF project. The opening section consider the approaches taken to regional assessments in other parts of the country (2.1), with the next considering how we endeavoured to build on, and in some cases transcend, their work in implementing our own aims (2.2). We then outline the sources of data for our project (2.3 – essentially, county SMRs, museums and the output from commercial work). Finally, we describe the background datasets against which we might wish to plot our distribution maps of that data (2.4). These include coastline and terrestrial boundaries; the courses of the Rivers Ouse and Derwent catchments and their major tributaries; larger modern settlements and the current road networks; the outlines of Yorkshire's three National Parks; the forests and lakes of the region; topographic data; a vertical aerial photographic record; land quality; and, finally, solid and drift geology.

2.1 Regional Studies beyond Yorkshire: areas, approaches and outputs

As noted in the preceding chapter, the YARF project is one of a series of English Heritage-supported projects intended to assess the current state of knowledge, and the potential, of the archaeological resource in different regions of England (Olivier 1996). Thus the approaches and outputs of these projects were considered in our own work from the outset. To this end, we consulted those which had been completed, in East Anglia and the East Midlands, and those which are ongoing, in North and North-East Wales, the West Midlands and Northeast England. Our aim was to consider their applicability to Yorkshire and to draw on their experience and expertise.

Of the completed projects, that for the East Anglia has been published (Glazebrook 1997 for resource assessment, Brown and Glazebrook 2000 for the associated research agenda), whilst that for the East Midlands is accessible from their website (East Midlands n.d.). Each took, essentially, the same approach in their first, assessment phase. They used period-based, research seminars in which local experts summarised the implications of SMR data on a county-by-county basis and, from this, put forward thoughts on how archaeological research in the region should be taken forward. Of the ongoing work, that in the West Midlands, a territory which, arguably, lacks a clear regional identity, has similarly prioritised a programme of research seminars over a resource audit, with a heavy focus on SMR data, its structure and distribution. Holdings of 'grey' literature generated by recent commercial work have been summarised, though it remains unclear, at the time of writing, how this information will be utilised ultimately by the project. The North and Northeast Wales project has audited data in their regional SMR, accompanied by a thesaurus of terms which, with a little bit reworking, allows data to be plotted by theme within period. Finally, the recently instituted Northeast England project also intends to take a period-based approach and then distil from this themes specific to that area ('the region as a frontier' and 'maritime archaeology', for example).

Whilst all of these projects are important in their own right, and have either generated significant results already or will soon do so, they also have their limitations and problems (most of which are readily acknowledged by their respective project teams).

Their work has informed our own project design in three spheres – the need to link SMRs, the need to analyse thematically as well as chronologically, and the need to broaden our concept of 'the archaeological resource' beyond the SMR database.

Those projects which structured their work around expert contributions to project seminars generated recommendations which usually avoided the systematic and quantitative use of data from diverse SMRs, still less any attempt to integrate these different holdings. The inability to link the separate databases, or even to gather metadata (data about data) concerning SMRs, has therefore limited comparisons across each region as a whole. Secondly, for most projects, data can only be analysed by period, not by type or function, and, in all cases but one, there has been no attempt to allow spatial distribution to be displayed automatically for such categories. Finally, although one project has attempted to assimilate recent commercial work into its remit, none have felt able to incorporate, in any systematic way, the implications of the archaeological material held in museums in their regions (a data source already acknowledged as important in Yorkshire: O'Connor 2003).

Our project decided that we needed to link SMR holdings in a single database for the whole of Yorkshire. We also wanted to ensure that this could be analysed in ways which moved beyond a simple period-based categorisation and introduced a thematic dimension crossing traditional chronological boundaries (see 3.2). Next we aimed to develop a system of data manipulation and spatial display (see 3.5). Lastly, we endeavoured to incorporate data from museums and contracting units, as well as SMRs, (see 3.3), together with that from other sources such as the Portable Antiquities Scheme (Paynton 2003). In these ways, we hoped that our project would generate an assessment of Yorkshire's archaeological resources which was less impressionistic and, perhaps, less conventional, yet more wide-ranging (though by no means complete) and thus more useful.

2.2 Aims and Implementation of the Yorkshire Project

As noted above, our initial phase of work involved quantifying, in broad terms, the volume of archaeological material which has been recovered in the region, and assessing its quality and accessibility (Appendix 2 summarises the detailed results from this first stage, covering the formulation of strategy, progress in main and subsidiary projects, and present position/future plans at that stage). This provided a platform of factual data from which the second objective, the development of a viable academic agenda for researching the archaeology of Yorkshire, could be constructed. Further issues, such as how the huge database created in the first phase of the work might be made accessible and how this report itself might be published, are addressed in a separate document, the *Research Agenda*.

In order to complete this work within a reasonable time limit, and within the resources made available to us, it was necessary to constrain the extent of the project in terms of the time periods to be dealt with, the type of archaeology which could be assessed, and the data sources which might be utilised. Thus we made a decision, from the start, to concentrate our efforts on the archaeological record from earlier epochs by taking an inclusive approach to data gathering for periods up to *c.*AD1000, but a more a refined focus in later centuries (see Project Design: Appendix 1). Hence we cannot pretend to

have done complete justice to the early modern, or even late-medieval, parts of the discipline. By the same token, we have generally had to ignore the resource represented by standing buildings.

These omissions are both regrettable and, to some extent, have led to the production of a biased, partial - and thus potentially misleading - report. Our defence, beyond reiterating the point that the promised resources demanded difficult strategic decisions on what to include and exclude, revolves around two issues. Firstly, to cover some aspects of later periods, we undertook an assessment of selected medieval towns, and a survey of Yorkshire's landscape and industrial heritage. Thus the gap in late material is only partial (if still large). In addition, as a result of our work, it is now possible to define more accurately what would be involved in incorporating later periods more fully (see the *Research Agenda* for a discussion of ways of augmenting the database). Thus we have at least moved a little further along this difficult road, and can signpost some ways forward, even if the project did not reach a completely coherent and intellectually satisfying destination.

Our work is also limited in the categories of data which it could draw together. In a project of this scale, and operating within the principles defined above, it was clearly essential to store all information in a single, coherent database. Hence, assuming the requisite mechanisms for data transfer could be created, material already held as soft copy could be accommodated more readily that hard copy sources. Of course, in focussing on IT accessibility, we had to ensure that the most important datasets would not be thus excluded. Fortunately, it was already clear that our main sources held their information in computer readable form, so this requirement did not create a major barrier. That said, certain data categories do not appear in our database as it stands. For example, more museums could be added, and the quality of the data which we do hold needs to be systematically enhanced, tested and augmented (of the data sources not accommodated, the most critical is probably the wealth of aerial photographic evidence from the region). All of these aspects are covered in the *Research Agenda*.

The programme of work undertaken by the project involved a process of initial consultation with other regional assessments, as noted above, then reading overviews of Yorkshire SMR and museum provision, and liaising with regional organisations and groups (Appendix 2 provides details). We also collected metadata concerning the size of holdings in SMRs, museums and contracting units, the form in which it was held, and its inherent structure, any associated thesaurus of key words etc.. From this, it became possible to define how the project could store Yorkshire's resources within a single database.

Database design involved establishing a coherent terminology for site function and period applicable to all archaeological encounters, then creating, testing and modifying the database accordingly, and finally building a customised system for its storage, retrieval and manipulation (Chapter 3, below, provides details). Importing data from our three main types of institution has allowed patterns in resource holdings to be recognised and quantified (Chapter 4). It also means that detailed results can be discussed on a period-by-period basis, setting this Yorkshire data beside the research agendas put forward at a national level by various bodies (Chapters 5-7).

The general results of this process of systematic data gathering and analysis could be predicted from the outset, being likely to take one of three forms: some seams of quality data from the region might be fully worked out (rather unlikely); other areas might be defined where existing resources matched research importance, allowing further work to proceed straight away; finally geographical or thematic gaps in the data might be identified, requiring either further fieldwork to generate new data, or more detailed quantification, identification and analysis of existing material and samples, for example in museum collections. In the event, a variety of general chronological and thematic issues have emerged in each of these spheres (discussed in the *Research Agenda*).

The project was planned to last for 18 months facilitated by a full-time EH-funded Research Assistant (RA) (in fact, it was extended to 21 months, with additional EH support). We were aided throughout by curatorial staff and many other archaeological parties in the Yorkshire region, together with the York Archaeological Trust and the Department of Archaeology, University of York, all of whom committed their own time and resources to the project. The project was based in the Department of Archaeology, as a convenient central institution which also gave access to the Archaeology Data Service (ADS). One of the present authors (SPR) was appointed as project manager, responsible to a steering group meeting at regular intervals and reporting back, at defined points, to the main YARFF group. In the event, two RAs, Ceinwen Paynton and Mark Whyman, worked initially in tandem on the project on a part-time basis, with the latter and SPR then being responsible for subsequent data analysis, aided by Patrick Gibbs (plus staff members of ADS, notably Keith Westcott, and Keith Challis of YAT) on various IT matters (see 3.1 below).

2.3 Data Sources

As noted previously, the main sources of project data concerned SMRs, museum holdings and commercial fieldwork units. The first group was critical to the success of the project. Our preliminary discussions showed that nearly all SMRs operated with a thesaurus of monument types defined within the national Monument Inventory Data Standard (MIDAS) framework, and that most used Exegesis systems and were compliant with Access 97 and Excel (hence having a common export language). The eight Yorkshire SMRs all assisted our work: the North York Moors National Park, North Yorkshire County Council, West Yorkshire Archaeology Service, South Yorkshire Archaeology Service, City of York Council, Humber Archaeological Partnership, the Yorkshire Dales National Park and the Peak Park. We have received information from every SMR which actively curates data (the last-named only receives data subsets from adjoining areas).

With museums, access to data was helped by the fact that an MDA-approved documentation standard, SPECTRUM, exists for museums, and that most institutions use the MODES database. However, storage systems varied considerably between individual organisations. A prioritised list of museums was drawn up using the Museums Yearbook, Vyner's recent report (2000, Table 2) and consultation with local YARFF museums experts. We then designed a dedicated policy for each institution. Data was gathered from Harrogate and District Museums Service (which also acted as a pilot study), the Yorkshire Museum, Hull and East Ridings Museum, Wakefield

Museums Service, Doncaster Museum, Sheffield Museum Trust and Leeds Museum. In addition material generated by the Treasure Act, held by the British Museum, and the huge database of the Portable Antiquities Scheme have been incorporated into our assessment.

With commercially-generated datasets, we faced some more intractable problems. It is widely acknowledged that, typically, there is a gap between the undertaking of fieldwork by the commercial sector under the auspices of PPG16 and the installation of the resulting summary data in *digital* form within the relevant SMR, and a still longer period until finds and archives might be lodged with a museum. Reasons for this are not hard to find. Firstly, fieldwork units are under pressure to move on to the next contract, rather than complete and present the archive of the preceding one. Next pressures on archaeological staff working within the infrastructure of local government mean that the backlog of information awaiting incorporation into the SMR can extend over several years. As rehearsed above, the YARF project, of necessity, concerned itself initially and primarily with data already in digital format. In order to overcome this 'information backlog' between contemporary fieldwork and county SMRs (and this factor, in principle, can apply equally, if not more so, to the deposition of archives in museums), we had to devise a strategy for obtaining data from commercial contracting units which was as up-to-date as possible.

The idea of 'door-to-door' collection of information from commercial and contracting units by the YARF project team was viewed as impracticable from the outset, given the limited personnel and time available to the project and the number of contracting units active in the region. A pilot study (in which Northern Archaeological Associates kindly co-operated) suggested that it was unlikely that these contracting units would themselves have digital data readily available in a form useful to the project. Hence an existing, centralised dataset which could provide the basis of a listing of PPG16 projects in the region post-*c.*1990 was sought, and was identified in the form of the Archaeological Investigations Project (AIP) hosted by the University of Bournemouth. The strategy was for the project team to augment this dataset with the help of the contracting units themselves.

The staff of AIP readily and kindly provided their data holdings for Yorkshire. This demonstrated that over 130 organisations had been involved in archaeology in the modern Yorkshire counties over the past 15 years. However, the 'big players' were far fewer in number, with 80% of the projects listed being carried out by 36 organisations, and over 60% by just six. Our intention was to furnish those 36 units with their projects listed in the AIP data, and ask them to update, add to or revise this list as necessary. This, it was anticipated, would provide our project with the most up-to-date information possible from the commercial sector, without the need for any organisation to spend large amounts of time compiling individual lists, or for the project researchers to make extensive visits to contracting organisations for which the YARF team simply did not have the resources. In the event, this proved a pious hope (see 3.3 below).

2.4 Background Datasets

In undertaking a data audit of the type discussed earlier in this section, it was clear that the known distribution of archaeological evidence in the region had to be considered

against factors which affected both its original disposition and its contemporary preservation and visibility. Since the original aims and programme of the project were predicated on the use of an appropriate graphical spatial display (i.e. a form of Geographic Information System, in essence: see section 3.5), we required electronic datasets which mapped this contextual information. This included modern data concerning terrestrial boundaries, rivers, settlements, roads and National Parks; topographic data, aerial photographic evidence; land quality assessments; and drift and solid geology.

A basic outline of the modern Yorkshire counties, including **coastline** and **terrestrial boundaries**, was obviously an essential starting point. This was obtained from the *Bartholomew Digital Dataset*, a publicly available source that is free from the publication restrictions imposed upon Crown Copyright Ordnance Survey data. This source also provided the courses of the **rivers** of the Ouse and Derwent catchments and their major tributaries, as well as larger **modern settlements** and the **road** networks that connect them. This information is obviously essential in allowing the user of the GIS to locate archaeological distributions readily, but also serves a more analytical purpose: rivers have obviously been important through time for the resources associated with them and the communications corridors they provide, whilst contemporary settlements and roads influence the presence and movement of modern humans in the landscape, thus influencing known distributions of archaeological material (a factor which was to become readily apparent when data distributions began to be viewed using the GIS). The *Bartholomew Digital Dataset* also provided the outlines of the three **National Parks** located wholly or partly within the region: the North York Moors, Yorkshire Dales and Peak District. Lastly, and of less importance, a dataset from *Bartholomew* containing the forests and lakes of the region was included as further indicator of modern land-use, although the relatively small physical sizes of these features (and the resolution limitations of our data) has meant they not as effective in identifying 'record-less' zones as, say, urban areas.

Whilst Ordnance Survey digital mapping data (such as LandLine) clearly offers a higher level of resolution, and greater detail, than that afforded by the *Bartholomew Digital Dataset*, the very substantial extra cost of this resource, set against the limitations of the YARF project budget, precluded its use. The same principle applied to **topographic data**, obtained from a public-domain internet source, in this case from the *Shuttle Radar Topography Mission* (*SRTM*), a US-based project that has yielded topographical data for nearly the entire world at varying levels of resolution. Although the Ordnance Survey data, which would have provided a more satisfactory level of detail, was again prohibitively expensive, the *SRTM* data included within the YARF GIS is accurate to 90 metres – a level of resolution similar to that of an average record within our dataset. Topography is clearly a factor of great potential significance in determining both ancient settlement and land exploitation, and the preservation and visibility of its archaeological remains in the modern landscape. The *SRTM* data that we employed is quite adequate for viewing data distributions at small scales, for example when examining broad trends in upland/lowland distribution. However, the 90-metre resolution leads to a blocky image when viewed at larger scales. Hence it could not be used reliably to investigate more localised variation on the boundaries of upland and lowland areas, or to examine subtle or highly localised topographic variations within either.

One source which we had not originally anticipated being included in the YARF datasets, but which was incorporated due to its research potential and extreme cost-effectiveness, was the comprehensive **vertical aerial photographic** record. This was provided for the four Yorkshire counties by the commercially available *GetMapping* survey. This information was to prove particularly useful when evaluating general patterns of contemporary land-use but also, especially pertinent to this project, it provided a highly-informative 'standard' backdrop against which to view data distributions. Continuous access to this vertical view of the Yorkshire landscape was both instructive in its own right, and any interpretations prompted by this full-colour photographic representation could be considered in relation to the other 'abstracted' mapped datasets discussed in this section and so confirmed, amplified or discounted.

Contemporary land-use influences patterns of the survival and visibility of archaeological monuments and artefacts in the landscape, and is itself linked to present **land quality**. The latter data may also have a role in identifying zones of high-quality land that were preferentially settled and exploited in the past. However, this correlation must be employed guardedly, as it implies a level of continuity in such quality belied by agrarian practices over at least the past two centuries, and is likely to be applicable only in very specific, and probably localised, circumstances. Data on present land quality was therefore obtained from *MAGIC* – a project designed to bring together in one place data from key environmental schemes and designations such as English Heritage, DEFRA and the Countryside Agency. The YARF data is derived from DEFRA's 'Agricultural Land Classification' dataset, which categorises land areas based on climate (e.g. temperature, rainfall, aspect), site (e.g. gradient, flood risk) and soil (e.g. depth, chemicals, stoniness). Although these variables are not necessarily entirely valid to the study of ancient environments, this dataset provides a useful source of information when used in conjunction with others.

One of the most basic factors in determining both patterns of ancient settlement and land-use, and the contemporary visibility and preservation of their archaeological remains, is the **solid** and **drift geology** of the region. This data was obtained from the *British Geological Survey* for use by the project for the whole region apart from the East Riding of Yorkshire (a restriction imposed by the cost of data for the whole region exceeding the project's budget). In fact the complexity of both datasets, which comprise extremely detailed subdivisions of solid geological series and drift sediments, arguably exceeded our actual requirements (indeed, that complexity often served to obscure and confuse the issue, and a more simplified version, distinguishing basic solid and drift classifications such as sandstone, gritstone, limestone and chalk, or glacial sands, lacustrine silts and alluvial deposits, may have been more useful). The drift geological map was typically the more useful, since the main upland areas were defined on this 'layer' by the *absence* of drift geology. For example, it was particularly effective in indicating the east-west lowland corridor of the 'Aire Gap', represented by a ribbon of drift deposits oozing westwards from the Vale of York and revealing the 'brain-pattern' relict drainage system of the Yorkshire Wolds.

CHAPTER 3: PROJECT IMPLEMENTATION AND METHODOLOGY

The following text discusses how we implemented the project and developed a methodology to fit its aims, starting with a description of the actual programme of work (3.1). From this, we set out in some detail the problems which we met in attempting to classify our data (3.2). These included defining the basic units of analysis (which we decided to call 'encounters'); the chronological labels (we settled on Palaeolithic, Mesolithic, Neolithic, Bronze Age, Iron Age, Roman, early medieval and medieval. Later periods such as post-medieval and modern were dealt with on a different, more selective basis); and functional categories (Landscape/Environment, Landscape Feature, Habitation Site; Agrarian/Pastoral, Non-Agrarian Production and Social/Specialist, each incorporating a series of sub-categories as necessary). Section 3.3 discusses data gathering issues in relation to our three sources of SMRs, museums and contracting units. We then turn to data processing (3.4) and how we constructed our database and dealt with problems concerning locational, chronological and functional information. A final section considers the question of data analysis and presentation (3.5).

3.1 Work Programme

The project was initially scheduled to run from October 2002 until the end of December 2003, employing two Research Assistants, Ceinwen Paynton (CP) and Mark Whyman (MW) across this period. CP was to work 4 days per week across the full duration of the project, with MW working approximately 1.5 days per week from the start until the end of August 2003, and then for 4 days per week until the end of data gathering and analysis. This work programme was designed to accommodate other work commitments of the two Research Assistants, and also allowed a division of responsibility within the project which would allow them to 'play to their strengths'. Thus, in the data gathering stage, CP was to establish contact with the hoped-for 'donor' organisations responsible for SMRs and museums in the region, as well as the Portable Antiquities Scheme, of which she had direct experience. The aim here was to identify the most appropriate and efficient way of obtaining their data for the YARF project, and to establish appropriate data structure and database format. MW was to take responsibility for obtaining data from archaeological contractors in the region (see 2.3, above), and then to become more involved in the analysis, interpretation and report-writing stage.

Initially, this programme was broadly adhered to, although technical and access difficulties and incomplete datasets delayed the collection of data from some SMRs and from contracting units: see section 3.2 below. However, when CP left to take up another post in August 2003, a substantial amendment was required to this timetable, alongside a reorganisation of personnel. Rather than appoint a new researcher at such an advanced stage of the project, the remaining tasks were divided between MW and the Project Manager, Steve Roskams (SPR), with the project timetable extended until the end of the financial year in March '04. Provision was made from savings in CP's salary to employ a Research Assistant with particular expertise in archaeological computing, Pat Gibbs (PG), to install archaeological data and background datasets

within the project's database GIS. Ongoing difficulties in obtaining data, and incorporating it within the categories needed by the project (see 3.2, below), eventually meant that data collection continued throughout the summer of 2004. Data analysis and report writing were thus deferred into the second half of that year, resulting in the final text for this report being delivered, belatedly, in the summer of 2005.

3.2 Data Definition: encounters, periods and functional categories

Our decision to derive Yorkshire's archaeological data from a range of sources, and to display their distribution using a GIS-based graphic interface, immediately raised three fundamental issues. These concerned the definition of each unit of archaeological information, chronological divisions and functional categories.

Firstly, then, what were the individual 'entities' which were being recorded? The traditional shorthand, that each represented 'an archaeological site', suffers from a range of all-too-evident, and widely debated, shortcomings: how can such essentially arbitrary fragments of ancient landscapes be usefully defined? And how could it be identified, given the range of sources involving different media with which we were dealing? On the one hand, such a term is too specific to cover observations of a 'cropmark' or 'earthwork'. On the other, it was inadequate when applied to a particular 'monument' or, even more so, an individual 'artefact'.

Eventually the word '*encounter*' was adopted, being a term which made no presuppositions about the specific nature of the form or type of evidence in question, and which did not carry with it the implication of a self-contained, detachable component of an ancient landscape implied by 'site'. Indeed, on the contrary, it served as a constant reminder that each individual data element obtained by the project comprised a chance observation of a component of a landscape. After all, existing data distributions represent merely 'what-we-are-aware-of', as distinct from 'what-was-actually-there'.

Secondly, how should, or *could*, these archaeological 'encounters' be classified chronologically? Even a brief perusal of the literature – for example just looking through *The Archaeology of Yorkshire* volume (Manby *et al*. 2003a) – demonstrates the tendency of traditional periods to sub-division. Hence from the Upper Palaeolithic onwards, in Yorkshire as elsewhere, the prefixes 'Early', 'Middle' and 'Late' were employed, now increasingly augmented by even narrower chronological attributions (cf., in particular, the Bronze Age: Manby *et al*. 2003b, Tables 3 and 4). This tendency goes hand-in-hand with its converse, to compound period descriptions (e.g. 'Late Bronze Age / Early Iron Age') which cut across the terminology of the traditional 'Three Age' system. These developments reflect, in part, the increasing accuracy of chronological determination afforded by radiometric dating techniques. Yet, more importantly, they are also a product of the (related) realisation that many of the most fundamental changes in ancient societies recognised through archaeology cannot be accommodated within the confines of conventional periods, structured as these usually are around changes in a limited range of (durable) technological artefacts (an issue which receives further consideration below in the discussion of 'functional categories').

At the outset, we held the view that the project should endeavour to adopt period attributions, and their subdivisions, which reflected the degree of chronological definition needed to frame, and answer, our fundamental research questions. However, examination of actual data holdings soon indicated that such a level of resolution was unobtainable for most encounters. There were two reasons for this. Firstly, and perhaps most importantly, it was not possible to ascribe the majority of archaeological encounters to a period sub-division. In many cases, indeed, chronological attributions covered more than one period ('Iron Age/Romano-British', for example). Secondly, this situation was exacerbated by the fact that most SMR and museum data sources did not provide closer chronological resolution *even in those instances where the data allowed it* (at least not within the electronically-stored data which YARF was able to access: the exceptions to this rule were the North York Moors National Park SMR and the Portable Antiquities Scheme data, both of which sub-divided most periods into at least 'early' and 'late' or their equivalents). In consequence, chronological descriptions in most sources had to be restricted to the following, very broad, categories:

PALAEOLITHIC
MESOLITHIC
NEOLITHIC
BRONZE AGE
IRON AGE
(evidence from the above periods sometimes described simply as PREHISTORIC*...)*
ROMAN
DARK AGE or EARLY MEDIEVAL
MEDIEVAL
(POST-MEDIEVAL)
(MODERN)
(the latter, bracketed categories lay beyond the scope of data collection for this element of the project)

Even the most cursory consideration of this list indicates its limitations in framing research questions, or even in simply generating and assessing known distributions of archaeological evidence. However, we sought to maximise chronological resolution within the YARF database where the original data allowed this (see below, 3.4).

Thirdly, it was decided at the outset of the project that the listing and plotting of encounters as simply period 'presences' (a Neolithic 'dot-on-a-map', a Roman 'dot-on-a-map' etc.) would be inadequate in discussing and evaluating the known archaeological resource. At the other extreme, the identification of every encounter by its distinct artefact, monument, cropmark or 'site' type would simply result in the replication of the original data sources, and so make overviews of the data extremely time-consuming and unwieldy, not to say impossible. To facilitate an appreciation of the general *type* of archaeological data represented by a specific encounter, and the occurrence of these types across different periods and terrains within the region, a scheme of '**functional categories**' was developed. Basically, these identified six broad headings:

LANDSCAPE / ENVIRONMENT
LANDSCAPE FEATURE
HABITATION SITE
AGRARIAN / PASTORAL
NON-AGRARIAN PRODUCTION
SOCIAL / SPECIALIST

Each of these umbrella groups incorporated a series of sub-categories, as follows:

LANDSCAPE / ENVIRONMENT
a- woodland
b- pasture/meadowland
c- agricultural/horticultural
d- heathland/undeveloped
e- other

LANDSCAPE FEATURE
a- dyke system
b- enclosure
c- water supply/drainage
d- other water related
e- boundary marker
f- road/trackway

HABITATION SITE
a- temporary
b- subsistence
c- farmstead
d- farmstead complex - dispersed
e- farmstead complex - nucleated
f- elite residence
g- urban settlement
h- conurbation

AGRARIAN / PASTORAL
a- production
b- processing
c- storage/exchange
d- disposal

NON-AGRARIAN PRODUCTION
a- extraction
b- processing
c- production
d- storage/exchange
e- disposal

SOCIAL / SPECIALIST
a- recreational
b- legal
c- educational
d- medical
e- sacral
f- funerary
g- ceremonial/commemorative
h- military (structural)
i- military (event)

Thus, in total, we generated 37 distinct functional categories, with the intention that any given archaeological encounter could be attributed to one, or more, of them. In this way our database could generate distributions for each category, or combination of categories, in different periods. It would therefore be possible, for example, to map the distribution of evidence for Mesolithic habitation sites, Neolithic funerary practice, or Bronze Age land enclosure across the region.

Defining 'middle-order' categories of this type will obviously never be straightforward or uncontentious, and the details of the categorisation could be discussed and debated endlessly. Inevitably, our own experience of applying this system has identified cases where revision and refinement would certainly improve their analytical utility (the 'ceremonial / commemorative' category in the Neolithic and Bronze Age, for example, included phenomena ranging in scale from cup-and-ring stones to henge monuments; some distinction between scales of monumentality would seem to be useful here). However, most of the groups appear to represent useful distinctions, implying that the underlying principle is a sound one, allowing the mapping of broad categories of evidence *within* periods and their comparison *between* periods.

Overall, these basic processes of definition and categorisation sought to organise the data obtained by the YARF project in a manner which provided useful chronological and functional classification, insofar as this could be achieved given the characteristics and limitations of the sources. The processing and analysis of the data was to lead to some modifications, to suggest areas in which the basic categorisations might be revised, and, arguably, to demonstrate the need to refine, where possible, the chronological and functional categorisation of data held by the main sources drawn on by the project. These issues are revisited below in sections 3.4 and 3.5.

3.3 Data Gathering: SMRs, museums and contracting units

As mentioned above (2.3), the project originally divided data-gathering between three sources: the regional county SMRs, Yorkshire's museums plus the Portable Antiquities Scheme, and contracting units. The data gathering strategies adopted in each type of institution are considered in turn below.

SMRs

The four county SMRs in the Yorkshire region (North Yorkshire, West Yorkshire, South Yorkshire and the East Riding of Yorkshire), along with the SMRs held by the North York Moors and the Yorkshire Dales National Parks, were approached at the outset of the project to explain its aims and to seek access to their data holding. From the inception of the YARF work, and written into its project design, these records had been flagged up as of critical importance. We now needed to establish what was the quickest and most efficient method of obtaining data from each organisation in a usable format.

Three of the county SMRs (North Yorkshire, South Yorkshire and the East Riding), together with the Yorkshire Dales National Park SMR, employed the ExeGesis system in the storage and retrieval of their data, but the remaining sources did not. Incorporating data from the latter sources, West Yorkshire and the North York Moors, required 'manual' examination of these datasets i.e. viewing their contents in spreadsheet form in Excel or Access, and attributing appropriate functional categories to each different term. This did not prove to be as daunting and time-consuming a task as had been anticipated. For example, although the North York Moors SMR contained *c.*8,000 entries, these comprised only a limited number of different terms, many of which were themselves closely similar (e.g. 'arrowhead'; 'arrowheads'). With numbers of this magnitude, the process could be completed in 2-3 days.

Nonetheless, for the ExeGesis users (mostly the larger SMR databases), it was thought possible to avoid the 'manual' attribution of functional categories by creating software 'filters' which would allow their data to be incorporated into our database with functional categories already attributed to the individual entries. After discussion between CP, MCW and Nick Boldrini of North Yorkshire County Council Heritage Section, these filters were created for the project by Sara Poppy of Cambridgeshire County Council. They used concordances, created by CP, between YARF's functional categories and the descriptive terms for monuments and objects used by the SMRs and derived from the National Monuments Record's Thesaurus (together with the MIDAS list of terms approved for museums' holdings: see discussion of museums below). The ExeGesis systems could then be 'trawled' category-by-category (a total of 37 filters) to extract all entries which equated with a specific YARF category. Thus, when the contents of these filters were incorporated into the project's database, their functional categories would have been attributed, automatically.

Data was obtained from the North Yorkshire and South Yorkshire SMRs by these means by late summer 2003, and from the East Riding of Yorkshire by Spring 2004, just inside the revised project completion date. Due to an oversight resulting from the departure of CP from the project in August 2003, and subsequent re-distribution of project responsibilities, the Yorkshire Dales National Park were not formally approached for access to data until the very end of 2003. However, CP had approached the Dales Archaeologist at an earlier date, and obtained agreement in principle. Hence this did not result in any disruption to overall work programmes.

A substantial problem with the data retrieved by the filters was identified late in 2003. Perusal of the North Yorkshire dataset by MW identified some surprising absences; there were, for example, no entries for *grubenhauser*, which seemed anomalous

considering that features of this type had been known from the county for many years. This encouraged a more detailed and systematic examination of the overall YARF North Yorkshire dataset – leading to the identification of *c*.50 missing NMR Thesaurus terms. Liaison with Nick Boldrini at North Yorkshire confirmed that several hundred entries were covered by these terms. Similarly, the list which the filters had generated for North Yorkshire included quite a large number of entries which were beyond the scope of, or otherwise not relevant to, the project, and/or which had bafflingly been attributed to clearly inappropriate functional categories.

Examination of the data already received proved that the problem, rather than a software malfunction or programming error, resulted from errors in the construction of the concordances between YARF categories and the NMR Thesaurus and MIDAS terms. This seems to have been caused by the hierarchical structure of the NMR Thesaurus, and its organisation and presentation on the on-line resource: some terms had simply been missed; elsewhere, extraneous terms had become incorporated in the filters because a 'higher-order' category which *was* legitimately included carried with it subsidiary terms which were not relevant; conversely, an entire NMR which had not been trawled for inclusion in the filters might actually embody relevant data at a lower level (for example, the category 'Other' actually referred to non-specific terms such as 'artefact scatter' and 'monument').

Clearly, these omissions had to be rectified if the distributions generated by the project were to avoid distortions in addition to the incomplete nature of the digital data available from the SMRs at the time. The problem was rectified in two ways. In the case of data from North Yorkshire and the Yorkshire Dales, and following the approach adopted for the non-ExeGesis users, the curators agreed to provide lists of all entries involving 'missing' NMR thesaurus terms held in their SMRs in Excel or Access format, and these were then added 'manually' to the YARF database. Secondly, as data from the East Riding of Yorkshire was still in the process of being filtered at this stage, a set of additional filters was prepared to cover the 'missing' terms, and the data missed by the original filters retrieved in this fashion. The process of 'purging' terms which had been incorporated due to the erroneous construction of the original filters was straightforward, rapid, and carried out manually.

Museums and the Portable Antiquities Scheme

For reasons rehearsed in Chapter 2, the project always felt a need to step beyond SMR entries and incorporate data from Yorkshire's museums. However, museum data storage systems were much more diverse than their SMR counterparts. In addition, collection policies and data availability varied widely: some Yorkshire material is recorded outside the region and, conversely, many holdings now held within Yorkshire were derived from areas beyond it. Hence 'bespoke' strategies had to be created. Meetings with colleagues from York/Yorkshire and Harrogate Museums, together with the specific help of Terry Manby and Peter Addyman, allowed a general strategy to emerge, based on the fact that an MDA-approved documentation standard, SPECTRUM, exists for museums, and that most use the MODES database. Initial comparison of the Museums Yearbook and Blaise Vyner's report on the region's museums (2000, Table 2) allowed a list of priority museums to be drawn up, and dedicated policy to be defined for each of these seven key institutions.

For the Harrogate and District Museums Service (also used as a pilot study), 3,000 of the 4,000 objects which they hold are from Yorkshire, much bequeathed by private collectors and with a strong prehistoric, lithic emphasis. Data was stored in Modes+ for Windows but data is spartan, with limited spatial resolution. The Yorkshire Museum's collections incorporated almost 1m objects, the vast majority of which were bulk finds. The remainder comprised, by period, 62% prehistoric, 24% Roman, 1% Anglian, 7% Anglo-Scandinavian, 6% Medieval and 1% Post-medieval. The records here were not fully computerised but most complete assemblages were flagged up already in our other sources, whilst stray, unprovenanced finds were irrelevant for our purposes. Hence only non-published, non-excavated, non-York chance finds required inputting from hardcopy records.

The Hull and East Ridings Museum contains the largest (and, some might argue, the most important) archaeological archive in Yorkshire, with c.1m items, including Neolithic flints, Anglo-Saxon metalwork and recent metal detecting acquisitions. It holds 2,130 archaeology records, equating with 5000+ objects, of which one third were unassigned to a period and thus not employed in our project. Of the remainder, 3% were Mesolithic, 20% Neolithic, 2% Bronze Age, 3% Iron Age, 8% Romano-British, 15% Anglo-Saxon, 23% Medieval and 26% Post-Medieval. All data, excluding post-medieval and non-Yorkshire sites, was imported, as were the holdings of the Wakefield Museums Service, with particular strengths in Roman and later material in its c.9.5k entries for archaeology.

Doncaster Museum Service, responsible for its immediate area, contains 10-15K individual items and c.5 tonnes of bulk material, all primarily Romano-British. 95% of the collection is from excavation projects which could be accessed through other routes: the remainder is now held in our database. Sheffield Museum Trust contained a collection of c.500K objects and is of major regional importance, the Bateman Collection of c.200 Bronze Age and Anglo-Saxon burials lying at its core. A combination of information from Modes databases and paper records has been gathered by the project. Finally, data from the collection at Leeds Museum, comprising c. 20,000 objects from across Yorkshire, was imported after the removal of records with uncertain provenances or lacking a functional category.

Gathering information from the above institutions meant that the most significant assemblages from Yorkshire have been incorporated into our database. However, more recent finds from the region included material designated as Treasure and held by the British Museum, and that incorporated into the data gathered within the Portable Antiquities Scheme (PAS). The former artefacts result from the operation of the 1996 Treasure Act, which has widened the definition of Treasure. Of 193 cases reported pre-2000 in annual reports, four came from the East Riding of Yorkshire, 18 from North Yorkshire, one from West Yorkshire and none from South Yorkshire. The post-2000 database has improved accuracy, though provenance is sometimes intentionally sketchy and perhaps skewed by the specialisms of regional advisors (e.g. there is a disproportionate percentage of coins in early Treasure cases from Yorkshire). All available data has now been imported into out database.

Concerning PAS material, CP worked for several years as the Scheme's officer for Yorkshire region. Hence, once permission had been given to use this data, incorporating it into the project proved fairly straightforward. The MIDAS terms used

to classify objects reported to the PAS were simply transposed into YARF's 'functional categories' via a table of concordances. The only problem to arise here related to the fact that not all objects retrieved *from* Yorkshire were reported to the PAS *in* Yorkshire; finders can range far afield from their home bases, acquiring objects in one region Yorkshire but reporting them to PAS officers in their home district. Hence the project obtained its data from the central PAS holdings.

Contracting Units

As noted previously (Section 2.3), the project intended to obtain up-to-date information generated by commercial agencies (data which might not, otherwise, have reached either the SMR system or museum holdings), by accessing the datasets held digitally by the Archaeological Investigations Project (AIP) at the University of Bournemouth. This, it was hoped, would provide outline information from contracting organisations active in the Yorkshire region. It was further intended to generate lists of projects carried out by contracting units, circulate these to each company, and ask them to add to, correct and update them and return them to the project. In this way, we hoped to obtain up-to-date and complete information whilst avoiding burdening commercial organisations with further work.

Two problems presented themselves when implementing this strategy. Firstly, when lists were circulated to the 12 units which had carried out over 60% of archaeological interventions in the county, only four actually replied, and only one of these provided a detailed response. Secondly, the implications of this single, detailed response were alarming. Having examined the AIP records of projects attributed to his unit, its director concluded that this list covered only *c.*40% of the projects which it had actually carried out in the period in question (a corresponding response was subsequently obtained from a second organisation). Hence AIP data, which we had expected to cover 80%-90% of projects carried out under PPG-16 guidance, provided no such short-cut.

This situation clearly raises questions concerning the value of the AIP resource (its data forms the basis of the supplements to the British and Irish Archaeological Bibliography, *Archaeological Investigations in England and* Wales). The reason for these extensive omissions seems to relate to the manner in which AIP data is collected. A project report may not have reached an SMR at the point in the year when it is visited by AIP staff, or may not be made accessible by the contracting unit on the grounds of, for example, client confidentiality. In such situations, there does not seem to be a mechanism for that project to be picked up subsequently - later data collection is concerned only with projects carried out in the year-in-question, *not* those (often, it would seem, many) which had slipped through the net on earlier visits. Since the first four years of AIP data, from 1990-94, were collected retrospectively, it seems likely that the worst of this effect will have occurred with data from 1995 and later. More importantly for the purposes of our project, these *lacunae* meant that obtaining near-complete coverage of recent archaeological interventions in Yorkshire would not be possible, given the available time and resources.

As this problem emerged, an attempt to rectify it was made by consulting English Heritage's Excavations Index (EHEI). This source, a copy of which is held by the Archaeology Data Service (ADS) at York, drew on and updated the AIP data,

apparently having been conceived, at least in part, to fill in the gaps in AIP coverage. The EHEI listings typically contained 10% more projects than their AIP equivalents. A comparison study examining three commercial contractors, ARCUS, Ed Dennison Associates and OnSite Archaeology, was undertaken to assess the extent of the discrepancy between the data sources. EHEI consistently returned more records in each instance, although this was initially unclear due to AIP's practice of splitting those projects that have taken place over a long period into individual years. Furthermore, the Index listed *separate entries for different archaeological periods encountered in the same project* (thus if an excavation encountered an assemblage of Mesolithic flints and a Romano-British field system, the project received entries in the EHEI for *each* of these phenomena, rather than a single record as with AIP data). This data thus conformed much more closely to our project requirements, disposing of the need to 'amalgamate' or 'split' individual entries retrospectively. The significance of this factor is discussed in section 3.4, below.

Our revised intention was now to revisit the strategy of circulating lists of their projects to the main organisations active in the region using a combination of AIP and EHEI data. Unfortunately this has not been possible at this stage of our project, even with its extended end date. Indeed, it seems likely to be difficult to achieve this in a consistent way, given the limited response from the field units who were sent the original lists – four out of twelve replies, of which only two had answered in any detail. Thus, as it stands, the data coverage achieved for the contracting units operating in Yorkshire is incomplete. Nevertheless, we estimate that the majority of commercial projects undertaken since 1990, many of which have not yet been incorporated into Yorkshire county SMRs as digital data, have been obtained from the AIP and EHEI sources. Furthermore, although incomplete, this dataset is generally accurate and thus useful. Finally, in terms of overall *coverage* and *distribution* of research in the county, we think it unlikely that the remaining omissions will materially alter the overall picture at a general level of resolution (although the same cannot, of course, be said for the potential *substantive* archaeological implications of the results of even a single encounter). Nonetheless, we would hope that the current incompleteness of the data can be rectified as part of a later stage of the project.

3.4 Data Processing

As is clear from section 3.3, the data obtained by the YARF project from SMRs, museums/PAS, and the contracting units via AIP/EHEI arrived in different formats, ranging from database entries which had been pre-filtered to conform to the data needs of the project (as in the case of the ExeGesis-operating SMR systems) to card-index systems in some museums which had to be visited by project researchers, copied, and the data incorporated manually into the YARF database. Between these extremes were many examples where data, provided in digital database format, needed to be classified in YARF terms (particularly with reference to 'functional category') manually, and the data then added to the project database.

The YARF database and data entry

Following discussion amongst the original members of the team, the project's database was created by Dr Keith Westcott of ADS. It was designed to incorporate a wide range of contextual data about each archaeological encounter it contained. From the outset we anticipated that a minority, and perhaps quite a small minority, of entries would have the full range of this data available. However, the absolutely essential data required for an entry fell into three categories: the *location* of an encounter (to whatever degree of resolution); the *period(s)* represented; and the *type(s) of activity* – the 'functional category' – denoted. If enough was known about an archaeological 'encounter' to establish these three characteristics – or even, in extreme cases, the first two – it could included in any overview of the Yorkshire region, notwithstanding that all other contextual data might be absent. If no information about date or provenance (to the level of, say, a single parish) was available, the usefulness of the information was considered to be, at best, marginal.

Processing the information acquired by YARF involved two basic stages: 'cleaning' the data received, and incorporating it into the YARF data format. The exact sequence and processes involved depended very much in the source of the data and its characteristics. In the case of data from non-digital sources – as in some museums – both were carried out by the YARF staff member responsible for inputting. In the case of electronically-acquired data, the 'cleaning' was carried out in the process of incorporating it into the YARF format, and typically involved amending obvious inconsistencies in text fields (such as different or mis-spellings of the names of units, individuals, locations, counties, mistakes in the inputting of standard terms etc.) and the removal of duplicated entries. Errors in locational information usually became apparent at a later stage, when entries were displayed on the project GIS and appeared, for example in the wrong Yorkshire county or further afield - in some cases in the North Sea! (It is clear that data 'cleaning' at this level will only have picked up the most blatant locational errors. Systematic checking of this information for the many thousands of entries currently held by YARF would clearly be an immensely time-consuming task, and one whose returns would be very unlikely to be commensurate with the resources needed to achieve it. Indeed, the most common error was associated with the first digit of each coordinate, which was often derived from faulty conversion from an OSGB tile reference, for example 'TK' for 'SE'. The scale involved meant such an error was easily detectable.)

In most cases, transposing the database fields employed by the 'donor' data holdings to those employed by YARF was straightforward, achieved easily and rapidly by simply re-labelling and re-ordering columns of data. In other cases, the process necessitated the cutting and pasting of data, for example in order to integrate some AIP data provided to YARF which was set out in tables with different layouts. This was carried out carefully and with repeated checking to ensure that errors were not introduced. However, the three 'essential' categories of information – location, period and function – required more detailed attention to conform with YARF's requirements. These are considered, in order, next.

Locational information

The degree of precision with which archaeological 'encounters' were located within datasets from all sources varied considerably, ranging from 12 figure references (e.g. E.534342, N. 428745 - accurate to 1m), to 6 figure references (eg. E.534000, N. 428000 - accurate to only 1km), to the location of an individual entry referenced only by parish. The detailed grid references presented no difficulties since the information could be incorporated directly into the database. However, locational information with less resolution – 6-figure grid references and, in particular, locations identified by parish, posed more of a problem. Here there was the possibility that a number of separate 'encounters' could end up being represented graphically as being located in the same spot.

This potential problem was resolved by arbitrarily assigning random coordinates, usually within a 1km radius of the central coordinate, to those records that would otherwise 'stack' upon a single point and thus give the false impression of a single record rather than a cluster. Although this introduced a certain amount of inaccuracy at high resolutions, the middle to low resolution at which the GIS was designed to function was unaffected by the relatively small imprecision.

Chronological information

The contrast between the level of chronological resolution initially hoped for by the YARF team, and that actually obtainable from the entries in most of the data sources, has already been commented on (3.2, above). Some data sources, however, *did* distinguish sub-divisions within at least some of the traditional periods. For example the PAS data divides 'Early Medieval' into 'Anglian' and 'Anglo-Scandinavian', and that from the North York Moors National Park SMR distinguishes between 'Early Mesolithic' and 'Late Mesolithic'. Conversely, a high percentage of entries from *all* sources had chronological attributions which spanned two or more periods, for example 'Iron Age / Roman', or even entire epochs - the term 'Prehistoric' was used frequently as a chronological description appended to entries from many sources, potentially covering the period from the Lower Palaeolithic (500,000 years BP) to the end of the Iron Age (*c*.1,950 BP). These ambiguities in period classification are inevitable and indeed important, reflecting real uncertainties in our knowledge of the dating of the majority of field monuments and cropmarks (although for virtually every entry the term 'Prehistoric' could usefully be narrowed).

For the project's purposes, chronological data therefore had to be organised in such a way that these different levels of resolution could be displayed: entries which were classified as *possibly* belonging to a particular period, those *unambiguously* attributed to just that period, and those allocated to a *sub-division* of the period. Each of these sets of data would be different, and would have different archaeological implications. Consider, for example, the Mesolithic period. Purely 'Mesolithic' entries speak for themselves, whilst the distinctions between 'Early-Mesolithic' and 'Late Mesolithic' embodied within the data entries obtained from the North York Moors National Park offer chronological refinement. In addition, without more detailed consideration of its description, any single entry classified as 'Prehistoric' could belong to this period, whilst a few other entries might be classified as 'Palaeolithic/Mesolithic', and many more as 'Mesolithic/Neolithic'. In each of the latter cases, obviously, the entry could

also be of Mesolithic date. The magnitude and spatial distributions of each of these sets of data will differ, and the researcher may wish to display one, all, or any given combination of them in addressing a particular question.

YARF therefore adopted a total of 14 chronological attributions, each represented by a single column in the project's database (i.e. the eight main chronological divisions, plus subdivisions within the Roman period (sometimes split between Early- and Late-Roman), within the early medieval period (sometimes further split between Dark Age/Anglian, and Anglo-Scandinavian) and within the medieval period (sometimes split between Norman and late-medieval). The level of chronological resolution, as discussed above, could therefore be defined by including or excluding columns within a database query. If, for example, one wished to consider every *possible* Mesolithic activity, all entries in the appropriate, 'Mesolithic' column had to be retrieved. If, however, a more precise chronological focus was required, this could be achieved by specifically *excluding* in the query such entries which could also have been Palaeolithic or Neolithic (refining the query simply by retrieving only those 'Mesolithic' entries which also displayed a blank space in the other period columns). By re-structuring queries in this way, any level of chronological definition – as far as the original data allowed – could be achieved.

'Functional categories'

As discussed above (3.2), a fundamental aim of the project was to equate terms used by the NMR Monuments Thesaurus and the MIDAS classification employed for artefacts with YARF's 'functional categories'. Only this would allow the *character* of Yorkshire's archaeological resource within and across periods to be evaluated. To fulfil this aim, in the many cases where archaeological 'encounters' had identified material from more than one period, *only* those functional categories relevant to a given period were associated with it.

3.5 Data Analysis and Presentation

Once installed within the project's system, the YARF database could be queried and display the distribution across the region of archaeological encounters, classified by period, 'functional category', data type, data source or any other attribute recorded by the project. These distributions could also be set against backgrounds displaying contextual data (see Section 2.4, above). The GIS data can be viewed straightforwardly using ArcView, but the files created would be transferable between most commercial GIS systems.

Each entry in the YARF database was attributed to one or more of 14 period categorisations, and one or more of 37 functional categories. Utilising these variables alone (that is, ignoring all related contextual data concerning type of encounter, the organisation involved, data source etc. – a further seven data fields in all), a total of over 260,000 potential queries were available to the researcher, to be displayed spatially and against the various topographical, geological and other datasets. The majority of these were unlikely to have any obvious research utility – it is not immediately apparent, for example, what a distribution of Neolithic/Bronze Age and Roman non-agrarian processing sites and élite residences might inform us about

(although *some* form of application is not impossible). Also, in a number of cases, period and functional categories are mutually exclusive, for example in the case of a 'Mesolithic farmstead complex'.

Nevertheless, the number of combinations of period and functional categories which *might* be analytically useful still runs into many thousands, and even examining each single functional category for each period would involve over 500 queries (and that without making any distinction between entries *definitely* attributed to a given period and those which *might* belong to it). If one notes that each distribution of this primary data could then be displayed against, and interpreted with reference to, a number of background datasets (see section 2.4, above), the possibilities are considerable. Faced with this volume of information, and the issues of data selection which it presented to the YARF team, decisions had to be made regarding what could be investigated, and at what level of detail, within the timeframe of the project. The following three guiding principles were adopted:

- regarding 'period' information, two distributions would be generated: one which displayed all entries which *might* be attributable to a given period, and one which displayed only those entries which were *unambiguously* attributed to the period in question. Queries relating to these distinct distributions were respectively labelled 'all' and 'only' (e.g. files showing all encounters which might be of Roman date were labelled 'PER6 – ROMAN_ALL', those showing only those definitely attributed to the Roman period 'PER6 – ROMAN_ONLY'. The 'PER6' prefix refers to columns in the database in which the Palaeolithic = Period 1, Mesolithic = Period 2 etc.)

- the individual 'functional categories' employed at this initial stage of analysis would be amalgamated under broader headings, namely HABITATION, LAND ENCLOSURE, PRODUCTION and SACRAL (including FUNERARY). Then distributions could be generated under each of the four headings for each period. The exact combinations of YARF functional categories included in these umbrella groups varied slightly from period to period, taking account of the presence or absence of phenomena in particular periods (farmsteads, for example, figure under the 'HABITATION' heading from the Neolithic onwards, but not in the Palaeolithic and Mesolithic). However, the groupings can broadly be summarised as follows:

HABITATATION	LAND ENCL.	PRODUCTION *(AGR. & NON-AGR.)*	SACRAL
temporary	dyke system	extraction	sacral
subsistence	enclosure	processing	funerary
farmstead	boundary marker	production	ceremonial /
farmstead complex	road/trackway	storage / exchange	commemorative
elite residence			

- within the time available, the evaluation and interpretation of these distributional data against most of the 'background datasets' held within the GIS could only be undertaken at a level which suggested possibilities for further more detailed research. For example, the expected broad patterns of differential representation on the solid chalk geology of the Yorkshire Wolds compared with the glacial and alluvial drift of the Vale of York and Holderness was readily apparent. However, more detailed, localised patterning of data relative to geology, topography, and patterns of settlement, communication, land-

use and land quality - factors which will be of great importance in understanding known archaeological distributions – require more detailed and rigorous investigation than was possible here. Issues of the *scale* at which the data was viewed, the degree of *precision* of the data points available to YARF, and the need to statistically evaluate the *significance* (or otherwise) of observed patterns mean that a number of potentially interesting observations regarding the extent of our knowledge of Yorkshire's archaeology, and the factors affecting it, remain just that; interesting observations (these are presented in section 4.2, below). However, gathering and storing the data in this way will clearly facilitate such detailed work in the future.

In order to generate and view the distributional data according to the principles outlined above, queries were created for each period ('ALL' and 'ONLY') and for each of the four broad groupings (habitation, land enclosure, production and sacral) and run on the database. The resulting region-wide plots, mapped simply against the coastline, county boundaries and major rivers, were copied into 'Paint' files, which allowed them to be readily and rapidly compared without the necessity of repeatedly re-generating distributions from queries within the system itself. This resulted in a set of distribution maps which could easily be compared, both on-screen or as hard copy (included in this report as its Figures 1-67). The investigation of aspects of these distributions against the background datasets was undertaken, usually, with reference to entire period datasets (both 'ALL' and 'ONLY') but sometimes in response to the characteristics of the more functionally specific queries (especially for the medieval period – see Chapter 6 below). Thereafter, particularly striking or interesting concentrations of data (or sometimes *lacunae*) were investigated at a lower level of spatial resolution to understand their implications. That said, as noted previously, insights gained from this whole process remain, at this stage, suggestions which may merit further investigation, not definitive conclusions.

CHAPTER 4: GENERAL DATA PATTERNING

This chapter considers the distribution of the YARF data across Yorkshire, in order to identify the factors which have influenced its distribution. Only then does it become possible to understand its potential for understanding past social formations, and the limitations on exploiting that potential. We look first at the overall patterning of the data within the region as a whole by period (4.1). From here it becomes possible to consider our distribution maps in terms of the intensity of archaeological fieldwork (4.2), the impact of modern settlement patterns and communications (4.3), the effects of modern land-use (4.4) and the influence of topography and geology (4.5). A final section considers the level of chronological resolution embodied in our database and its implications for the research process (4.6).

4.1 The General Patterning of Data

With *all* data points held within the YARF GIS displayed at a scale which allows the whole region to be viewed, the concentration is so dense – a total of c.58,000 entries, represented by c.44,600 separate data points – that any overall pattern(s) are difficult to recognise. However, when the data is viewed period-by-period, very marked variations in the density of known sites are clearly apparent. These patterns are particularly striking in those periods with a considerable number of encounters, notably from the Neolithic through to the Roman (generated as PER3 - NEOL_ALL, PER4 – BA_ALL, PER5 – IA_ALL, PER6 – ROMAN_ALL: Figs. 6, 16, 26 and 36 respectively).

It should be noted that the data represented in these distributions are *not* mutually exclusive: encounters included in NEOL_ALL might very well also occur in BA_ALL, those in BA_ALL in IA_ALL, etc., since these distribution plots map all encounters which *might* belong to the period in question. Nevertheless – indeed partly *because* of this characteristic – these distributions provide a clear exposition of broad trends in the known disposition of archaeological remains in the Yorkshire region. These main characteristics are summarised below in relation to the four groupings of functional categories described previously: habitation, land enclosure, production and sacral (section 3.5). However, first it is useful to look at the data as a whole.

Basic to the overall distribution is the very marked density of encounters in the eastern half of the region – between the North Sea coastline and the western edges of the North York Moors, Howardian Hills and Yorkshire Wolds – and towards its south-western quarter, south of the River Nidd and west of the Vale of York. Although there are recognisable local variations in the density of encounters *within* these zones, numbers of encounters per km² are typically markedly greater here than in the remainder of the region. The latter comprises the central lowlands of the Vale of York and the Vale of Mowbray, the great expanse of the uplands in the county of North Yorkshire in the north-west of the region, and the southern and western upland areas in the extreme south-west, in the county of South Yorkshire.

Breaking down the observed distributions within these broad 'density zones' immediately introduces into discussion the factors likely to be responsible for them, and subsequent sections will consider variations in the distributions in more detail with reference to the causes which, individually and in combination, are likely to have been responsible for them. Before getting into this detail, however, the question must first be posed: why should these 'distortions' of our current understanding of the distribution of archaeological remains matter? After all, nobody would suggest that a totally even coverage of *all* the material evidence surviving from the past is achievable, or even desirable, and some elements of it will, inevitably, attract more attention than others. The questions which archaeologists seek to answer, and the narratives they endeavour to generate to inform and satisfy wider public interest, will be addressed by selective attention to particular landscapes, localities and *foci* of past human activity, where circumstances of visibility, preservation, research interest and resources combine to sustain research effort. Everyone is aware that the 'known' component of archaeology is only a fraction and a fragment of its totality – what purpose does a preoccupation with 'what we don't know' serve?

One can respond to this question at several levels. Firstly, even if the point is taken no further, an awareness of *why* we are more aware of archaeology in some areas than others is important in evaluating the likely representativity (or otherwise) and significance of that component which *is* studied. Secondly, many questions and issues concerning past societies and how they changed – and the answers offered in response to them – rely on observations regarding the distributions and presence/absence of particular categories of archaeological evidence. This is particularly so where study is cast at a regional level, involving intra- and/or inter-regional comparisons, as is the case with the YARF project and its equivalents across the country. Where such comparisons involve manifestly partial knowledge, but fail to take into account the factors which structure our current knowledge, the results may be misleading in the extreme.

Equally significant is the effect of this uneven pattern of knowledge on the perceptions of the modern inhabitants of Yorkshire. Perhaps one of the most widespread misapprehensions about the material remains of the past is that they are confined to particular locations: ancient monuments, old buildings or historic cities such as York – 'there's nothing like that round here' seems to be a frequent, albeit anecdotal, response when the subject is raised. In reality, of course, material remains of the remote past are all but ubiquitous in Britain - they are just more obvious, and have received more attention, in some parts than in others. Public perceptions of the true extent of archaeological remains may be changing with the increased exposure of archaeology through television (*Time Team*, *Time Flyers* etc.). In these circumstances, demonstrating that areas of low archaeological visibility, which have received little attention but in fact hold considerable archaeological potential, is likely to be of great significance in generating interest, both in specific localities (with the possibility of actively engaging in research) and in the discipline more generally.

The prehistoric landscape of Rombalds (Ilkley) Moor offers a good example of the possible effects of differential survival and visibility on our ability to understand and

interpret archaeological patterning. As will become evident in the detailed consideration below, Rombalds Moor seems unexceptional, compared with other stretches of moorland which surround it, in terms of geology, topography, elevation, aspect, soils and other environmental characteristics. Perhaps its sole claim to being in an special *location* is that it forms the narrowest part of the watershed – almost a 'waist' – between the River Aire to the south and the River Wharfe to the north: from this point, to both east and west, the courses of these two major rivers progressively diverge (although not, it has to be said, to any great degree). With an interpretation of prehistory which saw Neolithic and early Bronze Age society as seasonally mobile, with summer gatherings in the uplands, such a location might be of considerable significance as the point of convergence for such communities travelling along different river corridors. This would explain the (seemingly) unusually dense concentration of rock carvings in the area.

Even this argument has some flaws, however. Only a few miles to the west, the moorlands above Skipton provide a location which forms part of the watershed of the Aire, the Wharfe *and* the River Ribble, which flows to the west of the Pennines. Here, perhaps, is an even more likely location for a summer meeting place of the type suggested. Yet there are far fewer rock carvings or other monuments known from here to suggest such a role. Is the present distribution a true reflection of the *actual* density of monuments, or does it simply reflect the fact that this landscape is less accessible and less well-trodden, and that similar or greater concentrations of remains await discovery?

Prehistoric rock-carvings are clearly not restricted to Rombalds Moor – examples have been found across the uplands of the northern Dales (albeit not in the numbers testified on Rombalds Moor: Boughey and Vickerman 2003) and the ongoing work of Tim Laurie (2003) in Wensleydale, Swaledale and Teesdale demonstrates year-by-year that many more remain to be found. In Wharfedale and Airedale the factor which distinguishes this Moor from much of its surrounding landscape is land *use*: to the east and west large areas of the uplands are given over to farmland (primarily pasture, but some arable) and the encroachment of Leeds and Bradford. Could the fact that this area of moorland has remained largely immune from the former conurbation reflect soil and/or drainage characteristics – impeded drainage resulting in peat accumulation and acidic soils unsuitable for cultivation, or even grassland – and a location still beyond the reach of town development even at its high water mark in the 19th and 20th centuries? These activities are likely to have resulted in the wholesale clearance of the naturally deposited glacial boulders which bear the rock carvings, and these may therefore have originally been much more widespread across the Aire/Wharfe watershed than appears to be the case today.

Hence Rombalds Moor, far from having been of especial significance in prehistory, could simply be a surviving fragment of a landscape originally littered with monuments of this type. Whilst clearly of significance to the people who created them, these do not, in themselves, denote an area of unique or exceptional significance. The fundamental issue here is not whether these specific arguments regarding the interpretation of the prehistoric monuments of Rombalds Moor are correct – they still remain to be tested. They are used, rather, as an example of how the factors of visibility and preservation to be discussed

below not only impact on, but can inadvertently serve to actually *structure*, the research questions which are asked, and thus to determine the answers given to them.

4.2 Intensity of Fieldwork

For an archaeological encounter to occur, and for the characteristics of the evidence there to be observed and recorded, someone is required to do the observing and recording. This remains true whether the encounter has occurred by chance or was consciously 'engineered' as part of archaeological research. The latter types of activity, which have become increasingly the case over the last century, have produced heavy concentrations of archaeological remains in certain areas. These imbalances, whether by individuals or institutions, were often established in the early days of archaeological research in the late 19th and early 20th centuries (see further below). However, they have then been frequently compounded by continuing traditions which concentrate attention on these early, 'core' areas, and so further focus attention away from those less favoured initially. This effect is readily apparent in Yorkshire, both at a regional scale and also more locally.

The regional pattern of data distribution described at the outset demonstrates, unsurprisingly, the extent to which the established 'heartlands' in the east of the county – notably the Yorkshire Wolds and the North York Moors – dominate. This is the zone with a tradition of active fieldwork extending back well into the 19th century, and has long been regarded – on the Wolds in particular – as one of the 'core' areas of British prehistory. The other marked concentration at regional level, that in the south-western quarter, is likely to be less familiar to audiences outside Yorkshire. Whilst it, too, can boast a tradition of research extending back into the early 20th century, the reason for the strength of archaeological evidence here seems likely to reflect a combination of three factors: the density of population in the industrial areas of the former West Riding; the extensive opportunities for the observation, recording and recovery of material provided by the continuing growth of the industrial towns and cities through the 19th and into the 20th centuries; and, crucially in this case, the creation in the mid-1970s of a local government archaeological service (in West Yorkshire) briefed and resourced to create a comprehensive inventory of the archaeological remains known to exist within the area of the county council's jurisdiction at that time. The importance of this provision is demonstrated by comparison of the density of encounters in West Yorkshire with their comparative sparseness across much of neighbouring South Yorkshire, a zone closely similar in terms of topography, geology, and modern urban and industrial land use.

Whilst the effects of research and recording traditions can be recognised at the regional scale, they also seem to have an impact at a much more localised level. Perhaps the classic case of concentrated activity concerns March Hill Carr in West Yorkshire. Here there are 132 known Mesolithic 'sites' in a zone one km square, thus constituting the highest density of such finds in all of Britain. Not only was this the most accessible area of moorland for collectors living in and around the densely-populated towns of Huddersfield and Manchester, it was Francis Buckley's main flinting ground (Spikins

2002). The work by Laurie (2003) in Wensleydale, Swaledale and Teesdale, mentioned above, shows what dedicated fieldwork over a rather larger area can achieve, as does that of Peter Halkon (2003) and colleagues in the Foulness Valley in another part of the region.

On the other hand, gaps can appear in otherwise dense general concentrations. For example, within the intensity of evidence along the northern scarp of the Yorkshire Wolds, there appear to be marked 'holes' around Thwing (strangely enough, given the dedicated research that has been carried out on that particular prehistoric site) and around Sledmere. A similarly 'blank' area exists in West Yorkshire to the south-east of Wakefield. These features may be a simple question of access to the land (perhaps related, in the case of Sledmere, to the attitude of the landowners here towards the early evolution of 'their' piece of landscape?), or they may be a product of modern land use.

Such issues, of course, create variations in the density of *all* encounters – the level of research effort are rarely determined simply by of the interests and determination of individuals or institutions and where they happen to live and work. In some areas, circumstances precipitate encounters with the material remains of the past, stimulating curiosity and further exploration, and in others modern circumstances can work in exactly the opposite direction. It is to these that we now turn our attention.

4.3 The Impact of Modern Settlement and Communications

The factors affecting the visibility of archaeological remains and our current knowledge of their distribution across Yorkshire, rehearsed above, are already widely appreciated as general principles (although it is true to say that it has not previously been possible to study their effects at a regional level with such an extensive and geographically broad-ranging dataset). However, others have attracted less attention and seem less immediately apparent, perhaps because they operate at a local level (although, even here, close inspection of the YARF database suggest they can be identified quite widely, if not all pervasively, across the region).

In addition to the regional concentrations outlined initially, the distribution of data in areas with a lower density of archaeological encounters – notably the north-western uplands, the central lowlands and the low-lying landscape of the Hull valley and Holderness to the south-east of the Wolds – exhibits marked localised clustering. Inspection reveals that the majority of these clusters centre on towns. In some cases, for example York, Boroughbridge (Aldborough) and Catterick, this was wholly to be expected: these locations have long been known to be the sites of important ancient settlements, and have attracted a corresponding degree of archaeological interest and investigation. Perhaps less predictable was the extent to which towns *without* obvious status historically served as foci for archaeological encounters, good examples being recognisable across the northern Dales at Bedale, Pateley Bridge, Grassington and Settle. Strikingly, closer investigation of localities in more detail, for example in the Vale of York between Ripon and Thirsk, around the villages of Skipton-on-Swale, Catton and

Topcliffe, demonstrates that the same phenomenon is also recognisable around lower order settlements. This indicates, unsurprisingly, that archaeological encounters will occur most frequently in locations routinely visited and observed by people. Yet the broader implications of this for the distribution of known archaeology across the region merits further consideration. Perhaps by the district around mid-Wharfedale and the moorlands to its north and south provides the classic illustration of this phenomenon of localised clustering in Yorkshire. This example is worth discussing in more detail, since it demonstrates how archaeological knowledge develops in a particular *locale*.

This district is one of the classic areas of Yorkshire prehistory, with the moorland landscapes renowned for their proliferation of prehistoric carvings and monuments, particularly to the south of the Wharfe valley. The situation of Rombalds Moor, above the town of Ilkley, was noted at the outset of this chapter and can be further developed here. Ilkley itself is the site of a Roman fort (*Olicana*), which has attracted antiquarian attention as long ago as the itineraries of Camden and Leland. But, arguably, it is the town's development from the middle of the 19th century which has led to a dense cluster of archaeological monuments and findspots which announces its important position in Yorkshire prehistory. Here it is not simply the existence of a small market town which led to its archaeological prominence, but its specific development as a spa resort. From Ilkley, perambulations of the moorlands to 'take the air' formed part of the health cure which attracted the Victorian middle classes. These provided frequent opportunities for encounters with archaeological remains, by representatives of exactly that class of people for whom antiquarian interests were coming to be seen as a gentlemanly pursuit and a mark of culture.

By the turn of the century these interests had been crystallised in publications (funded by private subscription) such as *Upper* and *Lower Wharfedale* by Harry Speight (1900, 1902) and *Ancient Wharfedale* by Edmund Bogg (in two volumes: 1904a, 1904b), which recorded the history and antiquities of the Wharfe valley. Such books both reflected the fact that knowledge and awareness of the historic 'depth' of a landscape and its visible antiquities had come to be regarded as something of a desirable social asset to certain elements of the middle class, and they served to generate further interest and stimulate research.   In these circumstances the accessible and already renowned landscape of Rombalds Moor attracted much attention, as did the moorlands to the north of Ilkley, on the opposite bank of the Wharfe. Here, further examples of glacial boulders inscribed with geometric and other markings deriving from the Neolithic or Bronze Age, often termed 'cup-and-ring stones', have been recognised along the ridge overlooking Wharfedale (largely restricted to the line of the main public footpath – an issue which will be returned to shortly).

More unexpected is a second concentration clearly indicated in the YARF database, that of medieval landscape features on the floor of the valley below. It seems highly likely that knowledge of these features results from their having being spotted from the ridge above, by those with antiquarian interests who had been examining or seeking prehistoric antiquities there. Thus the example of Ilkley and Rombalds Moor provides a graphic, if unsurprising, demonstration of how concentrations of people increase the probability of

encounters with archaeological remains, and thus how the modern settlement pattern predisposes certain localities to appear as concentrations of archaeological data. However, it also shows that mere visitor numbers are only part of the story. The social position of those involved has an impact on whether features are recognised and noted and, perhaps more important, on whether they are then reported and enter 'the archaeological record'. Such localities, having attracted attention, can become identified as archaeological 'hotspots' and, subsequently, as foci for fieldwork and research.

A further general point can be drawn from the aforementioned concentration of prehistoric field monuments along the ridge-top public footpath: archaeological encounters aggregate around frequently-travelled routeways. The phenomenon is recognisable both in areas with fairly sparse distributions, as in the case of the villages between Ripon and Thirsk referred to above, and in those with markedly dense concentrations, an excellent example being the line of the road which runs along the scarp of the Yorkshire Wolds southeast from Leavening. Indeed, across this locality as a whole, there is a clear and pronounced relationship between the distribution of archaeological encounters and the lines of major routeways, together with those areas visible from them. At a lower level, there is a distinctive correlation between finds distributions, especially of prehistoric flints, and public footpaths, particularly in the northern Pennines. It remains to be seen whether this pattern will remain true, as the impact of the Countryside Rights of Way Act is felt and great swathes of open access land are created. Such examples obviously raise the issue of whether the distributions could, in turn, reflect the enduring significance of ancient routeways along what may have long been important and highly visible communication corridors, rather than simply a higher level of exposure to modern observers. However, the main point is that such an interpretation should be actively investigated, rather than assumed.

4.4 The Effects of Modern Land-use

Probably the most significant single factor in determining the extent of archaeological research and knowledge within any given area is how the land has been used by its inhabitants over the past two or three centuries or so, the period within which antiquarian and archaeological observers have been active. It is unarguably true that patterns of land-use are in themselves the result of several factors – soil quality, altitude, climate and rainfall (and the wider geographical context which affects these), hydrology and the presence of mineral resources to name only the most obvious (see further 4.5 below). Nevertheless, it has been the activities carried out on the land by human populations which have largely determined the degree of visibility of archaeological remains, and in consequence the interest they have provoked and the attention they have received. These are discussed in what follows in relation to various aspects of rural exploitation (arable, grass, moor and forested landscapes) and other functions (urban and military uses).

The practices of *arable cultivation*, particularly in the second half of the 20th century, serve to destroy and level the physical remains of ancient landscapes which had previously survived as earthworks and other upstanding field monuments. Yet, by the

same token, they bring to the surface - and to the notice of human observers - settlement features and portable artefacts formerly buried beneath the soil mantle. By contrast, in areas given over primarily to *grassland* for the grazing of livestock, that soil mantle remains largely inviolate, and any buried structures or artefacts remain so. Yet earthworks – assuming they existed in the first place – survive, readily visible, to attract attention. The same applies to *uncultivated moorland and heath*, of which there are vast areas in Yorkshire. Here, however, ground cover of heather, bracken or scrub can make the recognition of earthworks less straightforward to the untrained eye than in the case of pasture, especially when the earthworks are slight (just how much is seen when a recent fire impacted on a section of the North York Moors, revealing a huge increase in the number of prehistoric rock carvings there).

Two of Yorkshire's 'classic' archaeological landscapes, the Wolds and the North York Moors, fall into the categories of arable land and grassland/moorland respectively. Even today, after over a century-and-a-half of intensive agriculture, the Wolds landscape is still littered with surviving prehistoric monuments, notably the prehistoric linear dykes, or 'entrenchments', and Bronze Age round barrows. However, in that period, many more have been levelled by ploughing, the removal of field boundaries to create larger fields, and the opening-up and 'improvement' of new ground for agriculture. These same processes, on the shallow chalk soils of the Wolds, have brought to the surface in prodigious quantities artefacts of all periods from the Neolithic onwards (though see 5.2 for the relative absence of earlier, Mesolithic flints from this area).

By contrast, extensive areas of the North York Moors remain largely unscathed by the impact of arable cultivation, being given over to rough pasture or moorland. Here extensive remains of entire prehistoric landscapes survive as earthworks, some as slight as a few centimetres high. Conversely, encounters with buried artefacts, and hence with the chronological and functional information which they can provide, are markedly scarcer. The contrasts drawn between the Wolds and the North York Moors can, of course, be identified elsewhere in Yorkshire, the limestone belt of the eastern Pennine foothills and the upland Dales further west being a comparable example.

Here we are dealing with circumstances within which land-use practices have contrived to render archaeological remains readily visible, in one form or another. Some consideration should perhaps be given to the opposite case - where such practices have resulted in their concealment. In broad terms, arable agriculture serves to level earthworks whilst bringing artefacts to the surface, whereas stock-grazing preserves earthworks, and leaves artefacts concealed beneath the ground surface. What of circumstances and areas in which agrarian agriculture is succeeded by stock-rearing in the period before *c.*AD1850, the point at which antiquarian and archaeological observation really got underway? In such situations the legacies of both surviving earthworks and surface artefacts are likely to be impoverished, hindering the development of archaeological interest, fieldwork and a resulting research tradition. Some areas of the gritstone landscapes of the eastern fringe of the Pennines, in North, West and South Yorkshire, may provide examples of just such circumstances.

Of course, it is not just arable and pastoral regimes which influence the visibility of archaeological remains on the ground. Since the 1920s aerial reconnaissance has been instrumental in revealing entire ancient landscapes across the whole of the British Isles, and demonstrating just how extensive these can be. Such landscapes can be recognised from the air under both of the land-use regimes discussed above, as cropmarks and earthworks respectively. However, notwithstanding the spectacular aerial images of earthwork sites ranging from the late prehistoric to medieval periods from the Pennine uplands, it is typically the arable areas which furnish the most comprehensive views of ancient settlement and land organisation. In this respect, the Wolds are pre-eminent within Yorkshire, with extensive arable cultivation, shallow topsoils and solid chalk bedrock providing near-perfect conditions for the differential plant growth necessary for good cropmark visibility. In consequence the ancient landscape of the Wolds (Stoertz 1997) is arguably the most thoroughly and extensively mapped of any in Yorkshire (the significance of geology, soils and related matters in determining known archaeological distributions is discussed further in the next section).

Comparable in archaeological terms as a broad class of land-use to pasture, *forested land* (used here in its modern sense of densely-packed woodland) serves to 'preserve' upstanding field monuments, or at least their recognisable remains, above ground. This is particularly marked in the one major area of forest surviving in Yorkshire, the North Riding Forest Park on the North York Moors. This exhibits a concentration of archaeological encounters – largely prehistoric field monuments – which is marked even amidst the numerous and wide-ranging archaeological encounters which define the National Park as a whole. That said, the word 'preserve' is used advisedly. Although field monuments remain visible as earthworks within forested areas, both ground preparation for planting and logging operations can inflict very substantial damage on them.

As the largest, by some way, of the historic counties in England, Yorkshire contains vast areas of farmland and uncultivated ground (the latter largely in the upland environments of the high Pennines and the Cleveland Hills). But it also encompasses two of the UK's largest *urban areas* or conurbations, the metropolitan districts of West Yorkshire and South Yorkshire. These very extensive built-up zones obviously have a major influence on the visibility, and indeed the survival, of any archaeological remains within their limits. This is most marked in the case of South Yorkshire, where the area of the city of Sheffield and the industrial towns and villages to the north-east of it appears as a near-blank on all distribution maps. In West Yorkshire, the Leeds/Bradford conurbation extends over an even larger area than that of Sheffield and there is also a recognisable decrease in the density of encounters within the built-up area compared to the more rural landscapes to the east, north and west.

However, absence of encounters is far more marked in and around Sheffield than Leeds/Bradford. This is intriguing, given that the two have a great deal in common in terms of their topographic locations, geology, drainage patterns and characteristics as extensive urban areas. The difference may, in part, reflect the less complete incorporation of archaeological data from Sheffield into the South Yorkshire SMR than

in the surrounding area of the county: storing data from the West Yorkshire conurbation might have been established on a firm footing following the production of *West Yorkshire: an Archaeological Survey to AD 1500* in 1981 (Faull and Moorhouse 1981). It is possible, for example, that holdings from the city of Sheffield simply have not as yet been entered into the SMR in digital format

However, other factors may have had an impact. Large urban areas, once built up, preclude the retrieval of 'chance finds' in significant quantities, yet the *process* of urban expansion offers innumerable possibilities for such encounters. Were there simply fewer researchers active in South Yorkshire during Sheffield's development? And, if so, does this relate to the chronology of urban development at each place? Leeds and Bradford expanded massively as centres of industrial textile manufacture and concentrated population from the 1820s, and especially post-*c.*1850, whereas Sheffield had become established as one of the country's major industrial cities before that time. So the 'window of opportunity' for archaeological activity in parts of South Yorkshire may have occurred before many people with the interest or knowledge to report on any remains which came to light were around to bear witness. That said, it is clear that large areas of suburban Sheffield were constructed in the second half of the 19th century, and would therefore fall comfortably within the period of 'high antiquarianism'.

Nevertheless, the lack of such a tradition does seem likely to be part of the explanation of the apparent sparseness of known archaeology on the uplands to the west and north of Sheffield when compared to equivalent areas of West Yorkshire. It is noticeable that only on the outcrop of Magnesian Limestone, which runs northwards along the western edge of the Vale of York, does the concentration of sites of any period in South Yorkshire match that in West Yorkshire, immediately adjacent to the north. This is almost certainly the result of aerial survey of the high-visibility cropmarks recognisable there – in other words a development of the last thirty years or so (see further discussion of this particular concentration in Chapter 5). More generally, the present differences in the known archaeological distributions in West and South Yorkshire may have their cause in the different economic and social history of early industrialisation and the development of antiquarianism in each sub-region.

The final aspect of land-use to have marked significance for known archaeological distributions in Yorkshire concerns land given over to *military* purposes. Several extensive tracts of upland in North Yorkshire used in this way have had an archaeological impact, the most vivid example being the area around Fylingdales Moor (site of an Early Warning Installation renowned for the outlandish appearance of its structures), to the east of the North Yorkshire Moors Railway line and to the north of the North Yorkshire Forest Park. The area represents a near total blank amidst the otherwise dense distribution of the North York Moors, thrown into particularly sharp relief by the density of sites recorded in the Forest Park to the south and west. It is inconceivable that this 'hole' in the distribution represents anything other than a lack of observation and recording due to restricted access to non-military personnel in the vicinity of a defence installation.

Examples from elsewhere in the country, most obviously Salisbury Plain, indicate that military designation can often have the effect of preserving archaeological remains *in situ*, since it prevents or restricts disturbance by other agencies which has impacted on the same landscape beyond the military area. Whether this effect would be as marked on the North York Moors as on Salisbury Plain is questionable, since the uplands of the Moors are in any case a remote, sparsely populated and largely uncultivated area, unlike the fertile agricultural belt of central southern England. Other military-controlled areas in Yorkshire, notably in the Pennine uplands, seem unlikely to have a similar effect since the distribution of archaeological encounters is already sparse. Hence 'blank' areas do not stand out so strikingly against the background distribution. The recent appointment of Niall Hammond as archaeologist for MoD properties in the north of England may result, in the foreseeable future, in a better understanding of the potential of these remains, as well as facilitating ways to unlock that potential.

4.5 The Influence of Topography and Geology

Present land-use is, of course, partly a function of geology and topography, and often to a large degree determined by them, particularly in respect of its influence on soil quality, agricultural potential, and the location and accessibility of mineral deposits important to human technologies. These constraints and opportunities applied equally in the past, if not more so, and will have had a major role to play in ancient patterns of subsistence and settlement. It is therefore likely that some of the broad patterns recognisable across Yorkshire, which clearly resonate with geological and topographical settings, do reflect past realities.

In addition to being fundamental in establishing the potential of particular landscape niches, geological substrates and the landforms created from them, create particular conditions for the preservation, visibility and concealment of archaeological remains. This is borne out by consideration of the evidence from the eastern upland areas of the North York Moors, Howardian Hills and Yorkshire Wolds, and the adjacent lowlands of the Vale of Pickering, the Vale of Mowbray and the Vale of York. As previously noted, the northern and western ridges of the Wolds and the Howardian Hills stand out as marked concentrations of encounters on distribution maps of all periods. To the north, this concentration thins to a very sparse distribution in the Vale of Pickering, with a density similar to that of the Wolds, reappearing as the ground rises again from the Tabular Hills and North York Moors. To the west of the western scarp of the Wolds, the Howardian Hills and North York Moors, the land falls away to the Vale of York and Vale of Mowbray, which again display archaeological distributions which are sparse in comparison with those upland areas.

These patterns are clearly influenced by topography, dense in the upland areas and sparse in the lowlands. They are also heavily affected by geology - indeed by ongoing geological processes. The uplands comprise blocks of solid geology of chalk, limestone and gritstone, covered with a shallow soil mantle. Here, archaeological remains are near to the surface, readily brought to light by the plough, and visible both on that surface and

from the air. In the lowlands, solid geology is a long way below the modern ground surface, which sits atop metres of river and lake sediments, themselves overlying tens of metres of glacial outwash and till. The river and lake silts often bury archaeological remains, preserving but also concealing them, so that they are visible neither as earthworks under pasture, nor as artefact distributions or cropmarks on arable land. The archaeology of Yorkshire's upland areas is predisposed to be visible, in one way or another; that of its lowlands to be concealed. This needs to be constantly borne in mind when evaluating the disposition of archaeological encounters currently recognised across the county.

Similar imbalances can be recognised at a more local scale. On the Yorkshire Wolds, for example, the shallow soil mantle covering the 'Wold top' has been subject to a process of erosion and redeposition, as colluvium, in the dry valleys left by the relict drainage system which criss-crossed the chalk plateau. In these valleys, therefore, archaeological deposits from the Mesolithic period onwards may be sealed at depth – protected from the plough damage which afflicts the tops of the Wolds (many of the dry valleys are in any case left untouched by modern agriculture) but, by the same token, are effectively invisible from the surface and often only accessible through deep excavation (see further below, 5.2).

A recent example which demonstrates this phenomenon, and its problems and potential, is the discovery of a previously unsuspected late Roman phase at West Heslerton, on the northern edge of the Wolds, sealed beneath colluvium in a dry valley which runs into the Vale of Pickering (Powlesland 2003, 188ff – the Heslerton project as a whole also shows how an apparently 'blank' lowland area can yield up evidence of its concealed remains, if archaeological techniques – here the use of extensive geophysical prospection - are deployed with sufficient energy). The late Roman and Anglian site at Kilham (Hunter-Mann 2000), in a comparable situation on the southern flank of the chalk, may provide a second example. Equally, whilst the Wolds provide the best documented cases of this phenomenon, a similar situation might exist in many of the valleys of the upland areas of Yorkshire. The extent and duration of the process, and the depth of resultant colluvium, will depend largely on whether arable agriculture was practiced on the uplands, and over what timescale.

Within the broad river valleys of the region's extensive lowland areas, archaeological encounters show a marked tendency to cluster along the rivers themselves. This might be a straightforward reflection of the importance of rivers and their immediate environs in determining the patterning of ancient settlement and lines of communication. Yet it should also be borne in mind that, in areas where archaeological remains are deeply buried beneath re-deposited sediments, the erosive action of rivers may provide the only mechanism whereby they are brought to the surface and can be seen, identified and recorded. Within lowland areas, therefore, archaeological encounters may in fact be over-represented along the courses of rivers themselves, compared with other parts of that landscape.

Consideration of archaeological visibility and preservation in the uplands in relation to sediment formation raises the issue of peat deposits, particularly the 'blanket' or *ombrogeneous* peat which still survives in extensive tracts across the Pennines and the uplands of north-east Yorkshire. Once again, peat enhances preservation of archaeological remains – sometimes to a spectacular degree – but also conceals them. It is no coincidence that the recognition of the extent and significance of prehistoric remains on the moorlands of West Yorkshire began to be recognised as the peat beds there began to desiccate and decay, exposing flint and stone artefacts, and sometimes possible structures and cup and ring stones, at the surface. This is a process which is now being repeated in Holderness (Manby *et al*. 2003b, 80), thus enhancing the archaeological record being collected by the Humber Wetlands Project (Van de Noort 2003). Conversely, better preservation of peat could explain, in part, the shortage of prehistoric sites in upland South Yorkshire.

A final influence of underlying geological formations, and the soils which they create when weathered down, concerns differential survival of materials. Broadly speaking, alkaline soils typical of chalk and limestone areas preserve calcine structures such as bone well but are inimical to the survival of pollen. In the acidic soils and peats of the gritstone uplands, and the lowlands fed with sediment by their rivers, this pattern is reversed. Whilst the effects of this on most major artefact types are less extreme and seem unlikely, except in a few cases, to denude that aspect of the archaeological record entirely, this factor will certainly influence the long-term research potential of these areas, and needs to be taken account of in research and fieldwork strategies.

4.6 The implications of data storage: functional and chronological categories and levels of precision

In addition to the effects of the factors discussed above which impact on the observable patterning of archaeological data in the Yorkshire region, the clarity of that patterning is compromised to the varying degrees by the diverse ways in which that data has been categorised and stored in different parts of the region. Variations in data density are clearly visible across modern county boundaries. In part these may be a function of aforementioned factors such as intensity of fiedlwork, site visibility, and modern landuse and settelement. However, to an equal, or perhaps larger, extent they result from different approaches to data classification in the region's SMRs. Thus concentrations of land enclosure along the Magnesian Limestone west of the Vale of York may be recorded in the north of the region as being of 'Iron Age' date, but as broadly 'late-prehistoric' in another SMR further south (see further discussion below, 5.5). The difference is a matter of how each organisation has decided to catalogue morphologically defined site types seen in aerial photography, set beside the background and research interests of the individuals concerned. A similar issue arises in relation to encounters of Romano-British date. Patterns of Roman roads are clearly seen in West Yorkshire as lines of data points, but are much less visible elsewhere (see 5.6). This can only be a result of different decisions on how to record such observations.

Further problems arise concerning the chronological precision attributed to entries in the primary datasets, though here they might be turned to our advantage to some extent. The issue, and the means adopted to deal with it in the YARF database, has been raised in previous sections (3.2 and 3.4 above). Essentially this involved structuring the database in such a way that we could generate distributions showing archaeological encounters *definitely* attributed to a given period ['(PERIOD)_ONLY' distributions] and those showing encounters which *could* be attributable to that period but might belong to another ['(PERIOD)_ALL' distributions] (see 3.5). In this way a distinction could be made between the known distributions of encounters with specific chronological attributions, and their equivalent for encounters which may, or may not, fall within that date range.

Comparison of '_ONLY' and '_ALL' distributions obviously serves to highlight current limitations in our knowledge of the date of many of the ancient landscapes, monuments and artefacts known from Yorkshire. As such, it provides yet another 'cautionary tale' about the incompleteness of existing data. However, it also serves a more positive purpose – in indicating areas where archaeological evidence has been recognised and has some level of recorded information, but which requires further research to clarify and refine its chronology. At a regional level, comparisons of these complementary datasets allow the identification of those zones where evidence is available with a level of chronological definition which allows important research questions to be answered, and of other areas where further dating resolution is needed before such questions can be tackled.

The implications of '_ONLY' and '_ALL' distributions in the case of specific periods will be considered in the relevant sections of Chapter 5 below, but an example will be cited here to try to illustrate the point being made. The distribution 'PER5 – IA_ONLY' (Fig.25) represents those encounters *securely* attributed to the Iron Age across Yorkshire. Overall, it exhibits some of the characteristics noted previously as being typical of the Yorkshire region as a whole: a marked concentration in the eastern half of the historic county (specifically the Yorkshire Wolds); another, less extensive concentration in the western uplands of the (North) Yorkshire Dales; sparse distributions in the Vale of Mowbray and in West Yorkshire; and areas of near or total absence in the North York Moors, the eastern Yorkshire Dales, the western uplands of West Yorkshire, the central Vale of York, and much of South Yorkshire.

When this distribution is compared with 'PER5 – IA_ALL' (Fig.26) the picture is transformed, the density of datapoints across the region being increased approximately fourfold (from 2359 to 9386). Whilst the Wolds remain as a major concentration, and are indeed massively enhanced, elsewhere the picture is significantly different. Major concentrations appear on the Magnesian Limestone belt in West and South Yorkshire, further localised clusters are evident in the eastern Dales and the West Yorkshire uplands, and the density of encounters increases dramatically in the Vale of Mowbray and, in particular, on the North York Moors. The interpretation of 'the Iron Age' in Yorkshire based on these two different statements of current knowledge would obviously differ enormously. All other things being equal in terms of consistency and accuracy of

chronological attribution across the region and the organisations which curate its archaeology (which of course, in reality, is unlikely to be the case), the true extent of the Iron Age archaeology of Yorkshire, as currently recognised, should lie somewhere between the two distributions which these plots exhibit (or, perhaps, is actually represented by one or the other - although this seems highly improbable).

One of the major tasks of future research is to work towards establishing where, between these two extremes, the true situation lies. The importance of this can be illustrated with another example. The period discussions below will indicate the importance, from the late Neolithic across the Bronze Age, Iron Age and Roman periods, of tracking the development of agriculture, and the expansion of sedentary habitation sites and land enclosure associated with it – a process for which we are still acutely short of evidence in terms of its chronology and scale. By narrowing the *functional* focus of the 'PER5 - IA_ONLY' and '_ALL' distributions to evidence for land enclosure ('PER5 - IA_ONLY_LAND_ENCL' and 'PER5 - IA_ALL_LAND_ENCL': Figs. 31 and 32 respectively) the very marked differences in the possible scale of Iron Age land enclosure are readily apparent. These differences in scale, density and distribution clearly have major implications for the nature and development of agrarian production, and thus, in all probability, social organisation, in the Iron Age. Which is closer to a true picture? Are the non-Iron Age encounters currently embedded in Fig. 32 actually evidence of earlier, Bronze Age land enclosure? Or are they a later, Romano-British development?

These questions are clearly of first-rank importance, and answers may be clarified by more detailed research into the existing records of the encounters illustrated on these distributions, or resolved by fresh field investigation. In the former case, the issue of *consistency* of chronological attribution needs to be borne in mind. An example of Iron Age sites in the uplands of the western Yorkshire Dales illustrates this well. Whether one compares every site type (i.e. 'PER5 - IA_ONLY' in relation to 'PER5 - IA_ALL') or only a particular functional subset (for example, 'PER5 - IA_ONLY_ LAND_ENCL' in relation to 'PER5 - IA_ALL_LAND_ENCL'), the distributions here are, in each case, virtually identical. In other words, encounters in this area have been identified as being specifically Iron Age with more confidence than is the case elsewhere in the region (whether this confidence is justified is, of course, another matter). Distributions in the western Dales might really include material covering a longer timeframe - all hinges on date classification mechanisms, and whether rely merely on conventions based on considerations such as monument morphology, or have been confirmed through detailed investigation. However, whatever the answer, an important first step is to be able to recognise these differences in the cataloguing of archaeological encounters across Yorkshire. Only then will we understand its potential impact on our understanding of, in this instance, agrarian development across the whole region in the Iron Age.

CHAPTER 5: DETAILED RESULTS BY PERIOD

The previous chapter discussed a range of factors which serve to 'filter' our recognition of archaeological patterning, particularly issues of the degree of visibility of monuments and artefacts within the landscape and the uneven distribution of fieldwork, research and documentation. Additionally, limitations regarding the level of chronological definition within (and, in some cases, between) the periods to which archaeological remains are customarily ascribed often make it difficult to interpret the YARF data with reference to current, mostly national, period-based research agendas and debates. Both sets of constraints apply to all of the period datasets discussed below, providing a kind of 'default' distribution in the region. They are not, therefore, rehearsed exhaustively in each instance but are only referred to when of particular relevance to the interpretation of observed patterning. Rather, the sections below try, where possible, to point out aspects of distributions which seem likely to be attributable to actual patterns of activity in the remote past, rather than resulting from current limitations in our awareness of archaeological remains across the landscape.

Drawing 'definitive' conclusions from the YARF data, if such can ever be said to exist, would require more detailed, critical and rigorous interrogation of selected data with reference to specific questions than can be attempted in this stage of the project (although it is hoped to address certain questions in this way at a subsequent stage). Thus the period-based sections presented below are clearly not, indeed *could* not be, exhaustive - the YARF database allows data interrogation in myriad combinations (see 3.5). Rather, these sections seek to give an indication of the *kinds* of questions which the data might be used to address, and how these relate to current regional and national research agendas. Hence they discuss each period in relation to the categorisation of archaeological encounters within the project, how these relate to wider regional and national agendas, and problems with applying such agendas to Yorkshire's data. In this way, it is hoped to indicate in more detail the diverse factors which affect our perceptions of, and approaches to, the region's archaeology.

In what follows, we have taken conventional periodisation as our starting point (notwithstanding the point, developed in what follows, that these very divisions can obscure, rather than enhance, the process of archaeological research). Thus we consider first early prehistory (5.1-5.3), then its later counterpart (5.4-5.5). This is followed by the Romano-British period (5.6), concluding with a discussion of Early-Medieval elements (5.7). The High-Medieval period and the industrial archaeology of the Early Modern period, which were dealt with differently by the project, are presented in later chapters (Chapters 6 and 7 respectively).

5.1 The Palaeolithic Period (Figs. 1-2)

At a general level, the Palaeolithic period is well known across England in terms of gazetteers (Roe 1968, updated by Wymer and Bonsall 1977), recent reviews (Gamble and Lawson 1996) and research frameworks (Prehistoric Society 1999), together with general commentaries (Wymer 1999). Such archaeological findings can also be contextualised in relation to environmental change (Simmons and Tooley 1981) and alluvial factors Needham and Macklin 1992). Finally, more detailed studies, for

example that by Wessex Archaeology (1996) and Howard and Macklin (1998) have allowed a specific Yorkshire focus to be developed. To these we can add recent papers by Gaunt and Buckland (2003) and Innes and Blackford (2003) providing, respectively, geological and palaeoenvironmental background, to which the review of Hall and Huntley (forthcoming) will soon add another dimension. Finally, Young (2002) and Manby (2003a) (the latter albeit very briefly) offer regionally-focussed faunal and artefactual analyses for the period. Thus the Palaeolithic data gathered by the project has a number of ready-made frameworks within which it can subsist.

That said, two major problems afflict the YARF data distributions and their interpretation with regard to this period. Firstly, the chronological range referred to by the term 'Palaeolithic' in sources utilised can refer to remains dating anywhere between *c.*250,000 BP (the approximate age of the earliest fauna so far found in the region) to *c.*10,000 BP – a time period longer by far than all of the other periods put together. Secondly, as becomes quickly evident when one compares the distribution of provable and possible Palaeolithic sites (i.e. 'PER1 - PALAEOLITHIC_ONLY' and 'PER1 - PALAEOLITHIC_ALL': Figs. 1 and 2 - see 4.6 for the distinction between '_ONLY' and '_ALL'), the majority of the locations mapped on the latter can be misleading for one of two reasons. Many fall under the catch-all heading 'Prehistoric' but are likely to belong to later periods of prehistory (and in some cases demonstrably *do* – e.g. 'Palaeolithic field system').   Secondly, and more securely, others have been mis-attributed, as in the case of the alleged 'Palaeolithic' settlement site and nearby Palaeolithic findspots in Welburn parish on the south-western edge of the Howardian Hills, for which no reported supporting evidence can be traced. Discussion of data distribution for the Palaeolithic period in the region, at least as generated by YARF, is therefore of limited value.   Some general observations about particular cases can, nevertheless, be made.

Regarding the *Lower* and *Middle Palaeolithic*, faunal deposits have been discovered in Kirkdale Cave on the southern edge of the North Moors, and in Victoria Cave near Settle, in the limestone uplands, dating from Oxygen Isotope (OI) Stage 5 (130,000-75,000 BP) and from inter-glacial sediments in the at Bielsbeck Farm in the Foulness valley (OI Stage 7: 240,000-200,000BP). An Acheulian handaxe of OI stage 11-6 (minimum age 150,000 BP) has also been obtained from Hotham, just to the east of the latter site.

Overall, the survival of evidence for the Lower and Middle Palaeolithic across most of Yorkshire is likely to have been compromised by the destruction wreaked by the Devensian glaciation (i.e. starting *c.*75,000BP) on earlier strata and artefacts in the region.   Nevertheless, cave sites clearly offer possibilities for as-yet undiscovered survival of such evidence, and the material from Bielsbeck shows that 'open' sites are also to be found. It has been noted that spatially extensive inter-glacial sediments exist in this locality in the south-eastern quarter of the Vale of York (Innes and Blackford 2003, 26). Care obviously needs to be taken regarding the depositional status of material from such localities (is it, for example, incorporated in sediments re-worked at a date far-removed from its original deposition, and at a distant location?). Yet the potential for the survival of evidence of pre-Devensian activity in 'niches' along the western edge of the Vale protected from glacial denudation is real.

Evidence for human activity in the *Upper Palaeolithic* is also very sparse, comprising a few diagnostic lithic forms largely restricted to areas in which Mesolithic activity has been researched in detail, as in the vicinity of Starr and Flixton Carrs and around Wensleydale. It is very noticeable, however, that when distributions of Upper Palaeolithic finds across the north of England *as a whole* are viewed, that these findspots form part of a wider, supra-regional distribution of late Upper Palaeolithic artefacts extending westwards into the Pennine uplands and Lancashire, and southwards into the Peak District and the valley of the Trent. This in turn constitutes one of the two discrete distributions of material noted by Smith (1992) which, it is argued, represent the post-Devensian re-colonisation of Britain (then connected to continental Europe via the western upland margin of the coastal plain now submerged beneath the North Sea and known as 'Doggerland') along two distinct routes: one across what is now the English Channel, represented by a concentration of material in the upper Thames valley and the Cotswolds, and a second along the coastlands (now submerged) which fringed the North Sea into Yorkshire and the central Pennines.

When the Yorkshire material is seen as a component of this broader northern concentration, it is striking that the distribution is *centred* on the southern Vale of York and the lower Trent, a zone devoid of upper Palaeolithic artefacts and in this period covered by the waters of Lake Humber. Whether or not one accepts Smith's argument for the region being part of a primary migration route for post-Devensian re-colonisation, the possibility remains that Lake Humber and its margins in fact represented one of the most resource-rich environments in the region at this time. The absence of finds from this zone may readily be attributed to the factors affecting visibility and retrieval rehearsed in Chapter 4. That said, the archaeological potential of the sands and gravels of the '25-foot drift' which were formed as beach deposits around the shoreline of Lake Humber becomes readily apparent. Recent work by Halkon (2003, Fig.78) and colleagues shows a way forward along these lines at the edges of the 'proto-Foulness' river.

5.2 The Mesolithic Period (Figs. 3-4)

Research frameworks have been proposed for this period at a national level (Prehistoric Society 1999) and recently augmented by further perspectives on Mesolithic 'lifeways' (Young 2000). However, translating these into ways forward within Yorkshire is not as easy as one might hope, despite the previously-mentioned recent overviews by Young (2002) and Manby (2003a). As with *all* periodisations within the YARF project, the grouping together of archaeological encounters under the single heading of 'Mesolithic', with no chronological sub-division, makes it difficult to relate our distributions directly to current research questions.

Penny Spikins (1999), for example, has proposed a model for a major shift in seasonal settlement between the 'early' and 'late' Mesolithic in the region. Envisaging seasonal migration from (now submerged) coastlands to the upland areas of the central Pennines in the summer, she points to a significant increase in the density and scale of occupation in the latter area from the early to late Mesolithic. Rather than attributing this to an assumed increase in population, she argues that it coincides with palynological evidence for the replacement of one tree species with another as the predominant forest cover (from Birch and Pine, initially, to Oak and then to Lime –

though certain niches saw different changes).   This impacted on the type, and movement, of game, in turn leading to adaptations in the character, and perhaps scale, of seasonal movement of human groups.   It is these processes which explain the observed change to dense upland sites at the expense of lower-lying locations.

As Spikins acknowledges, this model is clearly a provisional interpretation based on currently available evidence, which comprises a handful of excavated sites and rather more flint scatters and isolated finds.   Thus future discoveries across the region as a whole could easily transform, and perhaps even reverse, the distribution of sites as currently recognised.   Further, the Spikins model, and even its basic characterisation of Mesolithic subsistence strategies, is not universally accepted, even by researchers within Yorkshire.   Vyner, for example, comments (2003) that the Pennine and North York Moors flint scatters may be indicators of semi-sedentary settlement rather than wide-ranging hunting groups, playing down the range of hunting from base settlements (although Vyner's suggestion, in turn, appears to be dismissed by Simmons (2003) in the same volume).

Vyner and Spikins thus appear to offer very different characterisations, although the chronological definition applied by Vyner might allow their reconciliation – could Spikins' proposed changes in patterns of mobility of human groups, and of their subsistence strategies, be a precursor of more sedentary habitations and more localised food procurement as suggested by Vyner? Chronology is obviously vital here, but the level of resolution required is beyond that currently available to YARF. However, the whole debate over the nature of Mesolithic lifeways and the causes of any changes to them has crucial implications for the transition to the Neolithic, an issue which will be returned to below.

Vyner also raises the classic conundrum of lithic assemblage analysis debated famously by Binford and Bordes in the 1960s with reference to the 'Mousterian problem' of the European Palaeolithic: should variation in the composition of stone tool assemblages, and the individual artefact types therein, be attributed to chronological differences, to different subsistence strategies and/or processing functions, or to different groups of people? Or are these differences themselves closely interrelated? These, and related, issues were usefully addressed in the East Midlands Research Framework (East Midlands n.d. – henceforth EMRF), which proposes research priorities for the Mesolithic in an adjacent region with a closely similar topographic structure, but with many more substantial Mesolithic assemblages from a greater range of landscape contexts.

The EMRF (which also draws on Spikins' model) notes the potential for issues key to Mesolithic society to be addressed through archaeology: raw material acquisition and its movement through the landscape through the study of lithic reduction sequences between sites; distinct social groupings and/or territories represented by 'non-functional' variation in some lithic types; and distinction between activities within and between sites based on the structure of their assemblages, all in addition to the reconstruction of environment, habitat and resources utilised by Spikins. EMRF goes on to emphasise, however, that *none* of these research directions can be pursued without an initial, regionally-comprehensive programme of basic classification and research into the existing Mesolithic resource base.

Some of these themes, if not discussion of the means to pursue them archaeologically, have been touched on by Simmons (2003) with reference to Yorkshire. Although containing one of the most intensively investigated and important Mesolithic landscapes in Europe at Starr Carr and Flixton Carr, the study of the period in Yorkshire as a whole suffers in comparison with the East Midlands from the acute lack of knowledge of the period from the central lowlands (contrast, for example, the information available from the Trent basin, where decades of gravel extraction have both destroyed and revealed archaeology, with that from the Vale of York). In a regional context this is a crucial *lacuna*. The probable significance of Lake Humber in the Upper Palaeolithic has been commented on in 5.1. Further, it was observed at the outset of this document that Yorkshire's geographical unity as a region suitable for framing archaeological research can be attributed to it comprising three upland blocks connected by a single river system. In this context the absence of evidence from the greater part of the region's main arterial corridor is severely limiting, especially so when dealing with a period characterised by wide-ranging movement and mobility of human groups through the landscape.

Bearing this point in mind, the pattern of Mesolithic encounters generated by YARF can now be considered (both 'PER2 - MESO_ONLY' and 'PER2 - MESO_ALL': Figs. 3 and 4 respectively). At a regional scale, the densest concentrations of material, largely flint artefacts, of *specifically* Mesolithic date (i.e. those represented in Fig. 3) are located in the uplands of the North York Moors and the east-central Pennines, in the latter instance particularly on the watersheds between the upper reaches of the rivers Nidd, Wharfe, Aire and Calder. The Pennine distribution is on the western margin of the county of West Yorkshire (and immediately beyond that of the built-up area of the West Yorkshire conurbation, which will have severely, although not completely, inhibited the recovery of Mesolithic finds: see 4.3), and is likely in large part to be the result of long-term local traditions of collection in areas where artefacts have become exposed as a result of the desiccation and decay of blanket peat. This distribution extends at a lower density into the northern Dales, but fades away markedly to the south beyond the boundary with South Yorkshire. This may reflect a lack of a comparable local research tradition to that in West Yorkshire, and perhaps the absence of a survey comparable to *West Yorkshire: an Archaeological Survey to AD 1500* (Faull and Moorhouse 1981) in collating the available data.

The density of the North York Moors finds is in marked contrast to the sparse known distribution from the scarp of the Wolds and, in the case of the latter, a lack of fieldwork and research traditions clearly cannot be invoked in explanation (Manby 2003a, 33). One possible explanation of this relative absence relates to the impact of agricultural practices, with denudation of the soil mantle washing the (typically very small) Mesolithic microliths into the valley bottoms (one might note, for example, the recovery of Mesolithic flints under 4m of sediment in the course of the West Heslerton fieldwork in the Vale of Pickering). Any such process on the Wolds clearly did not redeposit all lithics into dry valley colluvium, as later, and usually larger, flint artefacts are found across the landscape.

Such disturbance of topsoil could have occurred at any point following the onset of prehistoric agriculture on the Wolds, but the most likely context may be the process of agricultural 'improvement' here from the 18th century onwards. A concerted campaign seeking re-deposited microlith assemblages in the dry valleys of the Wolds is required

to test both the general hypothesis that Mesolithic material has been washed away, and to date the point at which this may have happened. Indeed, recent work by John Pouncett collating flint assemblages from across different parts of the landscape in the Wharram Percy area may provide just such information. Alternatively, Mesolithic sites may have in reality have actually concentrated in valley bottoms, for example because of access to water. Modelling springlines and testing their proposed positions against that of Mesolithic finds might help test this idea, although it has to be remembered that erosion, the most likely mechanism to allow flint exposure, will concentrate along such springlines, as they lie at the break between plateau and hillside vegetation communities, where such cover is weakest. Hence there is a danger of misinterpreting the implications of any such correlations.

Away from the uplands, a concentration on the fringes of the Vale of Pickering reflects the long-standing interest in, and research into, this locality resulting from the internationally renowned work at Starr Carr and Flixton Carr since the 1950s. Elsewhere in the lowlands, single or small clusters of findspots are located along the river corridors and the river terraces overlooking them, particularly the Wharfe, Aire and Calder, whilst in the Vale of York and the Vale of Mowbray, as noted above, no more than a handful of findspots are known, most being recovered immediately adjacent to river channels. The particular character of the main waterways across the Vale, with deep channels cut by the rivers in the early Holocene and subsequently infilled with sediment, may mean that Mesolithic artefacts, strata and, perhaps in places, surviving ground surfaces may be concealed at depths of several metres along these corridors.

When account is taken of findspots of material which *might* be Mesolithic in date ('PER2 - MESO_ALL': Fig. 4 – again almost entirely comprising flint artefacts), there are significant changes in the observed pattern. Firstly, the density and extent of distributions increases markedly in four areas: in the North York Moors (particularly those areas away from the central watershed – the moors to the north of the River Esk in the north, the Hambleton Hills to the east and, especially, the Tabular Hills to the south); in the Pennines (especially the watershed between the Wharfe and Nidd); on the ridges of the Howardian Hills and the Yorkshire Wolds; and in a band of the Vale of Mowbray between the Hambleton Hills and the River Nidd.

This patterning raises some interesting points, which help to pave the way for discussion of the Neolithic in the subsequent section. Most encounters in this distribution not provably Mesolithic belong either to the Mesolithic *or* the Neolithic period and, as noted above, are mostly flint artefacts. One explanation is that this material has been classified within its parent dataset by people who are too hesitant or inexperienced in assigning a period attribution. However, given the broad spread of encounters to which this would apply, this seems unlikely. Thus one is pushed towards the idea that these flints are genuinely not more closely classifiable and represent lithic forms which could be of either period. The inexact chronology would then be both genuine, and therefore interesting, implying broad continuity of human activity either side of the proposed period interface. Not only are (presumably later) Mesolithic and (presumably earlier) Neolithic artefacts similar, but also their distribution would indicate the expansion of such activity into new areas, locations and environmental niches. Interestingly, the locations of these 'late' encounters appear to run *against* the regional model proposed by Spikins.

To pursue this line of research further obviously requires basic research on material at a regional scale, examining existing collections and establishing, confirming or refining their chronology, functional characteristics and formal affinities - a point emphasised by Manby (2003a) and reiterated by the EMRF. This is an absolute prerequisite to progressing the understanding of the Mesolithic in the Yorkshire region.

5.3 The Neolithic Period (Figs. 5-14)

Traditionally, the Neolithic has been seen as a period in which the developments in lithic technology which give the period its name occurred hand-in-hand with the origins, expansion and establishment of sedentary agriculture and pastoralism (introduced from continental Europe by incoming migrants). These trends in turn were assumed to lead to a radical transformation of environment and landscape, including the construction of monuments with sacral, congregational, mortuary and commemorative functions.

More recently, it has been recognised that the introduction of the elements of the classic Neolithic 'package' was not a synchronous process. The early Neolithic, for example, may very well have been dominated by continuing 'Mesolithic' lifestyles (see above) and the widespread adoption of sedentary agriculture may not, over much of Britain at least, have taken place until well into the Bronze Age. Thus, whilst Whittle (1977) may once have favoured the rapid expansion of agrarian subsistence in the late 5th millennium bc, more recent commentators such as Thomas (1991) argue that, prior to the 2nd millennium, agriculture and permanent settlement were insignificant and patchy.

As with other periods, establishing which of these differing pictures best characterises the Yorkshire region requires more, and more chronologically precise, evidence for environmental and vegetational conditions, and for the character of human activities and settlement than is currently available. Having made this obvious point – archaeologists always make a plea for further, and better quality, data - it can also be said that, in order to frame a research agenda, serious thought should be given to theorising the relationship between 'Mesolithic' (mobile, hunter-gatherer) and 'Neolithic' (sedentary, agrarian and pastoral) subsistence and social organisation.

How, for example, might small-scale agriculture and pastoralism complement and be accommodated within the framework of the highly mobile subsistence strategies of the Mesolithic? Do the later Mesolithic changes proposed by Spikins and Vyner above, perhaps involving less broad-ranging hunting strategies, anticipate the development (if only in parts of the region) of more sedentary habitation, agriculture and stock-rearing? How do changes in habitation and subsistence relate to the other classic developments of the Neolithic, the construction of permanent monuments in the landscape and the manufacture and use of ceramics?

In terms of pottery production and landscape exploitation it is interesting that the hand-list of radiocarbon dates from the site at Marton-le-Moor in the Vale of Mowbray published in *The Archaeology of Yorkshire* (Abramson 2003) includes 21 dates which fall chronologically within the Neolithic period between *c*.3950 BC – 2500 BC, and which are associated with its classic ceramic types: Grimston Ware, Towthorpe Ware,

Peterborough Ware and Grooved Ware. Virtually *every one* of the radiocarbon determinations involved was obtained from (charred) hazelnuts, the foodstuff which is virtually a *leitmotif* of Mesolithic hunter-gatherer societies. The single sample provably derived from a grain crop, barley seeds, dates from the range 2290 BC – 1970 BC, the very latest Neolithic or early Bronze Age. A similar picture seems to accrue from recent work at Roecliffe, near Boroughbridge (quoted in Hall and Huntley forthcoming), though here the hazelnuts are accompanied by other wild-collected foods such as crab apple and some indications of cultivated crops, including one sample with abundant cereal grains, mostly hulled barley.

The issue of the Mesolithic/Neolithic interface is not, of course, something which is problematic only in Yorkshire, and addressing it is likely to involve hard thought and wide-ranging consultation and consideration of archaeological and anthropological literature. It is clear that, as yet, no part of the region has produced the range of evidence which would allow these relationships to be recognised with any certainty. One of the intentions of this project was to begin to suggest *which* areas might have the greatest potential in this regard. Additionally, it is in the very nature of the Neolithic period that development is unlikely to have been uniform across the region. Thus the picture obtained for one area need not be applicable in another.

Nevertheless, the evidence which *is* currently available from artefacts, monuments, environmental and landscape studies ought to be sufficient to allow the development and refinement of models of the inter-relationships between the different suites of material remains available for Neolithic Yorkshire. This should, in turn, allow clearer definitions of *what types* of evidence are required to investigate these models further, and *where* it should be sought. Such an increased evidential base will need to be pursued with reference to more specific models and the questions which these raise - simply waiting for 'more data' to be generated, and assuming that all will become clear eventually as a result, will not allow real progress.

In the light of the above, it is worth considering the chapter *The Neolithic and Bronze Ages* (Manby *et al* 2003b) in the *Archaeology of Yorkshire* volume. This is, arguably, the most systematic and comprehensive of any of the period-based chapters in *The Archaeology of Yorkshire* volume. Covering the three-and-a-half millennia between *c*.4,400 BC – 700BC, it is divided into five main sections. The first is a concise, yet comprehensive, 34-page summary of artefact and monument types from the region, organised into six sub-periods (early/middle/late for both Neolithic and Bronze Age) linked, where possible, to national chronological schema. This section provides a chronological starting-point for regional research into the archaeology of these periods, and constitutes a crucial work of synthesis essential for all future studies.

The overview is then very usefully summarised on two 'timelines' (Tables 3 and 4), which illustrate the chronologies of various artefact and monument types, set against broad environmental and climatic trends. By its very nature this section deals with the best-studied and most closely-dated material of these periods from the region. It is followed by a summary of environmental, landscape and monumental evidence from no fewer than 13 'terrain units' from the three major topographic zones of 'Eastern Yorkshire', the 'Central Lowlands' and the 'Pennine Uplands'. This is followed in turn by shorter sections covering 'Subsistence Economy' and 'Wider Relations'. There is no doubt that this significant piece of work succeeds admirably in its intention of

presenting '…*a current chronological framework and the macro-topographical backgrounds for the traditional Neolithic and Bronze Ages*', which represents '…*the outcome of 20th century research...and...the vast 19th century data legacy*' (Manby *et al.* 2003b, 113).

The work of Manby, King and Vyner may provide an essential starting-point for studying the region, yet there is a fundamental element missing from the survey, one which is essential to the 'innovative research strategies' which the authors hope for in the future: the chapter is resolutely *descriptive*. It offers no real sense of human agency, individual or collective, and thus no social narrative in which the material remains can be situated, explanations proposed and reasons offered as to *how* and *why* the changes observable in the archaeological evidence occurred. Without social models to articulate the material evidence, the picture will remain static, comprising distributions, parallels, 'influences', and evidence for environmental change. These are means, not ends. Certainly, the evidence currently available is patchy and fragmentary, and may well support competing, and perhaps even contradictory, explanations. But there is surely enough material available to begin to propose some plausible hypotheses which future work can be framed to investigate?

Consider a handful of examples from the chapter under discussion here. It is noted that the advent of subsistence agriculture recognised from palaeoecological data has few, if any, primary Neolithic artefact or monument associations, and that there is increasing evidence in northern England that '[Neolithic] *innovations in culture and technology...pre-date the 'elm decline'* [of *c.*5,000 BP] (Manby *et al.* 2003b, 42). Such chronological dissonances raise a whole series of questions: what are their implications for the origin and role of early 'Neolithic' mortuary monuments (long barrows) amongst the apparently highly mobile groups of the Mesolithic? Was the development of such mortuary architecture triggered by changes in seasonal movement patterns such as those proposed by Spikins in response to climatic and vegetational change? And might this have resulted in the more localised patterns of movement promoted by Vyner, perhaps alongside increasingly sedentary communities in which crop cultivation and animal domestication began to take on an increasingly significant role?

Concerning flint artefacts, do changes in later Meso- and early Neo- lithic material culture have identifiable functional differences, whether at the level of individual items or as assemblages? How might variations in the composition of such assemblages (and their locations within the landscape) indicate changes in subsistence strategies which themselves impacted on wider social organisation? (This last issue will be touched on with reference to the YARF distribution of Neolithic material, later in this section). Can disparities in landscape and environmental evidence identified in the 13 terrain units covered in the Manby, King and Vyner chapter be interpreted at a regional scale, in terms of differential land-use and rates of 'take-up' of the Neolithic artefact and monumental traditions? How did communities within these different areas interact? Were they distinct, largely sedentary groups, or did a large part of the population remain seasonally mobile throughout much of the Neolithic? What might the role have been of the henge monuments of the region, for example the recently published Ferrybridge henge and its associated ritual landscape (Roberts 2005), in mediating such mobility of people and materials, located, as many of them are, along the western fringe of the Vale of York within the major river valleys?

Such considerations in turn raise the whole issue of traded items, most obviously the distribution of stone axes from the Cumbrian Fells throughout eastern England. Apart from any practical utility, did these serve as gifts in exchanges intended to cement relationships between increasingly static communities and kin groups which had previously migrated seasonally over much wider areas? Did the decorated ceramics of the Neolithic perform a similar role, and how do their functions, and apparent symbolic significance, relate to the development of an agrarian subsistence base? What does the overall suite of archaeological evidence from Yorkshire, as a 'subset' of the British Neolithic with its own variations and idiosyncrasies, tell us about how this region was connected with and related to the island of Britain as a whole?

This list of questions does not represent a research agenda. Indeed, it may be objected that these are a handful of enquiries drawn arbitrarily from a much longer list and that, in any case, the evidence scarcely exists to even begin to answer most of them. Both objections are valid, but we hope it has been demonstrated that these are types of question which *ought* to be being asked if we are to understand different categories of data in terms of overall narratives within which human agency is central, and which *can* be investigated using archaeological evidence. This approach also allows the implications of developments in different classes of archaeological evidence – lithic, ceramic, monumental, environmental etc. – to be considered in relation to one another with reference to overarching models of social development. Once artefacts, landscape and environmental data start to be theorised in relation to one another, priorities for data collection can start to be identified and refined, and discussion and debate moved forward.

The concluding section of the chapter by Manby, King and Vyner urged us to seek '*an understanding of...community subsistence base and land utilisation*' (Manby *et al.* 2003b, 113) and argued for multi-disciplinary collaborative landscape projects to achieve these aims by characterising successive settlement patterns within distinct geo-environmental areas. Whilst the significance and potential of such mini-projects would not be disputed, it might be argued that more general modelling of social change and its causes and impacts through the Neolithic (and indeed the Bronze Age and beyond) represent a more pressing concern, if the output from each environmental zone are to be combined into a picture of the whole region which can elucidate such diversity of response.

Finally, if it is maintained that constructing such model(s) is too extensive a task for a regional review, it may be noted that the East Midlands project has reached a similar point in its deliberations, and has made start in the process by acknowledging the range of subsistence and habitation strategies which might co-exist within a single region and by deploying the distinct models which it has inherited from previous work centred on the Peak uplands and the lowlands of the Trent valley and its tributaries. Whilst these should not be adopted uncritically north of the Humber, they do provide a starting point for the development of preliminary models for Yorkshire.

When one considers the YARF distribution of Neolithic encounters, the 'PER3 - NEOL_ONLY' distribution (Fig. 5) is more extensive than that for the Mesolithic, matching the latter in its concentrations but also extending into the Hambleton and Tabular Hills, across the Vale of Mowbray, and downstream along the Pennine watersheds and interfluves. Comparisons between this and 'PER3 - NEOL_ALL' (Fig.

6) shows simply increased concentrations of data in the same areas with the latter. The only exception to this concern several new, localised foci which seem to be a function of local collections practices, and some rather more general concentrations on the Magnesian Limestone belt west of the Vale, explicable in relation to Neolithic production in particular and discussed more fully below.

In addition, the 'PER3 - NEOL_ONLY' map (Fig. 5) bears a close resemblance to that of the sub-set 'PER3 - NEOL_ONLY_PRODUCTION' (Fig. 7) - the evidence for which largely comprises lithic finds and assemblages. This indicates, once again, the extent to which the regional distribution is dominated by this type of evidence, and links directly to the issue noted above concerning the extent to which Mesolithic subsistence practices, and perhaps the mobility which they involved, persisted into what is conventionally termed the Neolithic period. The fact that the PER3 - NEOL_ONLY_PRODUCTION (Fig. 7) and PER3 - NEOL_ALL_PRODUCTION (Fig. 8) distributions are markedly sparse on the Yorkshire Wolds, continuing the very thin Mesolithic distribution in this area, is also of interest. The latter distribution is, for the most part, a denser version of the former, the exceptions being that representation on the Magnesian Limestone belt of West Yorkshire is markedly greater in relative terms. This may reflect less narrow chronological attributions of lithics and some types of field monuments (e.g. field systems) in this area.

Further discussion of the distribution of other Neoloithic data must remain open, mainly due to the paucity of evidence. Thus 'PER3 - NEOL_ONLY_HABITATION' (Fig. 9) comprises only a few points, and even 'PER3 - NEOL_ALL_HABITATION' (Fig. 10) has similar limitations. Similar issues apply to 'PER3 - NEOL_ONLY_LAND_ENCL' (Fig. 11) and 'PER3 - NEOL_ALL_LAND_ENCL' (Fig. 12), with the exception of the concentration in the latter figure along the Magnesian Limestone in West Yorkshire (see further below under Iron Age discussion). When we come to a consideration of funerary components ('PER3 - NEOL_ONLY_SACRAL_FUNERARY' AND 'PER3 - NEOL_ALL_SACRAL_ FUNERARY': Figs. 13 and 14), discussion of the potentially important issue of monumental construction is hampered both by the lack of chronological definition, and by the adoption of functional categories (and groupings of same) which agglomerated 'sacral', 'funerary' and 'commemorative': a distinct category for 'monumental construction' would have been more useful, and should be created for more meaningful analysis. That said, consideration of individual cases does back up the suggestion that pottery production and monumental construction may be broadly contemporary developments even if, as noted above, their relationship with changes to landscape exploitation cannot yet be determined.

5.4 The Bronze Age (Figs. 15-24)

As with the Neolithic, it is clear that the implication of a period of wholesale change led, or at least characterised, by the introduction of new metalworking technology is inaccurate, and certainly inadequate as a basis for understanding the chronology of evident change in subsistence practices and social organisation. Thus, in some quarters, these traditional period divisions are giving way to schema which group together the late Mesolithic/early Neolithic, late Neolithic/early Bronze Age, and (as will be seen below) late Bronze Age/early Iron Age - these groupings seem to have more in common in terms of evidence for settlement form and organisation, the exploitation of

land and natural resources, and mortuary practices than they differ in terms of specific lithic and metal technologies. Such a re-configuration is likely to be equally appropriate for Yorkshire

The early Bronze Age in Yorkshire witnessed the rise of individual, accompanies burials, frequently under mounds ('barrows'), and the replacement of Neolithic ceramic traditions which formed components of an insular British tradition (Grooved Ware and Peterborough ware) with one which formed part of a European distribution – Beakers, as well as, of course, the manufacture of tools from metal. It may be worth noting (although, again, this is not a phenomenon unique to Yorkshire) that the earliest major change which is archaeologically observable relates to the monumental commemoration of the dead, in this case individually in round barrows, following the apparent pattern in the Neolithic, where long barrows are the earliest monumental features. Only in the later Bronze Age do marked developments in settlement form and land division seem to appear.

This broad sequence may be clear, but behind it lie issues which remain unresolved and largely unaddressed. These relate to developments and changes in the subsistence base, and to their chronology and underlying causes. In a recent overview of the prehistoric archaeology of northern England, Richard Bradley (2002) emphasised the incongruence between the chronologies for landscape change established by palaeo-environmental studies, which are underpinned by radiometric dating programmes, and the artefact-based schema typically employed by archaeologists, which often rely more on assumption than verifiable evidence. He further argues the need for archaeologists to get their house in order and consider the full implications of the former, dated sequences for their understanding and interpretations of the prehistory of the region, rather than ducking the issue and persisting with chronological assumptions which are frequently based on slender evidence.

Bradley's point is especially pertinent for the later Neolithic and Bronze Age in Yorkshire. The available evidence from across these periods suggests the expansion of agrarian and pastoral economies, but detailed chronologies across two-and-a-half millennia are scarce. The point is made more forceful by the fact that the Iron Age can become the 'default' attribution for the majority of undated enclosures, including all monuments but particularly those observed from the air as cropmarks. Such decisions serve to obscure and compress what may be a much more extended and less sudden development of land enclosure associated with agrarian and pastoral subsistence than is currently perceived to be the case (the issue is considered further below with reference to aspects of the YARF distributions, particularly in the Iron Age – 5.5).

Whilst evidence for permanent habitation sites of the early and middle Bronze Age is sparse, the period sees an increasingly durable mark being left on the landscape by its inhabitants in terms of funerary monuments (barrows from the early Bronze Age) and land division (linear boundaries from the later Bronze Age). How the development of more widespread funerary monuments, with an apparently increasing emphasis on individual commemoration, relates to wider changes in social organisation and the utilisation of the landscape is currently unclear, largely due to the uncertainties in chronology alluded to in the previous paragraph. To what extent in turn are these changes related to increasing population – accepting that such interrelationships are rarely simple cause-and-effect, and certainly that population growth should not assume

primacy as an 'independent variable'? Identifying changes in population level archaeologically will always be problematic, but the chronological patterning of the evidence surely indicates some increase in the course of the Bronze Age, particularly since it is usually assumed that the proliferating inhumations within round barrows was the preserve of élite groups, the greater part of the population being interred (as cremations or inhumations) in archaeologically less visible 'flat' cemeteries, or disposed of in other ways.

Whether population continued to grow through the middle and into the later Bronze Age is also uncertain, but increasing indications of permanent settlement and land division seem suggestive. How might this have impacted on social organisation, and what were the driving forces behind each process? The point made previously, that mobile 'Mesolithic' lifestyles may have persisted in some parts of the region through the Neolithic and into the Bronze Age, makes any decision on this matter difficult, and this, in turn, brings us back to the apparent sparseness of permanent habitation sites of the early and middle Bronze Age: is this simply a function of their visibility, or were they, in reality, infrequent features in the landscape?

Such considerations raise the question of the symbolic and functional roles of ceramics, which appear in the region in the middle Neolithic but seem to become more widespread in the later Neolithic and early Bronze Age with the appearance of Beaker pottery, with the subsequent emergence of other ceramic variants through the middle of the period. The majority of the contexts in which Bronze Age ceramics are found appear to be funerary, and they are often understood and interpreted primarily in terms of their symbolic and ritual role. It seems likely that any purely functional role relates to the storage and/or transportation of foodstuffs (possibly with pottery vessels being symbolic facsimiles of containers manufactured in other materials – e.g. the suggestion that Beakers imitate the shape and decoration on woven basketwork), the symbolic significance of the containers being associated with a vital food resource. But do the contents derive from agrarian production or gathered resources such as hazelnuts? Such issues obviously serve to emphasise the need to link artefact studies and broader environmental and landscape research, which have hitherto tended to be pursued in isolation from one another.

Consideration of Beakers serves as a reminder that, in this respect at least, Yorkshire in the Bronze Age formed a component of a European-wide 'culture', with Beaker variants known from across wide areas of western and central Europe. The potential implications of this merit brief mention in the context of previous discussion of the persistence of mobile hunter-gatherer lifestyles. Traditional explanations of British Beakers in terms of invasion and migration have largely been abandoned in favour of notions of 'acculturation' and 'peer-polity interaction' (Renfrew and Cherry 1986), with the objects being adopted as symbolic and prestige goods in imitation of practices conducted in societies with which inhabitants of Britain in the Bronze Age came into contact. Given the possible significance of mobility persisting through the Neolithic and beyond, could one entertain the possibility of extremely wide-ranging élites covering large swathes of Europe, supporting themselves by tribute-taking (reflected in the funerary deposition of ceramics representative of this social relationship)? Once again, this is clearly an issue which extends far beyond the confines of Yorkshire, but one might plausibly elucidate it with a more detailed characterisation of the nature of Bronze Age society, and how it changed through time, in our own region.

The late Bronze Age in Yorkshire witnesses the first clear indications of settled habitation sites and large-scale land division, alongside the disappearance of the large-scale 'ritual' monuments of the early and middle periods. Explanations as to how and why these major changes took place are again thin on the ground, although notions of population pressure on resources and a consequent increasing territoriality (witnessed by settlement developments such as palisaded enclosures and hillforts, and large-scale, monumental land division) often seem to be adopted as a 'default' explanation. Our incomplete knowledge of developments in the early and middle Bronze Age, with its marked shortage of evidence for habitation sites and information on the nature and balance of subsistence practices, make it difficult to establish the circumstances in which this landscape and settlement process developed. Yet many of its archaeological characteristics place it closer to the Iron Age period than to the earlier sub-divisions of the Bronze Age, reinforcing the earlier point about the need to define archaeological corpora across traditional period boundaries.

As with the Neolithic, and particularly in the light of the observations of Richard Bradley cited above, it is clear that more detailed chronological definition of the developments witnessed in the Bronze Age is essential, particularly with reference to the last-noted, key developments in subsistence economy, landscape organisation and land division. Yet refinement of chronologies can only be really effective in the context of research questions derived from *modelling* the character of Yorkshire's Bronze Age society and seeking to understand how, within these models, the different components of material culture of the period, manifest in artefacts, landscape, and environmental data relate to one another.

As Bradley (2002), again, has pointed out, these issues need to be approached with the specific, distinctive character of the prehistoric archaeology of the region always to the fore, rather than by employing assumptions derived from study of the 'classic' areas of central southern England. Whilst the long traditions of study and extensive research into these areas have meant that they have provided a baseline for other regions of Britain, he argues that they are, in fact, highly atypical: the prehistoric archaeology of, for example, northern England, should be understood on its own terms. We should be seeking to recognise what its particular characteristics are telling us about the societies which created it, rather than attempting to accommodate it within expectations derived from the downlands of Wessex.

Having acknowledged and accepted Bradley's observations, it should also be added that some broad themes – the shift from mobile to sedentary lifestyles, associated changes in subsistence from hunting and gathering to agriculture and pastoralism, the role of burials and monuments in establishing and maintaining forms of social organisation, the functional and symbolic significance of artefacts, and the nature and chronology of environmental change – remain fundamental to any research agenda. In addition to the obvious need for more chronological resolution to address these themes, the meaning and significance of the archaeological evidence from Yorkshire as to how prehistoric communities wrought such changes, and in turn responded to them, can only be drawn out through the development and exploration of more focussed hypotheses which connect these broad themes with each other, and with the different categories of available archaeological evidence.

Turning to the regional distribution generated by YARF, Bronze Age encounters (both 'PER4 - BA _ONLY' and 'PER4 - BA_ALL': Figs. 15 and 16 respectively) are greater in number than for any other period and similar in their concentrations, suggesting good quality chronological attributions (with the exception of the eastern fringe of West Yorkshire, as in the Neolithic period – see further blow under the discussion of Landscape Enclosure). The discussion of Production (Figs. 17 and 18) and, especially, Habitation sites (Figs. 19 and 20) is limited because of lack of data and serve to reinforce the extent to which the record for this period is dominated by funerary monuments, a particularly telling exemplar of Manby's observation of the extent to which the work of 19th and early 20th century researchers still furnishes much of our knowledge of prehistory in the region.

0The ready visibility of round barrows, both as earthworks (under pasture and, to a lesser degree, under the plough) and as cropmarks and soilmarks, means that they are readily visible under most land cover and that, possibly excepting the Vales of York and Pickering (though cf. the work of Dominic Powlesland (2003) and colleagues at West Heslerton) their YARF distribution may be a close approximation of their actual overall distribution. The confidence with which these monuments are attributed to the Bronze Age is reflected in the distributions PER4 - BA_ONLY_SACR_FUNERARY and PER4 – BA_ALL_SACR_ FUNERARY (Figs. 23 and 24 respectively): whilst not identical in every detail, it is difficult to distinguish any real differences between the two, indicating that the bulk of Bronze Age funerary monuments – primarily round barrows – are readily and unambiguously identified.

This is far less the case with evidence for land enclosure. PER4 – BA_ONLY_LAND_ENCL (Fig. 21) shows a concentration along the Wolds scarp (the 'Wold entrenchments'), with lesser concentrations in the Tabular Hills, Cleveland Hills and North York Moors and in upper Swaledale (each of these is an area where substantial upstanding monuments have attracted research interest in the course of the 20th century). PER4 – BA_ALL_LAND _ENCL (Fig. 22) greatly increases the density in all of the above areas except Swaledale (this being the subject of a dedicated research project in the 1980s in a previously largely undocumented landscape). However, the latter distribution also reveals a thin, but more widespread, distribution in the Pennine uplands overall, and a major concentration along the Magnesian Limestone belt of West Yorkshire and westwards into the Gritstone uplands of that county. This indicates the possibility of extensive (?late) Bronze Age land enclosure on the eastern Pennines (but see further below under Iron Age discussion), as well as the more widely-known evidence in the uplands to the east of the Vale of York. It apparent restriction to West Yorkshire seems more likely to reflect a more inclusive chronological attributions in the data from there than from other parts of the region: elsewhere, it seems, more specific Iron Age attributions have been applied on morphological grounds to 'undated' enclosures. Once again, there is as yet insufficient dating evidence to decide which attribution is the more suitable.

Finally, and back into the earlier Bronze Age, it is noticeable that the distribution of evidence for production in the Neolithic and Bronze Age is closely similar, as demonstrated by PER3 – NEOL_ONLY_PRODUCTION and PER4 – BA_ ONLY_ PRODUCTION (Figs. 7 and 17 respectively). Once again, this distribution is heavily influenced by where research has been concentrated – perhaps especially the case since much of the evidence is provided by lithics, requiring a measure of expertise and

experience to recognise on the ground. Yet these distributions serve as a reminder of the possibility, perhaps now probability, that patterns of activity involving mobile hunting groups may have persisted through the Neolithic and into the Bronze Age.

5.5 The Iron Age (Figs. 25-34)

The study of the Iron Age in Yorkshire has largely been dominated by the Yorkshire Wolds, and more specifically by the monumental and sometimes artefact-rich mortuary evidence recovered there: the square-ditched barrows, cart-burials and other accompanied inhumations of the famous 'Arras Culture', broadly spanning the second half of the 1st millennium BC. Discovery of these burials in the 19th century, along with the many surviving prehistoric monuments there and the high visibility of cropmarks on its chalk bedrock, has led to much research into the Yorkshire Iron Age being concentrated in this area. The effects of sub-regional areas of study inherited from the efforts of early researchers is still apparent, manifest in the bi-partite structure of the Iron Age chapter in *The Archaeology of Yorkshire*, which presents separate summaries of the Iron Age in East Yorkshire (Mackey 2003) and across the rest of the region (Manby 2003b).

The brevity of this chapter – seven pages covering a period of *c.*800 years compared to the 80 pages devoted to the Neolithic and Bronze Ages (admittedly a period covering nearly three-and-a-half millennia) – is not the reflection of a shortage of data from the Iron Age in the region. Quite the opposite. Recent surveys of eastern Yorkshire (e.g. Stoertz 1997) serve to emphasise the quantity of material available, whilst Manby points out that a large amount of primary data from central and Pennine Yorkshire awaits analysis and publication. It is arguably the character of that data, and the apparent intractability of much of it, which has limited the study of the Iron Age over much of the region, and restricted overviews of the period across the region as a whole. Recent 're-thinkings' of the Iron Age in Yorkshire have, unsurprisingly, focused (though by no means exclusively) on the eastern part of the county, where the quality and range of evidence available is seemingly highest. Yet even here, major excavations crucial to understanding the development of settlement across the period, at Garton and Wetwang Slack, remain unpublished. This contrasts, to some extent at least, with the comparative alacrity with which resources have been made available for the research and publication of richly-furnished funerary contexts from the locality. In the remainder of Yorkshire much more has been observed and recorded than has been interpreted, synthesised and published.

The reason for this diversity of response is, arguably, the *character* of Iron Age evidence in the region. The 'Arras Culture' burials aside (apparently concentrated in, although not exclusively *restricted* to, the Wolds – a point which will be returned to below), there is a notorious absence of evidence for burial provision across the rest of Yorkshire throughout much of the Iron Age. In the absence of a monumental burial tradition comparable with the Neolithic and Bronze Age, the comparatively few known hill- and promontory-forts and related embanked enclosures, together with the unique enclosed landscape at Stanwick, furnish the major, readily recognisable evidence of the period in the landscape.

The sparseness of burial evidence, Arras excepted, and the consequent lack of distinctive and/or rich artefacts deposited as grave-goods meant that antiquarian effort concentrated on earlier prehistory. This absence of distinctive artefacts (although such do exist, albeit infrequently, in the form of metalwork hoards and 'ritual' depositions) then hampered the development of chronologies derived from typological sequence. Finally the absence of monumental and distinctive features and of widespread artefact corpora meant that, where the Iron Age *was* studied, it was dealt with as a largely localised phenomenon within the 'sub-regions' referred to in earlier sections. The widespread occurrence of communal and funerary monuments, and distinctive artefacts deposited as grave furniture in the Neolithic and Bronze Age provided common ground for researchers across the region for the earlier periods. Whereas, for the Iron Age, it is only comparatively recently that attempts have begun to study and interpret the archaeology of the period across the region as a whole (initially Challis and Harding 1975 and, more recently, e.g. Evans 1995 for ceramics), mainly as a result of widening perspectives and increasing resources.

In short, much of the archaeology of the Iron Age in Yorkshire has been, and perhaps in some quarters continues to be, perceived as mundane and somewhat impenetrable, its large quantities of evidence more than offset by the problems of establishing chronologies from coarse ceramics, and the absence of the rich monumental, funerary and artefact traditions of earlier prehistory. Yorkshire is certainly not unique in that respect, this perception having been identified in Britain as a whole. The full extent of Iron Age land organisation, in this region as elsewhere, has really become apparent as a result of aerial survey since WWII, and it might be argued that the *leitmotif* of the period is the ditched field system, viewed from the air as a soil- or crop-mark (Stoertz 1997). The period is clearly one during which the landscape was transformed in many parts of the region. The difficulty, as usual, is in establishing the chronology of those changes, and what they meant in terms of the organisation of both subsistence economies and the society which they sustained. The lack of knowledge of chronology in particular is what has led the Iron Age to be termed (and sometimes used as) a 'dustbin', as noted in the previous section: a convenient chronological no-man's-land for indications of land organisation for which no evidence of date is available.

If, as suggested in the previous section, the early Iron Age should be seen, in many respects, as being 'of a piece' with the landscape developments of the late Bronze Age, what kind of questions should be being asked of this stage of development? As noted, the chronology of the Iron Age remains problematic and, in addition to the difficulties of artefact, particularly ceramic, chronology, there is also the problem of the radiocarbon calibration 'plateau' in the period 800 – 400 cal BC. Yet it is clear that the period as a whole sees the emergence of a much more intensively farmed landscape, testified primarily by the near-ubiquitous ditched (and, in the Pennine uplands, walled) field systems, but also by the frequent occurrence of saddle and beehive querns and, increasingly, palaeobotanical indicators.

In the first instance, how did the typical Iron Age fields relate to the large monumental land enclosures of the later Bronze Age in terms of function? Should the expansion of arable agriculture be related primarily to the need to provide fodder for large herds of stock? If so, in which parts of the region might the origins of intensive agriculture be sought in the later Bronze Age and early Iron Age? Evidence for the existence of Iron Age fields occurs across Yorkshire but was the balance of their usage for stock rearing

and penning or the growing of crops? And how did this change across the period and what might the implications of such changes be? The central role of livestock in the agrarian economy, cattle in particular, may mean that transhumant movements within the region were a central part of the subsistence economy, and seasonal grazing, on both upland pastures and in the low-lying wetland vales, may have formed significant zones of contact between different social groups. The Vale of York may have been of particular importance in this respect, given its extent and the fact that (as has been noted previously) its rivers serve to connect the uplands to the east and west, whose archaeologies have received more archaeological attention than the Vale itself.

Whatever the detail of their chronology, how do these changes in the wider landscape relate to settlement pattern and social organisation? Known settlements of the late Bronze Age, such as the promontory fort at Scarborough and the type-site palisaded enclosure at Staple Howe, appear to run through into the Iron Age, but over what timescale do these types of site proliferate, if they do? Subsequently, how is settlement form and location transformed in concert with agrarian expansion (as for example with the apparent shift from enclosed to open settlement at Thorpe Thewles: Heslop 1987)? And what are the implications of this for subsistence practices and social organisation? Above all, what forces drive these changes in landscape and economy? Manby (2003b, 123) cites climatic deterioration in the mid-1st millennium BC as a contributory factor, creating pressure on the fertility and productiveness of the land, and resulting in a need to expand into new areas. This may well be an important part of the story – but, equally, increasing complexity in social relations and the organisation of production within and between communities creates dynamics of its own, which may operate independently of environmental factors (and in some instances, although obviously not the one cited here, can precipitate changes in the latter sphere).

These issues lead to consideration of the development, or perhaps more probably the changing representation, of social hierarchies apparently indicated by the Arras Culture burial tradition, originally recognised in East Yorkshire, but increasingly encountered elsewhere within the region. The existence of a small number of hillforts in the uplands of the Pennines, Wolds and (as recently recognised at Roulston Scar) the North York Moors seemingly argues for, at least, periodic collective assembly and possible tribute-taking as part of quite extensive social networks. How the emergence of the Arras Culture burial tradition relates to the wider settlement pattern is unclear, as is the relationship of both to an expanding agricultural base.

Chronology, once again, is a fundamental stumbling block. The probable impact of the Arras élites beyond what has been perceived as their heartlands on the Wolds has been proposed in the context of the evidence for intensive iron production in the Foulness valley (Halkon and Millett 2000: a further indication of intensified resource exploitation broadly contemporary with agrarian expansion?). Control of this industry, it has been suggested, provided part of the basis for their superior status, as well as the raw materials for their grave accompaniments, and may have gone hand-in-hand with broader control, in particular of agrarian surpluses. The occurrence of square-ditched barrow cemeteries in the Vale of York at Skipwith, and to the west in the recent spectacular discovery at Ferrybridge (which, interestingly in the light of previous comments about the significance of cattle in this period, included a large deposit of cattle skulls) may suggest a geographically more broadly-based élite presence across the region.

These indications of Yorkshire's most famous Iron Age 'culture' being represented across the wider region raises several issues. The first concerns the basis of élite authority: were they located in 'central places' from which they exercised power, or more mobile, taking up residence (and extracting tribute) in various locations? Might, in fact, the propensity for burial with carts and horses reflect the significance of movement in their élite role? The importance of mobility in articulating social relations from the Mesolithic has been emphasised throughout, and the suggested transhumant movement of stock would see this continuing into the Iron Age. Whilst there is no suggestion that the Arras élites were in any sense 'hunter-gatherers', the possibility of their being peripatetic, rather than sedentary and restricted to a particular locality, merits consideration. We may have no clear idea of the articulation of élite groups with the rest of society in the later Iron Age, yet the new evidence from west of the Wolds allows alternative interpretative models to those usually employed. It also serves to re-emphasise the importance of considering the region as a whole in this period, suggesting that there must have been constant interaction between communities within the different sub-regions. We need to investigate and interpret the archaeological evidence in this light.

The apparent disappearance of the Arras culture burials in the course of the first century bc also prompts consideration of the integration of the Yorkshire region with the wider world: does this merely reflect a change in the manner of élite representation (with mortuary display no longer the significant arena it had once been)? Or are we seeing the decline and demise of a regional elite and the direct incorporation of what had been their territory into wider power structures? The rise of Stanwick in the north of our region may be of particular significance here (despite the recent changes which Wheeler's original phasing and interpretations have undergone: Haselgrove *et al*. 1990).

Yet how all of these developments relate to the chronology of agrarian expansion and land enclosure remains obscure. Apart from being of importance in themselves, these issues are vital in understanding the Roman impact on the region - so much about the nature of Romano-British settlement and society in Yorkshire, the way in which it was incorporated into the province of *Britannia* and the wider Roman Empire, and even the late Roman *floruit* and subsequent demise, hinges on an understanding of late Iron Age social relations and economic organisation. The latter will certainly have persisted, to varying degrees, across the region for much, if not all, of what we conventionally term 'the Roman period'.

Notwithstanding the difficulties of chronology discussed previously, in many respects the Iron Age distributions generated by YARF represent almost as chronologically-refined a picture as is currently available. The contrast between those encounters firmly identified as Iron Age ('PER5_IA_ONLY': Fig. 25) and those which *might* belong to the period ('PER5_IA_ALL': Fig. 26) is very marked. In the former, concentrations occur only in The Wolds and the north-western uplands, where densities should be sufficient to investigate local trajectories of development in some detail. In contrast, in Fig. 26, there is not only a substantial increase in density in The Wolds, but major concentrations appear across the North York Moors and much of West and South Yorkshire, with a strong presence, though of lesser density, in the Vale of Mowbray. Investigations of the distributions for Production (Figs. 27 and 28) and for Habitation

(Figs. 29 and 30) add very little either to these specific themes or to general interpretation due to the paucity of data points.

Much of the previous discussion was concerned with the chronology of land enclosure, and the relevant YARF distributions ('PER5 - IA_ONLY_LAND_ENCL' and 'PER5 - IA_ALL_LAND_ ENCL': Figs. 31 and 32 respectively) repeat this pattern, with the exception of the Vale of Mowbray, which displays only a very sparse distribution in both cases. Once again, the concentration on the Magnesian Limestone in West Yorkshire is evident on the latter figure, reflecting the distributions seen previously for Neolithic and Iron Age periods (Figs. 12 and 22). However, in the case of Fig. 32, it can be seen to now continue into South Yorkshire above the same geological formation (and the same patterning is produced in the Roman period - see below, Fig. 42).

It is difficult to believe that this density of sites along the western margins of the Vale of York could be created by localised collection policies, especially as it crosses county boundaries. However, whether the concentration of data points is a product of site visibility on this type of geology, or a 'real' aspect of human activity, remains unclear. Concerning chronology, SMRs obviously differ in their date allocations. Officers in West Yorkshire allow these features to belong to any period from the Neolithic up to, and including, the Romano-British (compare Figs. 12 and 32), whereas their counterparts in South Yorkshire suggest that they date to the end of late-Prehistory and/or into the Roman period. Other circumstantial evidence, for example the environmental evidence quoted above, might suggest that such intensive development of enclosures over so large an area is more in the late-Bronze Age and later than before although, of course, it should still be recognised that at least some of these sites might have their origins in earlier centuries. Clearly, only ground-based investigation of a sample, many of which have only been recognised from the air, will be required to take understanding forward.

Finally, mortuary evidence of confirmed (or highly probable) Iron Age date ('PER5 - IA_ONLY_SACR_FUNERARY': Fig. 33) is for the most part restricted to the Wolds and the uplands immediately north of the Vale of Pickering, with only a small number of encounters in the rest of the region. However, 'PER5 - IA_ALL_SACR_FUNERARY' (Fig. 34) reveals a sparse, but appreciable, distribution of possible sites in the uplands of West and (western) North Yorkshire. These may be of significance in the light of previous comments regarding overall regional hegemony of late Iron Age élites and the apparent spread of Arras-style burials to the west of the Vale of York.

5.6 The Romano-British Period (Figs. 35-44)

The incorporation of what is now northern England – including Yorkshire – into the Roman province of *Britannia* and the wider Roman Empire has traditionally been approached by archaeologists within the narrative framework provided by the classical authors of the 1st and 2nd centuries AD, and the accounts of power politics and military campaigns which they provide. In this, Yorkshire is no different from other regions of Britain and, as in those other regions, research and fieldwork in the 20th century has greatly amplified the quantity, quality and range of available evidence, as has been ably summarised by Ottaway (2003). This, in turn, has led to an appreciation that

archaeological evidence has the potential to address a range of issues extending far beyond the concerns of Roman authors and the archaeological pioneers who sought to illustrate their historical narratives. That said, whether we have developed the interpretative perspectives which can allow us to make the most of this wider range of archaeological evidence is altogether more debatable.

Although the narratives for the region furnished by classical authors and related sources no longer underpin research and interpretation to the extent they once did, their influence, and assumptions which derive from them, are frequently in evidence even in modern studies. Furthermore, issues which were established in the early years of the study of Roman Britain, in particular the processes and chronology of 'Romanisation' – the adoption of Roman (material) culture and the implications of this for the communities and society concerned – and the relative, and changing, roles of 'military' and 'civilian' in shaping Roman economy and society in the region, continue to inform the types of questions asked of the archaeological evidence, and the interpretation of the datasets marshalled in response to those questions.

This tendency is not, in itself, a problem: these are important questions which *should* figure highly in research. What is more problematic is that fundamental assumptions about the processes and 'meaning' of these developments, themselves a legacy of the early 20th century, continue to hold the field. One result of this is that the definition of what is regarded as 'interesting' and 'significant', and by extension meriting *detailed* research, remains tilted towards more 'Romanised' loci in the landscape. Thus the focus is on towns and 'higher order' settlements such as military sites and villas: the traditional indices of 'Romanisation'. Although the remainder of the rural landscape has by no means been ignored, with notable examples of study through both aerial survey and ground-based fieldwork, there is rarely sufficient chronological and functional information regarding settlement types and land-use to allow the meaning of changes in the countryside to be related to developments at the better-studied, more-clearly 'Romanised' counterparts. This may be, in part, a reflection (once again) of the difficulty of establishing reliable chronologies on sites lacking significant assemblages of particular types of material culture. Yet it also betrays unwarranted assumptions about the nature of the relationship between these different categories of site and, at a wider level, between Roman imperial authority and the indigenous societies which it incorporated.

It is clear that the essential starting point for understanding the impact (and indeed the processes) of Roman occupation on Yorkshire lies in the nature of those late pre-Roman Iron Age (LPRIA) societies which inhabited the region. As was noted in the previous section, these processes are far from clear at present, due in large part to problems in establishing sufficiently fine-grained chronologies. The social and economic organisation of these societies are unlikely to have been uniform across the region, but there has been little progress in differentiating them archaeologically, beyond the (not particularly helpful) application of labels such as 'Parisian' and 'Brigantian' tribal areas derived from classical authors. There are indications of intensification of land use in the later part of the 1st millennium BC, but whether these reflect increasing centralisation and/or hegemony of a regional élite in this period remains no more than speculation.

Understanding the character of LPRIA social organisation, how this varied across the region, and whether there are archaeological indicators of regional élite hegemony is of critical importance in understanding how the infrastructure and institutions of the Roman Empire were established and developed. The initial military impact is well-enough testified, with the establishment of the legionary fortress at York and an associated network of military installations of the later 1st and 2nd centuries. What is really at issue is how the region developed as part of a Roman province from then onwards, what the moving forces behind that development were, and the rate at which this occurred.

Discussion of these matters in the context of Roman Yorkshire, as elsewhere in Britain, has been dominated by two basic assumptions. Firstly, that the 'Romanisation' of the region is a symptom of the development of a system of production and consumption centred on market exchange. Thus demand for 'Romanised' goods drives production for profit, resulting in an upward spiral of wealth accumulation by élites which is subsequently invested in further production or spent on conspicuous consumption. This, in turn, generates further investment in production – agriculture or manufacture – and so the cycle continues. This 'model' – more frequently an unstated assumption – has been modified over the past couple of decades in the sense that the Roman state (in this region largely, although not exclusively, the army) is seen as the primary and fundamental investor in, and thereby foundation of, this market-driven economy. Nonetheless, the underlying notions concerning the nature of the Ancient Economy – essentially a pale reflection of our own – remain in tact.

The second assumption is that of 'continuity': the perception that the bulk of the rural landscape of the Roman period was already established by the end of the 1st millennium BC. The three-and-a-half centuries of imperial rule saw this landscape largely persisting, with only a veneer of Romanisation in the form of towns, villas and the network of Roman roads with their associated settlements distinguishing it from that of the LPRIA. The essence of how surplus was produced remained unaltered. All that changed was how, and by whom, it was now consumed. Both of these premises are deeply-rooted in the study of Roman Yorkshire, and both are problematic and need to be questioned and investigated, not assumed.

Whilst there is clearly no doubt that *markets* at which goods and produce were exchanged existed in Yorkshire as elsewhere in the Roman Empire, seeing 'the market' as the underlying dynamic of 'Romanisation', on which the institutions and edifice of the empire were built and ultimately relied, involves the imposition of anachronistic modern concepts of 'the economy' (an abstracted concept in itself alien to the ancient world). By assuming its operation, a whole range of issues regarding the nature of the relationship between the Roman state, regional and local élites and the wider population remain uninvestigated, and interesting variations in the patterning of evidence are left unexplored.

Equally, regarding 'continuity', the evidential basis on which some extravagant claims for the Iron Age origins of Romano-British landscapes is often very slender and, by assuming rather than demonstrating such antiquity, further important questions also remain unasked. Whilst, once again, there is no doubt that in many localities areas under cultivation or used for pasture in the late Iron Age continued well into the Roman period, it seems likely that this was significantly less uniformly the case than is usually

assumed. Furthermore, even in areas where agricultural landscapes can be shown to be of some antiquity in the Roman period, crucial details concerning possible changes in land use may be of great significance in understanding how rural landscape and society changed in the region from the late 1st century AD.

The EMRF comments regarding their Romano-British rural landscapes may be echoed in the case of Yorkshire: much of our knowledge currently exists in the form of static, descriptive maps which say little about the dynamics of agricultural land use. Hence, in addition to detailed and integrated field survey, a more analytical and interpretative approach to its study is required. To this could be added the comment that such research, and such approaches, should be undertaken with reference to more explicitly-stated models regarding processes of 'Romanisation', and the underlying relationships between Roman state, regional élites, and the wider population and the landscape which it inhabited.

There is now broad agreement that, beyond military fortifications and the main urban centres, anything which might be termed 'Romanisation' impinged but little on the wider landscape of Yorkshire for the first century or so after Rome sought to exert its control. Thus it appears to have been only in the late 2nd and early 3rd centuries AD that it began to make its mark (Roskams 1999). This is not to say that the inhabitants of that landscape were untouched by, or unaware of, the authority of Rome until that time – they undoubtedly would have been. Yet it does suggest that traditional patterns of community and social organisation may have continued from the LPRIA, with Roman institutions (and their representatives, perhaps drawn from local and regional elites) employing existing patterns of tribute and obligation to sustain the new infrastructure.

When new settlements and new settlement forms (such as the 'small towns' and roadside settlements) eventually began to appear on the scene around AD200, what functions were carried out within them? What were the reciprocal changes, if any, in the landscape beyond? Are there indications of an earlier pattern of farmsteads falling out of use? And, if so, were the former occupants 'attracted to the commercial opportunities presented by the new settlement', as a typical 'market' explanation would have it, or simply removed from the land under bonds of dependence, obligation and servitude, which represents one alternative?

From the 3rd century onwards, there are indications that the rural landscape beyond the main routeways was indeed undergoing change, with villas beginning to make their appearance, and seemingly growing in numbers and elaboration (if not greatly in size) through the late 3rd and 4th century. As noted above, it has frequently been assumed that these simply indicate the development of a taste for 'Romanising' amongst farming communities (or at least their more entrepreneurial members) who otherwise inhabited a landscape largely unchanged since the late Iron Age. As also noted above, this takes insufficient consideration of the uncertainties of our current knowledge of chronology, and the lack of detailed fieldwork investigating possible different patterns of land-use at a very local level in these two periods. For all that we can tell from the presently – available evidence (which has concentrated, almost exclusively, on buildings rather than surrounding landscapes), the growth of villas could be accompanied by marked changes in the organisation of land, the people on it, and the nature of the production in which they were engaged.

There are certainly indications of this in the evidence for rural production from the early 3rd century onwards, testified particularly by the manufacture of ceramics but also hinted at in other areas of production and by environmental evidence. There are also indications of significant changes in the layout and functions of the region's major towns from about that time, becoming more marked from the later 3rd century. What these changes signify in terms of the changing functions of urban settlement, individually and collectively, is unclear. However, archaeological investigations on these sites typically produce more evidence, both quantitatively and qualitatively, than the majority of Romano-British rural sites, especially where establishing the chronology of stratified sequences is concerned. These changes need to be considered in conjunction with contemporary developments in the rural landscape beyond the towns. A useful starting point would be to identify how different functions in the production, processing and consumption of raw materials, foodstuffs and manufactured goods are distributed across rural and urban landscapes throughout the region, in order to characterise changes in the organisation of production across the whole period and understand the role of different settlements in these networks of production and consumption through time.

Whilst this discussion has been largely restricted to settlement and landscape evidence – not least because, at a regional scale, these provide the common denominators – the Romano-British period is characterised, in Yorkshire as elsewhere in Britain, by a range and profusion of types of material evidence which do not exist for earlier periods, and in fact do not really occur again until the archaeology of the late- and post-medieval periods. Coinage and epigraphic evidence in particular provided the mainstay of early research into the period. Increasingly sophisticated statistically-based analyses of coin supply and circulation offers opportunities to understand contrasting roles of settlements within the region, and the degree to which they were integrated within a monetary system of exchange. That the role of money was intimately related to state taxation is now widely accepted, but equally it seems clear that, from the late 3rd century at least, coined money was widely used in a variety of transactions.

Again, the developments of the late 3rd and 4th century in the region have often been seen as the growth of 'civil' in contrast to 'military' society, growing out of circumstances of peace and security initially guaranteed by the presence of the Roman army, but increasingly developing its own impetus through the growth of market exchange (originally around military installations, subsequently in towns, 'small towns' and roadside settlements) and consequent increases in demand and (therefore) production. As noted previously, this picture rests on a set of untested and inherited assumptions, and it is important for study of the Romano-British period in the region that a more critical view is taken of the relationships between the state and its institutions (the army, civil authorities and, intermittently and briefly, the Imperial court), aristocracy and élites at regional and local levels, and the remainder (i.e. the great majority) of the population. Attributing all observable change in the archaeological record to aspirant 'Romanisation' attributable to 'the market' offers no explanation at all, and in effect renders new research redundant, since at a fundamental level its conclusions are already drawn.

Once again, as with earlier periods, the key issue can be seen not to be a need for 'more data', but for data which can be collected and analysed with quite specific research questions in mind. It cannot be argued that there is a net *shortage* of evidence for

Roman Yorkshire – Ottaway's survey (2003) amply confirms the extent and range of it – but rather that to answer the sorts of questions which would allow progress to be made in our understanding we need quite *specific* information, retrieved in quite specific ways. Much of this does not rely on spectacular (and spectacularly unlikely) discoveries, but on framing questions to which archaeological materials can supply answers *with reference to clearly stated models of Romano-British society in the region and how and why it developed and changed*. This obviously requires 'big questions' to be asked, as for the earlier periods – but such big questions already exist in the literature on Roman Britain, and research on the archaeology of Yorkshire in this period can and should begin to address them.

Any understanding of how and why Romano-British society came to an end in the region from the 5th century onwards unavoidably rests on how it was organised, and what held it together, in the first place. For plausible and satisfactory explanations for this decline and disappearance to be arrived at, characterisation of the nature of Roman society in the region across the preceding three-and-a-half centuries (which shows marked differences from regions both to the south and to the north) is an essential prerequisite. There is already a substantial body of archaeological evidence with which to begin this, but it needs to be animated and brought to life through the development of broadly-based models of society and social change.

In discussing YARF distributions, the point about a lack of chronological resolution has been made repeatedly. Since Romano-British archaeology is typically discussed at a resolution of < 50 years, this is a particular shortcoming, and it is clear that most of the issues discussed here cannot be effectively addressed. There are, nevertheless, a few specific points which can be made using the YARF database distributions. Comparisons between 'PER6 - ROMAN_ONLY' (Fig. 35) and 'PER6 - ROMAN_ALL' (Fig. 36) demonstrate few substantial differences, showing what we already know: that Roman sites tend to be more securely dated than many of their predecessors.

Concentrations of data at major urban centres also come as no surprise, whether a product of the former importance of these particular settlements (York, Malton, Brough, Catterick) and/or a product of local initiatives in gathering data (Castleford). Finally, this is the first period in which data concentrations become generally evident within the Vale of York. It remains unclear whether this is a 'real' change, as once believed, and a sign that imperial authority exercised substantial control over this part of the landscape for the first time, or simply a product of the way in which Roman sites have become more visible or dateable. The concentration of data along the Magnesian Limestone, discussed previously, is just as evident in the ROMAN_ONLY as the ROMAN_ALL map. This implies that, whatever their origins, some of these features were certainly retained in use into this period.

Elsewhere, sites on the northern scarp of the Wolds mapped in 'PER5 - IA_ALL' and 'PER6 - ROMAN_ONLY' (Figs. 26 and 35 respectively) appear to be largely complementary, with the Roman distribution forming two very marked, east-west, linear alignments. The Iron Age distribution in this area fills the space between them, as well as occurring to the south (to the north of the northerly alignment lie the wetland of the Vale of Pickering). Whilst this may reflect collection along existing road lines, as pointed out in other instances in earlier sections, these lines themselves may follow

Roman routeways, and this may be an instance of the growth of Romano-British settlements along such alignments, with the countryside in between retaining its LPRIA organisation. The same distributions show an explosion of Roman period sites along the Howardian Hills, although the extent to which this represents a genuine phenomenon or is a convention of classification in the Howardian Hills AONB archaeological project requires further investigation.

The distributions for production ('PER6 - ROMAN_ONLY_PRODUCTION' and 'PER6 - ROMAN_ALL_PRODUCTION': Figs. 37 and 38) and for habitation ('PER6 - ROMAN_ONLY_HABITATION' and 'PER6 - ROMAN_ALL_HABITATION': Figs. 39 and 40) add little by way of general interpretation to the above picture. As expected, production focuses on known centres such as Castleford, and shows concentrations in the Howardian Hills, Nidderdale and Upper Calderdale, the last two perhaps due to mineral exploitation, as well as a product of intensive collection activity.

Equally, consideration of mortuary remains (both 'PER6-ROMAN_ONLY_ SACRAL_FUNERARY' and 'PER6-ROMAN_ALL_SACRAL _FUNERARY': Figs. 43 and 44), adds little across the region, either in its own right or in relation to earlier practices. It does, however, demonstrate the pivotal importance of urban centres for burial practices (perhaps a self-fulfilling prophecy, given the easier recognition of cemeteries in urban contexts) and, maybe more surprisingly, the incidence of strings of burials in some rather out of the way places such as Upper Calderdale (though cf. above on collection policy and mineral extraction).

Finally, comparison of pre-Roman and Roman land enclosure ('PER5-IA_ONLY_LAND_ENCL' and 'PER6 FC_ROMAN_ONLY_LAND _ENCL': Figs. 31 and 41 respectively) is of rather more interest. This shows, on the north-western scarp of the Wolds, a marked shift in the 'centre of gravity' of the distribution in this location westwards, into the Vale of York, which may have important implications for the pattern and chronology of land use in the Vale across these periods.

5.7 The Early Medieval Period (Figs. 45-54)

The term 'early medieval' is derived directly from the convention employed by the regional data source drawn on by YARF. It would not necessarily be favoured otherwise as a term covering the period of 5th to mid-11th centuries, since there is a danger of confusion with the earlier part of ($c.11^{th}$ to 13th centuries) of the 'late medieval' period ($c.14^{th}$ to 16th centuries), a usage sometimes employed for 'early medieval'. Colloquially the terms 'post-Roman' or 'pre-(Norman) Conquest', are often used for this time span, although these also have obvious limitations. As used by YARF, in accordance with the majority of our data sources, 'early medieval' encompasses what are usually regarded as three, perhaps even four, distinct periods, each of which has often almost amounted to a discrete area of study in its own right.

The three very evident periods comprise: the 'early Anglian' (the northern equivalent of 'early Saxon'), extending from some point in the mid/late 5th century until the early 7th century; the 'middle Anglian' (equivalent 'middle Saxon') from the early 7th to mid-9th centuries; and the 'Anglo-Scandinavian' (equivalent 'Late Saxon'), mid-9th to mid-11th centuries. The fourth which might be added to this list comprises the early post-Roman

or 'sub-Roman' period of the early/mid-5th century. This is an area of study which has to an extent developed an identity of its own in the course of the past 15 years or so, seen as a post-Roman coda or a pre-Saxon overture depending on the perspective (and academic specialism) of the writer concerned. The very recognition of archaeological evidence reliably attributable to the 5th century is acutely problematic and, since it has to be approached with detailed reference to the situation in the 4th, its interpretation will depend to a large extent on how the later Romano-British evidence is understood.

Archaeological study of the 'early medieval' period as a whole has been heavily influenced, one might almost say largely determined, by two overriding factors. Firstly, in Britain, this epoch falls within the scope of a range (albeit limited) of contemporary written sources. These are of varying reliability, scope and chronological precision, but typically becoming more detailed in the later centuries of the period. Secondly (and very largely as a result of this), the period has been studied primarily in terms of the incursion, migration and settlement of ethnically distinct groups, together with the introduction and development of Christianity as the pre-eminent and, in the later part of the period, near-universal system of religious belief. Thus the divisions within the 'early medieval' period outlined above are marked by the arrival of 'Anglian' settlers from across the North Sea ('early Anglian'), the establishment of Christianity ('middle Anglian', after the conversion of King Edwin of Deira in the early 7th century), and the incursion and eventual settlement of Scandinavian groups in Northumbria from the mid-9th century ('Anglo-Scandinavian').

Research across southern Britain over the past half-century or so has indicated that the periods defined by this tri-partite sub-division do indeed have recognisably distinct archaeological characteristics, in terms of settlement organisation and funerary practice as well as art and artefact style. Furthermore, the scale and scope of investigations, in Yorkshire as elsewhere, has in turn raised questions which extend well beyond the scope of traditional historical narratives. Thus it is increasingly acknowledged that the archaeological study of the post-Roman and pre-Norman centuries is certainly not restricted to the illustration of those narratives, and the scope and potential of material remains as a source of evidence in their own right is clearly recognised. This is particularly evident when one considers the output from major research projects investigating this period within Yorkshire, notably the work at Fishergate on the edge of York and at West Heslerton in the Vale of Pickering, and at Flixborough just beyond the formal county boundary.

Nevertheless, the influence of these narratives, and the archaeological categorisations which derive from them, still runs deep. The division in burial practice evident across the region until the 7th century – accompanied 'Anglian' inhumations and cremations in the eastern half, (largely) unaccompanied 'British' burials in the west – is invariably interpreted in ethnic terms. Equally settlement studies across the same period (restricted largely to the 'Anglo-Saxon' sphere – commonplace artefacts [e.g. ceramics] diagnostic of contemporary 'British' settlement in the western part of the region have yet to be identified) are interpreted in the same fashion. Thus certain types of coarse ceramics and ornamental metalwork are classified as being ethnically 'Anglo-Saxon', and their identification on settlement sites as indicating the 'arrival' of ethnic Anglo-Saxons, or (more recently) the adoption of an 'Anglo-Saxon identity' by the settlement's existing inhabitants. The depth to which such ethnic classifications have penetrated the conceptualisation of the 5th to 7th centuries and the categorisation of

artefacts of that period mean that, in the last analysis, ethnicity and / or ethnic identity is invariably seen as the prime mover in the interpretation of the archaeology of settlement and landscape.

The problem of identifying early post-Roman settlement in the western part of the region *archaeologically* – as distinct from the evidence of place-names and the slender historical sources – has yet to be seriously addressed, in part because the later Roman archaeology from the Vale of York westwards has received comparatively little attention. Continuing interpretation of the evidence from this period in ethnic terms and in relation to Bede's account of the early development of the kingdoms of Deira and Northumbria will do little other than confirm the assumptions adopted at the outset. Instead we should start to study cemeteries and, to a lesser extent, settlements without relying on assumptions of broad ethnic identities.

To develop such new approaches, however, requires – once again – the development of new analytical frameworks: of late Romano-British society in the region, of how and why it broke down, and the implications of the patterning of the available early post-Roman evidence for how this breakdown resolved into new social forms.. Whilst it is reasonable to say, with Loveluck (2003, 158) that the '…formation [of post-Roman societies in the region] was the result of a complex range of interactions between indigenous and incoming populations with different effects in different parts of Yorkshire', more detailed and specific models will be required to clarify this complexity and characterise those different effects across the region.

From the early to mid 7th century and into the 8th, conventionally the 'middle Saxon' or, in Yorkshire, 'middle Anglian' period, ethnicity becomes less of a preoccupation in the interpretation of archaeological evidence. This is partly because the practice of accompanied burial is seen to decline, partly because of the (assumed-to-be) related issue of the spread of Christianity in the north following the conversion of Edwin of Deira, and partly because of the conquest of the British kingdom of Elmet, in the west of the region, by Deira in the course of the 7th century, thus extending the power of a Christian, Anglian dynasty across the region, and leading ultimately to the creation of the kingdom of Northumbria.

Archaeologically, the period witnesses marked changes in mortuary practice and settlement form. These have been summarised by the contributions of Loveluck (2003) and Hall (2003) in *The Archaeology of Yorkshire*, and point towards increasing social stratification, with the advent of richly-furnished or prominently-located individual burials, and settlements which have been identified as trading *emporia*, 'estate centres', and (in some respects more reliably thanks to the testimony of Bede and other contemporary ecclesiastical sources) monasteries, as well as the documented (if as yet archaeologically obscure) royal/ecclesiastical centre at York. Finally we now have the 'productive site', a term first coined in 1989 by Mark Blackburn and Michael Metcalf and developed in a recent conference (Pestell and Ulmschneider 2003. See Bosner 1997, 39 for a definition more directly related to Yorkshire's material culture). Apparently characterised by the frequent occurrence of metalwork and coinage of the later 7th and 8th centuries, this adds another component to the changing pattern of settlement (and, by extension, social) organisation in the region.

These changes very evidently relate to the growth of aristocratic power and its expansion and consolidation across Yorkshire. Such development underlies the creation of the kingdom of Northumbria, and the royal and ecclesiastical institutions to which our historical knowledge of the post-Roman centuries here is owed. It is clearly vital to understand the ways in which patterns of group identity, settlement organisation, production and exchange which prevailed in the 5th and 6th centuries were transformed in the 7th and 8th. This is obviously equally true of developments in the 9th and 10th centuries, following the Scandinavian settlement. It is this phase of activity which may see the origins of the settlement and landscape organisation in the region familiar in the later medieval period. The impact of Viking attack and subsequent settlement, initiating widespread fragmentation of landholding and consequent re-structuring of landscape and social organisation, is broadly accepted. As is the case with the preceding centuries, however, the proposition is underwritten by a restricted range of evidence and a small number of examples.

Our present understanding of the *patterning* of change across the early medieval period draws on a range of categories of evidence available in greater or lesser quantities: settlement sites of various types, mortuary practice and cemeteries, artefacts (notably ceramics and decorated metalwork), coinage, and zooarchaeological and environmental studies. Analyses of these individually has offered some glimpses of the *dynamics* behind that patterning (for example through coinage, ceramics and vertebrate remains – although discussion of dynamics is frequently driven by abstract conceptions of 'the market'), which further, targeted research could develop and pursue. The need to combine such research within overarching models of social change is as relevant in this period as in earlier ones. What is currently absent, however, to a degree greater than any period subsequent to the Neolithic, is extensive evidence for the rural landscape which sustained early medieval society (see further below).

In summarising their respective sections in *The Archaeology of Yorkshire*, Loveluck (AD 400 – 700: 2003) emphasised the need for integrated settlement, landscape and material studies undertaken through co-operative initiatives, whilst Hall (AD 700 – 1066: 2003), alongside urging large-scale investigations beyond the traditional 'heartlands' of the Wolds, noted the extreme sparseness of data and the 'unpredictability' (in character and research potential) of that which often emerges from large-scale projects. All of these are undoubtedly high on the list of archaeological *desiderata* for the early medieval period in Yorkshire. However, once again, it might be argued that the most crucial need is to develop models which offer the potential to explain social change across this period through the medium of archaeological evidence, and allow the implications of different categories of that evidence to be related one to another: the application, on the broad scale, of the 'elegantly simple and provocative speculations, re-directing attention to the ostensibly well known and placing it in an unfamiliar interpretative context' alluded to by Hall (ibid., 179). Whilst chronological definition is clearly essential, it might be argued that the period-specific 'themes' which have dominated the three differentiated phases within the early medieval period – ethnicity (5th to 7th centuries), Christianity (7th to 9th centuries) and Vikings (9th to 11th centuries) – be set aside from discussion. Instead, the substantive changes in settlement, mortuary practice, landscape and material culture should be considered in their own terms, allowing them to be understood through 'common denominators' of social and economic practice.

Regarding the YARF database distributions for this period, comparisons between 'PER7 – EARLY_MEDIEVAL_ONLY' and 'PER7 –EARLY_MEDIEVAL_ALL' (Figs. 45 and 46 respectively) show few differences, which may be reassuring, but also few particular concentrations or gaps across the region (including activity in the Vale of York, continuing the patterning first evident in the Romano-British period). The distribution of production sites 'PER7 – EARLY_MEDIEVAL_ONLY_ PRODUCTION' and 'PER7 –EARLY_MEDIEVAL_ALL_PRODUCTION' (Figs. 47 and 48 respectively) are too sparse to be useful, especially the former. Similar considerations apply to habitation, only more so ('PER7 – EARLY_MEDIEVAL_ONLY_HABITATION' and 'PER7 –EARLY_MEDIEVAL_ ALL_HABITATION': Figs. 49 and 50 respectively): to landscape enclosure ('PER7 – EARLY_MEDIEVAL_ONLY_LAND_ENCLOSURE' and 'PER7 – EARLY_MEDIEVAL_ALL_LAND_ENCLOSURE' (Figs. 51 and 52 respectively) and, perhaps a little more surprisingly, to funerary evidence ('PER7 – EARLY_MEDIEVAL_ONLY_ SACRAL_FUNERARY' and 'PER7 – EARLY_ MEDIEVAL_ ALL_SACRAL_FUNERARY' (Figs. 53 and 54 respectively)

The absence of information on landscape exploitation is especially unfortunate. The Iron Age and Romano-British periods, notwithstanding chronological uncertainties, have very large numbers of ditched enclosures, fields and other landscape features attributed to them. In contrast, the number of such features currently attributed to the early medieval period is extremely small (see Fig. 51 - and there are not very many more examples on the 'ALL' version of this distribution: Fig. 52). It is highly improbable that this sparseness represents a realistic picture – it almost certainly reflects a combination of lack of direct evidence of chronology, and unwarranted assumptions regarding the Iron Age or Romano-British date of cropmark enclosures. It does, however, serve to indicate the scale of work required to fill this currently very large gap in the evidence for the early medieval period in the region.

Finally, the issue of the chronological definition of the data, a difficulty when trying to make statements about all the periods under discussion, is acutely problematic – we are considering a period of little more than six centuries which has traditionally been sub-divided into three components. A minority of the constituent datasets discriminate between 'Dark Age / Anglian' and 'Anglo-Scandinavian' chronological categories but even here the former category includes, under the sacral/funerary umbrella, both cemeteries of the 5th/6th centuries and ecclesiastical sculpture of the later 7th and 8th. Hence, as a 'raw', undifferentiated distribution, this would seem to have little interpretative utility. In terms of the research agendas and questions which have been applied to this period, greater chronological resolution of the data, at least within the tri-partite periodisation discussed above, is essential. It has therefore been difficult to abstract any meaningful substantive statements regarding the early medieval period in the region from the YARF data, beyond confirming the issues of visibility and research coverage discussed earlier.

CHAPTER 6: THE HIGH MEDIEVAL PERIOD

As with every other aspect and period within the region, Yorkshire's medieval archaeology is threatened by a range of modern activities, notably farming and mineral extraction in the landscape, and urban renewal within both major historical towns and their counterparts lower down the urban hierarchy. Thus it too requires a resource assessment and then the development of a research agenda, whether to guide curatorial decisions or to give structure to future investigations. However, the medieval period is also different from those periods which precede it in that the potential volume of archaeological evidence which would be relevant to any regional assessment is vast, and this for two reasons. Firstly, the size of the human population by this time, together with the technology available to it, meant that there were many more impacts leaving archaeological traces in these centuries than previously. Secondly, as such activities occurred more recently, evidence of them survives much better than their counterparts of earlier times.

Such profusion and complexity of evidence is, of course, welcome for the potential it has to allow social analysis. Yet the sheer scale of the task in handling medieval datasets can be a daunting one, not least because relevant materials include standing remains alongside below-ground material, written records alongside artefacts. Thus archaeological interpretations of medieval society quickly require inputs from a range of specialist sub-disciplines, for example buildings archaeology or, within this, church archaeology, together with research in non-archaeological spheres, for example those of the documentary, art and architectural historian.

For these reasons, and given the resource restrictions under which any project must operate, we decided from the outset to make it clear that this was to be an assessment of *archaeological* resources of the region, and that we would be taking a particular, two-pronged approach to the period after AD1000, the second of which embodied an element of selectivity (see Project Design, Appendix 1). Thus, on the one hand, all artefact and ecofact studies, together with settlements and landscapes, were studied on the same, broad basis as the earlier periods (see Section 6.1 below). On the other, we determined to carry out a dedicated study of certain medieval towns (one of three thematic studies, the others being concerned with Industrial Archaeology: see Chapter 7, and with landscape archaeology which, in the event, was incorporated into this and the next section: see Chapter 3.1 for details). The results of our sampling of medieval towns are presented below (6.2). This is followed by some suggestions of ways in which understanding of the latter resource might be significantly advanced by means of the sort of work carried out in West Yorkshire (6.3). From this, it becomes possible to draw out some general lessons concerning practical and intellectual ways forward for medieval archaeology in the region (6.4).

6.1 Data distribution in the landscape (Figs. 55-67)

Data related to the medieval period was compiled for the project using the same list of SMR, museum and commercial sources utilised in earlier periods, though with two differences. Firstly, because of the increasing profusion of non-archaeological sources for this period, the SMRs holdings list some medieval settlements, most obviously

villages, which are known only by being mentioned in documentary sources such as Domesday. Whilst not wishing to cast doubt on the existence of these places (though concrete identification can be uncertain on occasion), where such settlements were completely unknown archaeologically, they were not included in our database.

Secondly, although chronological attribution can be problematic for all periods, this is rather less the case in the medieval period, when most sites are known either to belong to it, or to not. The main exception to this concerns early medieval settlements which may or may not continue later. However, although some sites labelled as early and high medieval may only be one or the other but not both, most of these are likely to fall into the later period only, and have thus been included below. When analysing the distribution of medieval data, therefore, in contrast to previous periods, it is largely unnecessary to distinguish between *provably* medieval and *possibly* medieval entries – the two are similar enough, at the level of resolution being employed for analysis here, for one to stand for the other. Hence, below, only the former has been used in looking at particular functional categories.

When looked at in the round (PER8 – MEDIEVAL_ONLY and PER8 – MEDIEVAL_ALL: Figs. 55 and 56), data of medieval date shows some important patterning in terms of both gaps and concentrations. Of the former, all entries have a very limited distribution in South Yorkshire compared to other regions, no doubt related to collection processes and policies within that county. Data is similarly sparse in the Vale of York and, to some extent, in Holderness. The former pattern certainly, and the latter arguably, is mainly a function of site visibility. Knowledge of this fact has then probably exacerbated matters, less energy being devoted to survey work here, as researchers tend not look too hard in places where sites are assumed to be invisible.

That said, the absence of evidence in three areas might owe something also to actual human activity in the medieval period, not just the vagaries of archaeological collecting or land-use in subsequent centuries. Thus operations on the North York Moors and on the Wolds top may be truly sparser than elsewhere, or have taken a form which left, at best, only limited archaeological traces. This lack of intensity is best explained by the high altitude and geological setting of these zones (although the still greater sparseness of data at the east edge of the Moors seems likely to be a product of a lack of fieldwork there, or of the way in which material has been dated). Finally, the striking absence of settlement, or indeed of any concerted activity at all, in a zone north of Harrogate seems a real artefact of past activity, but is presently difficult to explain, other than in terms of local geological influences.

Conversely, particular concentrations of medieval activity are evident across the region at a local level, and can mostly be explained by the intensity of fieldwork undertaken in these areas. The same is probably true of 'hot spots' in various parts of The Dales, an area where survey work aimed specifically at uncovering aspects of the medieval landscape has taken place over an extended period of time. In addition, Dales fieldwork carried out by those with other period interests, whether in prehistoric activity related to flint scatters or in early modern industrial practices, have encountered, and fortunately then recorded, medieval sites not directly related to their specialist sphere. In both cases, practitioners seem to have been assiduous in systematically lodging their data with SMRs, thus making it accessible to research. Finally, there is a marked concentration of sites in Howardian Hills. From the

information available to the project, and comparisons with other periods, it is not immediately obvious that this is a product of intensive activities by interested parties, or because site visibility is especially enhanced in that zone. Thus this concentration may be a real facet of medieval activity.

As well as these total distributions, data of the medieval period was analysed according to the following eleven functional categories:

- landscape features (Fig. 57: 1600 examples across the region, the most common including: boundaries evidenced by ditches, walls, stones, crosses etc.; roads, track ways and hollow ways; and field systems, enclosures and earthworks)

- agrarian production (Fig. 58: 2559 examples, including: landscape features such as lynchets, field systems, ridge and furrow, cultivation terraces; more specific structures such as mills, sheepfolds, rabbit warrens, fishponds and barns; and more dubious artefactual components such as cauldrons and cooking vessels)

- non-agrarian production (Fig. 59: 1144 examples, including large features such as dams and quarries; smaller-scale processes such as bloomeries, lead, iron, lime and pottery production, whether in the form of kilns, industrial residues or otherwise; and finds such as non-descript vessels, coins)

- all production (Fig. 60: 2641 examples, distilled from the agrarian and non-agrarian categories above, but including only those things related to the specifically productive part of the sequence, not storage and exchange – see next category)

- storage/exchange (Fig. 61: 1019 examples, essentially the elements from agrarian and non-agrarian categories not included in production. Some grey areas mean that the last two totals – 2641 + 1019 – do not add up exactly to the preceding two – 2559 + 1144)

- water-related (Fig. 62: 300 examples, including ponds, wells and various mill-related features such as weirs, leats, dams and races)

- habitation sites (Fig. 63: 1946 examples, including the elite, military and ecclesiastical sites listed under more detailed categories below, plus general settlements, deserted, shrunken or otherwise, farmsteads, and building/house platforms. With documented settlements, the overall number would increase by 391, the majority of which occur in the North Yorkshire SMR. Thus we know 17% of the medieval settlements listed in SMRs only from documentary sources)

- elite habitation (Fig. 64: 877 examples, including a range of ecclesiastical, monastic and non-monastic sites, plus castles/moats/motte and baileys)

- military (Fig. 65: 742 examples, essentially the non-ecclesiastical components of the elite sites, plus town walls, towers and tower houses, and some extras such as beacons and battlefields)

- social (Fig. 66: 297 examples, including hospitals, parks and stocks, plus myriad other small categories ranging from hunting lodges to gallows)

- sacral (Fig. 67: 864 examples, including monastic sites in the landscape, cemeteries as burials or grave stones, holy wells, or artefacts such as crosses, carved or engraved stones and ampullae)

Within each category, the following distribution patterns are evident:

Landscape features and *habitation* sites follow the general trends seen in the total distribution of medieval data and discussed above, the sparseness noted in South Yorkshire being especially true of habitation sites

A*grarian* and general *production* categories show similar distributions, though perhaps increasing slightly in South Yorkshire and the eastern edge of The Pennines compared to the general average.

Non-agrarian production shows no special concentrations beyond, perhaps understandably, being more limited where agrarian production is most concentrated and surprisingly rare across most of the Dales. In the latter case, a more focussed analysis distinguishing between extractive processes and metal-working could elucidate things further.

Storage/exchange is sparse in the west of the region as a whole and in Holderness, though more concentrated than one might expect on the Moors, especially in riverine settings, and in the Vale. A particular concentration around the Bridlington/Rudston area could be related to its coastal context: a further check on the detailed site types represented here would test this interpretation.

Water-related sites are mostly absent from the Vale (due to site visibility), and from the Wolds and Moors (due to the nature of river systems there). However, they are evenly spread elsewhere, in South and West Yorkshire, and positioned to take advantage of small, as much as large, rivers. A particular concentration along the Humber Estuary seems to indicate a real pattern of exploitation of that river system, and a corresponding focus along the Hull Valley could be similarly explained, or be a product of intensive data gathering here undertaken by East Yorkshire fieldworkers. The absence of sites here on the adjacent coastline seems likely to be related, in part, to sea erosion. Perhaps surprisingly, there is no obvious correlation between water-related sites and those evidencing storage or exchange facilities.

Elite and military sites show a very similar distribution to each other, and this is only in part due to the fact that the same site can occur in both categories. This implies that features such as town walls, towers and tower houses are as much about making ideological statements as the purely elite features, part of martial display rather than simple control of the landscape and its resources. Both categories suggest a slight tendency to favour riverine settings and, understandably, are fairly sparse in those places where habitation was sparse. However, more striking is their relative absence across the west of the region, a zone where habitation in general is by no means lacking, in contrast with a concentration further east in Holderness and even within the

Vale. This western absence of elite and military sites is the most striking of the medieval distributions and will be discussed further below.

Social and *sacral* sites are widely distributed across the region, including those zones noted above which lack elite and military functions, with rather less than the expected number in the Humber Basin (perhaps a real pattern) and slightly more concentrated in South Yorkshire than other site types (probably a function of SMR attributions, though numbers are small here compared to other zones, so any patterning must be treated with caution).

As noted above, the clearest pattern to emerge from this study of the medieval period concerns the contrast between the virtually co-extensive elite and 'military' sites (sparse in the Dales but becoming much more dense as one moves to the east), together with storage/exchange (again sparse in the west but more concentrated in the Vale and even on the Moors), as against the distribution of habitation and agrarian/production sites (just as visible in the west of the region as the east). Notwithstanding the vagaries of data recovery and SMR categorisation, this is probably a 'real' configuration, not an accident of post-medieval activity of whatever sort. If groups of medieval people are living and working in the west of Yorkshire, why are they not generating the numbers of elite superstructures one might expect of such a hierarchical society?

One relevant factor concerns how land was distributed in detail after the Norman Conquest, and the way in which the character of the landscape affected the size of these allocations – allotments requiring pastoral exploitation might be larger than those capable of agricultural development. Thus estates held by the Bishop of Durham in the north of region, or those of Count Alan of Brittany focussed on the Honour of Richmond, meant that a single authority controlled large tracts here. As a result, there would be only limited competition over resources between those a little lower down the elite pecking order. In contrast, the proliferation of elite and military sites in the eastern, more agricultural zone could be seen as a product of peer polity interaction, and especially competitive emulation, amongst the latter groups. Clearly, this hypothesis could be tested comparing what is known about Norman landholding from documentary sources against the archaeological patterning.

A second, more intriguing, factor relates to the hypothesis previously put forward by those investigating the Dales: that of the pivotal importance of monastic systems in controlling landscape exploitation there. The elite and military categories used in our study, the basis on which a thin coverage in the west was identified, refer in the main to the activities of *secular* elites. Thus, in part, the pattern identified may not relate to presence or absence of elite authority *per se*, rather to whether authority was expressed through a large number of manors and castles, or employed ecclesiastical mechanisms such a smaller number of monastic granges and the like. This is backed up when one subdivides aspects of the widely-distributed sacral sites. Those components which might be reasonably associated with monasteries appear to concentrate in the west and, to a limited extent, the north of the region, whereas church sites cluster elsewhere. In short, our data is displaying the distinction amongst the upper echelons of medieval landholders between the large-scale, monastic sacred sites and the more dispersed, secular elements.

The corresponding lack of storage/exchange sites in the west suggests either that these categories also have a 'secular' bias, or that the mechanisms employed in large, pastoral holdings and monastic areas are less susceptible to archaeological identification, perhaps because systems here were more centralised and thus structural remains, though still substantial (and perhaps *more* substantial) where they existed, were not so widely dispersed in the landscape. In turn, this east-west contrast, though hardly a completely novel conclusion, has important implications for the relationship between temporal and religious authority in the preceding period, and for the subsequent development of resource exploitation in the early modern period.

Economic development in Yorkshire in the early medieval period might be portrayed as a process by which royal authority laid claim to large tracts of land across the region by means of monastic institutions. In subsequent centuries, the growing power of seigneurial authority saw a reduction in royal power, the king dispossessed of land by growing numbers of feudal nobility who expressed their authority through building moated sites, mottes etc.. Our archaeological evidence might imply that this evolutionary process was more successful in the east and centre of the region than in its western landscapes. Whether the residues of ecclesiastical landholding which remained in the west still acted in relation to royal demands, or now made decisions autonomously, remains a vexed issue amongst medieval historians. The matter is also unclear archaeologically at the level of resolution used in our study, though might be elucidated with a more detailed analysis of functional categories within the amalgamated groupings employed above.

The second significant issue concerns the implications of this east-west division of medieval land-holding for the trajectory of development in subsequent centuries. The natural resources most famously exploited in Yorkshire in what became the industrial revolution of the early modern period are concentrated in those zones where large-scale, and especially monastic, landholding remained most long-lived. Unsurprisingly, landscape historians in the Dales have already drawn attention to the role of the monasteries in laying the foundations for this fundamental shift. The question here is: why was economic transition focussed first in these landscapes? Answering it is of fundamental importance to any study of the past concerning, as it does, our understanding of the way in which medieval society gave birth to modern capitalism. It is a tantalising matter which archaeology could elucidate further with better chronological controls (even if a definitive response remains elusive). Several forms of interpretation suggest themselves.

The simplest explanation is based on geologically-determined, technologically-driven factors. A particular distribution of medieval power existed across the region based, ultimately, on the character of the landscape. The natural resources on which institutions were sitting in the west, although marginal to the more competitive feudal elites elsewhere and thus bypassed by them, suddenly became of great significance when technical advances allowed, or even demanded, the greater exploitation of coal, lead and so forth. These changed circumstances may have thus engendered a shift in economic power from the east to the west of the region.

A second, more intriguing and deep-seated explanation concerns underlying social dynamics. Monasteries and large secular estates may have been more able to organise the labour of substantial numbers of people, for example in the form of lay brethren.

Thus systems of greater economic control were developed first in these landscapes, in the process laying the foundations for a transition to full-blooded capitalism and its use of controlled wage labour in later centuries. To this might be added the notion that, in theory, monastic exploitation was meant to be aimed at the self-sufficiency of its adherents, so might be less orientated on feudal exploitation and thus more able to escape its constraints. In addition, it could be argued that monasteries were part of a European-wide system, which meant that not only long distance trade, but also ideas concerning technological development, could be transmitted more readily here than in secular society.

The two problems with this form of explanation relate to the general nature of the medieval church (it would be a brave person who maintained that any aspect of ecclesiastical activity at this time could really be divorced from the rest of society in the way suggested above) and to the details of its Yorkshire chronology. Thus, concerning the latter, the availability of significant numbers of lay brethren was not something which existed from the start of monastic incursion, rather a product of 12th century developments, and then mostly within the Cistercian order (though this would still allow it to have an impact in later centuries). Secondly, such authority was not concentrated exclusively in the west, any more than were large-scale secular estates. The shift to a monastic focus in North Yorkshire in the course of the 15th century has to be acknowledged (though knowing this could allow one to design an archaeological research programme which focussed on the process of industrialisation in just these northern landscapes).

The biggest chronological problem concerns the impact of the reformation, though this itself may then suggest a third form of explanation. The 16th century saw the decimation of monastic power, at least in theory, so any continuity into post-medieval development may seem far-fetched. However, the dissolution not only meant the demolition of its buildings, but also made large tracts of land available, almost at a stroke. The opportunity which this created in the elite housing market has been noted in urban contexts, but must have had its counterparts in the countryside, not only in terms of buildings but also in terms of the access to the landscape and the resources which it contained. It has been argued that the products of these newly-acquired lands were much more orientated on the market than hitherto, and this itself may have fuelled further moves into non-feudal economic development.

6.2 Individual town studies

Our study of selected medieval towns aimed to provide evidence to set beside the more general landscape patterning discussed above. This element of the project started from the point of view that these settlements had both a distinct legal status and a particular role in the affairs of the region in respect of economic, political, religious and other matters. Thus they deserved special consideration and were likely to be recognisable as distinctive on the basis of certain physical features such as zones of dense settlement, regular street plan and defences. Sheeran (1998, Table 3.1) lists 48 places in Yorkshire in 1450 which might be called towns and this project aimed to sample a number of these to aid its assessment.

In the first instance, eleven places were put forward: Beverley, Doncaster, Hedon, Hull, Leeds, Pontefract, Ripon, Scarborough, Selby, Sheffield and York. The reason for the choice of York and Hull is perhaps self-evident, given their importance in the region's affairs and the well-documented wealth of their archaeological resource. The choice of others was based on additional criteria: the amount of archaeological work needed to allow a realistic assessment of potential; documented historical importance; possession of particular features (port, religious houses, industrial sites etc); and being representative of a certain course of historical development (former Roman settlements at Doncaster and York; towns of pre-Conquest origin at Beverley and York; late medieval planned towns at Hedon, Hull and Pontefract; settlements which grew mainly from the 16th century or later at Leeds and Sheffield; and a small town without borough status: Selby).

In initial discussion of this sampling strategy, strong representations were made to augment this list, even if this meant dropping one place to allow another in. In this way, towns in upland areas, for example Hawes, Richmond, Helmsley, Whitby and Guisborough, might be included. Alternatively, it was suggested, towns could be chosen in relation to documentary sources and the intensity of archaeological investigation, but deliberately including places usually ignored in previous studies. Thus, in East Yorkshire, Great Driffield and Bridlington might be incorporated alongside Beverley, Hedon and Hull in the form of an extensive urban archaeological survey covering a significant range of examples in that area's urban hierarchy.

These suggested additions to our proposed sample were sensible and desirable, and would have provided useful ways of ensuring a much wider, and perhaps more representative, understanding of the region's urban settlements. However, in the event, it became clear that we could not analyse in detail all of the first list of eleven places with the available resources, let alone others, and we made the strategic decision to cover a smaller number of places fully rather than attempt a more superficial treatment of a longer list. Hence detailed reports have been produced only for Doncaster, Leeds, Pontefract, Ripon, Scarborough and York (see Appendices 3.1-3.6).

In the future, it will remain highly desirable to carry out corresponding work at the other towns mentioned above. However, in order to assess the validity of our findings, two other factors should be mentioned. Beverley, Hull and Hedon have been brought together in recent synthetic works and their implications have been taken on board in the discussion which follows. In addition, aspects of medieval Sheffield have been approached via its industrial development (see Chapter 7 - though probably not in the detail which it really deserves). Thus only Selby from the original list is entirely missing from our considerations. Secondly, although additional work can always overturn present conclusions, especially in archaeology, we feel that we have sampled enough urban centres to formulate some ideas of both their overall potential as a source of evidence, and the problems which might arise in trying to exploit that potential.

In carrying out work on Doncaster, Leeds, Pontefract, Ripon, Scarborough and York, the project was fortunate in that SMR holdings, even where not computerised, were well-ordered, accessible and 'manned' by knowledgeable and helpful staff. Hence it was rarely necessary to look to other sources, for example the NMR and the AIP, to learn of new sites or glean further information about ones already listed in the SMR.

This is testimony to the general efficiency and effectiveness of SMR systems in the region.

These detailed reports were written to a common format to facilitate comparisons comprising: *Introduction* to the settlement; its *Location and Origins*, giving geological setting, any early medieval or earlier occupation; *The Archaeological Resource*, summarising the available sources of evidence; and *Archaeological Evidence*, providing a detailed description of each facet of the town, split either by zone or by function   The main results of this work are summarised below on a town-by-town basis, with some common patterns distilled in the concluding section (6.4).

Doncaster has generated a body of archaeological evidence over time which allows an outline understanding of its medieval development to emerge, including aspects of suburban development in relation to the core. This work may, in time, serve to elucidate the vexed issue of nature and date of pre-Norman activity and any relationship with the Roman settlement here and provide evidence of major public buildings to set beside existing information concerning the castle and the possibly early ecclesiastical focus of St. Mary's. Small-scale commercial work will continue to generate finds assemblages from intrusive features, as at Low Fisher Gate, and so throw light on urban functions such as the pottery production starting here in the late-11th and flourishing through to the early 14th century. Patterning in the distribution of wasters, even when the assemblages concerned lack good, contextual information, might be sufficient to understand the mobility of ceramic production during these centuries. Finally, water-logged deposits such as those which might be expected in the town's waterfront zone could have huge environmental and other potential.

In *Leeds*, the pattern of settlement growth between the Anglo-Saxon period and the mid-16th century provides a framework within which a number of critical issues can be explored, notably the role of the manorial regime in the growth of the town and how much tenurial fragmentation limited the latter's impact, and the secular/ecclesiastical relationships following the foundation, in 1147, of Kirkstall Abbey only two miles to the west of Leeds. Archaeologically, desk-top studies could help elucidate the town's natural topography and riverine regimes, especially if augmented by commercial borehole data and focussed environmental sampling. This would provide a context for interpreting data from of small-scale evaluation in relation to the topographical and structural development of the town. Equally, any opportunity to recover evidence from horizontal medieval deposits must be seized, whether situated in the core or the, seemingly, marginal parts of the townscape. Finally, artefact, particularly ceramic, assemblages (some of which already exist) could be analysed to provide a fingerprint for Leeds, thus allowing comparison with other sites in the region, whether nearby Kirstall or elsewhere in West Yorkshire and beyond.

For *Pontefract*, further archaeological investigation could address the location, extent and character of a pre-Conquest borough, initially employing broad, datable finds assemblages and then, if foci become apparent, making use of more contextual studies of topographic and structural development. On this basis, the relationship between early settlement and the Norman town should become apparent. Concerning the latter, different phases of town planning can be expected and would be best elucidated by analysing 'clean' assemblages from the base of critical stratigraphic sequences in the townscape. Finally, using a combination of archaeological and town plan evidence, the

significance of different forms of burgage plots in the development of the Norman and later medieval town should become apparent.

Ripon's research issues focus initially on the question of the physical relationship between the boundaries of the ecclesiastical precinct and secular settlement, itself an expression of the complex economic and social relationship between religious and temporal power in the foundation of the town. Corresponding problems arise for later periods in terms of the layout and development of ecclesiastical landholdings in relation to those the secular components of settlement. Beyond these aspects, mainly a function of investigating the core area, there is a notable lack of knowledge concerning the spatial extent Ripon through the medieval period, best approached initially by charting dated finds assemblages of a sort easily derived from limited evaluation work, then subjecting any patterns which appear to functional investigation, initially from finds then, where surviving, structural evidence.

In *Scarborough* an important body of evidence which has been collected over time to varying standards but its regional significance may not be fully appreciated. We now have an opportunity to review existing evidence in its won right, rather than in relation proposed 'Viking' origins or assumptions about its 'old' and 'new' boroughs. Are any pre-Norman foci evident in the distribution of the earliest archaeological assemblages? What is their date and are they really indicative of Scandinavian or ecclesiastical origins, or just found on sites which later acquired churches? Secondly, to what extent is Scarborough a planned settlement, doubling its size with the creation of the Newborough? And how does this process relate to pre-existing landholdings, and to the defensive features of the townscape and the castle beyond? Thirdly, processes of land reclamation and property development require investigation, both near the harbour and in relation to presumed high-status mercantile holdings at the heart of the town, the latter raising the issue of 14th century trajectories and the apparent contrast between poor material culture compared with the supposed, documented wealth of the town at that time. The potential of defining harbourside or riverine waterlogged areas could be vital here, both in academic terms and in allowing the construction of a deposit model to facilitate development control. Finally, the question of town-hinterland relations must be investigated. How was the town supplied, and what did it produce? - surely not just pottery. And what of ceramic distribution mechanisms, regional role and demise, plus corresponding questions of long distance trade issuing from its harbour?

York's medieval development has been approached via documentary history, historical geography and archaeology and, although this document is primarily an assessment of archaeological material, this is not to deny the desirability of inter-disciplinary studies. There is considerable potential for archaeological research in various inter-related spheres including: structural development, considering the use of building materials, structural features and plan form; the wider settlement, analysing the formation and management of properties, the use of land for buildings vs. other activities, and the street pattern; zoning in the medieval town in terms of the social hierarchy, and craft and other activities, with some particular districts already capable of definition such as defences and York's castles (structural sequence, use of building materials etc.), religious houses (structural development, role in the community, status of inmates) and suburbs (process of expansion beyond the walls, instances of later medieval contraction); and technology and environment, encompassing topics such as sources

and use of food and materials, manufacturing techniques, urban flora and fauna, and the impact of human activity on the river regime.

6.3 Additional urban data

In addition to our own, detailed archaeological surveys of a sample of medieval towns, our initial discussions with colleagues in the West Yorkshire Archaeological Service made it clear that they had undertaken a number of urban surveys beyond our own, limited list. These holdings came in four forms: unpublished *academic surveys* (9 towns), statements in *Conservation Area appraisals* (23), *commissioned archaeological surveys* (10) and special, *'one-off' surveys* (2, paralleling our own two YARF surveys in the county). These various types of report, although compiled at different times and for different reasons, constituted a significant archaeological addition to our understanding of that county's medieval towns and thus provided a useful way of augmenting our own work.

Because of the importance of this material, the project decided to carry out a summary appraisal of these additional reports in order to define their research potential. Thus archives were consulted at West Yorkshire SMR, WYAS Wakefield, and on the web at http://www.arch.wyjs.org.uk/AdvSrv/Consheets.htm. The aims and contents of each type of report were summarised, and an assessment made of their usefulness as an archaeological resource. In some places, the implications of the various types of resource were developed by discussing one or more of the site-specific reports. All of this detailed material is provided in an appendix (Appendix 4).

The list of documented Yorkshire towns (Sheeran 1998) provides information on the status of West Yorkshire settlements recorded as boroughs (Bradford, Leeds, Otley, Pontefract, Wakefield), non-burghal towns (Halifax, Wetherby), failures (Almondbury, Harewood) or problematic (Bingley), and places with rights to hold a market or fair (Nostell, Pontefract, Wakefield, Leeds, Harewood, Bingley, Otley, Wetherby, Bradford, Aberford, Emley, Almondbury, Tanshelf, Keighley, Elland, Thorner, Rothwell).
Of the 43 places in Sheeran's list, 36 have some sort of archaeological information from at least one WYAS source.

TOWN NAME	Sheeran reference	Academic survey	Cons. Plan	Commis. Survey	One-Off/YARF
Aberford	Market				
Addingham			☺		
Almondbury	Failed/Market	☺		☺	
Bingley	?/Market	☺	☺	☺	
Bradford	Brgh/Market	☺	☺		☺ WYAS
Burley in Wharfe.			☺		
Cullingworth			☺		
Dewsbury		☺		☺	
East Morton			☺		
Elland	Market			☺	
Emley	Market				
Esholt			☺		
Guiseley				☺	
Halifax	NonB.	☺			
Harewood	Failed/Market				
Haworth			☺		
Huddersfield		☺			
Idle			☺		
Keighley	Market		☺		
Kippax				☺	
Knottingley				☺	
Leeds	Brgh/Market	☺			☺ YARF
Little Horton La.			☺		
Lower Wyke			☺		
Manningham			☺		
Mirfield				☺	
Morley			☺		
Nostell	Fair to 1275				
Otley	Brgh/Market	☺	☺		
Oxenhope			☺		
Pontefract	Brgh/Market	☺			☺ YARF
Pudsey			☺		
Queensbury			☺		
Rothwell	Market				☺ WYAS
Ryecroft			☺		
Silsden			☺		
Steeton			☺		
Tanshelf	Market				
Thorner	Market				
Thornhill				☺	
Thornton			☺		
Wakefield	Brgh/Fair				
Wetherby	NonB./Market		☺	☺	

Before summarising the results of this subsidiary project, a number of cautions must be set out. The reports on each town are by no means comprehensive, the SMR holding substantial records and reports of fieldwork and excavation beyond the summaries examined below. In addition much archaeological fieldwork has taken place been after the production of the 'academic surveys' of the early 1980's, due chiefly to PPG 16. In many cases the records from these recent projects have not been fully accessed into the SMR catalogue. Also, the reporting of fieldwork programmes, finds, and interpretation did not fall within the remit of the commissioned surveys or the Conservation Area appraisals, and so goes primarily unmentioned in those documents.

Having said that, if one approaches this documentation with certain questions in mind, the more recent relevant field reports, watching briefs and finds evidence are readily available for specific sites, so can easily be used to augment and update what is known. In addition, for certain places, existing information is already considerable, notably for the towns of Almondbury and Leeds, because of the historical research carried out by the Thoresby Society; for Pontefract, because it has been the most frequent site of fieldwork; and for Wakefield which, along with Pontefract, was one of the most important medieval sites in the county. These four sources are discussed below in an order which presents the most up-to-date and archaeological first, then moves on to those with a more general, and usually documentary, focus. Thus *'one-off' surveys* are followed by *commissioned surveys*, then *academic surveys*, finishing with *Conservation Area appraisals*.

'One-off' surveys have been carried out at several places due to a particular set of circumstances and closely parallel our own, West Yorkshire work in Leeds and Pontefract discussed above (6.2). Two medieval towns have been subject to such research: a historical settlement survey of Rothwell, produced by an Oxford University Dept. of External Studies diploma student under guided supervision (see also Wrathmell 2003b); and Bradford city centre, where a desk-based assessment was written as part of developer-funded work in advance of a large-scale regeneration project, including an assessment of surviving below ground archaeological potential in a significant part of the city centre.

Though brief, these reports are thorough and well-presented, and comprise the most 'archaeological' of the report types discussed here (see appendix for a summary of Rothwell, as an example). Each covers: 1) the location and topography of the site, 2) a brief history of the settlement, 3) documentary evidence, 4) archaeological evidence, including above-ground remains, excavations, and archaeological potential, 5) listed buildings and those of special interest, 6) a historical synthesis encompassing Romano-British, Anglo-Saxon, Norman/Medieval, and Post-Medieval and Modern periods of settlement, 7) a summary of the general importance on archaeological/historical levels, and an assessment of the survival of evidence, 8) a short paragraph on research priorities and potential for the site, 9) appendices including a list of relevant documentary sources and their availability, a summary table of listed buildings with descriptions, and a summary table of SMR sites and features, and 10) a compilation of cartographic and photographic evidence, including some or all of the following: a map of the site's location in W Yorks, modern OS maps, planning constraints maps, early village maps and plans, listed buildings plans, estate maps, and photographs of buildings and remains of historical interest.

Commissioned archaeological surveys of historic settlements in West Yorkshire have been produced by WYAS since about 1998 at the rate of 1 or 2 per annum. Work has been completed for Almondbury, Bingley, Dewsbury, Elland, Guiseley, Kippax, Knottingley, Mirfield, Thornhill, and Wetherby. Settlements have been chosen on the basis of three criteria: to improve our development control responses in areas of perceived SMR weakness and where development pressures exist; on the grounds of the political need to carry out additional work in certain Districts to reflect different levels of funding; and to investigate an apparent degree of medieval nucleation (e.g. the close association of a castle and medieval church - Mirfield, Kippax - or a medieval port: Knottingley).

Each report is fully referenced and follows a generally consistent format (except Bingley, the first to be done, which does not conform exactly but is still vastly similar). This structure comprises: introduction, geology, sources, methodology, historical background, individual sections on prehistoric, Roman and medieval occupation, concluding with a catalogue of sites. A variety of illustrations accompany each report constituting very complete and detailed compilations of historical and contemporary maps and plans, as well as appendices covering survey work carried out and historical documents related to the settlement and, sometimes a cellar survey of the historic core of a settlement. Photocopies of photographs detailing important historical buildings and their features, or views of the town or its market place, are frequently included.

Academic surveys of Almondbury, Bingley, Bradford, Dewsbury, Halifax, Huddersfield, Leeds, Otley, and Pontefract were written by WYAS staff in the early 1980s for a (never completed) volume on the medieval towns in West Yorkshire. Settlements were selected, in part, on the basis of a town's historical importance (e.g. Otley), but also on its contemporary size and importance (e.g. Huddersfield). The texts are unauthored and are of variable quality and take the form of either typescripts or photocopies of hand written (and corrected) manuscripts but most are fully referenced.

Obviously the research is somewhat out-of-date, and a few of the surveys can be overly simplistic in their assumptions or largely lacking in analysis. In addition, even the thorough and well-produced reports are dependent entirely on historical sources and, in some cases, almost wholly secondary rather than primary ones. That said, they still form a potentially important research resource and the more thorough examples generally conform to a format of 1) site and origins, 2) urban status, 3) urban extent, 4) population, 5) manorial sites, 6) houses, 7) routeways and communications, 8) trade, industry, and agriculture. Occasionally there are sections on local government and public works, and recommendations for future study, excavation, and historical implications.

Conservation Area appraisals have been carried out by the WYAS Advisory Service since 1998 for the Districts of Bradford and Leeds to help inform development control and design in a particular conservation area. They presently exist for Addingham, Bingley, Bradford, Burley in Wharfedale, Cullingworth, East Morton, Esholt, Haworth, Idle, Keighley, Little Horton Lane, Lower Wyke, Manningham, Morley, Otley, Oxenhope, Pudsey, Queensbury, Ryecroft, Silsden, Steeton, Thornton, and Wetherby.

Each comprises a historical summary of 2-4 pages, which gives 1) a chronological overview of the area's historical origin and location; 2) brief mention of any archaeological investigations and finds that are associated with the area; 3) brief mention of features such as buildings, earthworks, fields, and routeways that are known to have or may have historical importance; 4) a list of important families and historical associations of the town, and their contribution to its historical development. The reports are unreferenced, and rarely indicate the sources from which the information has been drawn and summarised but each includes a detailed map of the conservation area, with buildings coloured-coded by date, divided into periods: 17th century or earlier, 18th, early 19th, mid-late 19th, 1900-1950, 1950-1999.

Each appraisal aims to summarise the overall historical development of the area, its present character, divided into zones (each zone detailing architectural characteristics and the historic importance of various buildings - the bulk of the assessment) and any proposed extensions to the conservation area. The appraisals are then distilled into attractive promotional documents by which the local council highlights its most pressing concerns, and publicises the historical character of the area's built environment and development.

6.4 Conclusions

This final element of the discussion of Yorkshire's medieval archaeology presents a summary of the conclusions which might be distilled from the preceding three topics and endeavours to point to ways in which either existing resources, or those which might be gathered in the process of responding to commercial threats or carrying out research projects, could be deployed to enhance our understanding of social and economic dynamics in this period. It ends by making a plea for the development of a new intellectual framework within which the results of such data analysis might be deployed.

The *landscape data* (6.1), when looked at in the round, evidences some important gaps and concentrations, nearly all of which can be explained in relation to one of three factors: initial collection processes, current curatorial or land-use practices, or geomorphologically-determined, site visibility. In each case, programmes of concerted data gathering need to be designed to even out these gaps and thus provide a more balanced sample for future research. Analysis of these distribution would also enable us to revisit the debate over whether such patterns are a product of medieval activity, as argued by Stuart Wrathmell and others (see further below), or simply a reflection of current land-use and the zoning of modern pastoral and agricultural practices across the country.

However, some of the patterning evident in our database can already be argued to be significant. Hence the sparse representation of activity on the North York Moors and on the Wolds top seems to be a 'real' product of medieval society related to these topographical settings. Conversely, data concentrations in the Howardian Hills might also be a significant characteristic of occupation in that period (and may even have a link to the sense of identity which communities still living in that landscape retain today).

When the datasets are analysed in more detail, by functional category, landscape features, habitation sites, production in its various forms, plus social and sacral sites follow the general trends noted above. Water-related sites also fit this pattern at a general level, but are obviously influenced by natural topography, being rare on the Wolds and Moors. More interestingly, their positions elsewhere show that small, as much as large, rivers were being exploited, although particular concentrations beside the Humber and Hull rivers show that major waterways were certainly not ignored.

The most striking medieval patterning uncovered by the project relates to the scarcity of sites concerned with non-agrarian production, storage/exchange, elite construction and military activity in the west of the region in general, and in the Dales in particular. At one level, a east-west contrasts are unsurprising since the Yorkshire region straddles the three broad 'provinces' defined by Roberts and Wrathmell (2000). However, in this case, it has been argued above that the patterning might be better interpreted as a distinction between small-scale secular authority, which managed to develop its control of the landscape in the centre and east of Yorkshire in the course of the high medieval period, in contrast to the west where older and larger secular and monastic institutions retained their dominant position for longer, perhaps after these institutions had been established in earlier centuries as a mechanism for allowing royal authority to inculcate itself into the region as a whole.

This pattern, if correctly interpreted, may be important for understanding the role of monasteries in medieval society, and certainly would have profound implications for interpreting the transition between medieval and modern periods across the region. It thus poses a series of questions which more detailed examination of existing archaeological resources, together with further, dedicated data collection in selected areas, might do much to elucidate:

- how much did systems of economic activity really vary between east and west? Are we dealing with different basic systems of production, or simply with different superstructural components, church vs. monastery, and king vs. proliferating feudal nobility?

- to what extent were the activities undertaken in the west influenced by the needs of the medieval state? Or were they dictated by the demands of a more regional authority or conversely, in the case of monastic institutions, by the European-wide requirements? And are the latter themselves coherent across area concerned, or do they take very different forms in the various monastic orders and their associated granges?

- finally, what drives the transition to industrial capitalism here: technological changes which made a previously marginal geological setting suddenly more central to economic needs? Or monasteries themselves, embodying a significant control over labour which allow 'capitalistic' reinvestment of surplus to be undertaken more readily than in other parts of medieval society? Or the impact of the reformation which, in a short period of time, made landscapes and their resources available on a scale not possible hitherto, thus allowing a qualitatively different level of development? In short, what combination of circumstances ushered in the new economic system here which, eventually, came to dominate not only the rest of Yorkshire but the whole of Britain and, for that matter, countries well beyond?

Our *case studies of individual towns* (6.2) demonstrate clearly that threats in both major and lower-order medieval towns, though mostly small-scale and controlled effectively within the systems generated by the implementation of PPG16, have a considerable, cumulative impact on the archaeological resource in each urban centre. The present challenge is to see whether we can structure our research objectives to make them relevant to the management of these impacts and, conversely, whether we can adjust those objectives so that the types of data generated by limited evaluation work can answer the questions which they embody. The towns which this project was able to study in detail give some grounds for optimism on both counts. Their implications are summarised below under three themes, moving from the general, and least interventionist (though note that standing buildings were excluded from our remit), to the particular.

Firstly, our studies make it clear that urban deposit modelling, long accepted as a vital tool for both research and development control in major historic towns, is equally viable and useful in lower-order, less deeply-stratified settlements. A combination of desk-top archaeological studies, existing commercial borehole data and focussed environmental sampling would allow us to produce an outline, and in places quite detailed, deposit model for most of the places investigated. This would not only be a useful research tool in own right, elucidating natural topography, processes of land reclamation, riverine regimes and their influence on other developments (in defensive capabilities, river crossing points, the use of water resources in economic development, most obviously milling) and so forth. It would also provide some basis on which to make more coherent planning decisions and, equally importantly, allow us to pose quite detailed questions of local topographical settings, many of which could then be elucidated by ensuring that fairly rudimentary, but critical, archaeological observations were written into any brief for archaeological evaluation.

Secondly, commercial evaluation work frequently generates finds assemblages but limited contextual information to which they can be related. However, groups of artefacts for which we have no proper context are still worthy of analysis as they might chart the date of its origin or its demise and indicate economic activities and trade relations at a very broad level. In this way, they could give an archaeological perspective on proposed 'urban decline' of the 14th and 15th centuries, a suggestion based on documentary sources and perhaps relevant only the ecclesiastical spheres and not the whole urban fabric, let alone economic and social activity more generally. This could provide a significant corrective to conventional wisdom on late-medieval urban trajectories, and allow a more detailed and interesting pattern to emerge.

In similar vein, ecofacts might serve to characterise a settlement's urban footprint in terms of the supply of water, food, fuel, building materials and other goods, and the disposal of rubbish and pollution of soil, rivers and air, and thus modelling ecological change (Roseff and Perring 2002). A good example of the latter from York concerns the use of isotope analyses to identify lead pollution beside the Ouse in the 9th-11th centuries (Hudson-Edwards *et al*. 1999), providing a contrast with earlier centuries and implying more intensive exploitation of lead resources in the Dales than hitherto.

With further, but still minimal, information ('this assemblage was probably generated nearby, rather than being dumped from elsewhere in the town') we could tackle issues such as the position of original settlement, functional zoning and the geographical and

social relationship between ecclesiastical and secular foci. Indeed, a body of such artefact, particularly pottery, assemblages already exists in certain places but remains unanalysed. Finds 'finger-prints' generated by this material for one town would then allow comparisons at both a local level (for example, Leeds vs. Kirstall) or across the region.

In carrying out such studies, it will be important to ensure widespread coverage. Firstly, material from outlying zones will still be useful in defining broad-brush social and economic development. Secondly, assemblages from marginal areas might prove more diagnostic of urban fortunes than those derived from core locations. Finally, we know so little about changing urban foci. The assumption that the original core of a settlement will underlie what is later 'known' to be its town centre, usually on the basis of documentary/map evidence, needs to be tested archaeologically, rather than employed in the provision of archaeological curatorial advice to generate self-fulfilling prophecies.

Finally, with controlled intervention in the ground, even in the form of small-scale evaluation let alone larger excavation work, further possibilities obviously open up. It will sometimes prove possible record processes of burgage plot and structural development in outline (for example Briggate, Leeds – Appendix 3.2), and perhaps to elucidate degrees of planning and even measurement systems. More generally, such commercial work will enable us to test existing hypotheses (for example at Ripon, Appendix 3.4, where recent evidence for the development of the town can be set beside the earlier theories of Mackay, Hall and Whyman).

Obviously such work will really come to life when linked with study of standing buildings, and one must remember with the latter that earlier structural elements may be locked inside later features in buildings which thus seem very unpromising at first glance. However, even in limited, isolated test pits uncovering sequences of intrusive features, property development can be elucidated through careful stratigraphic recording, and sometimes dated by the recovery of chronologically diagnostic ceramics.

Of course, where horizontal stratigraphy survives, even in small pockets, detailed investigation is vital and can be hugely productive. Indeed, chance survivals can rewrite the whole agenda for the archaeological investigation of a town. Approaches in the past here have usually focussed on well-documented features of the town, for example to search for manorial buildings or defences. However, as shown by the excavations at the King's Mills in Sovereign Street, Leeds (a project, it should be noted, initially designed with purely post-medieval questions in mind – Appendix 3.2), purely archaeological considerations are of over-riding importance. The existence, here, of an early 'fall trough' to direct water onto the timber wheel pit creates a significant change to our understanding of medieval technological development. More generally, a simple focus on the physical survival of archaeological remains, rather than documentary-led agendas, could greatly increase the archaeological research rewards from commercial work.

From the evidence of our case studies, one might almost conclude that *any* survival of horizontal stratigraphy in these medieval towns is deserving of our detailed attention, both because of its rarity and because of the opportunities which it offers to gather finds assemblages from controlled contexts. Even a possible exception to this policy, the

existence of amorphous 'dumped' deposits, will still deliver informative finds groups, for the reasons rehearsed above. Such seemingly unpromising sites will also need to be subject to coherent environmental sampling programmes aimed at understanding site formation processes and the detailed character of this 'dumping' practice.

Additional urban data along the lines of that lodged in the WYAS archives (6.3) is probably available for many of the smaller medieval towns in our region. Of the four types of sources held in West Yorkshire, the information contained in their conservation plan summaries are very limited, but would serve as a minimal introductory starting point for some 23 settlements. These must have their equivalents in some other parts of the region. One might expect not to find equivalents elsewhere of the nine academic surveys and these are very variable in content and focus mostly on documentary sources. However, it would be quite easy to make them internally consistent and comparable. In addition, each could be updated with archaeological information from SMR and, if necessary, AIP/NMR sources. Equally the ten specially commissioned surveys could be expanded somewhat in terms of archaeological detail so that they more clearly resembled the two 'one-off' WYAS surveys and our own work on Pontefract and Leeds.

In sum, of the 43 places in West Yorkshire listed by Sheeran (1998) as medieval towns, we could produce, with only limited resources, a report for 17 of them which was sufficiently detailed to be useful as a guide to future curatorial practices and research endeavours. If one adds in the more minimal information contained in Conservation Plans, there would be only 7 places lacking some form of collated information from this list of sources and some of these, for example Wakefield and Harewood, are already well known archaeologically.

It is unclear how far other counties in the region could produce material, whether from primary or secondary sources, which was comparable to the West Yorkshire list, and whether this might have a purely documentary, or more archaeological, focus. Work already undertaken in East Yorkshire suggests that, alongside the well-known work in Beverley, Hedon and Hull, we could add in similar studies of Great Driffield and Bridlington with minimal resources. In other places, for example Whitby, recent commercial work provides an opportunity to set its own detailed results beside what is known from earlier work across the town, in this case also offering insights into the relationship between the main medieval town and the adjacent rescue excavation on the site of the abbey. In short, corresponding dedicated work in the archives in each SMR should quickly be able to define a list comparable to that tabulated initially for West Yorkshire.

Finally, *an intellectual framework* will need to be established within which the various components of medieval society mentioned above can be articulated, otherwise meaningful discussion of their inter-relationships will be impossible. Such a framework will have to confront a series of vexed issues: the relationship between medieval archaeological and documentary evidence; our approach to the concept of landscape archaeology; the characterisation of the social and economic relations which define the period; and the role of large and small towns in that society, plus the relationships within urban hierarchies and between towns and their hinterlands.

Until recently, much archaeological work in the medieval period has been undertaken within frameworks established on the basis of documentary evidence. Thus investigation of towns has tended to focus on finding features of the townscape mentioned in those sources, most often ecclesiastical buildings and public secular structures. However, as noted above, an alternative, more purely 'archaeological' approach to our towns could be more productive. This would look at the material culture from a range of contexts, starting with the best preserved, and would avoid starting with the assumption that public buildings and urban legal status define the fundamental characteristics of any settlement and thus provide the underlying dynamic of its development.

Similar points might be made in relation to landscape archaeology. Various commentators working in the region have noted diversity of response across Yorkshire (though, interestingly, disagree fundamentally about how one should then proceed to analyse such variety - consider an even more local level of analysis: Moorhouse 2003a and 2003b, or look at the region in the context of a higher-order, national framework: Wrathmell 2003a). However, both these specialists argue forcefully that archaeological interpretation must take place within the structure of the townships documented for the period.

Of course, the township is not the only administrative unit within which social dynamics might be articulated – the manor and parish provided alternative structures - but it has been claimed that it represents a more significant division for the majority of the population, and thus that analysis based on townships is more likely to be socially meaningful. That said, it should not be forgotten that even this structure was imposed on the landscape in order to facilitate its development and exploitation. Thus it involved a complex, contested process and, where central authority was promoting imposition, there is no reason to believe that success was guaranteed.

A recent paper by Harvey (2003) concerned with the territorial tithing in Cornwall (its equivalent of the 'vill' elsewhere) makes this point, and perhaps opens up the field for archaeology in a way different from the approaches recommended above. Harvey shows here how parishioners competed with the mother-church over chapel provision, and thus over the administrative and fiscal structures which accompanied this. Their battle over ecclesiastical facilities, in reality a battle over resources and whether tithes were to be used locally or hived off elsewhere, was sometimes lost and sometimes won. As with Cornwall's tithings, any intentions to develop, or alter, township structures in Yorkshire, whether from above or below, must have been successful to different degrees due to a combination of topographical and geological settings and, more importantly, social and cultural factors. Even where 'successful' eventually, attempts to circumvent or negate them seem likely to have continued.

Such social conflicts must have their counterpart in contemporary material culture, whether the architecture of the buildings concerned or other facets such as artefactual or topographic evidence. Patterning in this archaeological evidence could test the effectiveness of these administrative units in interesting ways, charting success or failure, resistance or acceptance – but only if 'the township' is not assumed as an analytical unit from the start.

If one wishes to approach landscape analysis in a 'totalising' way and with real time depth, as most practitioners argue is necessary, then how is this to be done without adopting the structures inherent in documentary frameworks? Is this possible without ending up arguing for superficial continuity (the modern rooted in medieval period or earlier) or falling into empiricism (making a plea for 'more data' before we attempt any form of interpretation)? And can we do so whilst avoiding a teleological reading of medieval society which portrays it as rule-less and disordered, in contrast to a rational and ordered modernity, a world in which elites dominated the lives of an undifferentiated subject population, and from which capitalism emerged unheralded, owing nothing to earlier traditions and trajectories?

In my opinion, medieval settlement and economy can be understood only by attempting to characterise the nature of feudal social relations. Although any such attempt to create a totalising analytical concept in frowned on in certain quarters as being 'tyrannical', how one defines feudalism will affect most of the major archaeological issues raised above: urban origins and market development; the relationship between feudal aristocracy, the royal state, and the church; the nature of technological innovation in the countryside; and the transition from feudalism to capitalism. In essence, two approaches have been taken to these issues: a conventional approach, discussed first below, and what I believe to be a more productive, historical materialist standpoint.

The first perspective goes back at least as far as Postan and his description of towns as "non-feudal islands in a feudal sea" (1972). Today, most medievalists would deny the validity of his pithy epithet and instead see urban settlement, whether planted and planned or growing organically, as an integral part of feudalism. However, the exchange system embodied most obviously in towns is still portrayed by many as the dynamic underpinning all medieval society, such 'market forces' inculcating themselves into the countryside. Thus, as Finch (2002) shows, urban considerations have, wrongly and by default, dominated research into the medieval countryside: all social development takes place from the sophisticated town outwards into the utilitarian landscape; when medieval nobility seized urban economic opportunities with enough vigour, we get the development of mercantilism: with further energy in the system, the gradual transition from feudalism to capitalism takes place.

Such an approach has been tremendously influential in medieval studies, providing the basis on which historical geographers have carried out town plan studies and archaeologists have investigated riverine trading zones and interpreted patterning in artefactual analysis. Yet it can be criticised on various grounds. Thus it adopts a partial view of both rural and urban spheres, forgetting, for example, the sophistication of the countryside and its opulent church or complex agricultural strategies, and the poverty of the town, the ability to breathe its 'free air' being of little advantage if the water was contaminated and the diet unbalanced. It also does not recognise that regional differences might be best explained by the dynamics of rural social and economic relations (Britnell 2000). Finally, vitally important from an archaeological viewpoint, it fails to acknowledge that many rural transactions ignored the urban market, and thus remain hidden from most documentary history (Dyer 1992)

Given these reservation about the domination of towns and their abstract notion of an 'urban market', some have charted an alternative, Marxist approach which defines

feudalism in terms of the exploitative relationship between lord and peasant (Hilton 1992). Its distinctive attribute is seen as the extraction of surplus by rent from individual households as expressed by the setting out of tofts and crofts in organised villages, and with technological development limited as long as peasants remain in control of their tools and the land. In addition, because this economic system is founded on exploitation, we should expect conflict at its heart, and thus diverse reactions to any attempts at imposition (see the above discussion of Cornwall's' tithings, for example, or the relationship between dispersed and nucleated settlement across a region, as discussed, famously, for Warwickshire: Dyer 1996). Finally, in this perspective, any change from feudal to capitalist relations must involve breaking the peasantry's control of land and its resources, and thus should be evident as a sharp, revolutionary change, not an evolutionary process. However, it may take place in some areas more easily than others, and be accepted more readily for some parts of the economic process than others (see further below, Chapter 7).

Data from every part of medieval Yorkshire – landscape studies, the full range of settlement trajectories, not just that of towns, artefact and ecofact research - could be deployed to elucidate the debate between the two view points summarised above protagonists. Hence, when we see a change in the countryside from early medieval dispersed settlements, perhaps together with the definition of territories via dyke systems, towards more focussed villages, does the archaeological evidence suggest an organic growth of settlement form as individuals come to the fore to exploit opportunities piecemeal: gradualist economic development? Or is it expressed in the form of new, multiple crofts and tofts, of streets to facilitate control of lord, and of field systems to bind peasantry together and to 'their' manor: a concerted attempt at imposing rent-based surplus extraction?

Concerning medieval urban development, do building methods, topographical organisation and the economic units of production appear to stand outside the economic relations of the countryside: proto-capitalist enterprises? Or do archaeological data suggest, as Hilton (1985) would have us believe on the basis of documentary evidence, that small towns are concerned mostly with the provision of essentials such as salt and tools for a local peasantry, and are actively promoted by the lord who held power in the landscape: integral with economic processes on the land? And what of their larger urban counterparts: are they essentially the same as the small town, writ large, or with an added dimension of conspicuous consumption amongst the elite, giving feudal nobility a sense of their own identity?

Finally, does the evidence suggest that exchange could truly transform medieval society, with new technology, for example in ceramic production, introduced and maintained through the period, and long distance trade evolving to eventually dominate the economy, a move from production for use to production for exchange: the seeds of mercantilism in the core of the medieval period? Or is progress much more halting, crises just as common as gradual social development, and technological change unsustained and piecemeal, due to the inability of central authority to impose itself on producers so long as they maintained control of their own means of production: a crisis of feudal exploitative systems?

The canvas here is large, and the issues of the same magnitude, encompassing how we conceive of social change altogether, how we approach a landscape archaeologically, how urban hinterlands might be defined and investigated through time, and how we understand the defining characteristics and genesis of the modern world to which its medieval forerunner gave birth (see further in Chapter 7). Yet, if we wish to justify continuing to devote resources to protecting medieval sites *in situ*, or to gathering, storing and interpreting medieval archaeological data-sets, such are the necessary terms of reference.

CHAPTER 7: THE EARLY MODERN PERIOD – INDUSTRIAL ARCHAEOLOGY

Industrial Archaeology (henceforth I.A.) plays a critical role in our understanding of the early modern period, not only in Yorkshire but also in the world as a whole. In what follows, we first consider the background to its development within Yorkshire (Section 7.1), before describing how the YARF project endeavoured to develop a strategy for its investigation (7.2). Implementation of that strategy led to a critical issue – the need to define I.A. itself, and consider its relationship with documentary history (7.3). With such issues in mind, we then make some suggestions as to how we might develop methods and practice (7.4) and theoretical perspectives and research questions (7.5) within Yorkshire.

7.1 Background within Yorkshire

Study of I.A. within Yorkshire starts with two enormous advantages compared to some other parts of the country: we have a critical mass of accomplished researchers, and they have developed a number of innovative approaches. Thus some of the most able practitioners work here, whether in curatorial roles, as consultants, in commercial contexts, in particular research areas such as coal and lead mining), or as even more focussed specialists, for example with interests in Unitarian Chapels. To these people can be added many others carrying out research relevant to the sphere of interest but who would not see themselves as industrial archaeologists, for example those studying historic landscapes in the Dales. The project drew on their experience in attempting to define its initial approach to this critical aspect of our past (see Appendix 1), and then used interviews, email communications and published output to further develop its perspectives.

Able and dedicated researchers usually generate innovative approaches and are likely to follow them through with publication or other forms of dissemination. Thus, unsurprisingly, some of the most groundbreaking of I.A. studies have been produced in Yorkshire. For example, RCHM(E) research surveys of its textile mills (Giles and Goodall 1992) are renowned within the discipline. On the rescue side, information generated by archaeological investigation of inner city brownfield sites in Sheffield, carried out at the recommendation of the South Yorkshire Archaeology Service, has begun to add significantly to our understanding of Early Modern social development in that city. For the future, the ARCUS group who carried out the fieldwork have set up a *Steel City* project to explore the growth of Sheffield from the medieval period onwards, and to investigate the conditions of life and work in the early industrial town.

The general objective of this work is nothing less than rewriting the current intellectual agenda for I.A.. Until now, this has tended to see the machines and the factory system as simply dehumanising, rather than offering a role for individual action (or at least reaction to the imposition of new forms of work organisation), and has viewed the process of industrialisation as homogenous, rather than locally diverse. Yorkshire-based researchers have been amongst those putting forward such new interpretative frameworks, part of the development of the sub-discipline as a whole. In what follows,

critical aspects of our increasing knowledge of industrialisation are outlined, illustrated with pertinent Yorkshire examples.

An interest in the products of industrialisation is evident from early in the 20th century, as indicated by the Iron Bridge being closed to traffic over fears about its structural integrity in 1930, and documentary historians promoting the cause of transport during the 1940s. Such concerns then found an outlet in WEA and other adult education classes in the 1950s, thus spawning further interest which led, eventually, to participation at an official level. However, in the second half of the century, these endeavours were formalised into a distinct sphere of research, and it is at this point that the sub-discipline of I.A. can be said to emerge (Palmer and Neaverson 1998).

At this time, it was mainly understood as the province of documentary historians, with minimal impact on archaeological academe (David Crossley was perhaps the exception in our region: see below). In principle commentators may have been interested in all aspects of industrialisation, but the easy identification of factory remains meant that economic, and particularly technological, aspects tended to be studied more readily than social ones – the steam engine itself seemed of greater interest than the building housing it, the commodities it produced or the workers who operated it. Eventually, the baton was taken up by the RCHM(E). Their initial work on standing buildings involved a few staff actively engaging in industrial recording, with the subjects treated in a piecemeal fashion (Falconer and Thornes 1986, 25). However professional and official interest in I.A. grew apace during the 1980s, perhaps led by the threat to industrial monuments, one result being the pioneering work on the region's mills noted above.

In recent decades, a growing professional interest has led to many further advances in Yorkshire, especially following the issuing of PPG16. The commercial cutting-edge has been provided by companies such as ARCUS in Sheffield and in the briefs written by knowledgeable curators working in development control. However, the intellectual cutting-edge continues to involve a meld of both these parties and industrial interest groups beyond them, for example mining groups in the Dales, West Yorkshire and the North York Moors. In short, fruitful interaction now takes place between all spheres, within and beyond the region. On one of several email discussion lists for I.A., for example, it is not unusual to find the curatorial sector seeking advice on the identification of particular artefacts, and for members of 'amateur' specialist groups to provide the answers.

The collective efforts of all specialist groups in Yorkshire have meant good progress in the creation of syntheses as well as pushing forward academic agendas, the latter being part of a more general trend led by luminaries such as Marilyn Palmer (1991) who are reflecting on the current agenda for I.A. and where it should be going next. Within Yorkshire, the work of David Crossley (1990) stands out here. He has promoted the notion that an understanding of landscape is vital to study the impact of a growing population and its food and fuel needs (see, for example, his recent work on waterpower in the Sheffield landscape: Crossley 2004). As a result, archaeologists have concerned themselves with the study of rural buildings of all social levels, of pre- and post-enclosure land and of woodland development, for example by creating vegetational histories from pollen and chemical data, linked to C14 dates (Mighall *et al*. 2004). They have also been encouraged to carry out research in collaboration with

those investigating documentary sources, including pictorial and map evidence and abandonment plans. From these foundations, studies of metal industries, textiles, glass and ceramics have all been to the fore in the region.

In the first sphere, investigations have drawn out our knowledge of pre-steam power sources such as the horse, wind and water. Iron working, a big research focus for last 25 years, witnessed a move to the water-powered high-shaft bloomery by the 15th century (for example Timberholme, North Yorkshire: Vernon *et al* 1998) and the bloom-hearth in the course of the 16th century (for example Rockley Smithies, South Yorkshire: Crossley and Ashurst 1968). There then followed the critical move to charcoal blast furnace by the mid-17th century, allowing a hugely increased volume of production, and a further change in the early 18th century from charcoal derived from coppiced woodland to coke, freeing up woods to supply timber for other uses or to be converted into agricultural use. The crushing, washing and smelting of lead involved the change from the bole hearth, in use from at least the 13th century, to the ore hearth during the 16th century, and then to the reverberating furnace (cupola) by the late-17th (the last requiring water power and drafts, so set up in high places and thus often better preserved than earlier facilities). Studies of coal and iron ore extraction have drawn on evidence such as that from Yorkshire's Bentley Grange, Emley, and from Tankersley's bell pit mounds, many of which led into shaft and gallery mining.

In the other spheres, domestic textile production before 1700 embodied a distinction between rural production and urban finishing and marketing, notwithstanding its growing mechanisation. This process has been studied in the fenestration and layout of weaver's cottages in Calderdale, together with specialised products, for example linen around Barnsley. For later periods, pride of place must go to the Royal Commission's thematic survey of Yorkshire's textile mills by Giles and Goodall (1992), which has played a major role in the development of industrial research agendas. Glass, at first imported from Europe, was home-produced from the early 16th century, later production boosted by imported technology and, probably, immigrant labour, as evidenced in our region by the archaeological findings at Rosedale and Hutton-le-Hole. More generally, the move to coal (Crossley 2003) and development of the canal infrastructure facilitated larger scale of production, as is clearly seen at places such as Catliffe and Gawber from 1700 onwards. Finally, evidence from Yorkshire has been vital to our understanding of ceramic production. 'Cistercian' ware production near Wakefield (Wrenthorpe, Potterton) from the early 16th century may have been due to a fortuitous combination of fuel, clay and freed-up rural labour. This can be contrasted with the different structures of the early 18th century, manufacturing taking place adjacent to major towns such as Halifax to supply their burgeoning population directly, before all was swept away soon afterwards by mass production in Staffordshire.

More recent work in Yorkshire has continued these traditions. Thus, in the Dales, study of the extraction and processing of lead, Britain's second export after wool in the 17th century, has not only thrown light on technological matters, for example the change from water power to steam, but has also elucidated a variety of economic and social issues. There is evidence of the continuing influence of pre-industrial legal mechanisms, as the medieval structure of liberties was carried forward to influence mineral extraction rights in the new conditions of early modern society (see further below). In contrast, we also see the move towards employing full-time miners, as owners sought to control the industrial process with more mobile labour based on

wages or piecework, and the increased division between male and female, as greater division of labour increased gender distinctions within the workforce. Such evidence reinforces the view that industrialisation interacted in complex, and sometimes quite individual, ways with pre-existing social structures and that our picture of sizeable factories employing large numbers of male wage labour, though true in the end in many spheres, was reached in interestingly different ways in many industries, and not at all in some.

Other independent work continues apace in the region and can be incredibly productive, the work by Kevin Cale and community groups in the hinterland of Harrogate providing an excellent example. Similarly, map work on lead and coal sites in the Halifax area have meant that the number of known sites here has increased from 20 to 1500. We now have evidence of small-scale coal extraction sites on the millstone grit as well as coal measures, thus starting to break the mould of self-fulfilling searches in geologically determined zones. Recently Huddersfield Archaeology Society joined forces with Gerry McDonnell, University of Bradford, to excavate medieval iron smelting at Myers Wood near Huddersfield with the support of the Heritage Lottery Fund. Such archaeometallurgically-orientated projects are not only valuable in themselves, but could also enhance the research yield of developer-funded excavations.

Yet, despite these clear advances, many problems remain. Survey work undertaken by some independent groups can lack clarity on the level of resolution used in their recording and generate mistakes in categorisation which then enter SMRs, for example in the identification of seemingly ubiquitous 'bell pits'. Secondly, groups generate holdings and archives which are seldom catalogued, let alone researched: the Northern Mines Research Society is one exception, feeding its material into the SMR on a regular basis and holding information on a Geographical Information System, rather than by more mundane mechanisms – a fine example of 'best practice'. Finally, materials accumulated in museums and private collections can also remain uncatalogued and inaccessible. The Hawley collection of Sheffield's output of light industrial tools is the exception that proves the rule here, with its holdings of finished and part-made items, tools for making tools, 5,000 trade catalogues, film of processes and oral accounts being available on-line and to visitors. The material is well known to historical archaeologists from former overseas colonies but, paradoxically, much less so in the UK, or even in Yorkshire outside Sheffield.

Beyond these methodological and empirical matters, a second problematic sphere concerns the publication of results, which can often take the form of site specific, synthetic accounts which 'explain' industrial change in terms of technological development lead by dynamic (English) individuals. This framework, developed in an earlier context of triumphalism, ignored, *inter alia*, the real conflicts which went on between producers and owners, the former being the source of much innovation, and the negative impact of colonialism beyond Britain. Paradoxically, this outmoded structure has already been abandoned by the more innovative economic historians. Thus, while I.A. has been preoccupied with unfashionable interpretations and with the conservation and preservation of the 'biggest', 'best' and 'most unique' of our industrial heritage, concepts concerning the microeconomics of the firm, the organisation of production and so forth remain marginalised, despite their considerable potential to frame new archaeological agendas. Thus, whilst much has been achieved

with the discipline, barriers to further progress remain and, it might be argued, these come largely from within Industrial Archaeology itself.

7.2 Developing a Strategy

Discussions with Yorkshire-based practitioners have been pivotal for YARF's attempt to work towards a new strategy for I.A.. Nearly all parties suggested that the traditional forms of interpretation, usually coupled with looking at each industry separately, would not provide the best way forward for our project. We therefore decided, from the outset, to take a more thematic and holistic approach in our assessment, in the process endeavouring to ensure that we would include the often-ignored Vale of York and East Yorkshire alongside the much-studied uplands, and that we would take account of local diversity within broad trends, for example the fact that lead mining in Wharfedale may be different to that in Swaledale, and may even vary from parish to parish within a single dale. We also felt the need to link I.A. with others spheres, perhaps best achieved by seeing whether the four-fold division employed elsewhere between extraction/production, processing, storage/exchange and disposal could remain tenable and useful.

The strategy proposed initially (see Appendix 1) involved, first, looking at existing source materials and augmenting them where possible, before focussing on particular case studies which transcended any one industry and reflected differences in topography and landscape across the region. It was then hoped to summarise those resources quantitatively in relation to our four-fold division embedded in the project database, distinguishing between extraction/production, processing, storage/exchange and disposal (see 3.5). Six possible studies were put forward (Sheffield, focussing on workshop craft industries; South Yorkshire coal, studied in relation to ironstone; Halifax and textiles, linked to pottery, bricks etc. and, building on the work of Giles and Goodall to stretch the definition of I.A. to include a range of buildings and spheres beyond the actual sites of production; lead mining in The Dales, to study local diversity and provide links to landscapes work in the area; the Alum industry on the North York Moors, an example of monopolistic production with great significance beyond Yorkshire; and the fishing, port facilities and communications network in and around Hull. Each case study was to consider previous approaches and the present intellectual agenda, data sources and the problems/potentials therein, illustrations of best practice/innovative studies, and future directions.

In the event, even this more piecemeal, but still wide-ranging, approach could not be delivered in its entirety due to our lack of resources. In its place WYAS, in the person of Helen Gomersall was commissioned to produce such a broad-brush, quantitative and qualitative study of defined aspects of West Yorkshire. This work was not only intended to comprise a ground-breaking exercise in its own right, but also to provide the basis for informed discussion amongst all interested parties within the region. Its output, entitled *The Industrial Archaeology of West Yorkshire: an overview, 2003* (see Appendix 5), comprised the following components:

> *Introduction* (the history and definition of the discipline, its present state of flux and the focus of this study)

The Industrial History of West Yorkshire (geological and pre-industrial background, then subsequent stages of industrial development)

The Resource: documentary evidence (maps and plans, company information, government sources)

The Resource: physical evidence (sources, then descriptions divided between raw materials, manufacturing, food, infrastructure/transport and social facilities)

Resource Potential and Future Work (focus on the preservation of field evidence and on developing a coherent research strategy for major industries, minor ones being better represented beyond Yorkshire)

Conclusion (physical survival patchy and encouraging brownfield development potentially disastrous, PPG16 system generally effective but demolition of unlisted buildings a significant loss)

This report was then circulated amongst a number of interested parties within the region, followed up by a sequence of face-to-face discussions. The latter had to be provided with some structure, yet avoid the present author simply engaging others in a question-and-answer session defined in relation to his own, inexpert parameters. Thus six key issues were distilled from the WYAS text to provide an initial agenda for these meetings. These comprised:

1. There is disagreement on how to define I.A.. Should this be done:

   - by date (what dates and why?)

   - by function (then where does industry stop and production more generally, or other social practices, start?)

   - in relation to the development of capitalism (in which case, what are the latter's defining characteristics and internal dynamics?)

2. The report on West Yorkshire has sketched out a history of its industrial development: mixed rural economy; pockets of industry with further growth facilitated by the controlled development of infrastructure; enhanced raw material supply, spin off industries, wider markets; then urbanisation involving housing, lighting, sanitation etc. for the burgeoning population. How far does this story match that which could be developed in your own sphere of interest?

3. Documentary sources are clearly relevant to I. A. and available through various sources. However, how should the two types of evidence be linked?

   - how do you see this relationship in theory, notably the question of *when* the two disciplines should be linked in researching I.A. – from the start in a process of interdisciplinary research, or on a multidisciplinary basis, with integration only later, when each has worked up its evidence to a certain level of general interpretation?

- on a practical level, does the list of WYAS sources (OS maps 1880s+; geological maps 1930s+; 'Building Plans' 1840s+; trades and postal directories late 18th century+; depictions on company letterheads; census returns and other governmental surveys; company records) cover what is available to you? Would you split the sources in this way? And how accessible is this material in your sphere: PRO, County RO, SMR archives?

4. Physical remains, whether derived from information obtained from privately held datasets or county SMR, are divided here between raw materials, manufacturing, food technologies, infrastructure, transport and social features. Is this:

- a good way of separating things or should we see: transport as part of infrastructure; collapse all of last three categories into a single group; divide between supply, demand and spin off?

- a complete list of general heads and, if so, what subcategories would need to be added under each to fit your area?

5. The report puts forward a number of principles which might guide future curatorial and research practice, each of which raises further issues:

- is the fact that minor manufactures are better known outside Yorkshire a good reason to give them reduced priority here or should we tackle them as smaller industries spinning off larger ones?

- should data collection be prioritised over analysis in the way suggested, whether as a point of principle or due to our present position in a research cycle?

- how should research agendas be developed? (giving a number of industries particular emphasis? Testing models, whether derived from elsewhere or created locally, against Yorkshire evidence? Emphasise developments either side of major technological changes or study a continuous process?)

6. Finally, given data vulnerability, should I. A. be driven by curatorial needs or academic endeavour?

This process of consultation produced myriad results, some aspects generated directly by the WYAS report and this author's gloss on it, others additions to that agenda and a product of quite individual interests and viewpoints. However, some of the six questions listed above clearly created more substantial bones of contention amongst Yorkshire's I.A. community, whilst others were far less controversial. Thus, of the latter, West Yorkshire development (Question 2) was thought to be comparable to other regions, even if each differed significantly in detail – but 'the devil is in the detail'. Equally, the division into sub-themes within I.A (Question 4) was broadly accepted once manufacturing and food technologies were set in a single context of production, and transport was seen part of infrastructure – hence most favoured a division between raw materials, production, infrastructure and social/other spin off.

The interview records were compressed, distilled and compared, and then set beside general perspectives on landscape archaeology (the 'specialist' study to be undertaken by the project which, it was decided, was better assimilated into the period-based

discussions of this and the preceding period – see 2.2 above). The various points raised could be rationalised under three broad headings, which are therefore used to structure the remainder of this section of our report. These comprise:

- the definition of I.A. and its relationship with Economic History (Questions 1 and 3 – 7.3 below)
- the development of method and practice (Question 6 – 7.4 below)
- the development of theoretical perspectives (Question 5 – 7.5 below)

7.3 Defining Industrial Archaeology and its Relationship with Economic History

Most practitioners interviewed accepted that there was a need to define I.A.. Such definitions might be required for practical reasons such as achieving academic respectability and status in order to obtain resources, or winning the argument when competing with other interests within archaeology and beyond in curatorial activities etc.. Or they might be based on intellectual needs, such definition being a prerequisite for debating relationships between I.A. and other spheres of archaeological interest, or required if the sub-discipline was to deliver social analyses and define systemic change or to chart diversity of response within this proposed industrial sphere. In the process of consultation, Mike Gill put forward the following definition:

> *Industrial Archaeology is that branch of archaeology which uses a multi-disciplinary approach to study the physical remains of industry, whether by period or theme, in the wider context of the neighbouring landscape. Data generated by fieldwork or archival research should be modelled using a hypothetico-deductive approach to evaluate it*

Many would agree with the first part, even if some would object to his explicit 'model testing' of the second part. However, there was much less agreement over the critical dichotomy embodied in his *period* vs. *theme*, interviewees falling equally between those who preferred thematic or chronological definition.

The solution proposed by some is to define an 'Archaeology of Industry' lacking all chronological boundaries, so creating a sub-discipline which can take its place amongst counterparts such as landscape archaeology and urban archaeology. This sphere might still embody a dichotomy between those with a particular interest in technological development (which need not mean, incidentally, that they are driven to technologically determinist explanations of industrial development), and those wishing to be involved in an archaeology of production more generally (perhaps itself encompassing sub-themes such as the acquisition and transport of raw materials, the production of artefacts and their distribution, and their consumption and disposal). But what all strands have in common is that, in theory, any research topics generated could spread well back into prehistory (of course, some interests defined by technology inevitably relate exclusively to more recent centuries, for example a focus on steam powered locomotives).

This approach obviously raises the question of how one is to distinguish *industrial* production from other forms of productive activity in society. Here, various, interlinked criteria were suggested: that industry, by definition, should involve a focus

on non-subsistence production; on the manufacture of artefacts requiring more than one artisan; or on production intended for distribution beyond the purely local sphere. Inevitably, all such definitions raise the issue of how we can recognise such distinctions archaeologically on the margins, though this need not militate against them as definitions *per se*. More importantly, they might also rule out certain spheres of activity which have been seen, conventionally, as the concern of I.A.. For example, the activities of the "little mesters" in Sheffield comprised a highly individualised form of outworking carried on by independent artisans and persisting into the 20th century. Do we want to place this beyond the concern of I.A. *by defintion*?

However, the most trenchant criticism of this first, non-chronological approach is that it still separates production from other aspects of society, so militating against truly contextualised research. To this, one might add, it can all-too-easily result in an analysis of industrial development itself, the seeds of modern capitalism being traced to much earlier periods, whether medieval, Roman or even prehistoric (actually, the same criticism can be made of its proposed bedfellows 'urban' and 'landscape' archaeology: all towns can seen as market centres and all landscapes as timeless, or at best very gradually changing, contexts - see the discussion of the medieval period, Chapter 6). It is tempting to conclude that, if one wishes to hive off Industrial Archaeology in this way, it will then be necessary to invent a new sub-discipline to look at recent industrial production in the broadest possible social context, and thus to delineate a chronologically-defined specialism.

Problems remain on what this discipline should be called. Historical Archaeology is favoured by some, but applies more easily to a North American situation than Europe which, in some sense, can call on the support of documentary history to aid archaeological interpretation from well before the modern period. Post-Medieval Archaeology is put forward by others (Cranstone 2004), but clearly defines the sub-discipline in terms of what it is not. Overall, the present author would make a strong case for The Archaeology of Capitalism (Johnson 1996), a term which allows, indeed demands, contextualisation beyond the narrow confines of technological development, and gives a ready resonance for theoretical debate and relevance to present-day society. Connected to this issue of title is the question of which particular chronological markers are to be used - after 1500 for the late- or post- medievalist, after 1750 for those who wish to see factory production as the defining characteristic of modern society. That said, it can be argued that such a chronologically-defined specialism can remain useful, even if start dates are debated or acknowledged as being inexact, and even if the point in time at which this new period could be said to have started varies between different geographical regions or within different aspects of the overall period.

The second large bone of contention amongst industrial specialists concerned what should comprise the proper relationship between economic *Documentary History* and Industrial *Archaeology*. Clearly, relevant documents can derive from a variety of sources, whether records from commercial transactions, estates, litigation, the crown, or observations of production processes by third parties. Hence their study can allow functional interpretation of physical remains and even, where the sources embody appropriate detail, show how, where and when previous systems changed, for example those concerned with landholding.

For example, as noted above, medieval rights to exploit mineral resources could involve the definition on landscape blocks along the length of a seam, each worked by partnerships. When technology developed and extraction took place laterally out from these blocks to adjacent areas, the earlier divisions might be retained initially (and were, perhaps, still worked by the same human units of production). Only later did these zones of medieval origin become amalgamated, the landscape units of production now being defined by seams coalescing along whole valleys or streams. Clearly, knowledge of these legal processes will be of fundamental importance to any archaeological interpretation of the exploitation of such seams. In similar vein, Gledhill's (2004) study of conflict over access to woodland and its resources shows how earlier trajectories in ownership affected the way in which different parts of Swaledale could be exploited for the timber required by the lead industry. Such work would be impossible without the support of written records.

More generally, documents can allow models to be developed, for example on the development of forging over iron smelting, which archaeological investigation can then confirm or contradict. However, things can often become more complex. Where conflicts between documentary and field evidence cannot be resolved, where neither being provably incorrect, we may simply need to draw attention to these differences. In addition, documentary evidence can be patchy or simply inaccurate (and sometimes intentionally so, for example a company's trade catalogues showing far more chimneys in its illustrations than actually existed at the factory site, or descriptions of the fuel mixtures used in some metal processing written down to mislead potential spies). At base, documents were always produced for a reason, and thus written from a particular viewpoint, most obviously that of the ruling class. Hence their use by archaeologists is rarely straightforward.

In reality, nobody would suggest that I.A. can afford to ignore relevant documentary evidence entirely and this disagreement on its role of rationalises, essentially, into one of two positions. For some practitioners, documents provide a starting point for analysis, for example by generating models which can be tested against the archaeological record on a particular site or on others with more limited documentation – an opportunity for inter-disciplinary research. For others, such research best takes place alongside more purely archaeological research, with each sphere worked up to higher levels of interpretation using its own concepts and methodologies in order to provide a coherent basis to discuss multi-disciplinary comparisons at a later stage of synthesis. There is no obvious consensus within Yorkshire of which is the best course to follow.

7.4 Developing Methods and Practice

Helen Gomersall's report (Appendix 5) shows how much information is currently held in the WYAS SMR, and how much can be made of it when there is a knowledgeable curatorial staff to call on. However, these advantages are far from common – one is far more likely to be struggling to get I.A. in particular, and the modern period in general, acknowledged as a legitimate part of the development control process. Further, even where data gathering ahead of such development is accepted, the researcher can be hard-pressed to use the output to produce a coherent picture on what is 'known' about

the process of industrialisation in any one area, let alone what this might mean for the further development of responsible curation practice.

This situation is improving slowly, and has been given a boost by record enhancement generated within the MPP system. However, the latter process is incomplete and, anyway, will never be able to answer all of the interpretative questions raised above. In essence an SMR is just that – a record of sites and monuments in a designated area. No matter how tightly we define process of industrialisation, the research issues raised can only be approached using a landscape context for such development. And this will be based on map regression analysis, GPS, AP work and so forth, none of which fits very nicely into an SMR structure. There is a huge challenge, here as elsewhere, in making SMRs into research tools.

When one considers the threats to that resource, threats are numerous, both in towns and the countryside. The work of utilities and big public projects such as Yorkshire Forward have a considerable impact on industrial remains. This can involve backfilling features in townscapes and rural landscapes alike, and destroying the 'hidden landscapes' of underground mining. In addition, much of this work takes place in a way which avoids altogether the control which PPG16 allows in other development contexts. It is possible that money from the aggregates levy and or the landfill tax system could even-up the playing field here if applied systematically, but such resources have yet to be requested, let alone obtained. Hence appropriate procedures have yet to be put in place.

In the countryside, mineral extraction remains a big problem, as does the insidious drip-drip effect of agricultural exploitation. However, in assessing the research potential of sites, it is important to move beyond the conventional notion that little will survive where modern exploitation has taken place on early sites – that mining destroys its own past. Of course some sites were reused on successive occasions, for example when technological advances made it feasible to exploit resources previously thought to be uneconomic. Yet such reworking often hides, rather than destroys, earlier evidence, as recent work by the Northern Mine Research Society at Appletreewick demonstrates through its identification of the phases of exploitation still written in that landscape (Roe and Davies 2003).

That said, dealing with rural threats systematically within the region will not be easy, not least because they are differentially distributed. National Parks, for example, are rather better protected than most other spheres. Paradoxically, because past industrial development has involved moving between what are now better- and less well-preserved landscapes, archaeological investigation will give much more detailed views of some periods and spheres than others. Thus data sets generated either by reactive, commercial work in some areas and proactive, research projects in better preserved areas elsewhere will inherently contain gaps. A well-rounded understanding of all aspects of early modern social development will only be developed by the use of targeted research in the full range of landscape settings. Dealing with *lacunae* in this way, alongside the enhancement of development control procedures, is essential if we are to make the most of the data generated commercial, rescue work. It will also ensure that curatorial advice and provision remains up-to-date and relevant to developing research objectives.

In urban contexts, corresponding problems remain, only some of which can be covered within PPG16 conditions. In particular, recent government planning guidance embodied in PPG3, advocating the use of brownfield sites for housing, has encouraged the development of inner-city 'brownfield' zones, rather than the 'green belt'. Hence large swathes of industrial sites are being destroyed, either because archaeological considerations take second place to the economic needs or perceived issues of decontamination, or because there is simply no recognition that they constitute areas of archaeological interest. Thus, beyond conservation areas, standing industrial buildings undergo demolition or conversion to new use without record and workers' housing can be swept away with equal abandon (although the lobbying work undertaken by English Heritage in Nelson, or the present negotiations about what is to be done with such housing at Hungate in York might suggest things are starting to change. See Hughes 2004 for an example of how such information can start to tackle issues such as the quantification of philanthropy, and Belford 2004 for the need to look beyond concepts such as 'slum housing', using values embodied in later Victorian attitudes, rather than the realities of the lives of the people who occupied these properties).

Equally, below ground remains, for example the 'hidden landscape' of underground mining mentioned above, are seldom considered significant when in the way of proposed housing developments yet are vital, both in themselves and more so if integrated with studies of surface remains. This situation is exacerbated by there being little quantification of this below-ground resource, even in terms of the number of sites, let alone levels of survival. This situation could be ameliorated significantly if a survey along the lines of the cave audit were to be commissioned. In addition, the investigation of underground industrial remains has lacked, until recently, a developed methodology. However, recent work by Martin Roe (2002) has begun to remedy the latter problem and these methods have been applied in two recent surveys in the Halifax area, recording in detail of a 6km stretch of mine workings. These projects, now lodged with the SMR, includes recording artefact locations in order to allow monitoring of visitor impact and shows just how much is possible, even with minimal, indeed inadequate, resources.

Further advances can be predicted here, for example the use of computer modelling to survey below-ground remains at a greater level of resolution than that used above the ground, and of GPS to locate surveys. Alongside this, conventional fieldwork techniques could be applied more fully to industrial matters: finds analysis to identify ore fragments, waste slags and debris such as crucibles and moulds and so define sites; environmental and geochemical sampling to characterise them; and geophysical prospection (see Vernon *et al* 1998, above, for example) to contextualise findings still further.

Corresponding work by ARCUS and the South Yorkshire Archaeology Service on brownfield sites in Sheffield has exploited opportunities in purely commercial contexts. Here, rapid characterisation of large areas via predictive modelling has allowed a strategy of targeted evaluations and fuller excavation to be developed, followed by careful recording of site topography and taphonomic processes. Although this approach, in essence, follows the broad principles applied to all sites threatened by modern development, its does so on a scale which is rarely encountered elsewhere. By the same token, sampling of the residues of industrial processes on such sites involves dealing with factors largely irrelevant in earlier periods. These include the sheer

volume of these materials, their moveability around the site (for example for use in later construction work), ill-defined taphonomic processes which may distort later analysis (e.g. movement of ground-water or contamination), and recycling of residues to confuse archaeological interpretation. Once such problems are mastered, the data generated allows much fuller integration of all aspects of the archaeological record, and can include more destructive investigation of artefacts than would be allowed with museum holdings.

A good example of the latter concerns work by ARCUS on developments in blister steel production from the 18th century (Barraclough 1984). This indicates the use of lower carbon steels for cheap cutlery, and their high carbon counterparts for more specialist applications. The microstructure of two blades was examined by means of photomicrographs. One incorporated at least seven different layers of steel to allow forging into 'shear' steel, thus suggesting a good quality product. In contrast the second blade, although ostensibly an equally well-finished object, appears to have been made up of materials of varying carbon composition, suggesting that the blade was made from recycled scrap. In addition, controlled excavation will allow such artefact studies to be contextualised in relation to deposit formation. Finally, alongside these direct products, studies of other finds assemblages, for example clay pipes and bottles, will elucidate matters such as the incidence of smoking and drinking at work allowing us to understand how workers sought to undermine the imposition of capitalist 'moral codes' in their workplaces.

In addition, where one can start the process of recording a closing factory early enough, it becomes possible to create a photographic history, by means of video, and an oral history, by means of taped conversations, of working practices which are about to be swept away for ever. In this case, such activity is linked to the work of the Hawley Collection (see above), paralleling work undertaken by Eleanor Casella and others at Manchester University and demonstrating the immense contribution to I.A. of oral evidence. Beyond these purely archaeological aspects of fieldwork, research undertaken as a result of curatorial initiatives in association with Sheffield Archives has involved rescuing paper archives such as trade catalogues and company records.

In the longer term, such commercial work will provide a detailed understanding of general processes of valley backfill and artefact dumping within Sheffield. Each future development project will still require initial desktop studies, followed by an ability of archaeological contractors to 'think on their feet' in order to exploit all opportunities to develop a detailed understanding of industrial activity in a threatened area. However, alongside this individual work, the development of an increasingly sophisticated and accurate urban deposit model, of the sort normally created only for our major historic towns, should have two important impacts: it would constitute an important research tool in its own right, elucidating how the modern townscape was formed over a fairly short period by intensive human activity; and it would give a more informed structure and context within which to set curatorial advice in advance of specific threats to the townscape.

Commercial work carried out with an awareness of the current academic viewpoints will step beyond a perspective which sees the factory system as simply dehumanising and the process of industrialisation as homogenous to chart its local diversity and thus rewrite that outmoded agenda. In doing so, it will provide a vibrant context for new

social analyses to be fed back into contemporary culture, creating a huge opportunity to interact, archaeologically, with local audiences. The level of detailed recording involved demonstrates that industrial change is not simply technically driven but socially determined. In the process of such development, regional and local identities were sometimes transformed, modified or retained, just as the lives of its citizens in the 21st century continue to be affected by the modern world. Seen in this light, the study of industry could move beyond the province of either processes of 'cultural resource management' carried out by local government staff on behalf of local people, or of a tourist industry offering studies of squalor or of pure nostalgia. In their place, it could offer a view of a globalised battleground in the recent past on which people struggled to retain their identities, or forged new ones, just as they do in the present.

In sum, there is a huge opportunity, only rarely exploited at the moment, to make I.A. socially relevant the communities whom it should be aiming to serve. That said, developing curatorial and institutional practices alongside fieldwork methods and dissemination mechanisms will be necessary to see I.A. consolidate or, hopefully, advance its current position. Important progress has already been made in each sphere within Yorkshire, and can only be strengthened by employing developments elsewhere. The pioneering 'Manchester Methodology' used by Nevell and Walker (1998) to study the roles of lord, freeholder and tenant in Tameside could be applied to many Yorkshire landscapes to good effect. The notion of the 'industrial process' could be used to dictate the ordering of our site recording procedures, as recommended by Badcock and Malaws (2004). And curators could follow Rogic (2004) in trying to ensure that evaluation of standing buildings was concerned with their spatial organisation as much as the architectural importance of their facades, not least because it is internal spaces which are likely to be most radically affected by subsequent development.

That said, methodological and organisational advances will be necessary, but sufficient, to ensure that we do justice to our early modern heritage in the long term. Only a more elaborate, and archaeologically useful, research framework will allow us to tackle the underlying challenges facing us in Yorkshire. This issue is considered next.

7.5 Developing Theoretical Perspectives

Attitudes towards industrialisation within society as a whole have taken an interesting series of turns over time. In the course of the 20th century, they moved from an emphasis on its negative aspects, played up by commentators such as Toynbee, to those who looked more positively on the process, seeing it as engendering the birth of modernity – 'a good thing'. The latter saw development as an evolutionary, not revolutionary, progression based on long term, almost natural, changes in any one of demography, technology, capital formation or working class demand. These views also emphasised the pivotal role of factory owners who began with small-scale development, then overcame local diversity by regional transport initiatives, replacing local identities with regional ones in a the process (i.e. ideology changing to match the material world), before finally dominating production across the globe. Such approaches, perhaps inevitably, tended to promote the notion of a unilinear sequence of development based on gradualist changes running from cotton at the start to the pharmaceutical and petrochemical industries of today at the end, with intervening steps involving coal, steel, engineering and shipbuilding, cars and electrical goods.

There are many problems with such conventional wisdom. Explaining past development in terms of unilinear sequences of selected industries serves to marginalise archaeological evidence for development in other strands of manufacturing, seeing the latter, at best, as spin-offs and, at worst, as simple failures. In addition the traditional story usually ends up with a Whiggish view of historical development underpinned by the triumphalism of imperial attitudes and conveniently ignoring the negative impact of colonialism abroad: history is portrayed as driven forward by a British aptitude for invention. Such approaches now sit uneasily beside the facts derived from documentary and archaeological studies. Thus the former show that developing the 'white heat' of new technology by a well-respected figure such as Darby in his adoption of coke-fuelled iron smelting came after he had worked for a spell in Germany, and were impelled by demand from elites in Bristol who derived their wealth from the profits of colonialism, and slavery in particular (and, in the process, transformed that townscape: Leech 2004).

The issue of the source of technological innovation has affected not only archaeological interpretation, but also the data gathering that underpins it. Thus when the move towards the charcoal blast furnace in the late-15th century was assumed to be a continental import, it made sense to look for early examples in the Weald. However, more recent work suggests the source of such innovation may be in Germany or Scandinavia, so their early counterparts in Britain are more likely to turn up in northeast England than elsewhere. Either way, the archaeological findings at Rosedale and Hutton-le-Hole, noted at an earlier stage above, can be reasonably interpreted as imported technology used by immigrant labour – what price, then, a uniquely *British* attitude to innovation?

Further, it is not just empirical enquiry which has created problems for the old approach. General perspectives on technological change have changed radically in the past decade and I.A. must take this on board if it is to define a research agenda for the new millennium, rather than the last. For example, current archaeological thinking tends to portray innovation more likely to take place amongst those who occupy social *lacunae*, not the core, elite positions, and so amongst people engaged in what have been termed by 'cultures of disagreement'. Equally economic production, whether pioneering or purely conventional, is rarely carried out by a newly-arrived, alienated working class derived from a reservoir of mobile labour. Rather that initial workforce comprises family groups who moved as teams and retained many elements of their previous social structure.

Clearly, these new approaches are now a long way from seeing industrial development as a dynamic product of an English individualism, a process whereby those at the top of society imposed profound technological changes on those below, revolutionising every aspect of society with a click of their collective fingers. For these new paradigms to work, an earlier emphasis on the 'symbolic' value (Lipe 1984 - see above) which led to a history of industrialisation structured around particular examples (the first process, a famous inventor) must now give way to interpretative frameworks which generate 'informational' value by means of a thematic, holistic approach to I.A.. Researchers in Yorkshire have been amongst those trying to break down outmoded perspectives and replace them with something more incisive and appealing, more in tune with present archaeological thinking, and more relevant to the detailed evidence now being

produced in the field. Amongst those consulted for our project, two have co-edited volumes published in 2004 which specifically aim at pushing that agenda forward – Cranstone on *The Archaeology of Industrialization* (Barker and Cranstone 2004) and Symonds (forthcoming) on *Industrial Archaeology: future directions*.

That said, moving beyond redundant frameworks or avoiding a refuge in simple empiricism will be no easy task. Only 16 years ago, the Society for Post-Medieval Archaeology (1988) managed to designate its research priorities in a list running to just nine pages, covering many themes yet failing to link any one to any other. A more recent hit list by Cranstone (2003) shows how much more has to be taken into account: pre-industrial trajectories, environmental and other landscape impacts, industry, transport, elite power, religion, class structure, migration and culture contact. Any frameworks must accommodate:

-the complex nature of all forms of industrialisation: much initial development was piecemeal and speculative in nature and we need to explain 'failures', heroic or otherwise, alongside international successes, together with the interaction of industries and 'spin off' into small industries, alongside what became monopolistic concerns. We must also cater for local diversity of response, whether in production (as noted above, Wharfedale lead mining varying from parish to parish), in the domestic sphere (for example, the redefinition of space in the 'great rebuilding'), or in diverse reactions to urban monumentality (Sheffield's bourgeoisie investing rather differently from that of Leeds, for example, perhaps due to the distinct forms of wealth generation in each city – it is important to remember that 'industrialisation could be based around collections of small workshops, just as much as large factories).

- the intricate relationships between technological change and landscape exploitation: the move from water to steam meant that major industries were no longer constrained to riverine contexts, with considerable implications for many townscapes. Equally, the earlier move from charcoal to coke in the iron industry had huge impacts on woodland management, perhaps coppiced for centuries and now available for different forms of timber exploitation, or even to be converted the agriculture to help feed a burgeoning population.   Control over such resources was critical in the initial stages of development, for example to take over mills and fishponds under monastic control. However, such pre-existing landscape rights could embody differences between minerals and woodland, with the latter perhaps further split between hunting, firewood and coppicing. All had to be accounted for if one wished to convert woodland use into a new agricultural field. Thus relationship between grazing, quarrying/mining and cultivation *even in the same landscape* involved a complicated set of inter-meshed factors, made even more complex when one considers valley settings vs. hilltop contexts. Further, what was at stake was not just questions of access to resources - production in the landscape was one of the ways in which workers established their identities (Gwyn 2004).

- the difficult, sometimes fraught, relationship between technical development and labour organisation: the use of blast furnaces, allowing continuous operation, must have meant huge changes to the way the production process had to be controlled, and thus to the social organisation required to support it. Implementing such change required investing in, and planning for, a trained workforce (such processes are becoming visible through artefactual analysis of trail pieces recovered from discarded at production sites:

Symonds 2002). To cover such topics, we may need to develop an 'archaeology of the workplace'.

- the interaction of the physical and mental worlds: wealth was not only generated and reinvested in production but was consumed ideologically, in the form of symbols of authority (castles, halls, gardens). Yet ideological systems were not simply imposed on those at the base of society. The latter could also express their reactions and resistance ideologically, and their different responses themselves impacted differentially on the material context of production. In this way, non-conformist reactions to main stream religious practice may have facilitated open-mindedness over new technology and an avoidance of patenting (though such attitudes seemingly contrast with the limited flamboyancy of Methodist burial practices – Sayer and Symonds (2004): again, local diversity is of more interest here than generalities and averages).

- the social impacts of changes in production in others spheres, both thematic and geographical: industrialisation not only changed working lives, but also process of consumption for every level of society. The commodification of household goods is clearly a topic which can be investigated by artefactual analyses.   This research can also allow us to interpret finds in ways which step beyond the simple notion of change being driven forward by 'fashions' dictated by the middle classes (Barker 2004).   Such studies become especially effective when contextualised in relation to building development, domestic use of space etc.. Equally, colonialism ensured that economic changes within Yorkshire interacted with those abroad, both when the latter regions supplied labour or raw materials, or when they provided markets for industrial output (hence the interest in Sheffield exports shown by researchers from Sydney, New York and Cape Town, for example).

In sum, those who criticise traditional approaches to industrialisation have been correct in seeing these as: too simplistic ('plug in developments in the wool trade or a population explosion, and economic take off is guaranteed'); too narrow (a concern with technological development, but rarely with labour organisation, let alone wider social factors); too focussed on a 'top-down' process (imposition by a prominent, named individual - the true picture involves interaction at a variety of inter-connected scales, in which co-operation, as much as competition, drove development forward. For example the mills built at Hebden Bridge were mostly a product of the co-operative movement); and lacking a proper understanding of preceding circumstances, thus failing to acknowledge that all social change takes place in the context of inherited historical trajectories and that these pre-existing contexts might embody social identities which some struggled to change or transform, and others to retain.

Our challenge, therefore, is to start to outline a new structure which will allow interpretation of industrial development in relation to basic economic dynamics, including pre-industrial social trajectories, yet avoid the simplistic, narrow and top-down views mentioned above. And this must be done in such a way that archaeology has something to say about 20th century developments such as concrete, cars and electricity, as much as cotton or coal in earlier centuries. After all, the century we have just left may have the greatest relevance to contemporary society and its immediacy engages public interest above all else.   Yet mainstream archaeology has rarely concerned itself with topics such as war-time production.

That said, critics of earlier particularist and technologically determinist interpretations must themselves be careful when recommending a holistic landscape perspective. It will not be enough to simply replace a culture-historical landscape with an environmentally determined, functionalist one derived from the 'new archaeology' of the 1970s and 1980s (for example in the form of processualist flow diagrams of phases of industrial organisation: Blackburn 2004), or with a nebulous, timeless 'ideological' landscape of post-processual theory of the 1990s (Tarlow and West 1999). Theorising industrialisation involves accepting the real complexity of both material and mental spheres, and the need to accommodate both truly interdisciplinary research and the scale and diversity of archaeological evidence. By meeting such challenges, we can ensure that I.A. in Yorkshire is made relevant to 21st century society.

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