

9. Conclusions

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Over the last 30 years the Magnesian Limestone and its margins have been the subject of regular aerial reconnaissance that has documented in detail the survival of prehistoric and Romano-British landscapes as represented by cropmarks (Fig. 9.1). The gradual introduction of comprehensive fieldwork strategies over that period, particularly since the introduction of PPG 16 in 1991, has seen the increased employment of large-scale geophysical surveys and open-area excavations, resulting in a wealth of new information in a relatively short space of time. Increasingly, excavation work is confirming the impression from cropmark studies that there is considerable diversity in the enclosure and division of the later Iron Age and Romano-British landscapes, but it has also exposed the problems of site invisibility and a depth of chronological complexity that is not apparent at face value.

Archaeological work to date has been unable to confirm the purposes of the field systems, although their ditched nature, coupled with the evidence from artefact assemblages and environmental data, suggest that they were part of mixed farming regimes that had an onus on animal husbandry. There is no real evidence for intensification of production as a response to the arrival of the Roman military and few villas and Romanised sites are known in the region. The overall impression is, rather, one of continuity from the Iron Age to Roman period, with the reinforcement of pre-Conquest settlement and landscape division, supplemented by the expansion of field systems and settlements into new previously unenclosed areas in the later Roman period when there is evidence for the development of some larger estates and a greater adoption of Roman material culture.

The overview provided by the plotting of a large cropmark data-set over a wide area has allowed for the better characterisation of its component parts and better analysis of their distributions. Whilst the vast majority of enclosures are variations on a rectilinear plan, and therefore not easily (or justifiably) differentiated, certain forms have distinct traits (e.g. enclosures with extended entrances and outer compounds and extended enclosure groups). The relatively localised distributions

of these might be related to different agricultural practices, or subtle tribal differences within the Brigantian confederation.

The mapping resulting from this project has notably put Riley's (1980) work on the cropmarks of South Yorkshire and north Nottinghamshire into much clearer perspective. It is now considered that there were essentially only two forms of rectilinear field patterns: strip fields and mixed fields. The former may be equated with the 'brickwork' phenomenon of South Yorkshire and north Nottinghamshire, which predominates on the Sherwood Sandstone to the south of the River Don, whereas mixed fields, and a much wider variety of enclosure types, predominate on the Magnesian Limestone to the north of the Don. Areas of each type are to be found on both sides of the Don, and while this river may well have formed a major territorial boundary in the Iron Age, there is little evidence that the apparent differences in the field systems can necessarily be equated with different tribal/agricultural regimes, or be attributed to any act of deliberate policy, as has been considered in the past. For although the field patterns appear very unified, both the mixed and strip field regimes seem to have been created incrementally over a period of time and no marked differences in their subsistence economies can be inferred from the excavated evidence. It is argued that the determining factor in the matter may actually be quite straightforward, if two matters can be presupposed.

The first point to consider is the Magnesian Limestone to the south of the Don. The cropmark record for this area has revealed small isolated enclosures, but virtually no extensive field systems. Dearne and Parsons (1997, 87) concluded the area to be 'individualistic, even singular, in comparison to the evidence obtained from adjacent areas' on the Sherwood Sandstone. This area is particularly noted for enclosure sites formed from rubble-built walls, which some have interpreted as giving it closer affinities with the highland zone. Why this area should have a different landscape character is essentially unknown, yet the most likely factor here is, indeed, its relatively greater altitude when compared to the limestone belt to the north of the Don gorge. The land here could not be regarded as strictly marginal (e.g. Parry 1978, fig. 27) but, in the subsistence economy of the early prehistoric period, its greater elevation, coupled with thin dry soils, may well have

prevented it from receiving the extensive exploitation, and thus the clearance, that must have begun to have taken place on the Sherwood Sandstones and the Magnesian Limestone to the north of the Don at the same time.

The second issue to consider is the chronology of the field systems. Despite an inherent Roman bias in artefact dating, it is apparent that the majority of the field systems in use in the Roman period were the redefined fields that had been established in the later Iron Age. This has been demonstrated to a degree through excavation, mainly with the aid of radiocarbon dating, but is implied on a much wider scale by the almost total absence of field systems orientation to the Roman road network of the area. This suggests that the field systems of the Sherwood Sandstone and the Magnesian Limestone north of the Don were probably well established by the time of the Roman conquest. The corollary to this is that for these landscapes to have been exploited to that degree in the later Iron Age, they must have been subject to extensive clearance by that time, which accords very well with the dated environmental evidence.

Thus, we may consider a model whereby early prehistoric clearance largely avoided the higher Magnesian Limestone to the south of the River Don and was concentrated on the lower well-drained areas of the Sherwood Sandstones to the east and the lower lying Magnesian Limestone to the north of the Don. Had the geology and drainage of the Vale of York been more favourable it is conceivable that there may have been similar exploitation to the east of the limestone in that area. That such circumstances did not prevail made the limestone the favoured option for early exploitation to the north of the Don, the difference being that, apart from the geology and soils, the topography in the north was one of rolling hills rather than the predominantly flat plain of the sandstone to the south. This topographical difference may well be fundamental to the differences in the field systems of the two areas and there is perhaps no necessity to resort to cultural and economy-dependent models to explain it. It has been demonstrated that sites in both areas expanded incrementally over time. Those on the Sherwood sandstones were able to do this in straight lines, whereas those on the limestone to the north had to adapt to the irregular topography. One modification to this model would be to surmise that there may have been a lesser degree of clearance on the limestone

at the beginning of the Iron Age. This would explain the greater incidence of meandering and sinuous trackways and ditches which might be equated with assarts and limits of clearance, so providing a further potential factor in the production of more irregular field systems in the northern part of the study area.

The above hypothesis may well be over simplistic and reliant upon too few well dated excavated sites for universal approval. The notion of a later Iron Age origin for the vast majority of the field systems in the study area is in keeping with recent thinking about origins of the Dales field systems (Fleming 1998, 138; Martlew 2004) and the rather better excavated landscapes of East Yorkshire (Mackey 2003, 120; Stoertz 1997, 65-7; Millett 1999), and accords with the wider indications from pollen analysis that there was little scope for the creation of new fields in the Roman period due to extensive land division for agricultural exploitation in the Iron Age (Dark and Dark 1997, 94).

Future Work

Aerial Reconnaissance

The systematic cropmark mapping carried out as part of this project is largely based upon aerial reconnaissance carried out in the 1970s and 1980s. Whilst our understanding of much of the cropmark landscape of the study area is unlikely to be radically modified by further systematic aerial reconnaissance, there will be occasions when extreme conditions prevail that will provide significant new information. There is, however, a need for regular reconnaissance for monitoring purposes. Aerial reconnaissance is the only means of monitoring the degradation of the cropmark landscape by ploughing on a large scale. The archaeology of the rural landscape is a fast diminishing resource, most of which will never be subjected to detailed archaeological examination. Aerial reconnaissance provides the best way of maintaining an overview of this process and highlighting the need for the investigation of key or unique type-sites before they are truncated entirely. Regular monitoring also needs to be carried out over 'blank' areas to monitor changes in the agricultural regime or methods of land use that might make them more conducive to cropmark formation.

Field Survey

Parts of the landscape that appear devoid of cropmarks should be the targets for remote sensing by geophysical survey and fieldwalking. Geophysical survey by magnetometry has proved to be the best complementary method to cropmark mapping in the recording of archaeological sites, especially in enhancing apparently blank areas of the landscape, yet it has only been employed on less than a third of the quarries in the study area. A preference for reactive strip and record or watching brief strategies has in many cases denied the potential for geophysical data to be used proactively in ‘bank’ areas of the landscape, which would enable archaeological mitigation strategies to be more considered and allow for preservation *in situ* options to be explored if the site appears to warrant it.

Fieldwalking has seen mixed results and has consequently only been carried out on an irregular basis. Although finds yields may be small, it remains nevertheless the best method of detecting unenclosed and ephemeral early prehistoric sites which are invisible to other methods of remote sensing. Such sites, as well as many areas of the later Iron Age and Romano-British landscape, may well now only survive as disturbed deposits in the ploughsoil.

Some of the best surviving, and arguably best protected, archaeological sites are preserved as extant earthworks by virtue of their situation within contemporary woodland. Some of these known sites have only been registered incidentally as part of this project and it is likely that many more exist unrecorded, especially where cropmarks can be seen to lead off into woodland areas. In a situation where much of the cropmark landscape is being denuded by repetitive deep ploughing, such survivals will represent a very important resource that is desperately in need of mapping.

Excavation

At the beginning of the 1980s, a time when virtually no excavation had taken place, archaeologists were exercised by questions relating to the date of enclosure complexes and field systems, the process of their evolution and their purpose (e.g. O’Brien 1979; Riley 1980). With the benefit of over 25 years of investigation, our interpretations of the cropmark landscape are better informed, but remain very

intuitive. Cropmark mapping and large-scale excavation have improved our spatial understanding of sites in the landscape and the relationship of enclosures to field systems, the vast majority of which can now be attributed to the later Iron Age and Roman periods. The trend towards the excavation of large open areas has also improved the detection of earlier prehistoric sites, albeit largely by serendipity. The scarcity of diagnostic artefactual data for the early prehistoric and Iron Age, and poor organic preservation generally, mean that dating resolution is relatively poor. The dearth of environmental evidence has been the main factor in the failure to achieve anything more than a rudimentary understanding of the developmental history of the landscape, in terms of the changing balance between woodland and grass land, and the degree to which the latter was turned over to arable farming at different times. Thus, more precise dating and environmental reconstruction, and better site and landscape interpretation, remain long-term objectives for the cropmark landscapes of the region.

Earlier Prehistoric Period

Very few early settlement sites have been investigated within the study area or the region generally. This is mainly a result of their unenclosed nature and therefore their invisibility to remote sensing techniques and their discovery might be improved by the adoption of more intense fieldwalking strategies. None of the known curvilinear cropmark enclosures, which are believed to be of earlier prehistoric date, has been subject to investigation and should the opportunity arise to excavate any of these sites it should be afforded a high priority.

The existence of ritual foci away from the principal henges appears to be an increasing possibility. A number of barrow groups have been investigated, but there is a need to understand better the date, nature, function and longevity of several possible hengi-form monuments, especially given their sometimes tenuous landscape associations with pit alignments of likely Iron Age date.

Iron Age and Roman Period

Understanding the Iron Age archaeology of the region will remain problematic whilst there is no better understanding of the functions and dates of occupation of the fortifications, such as at Barwick-in-Elmet, and their associations with the

linear defensive earthworks and the farmsteads of the cropmark landscape. Enclosure forms vary considerably and although a number of rectilinear Iron Age/Romano-British settlement enclosures have been excavated, few of the variants have been investigated. Consequently, further work needs to be carried out to investigate other extended enclosure sites, similar to Dalton Parlours, as well as those with extended entrances and outer compounds, to ascertain their dates and functions, and test whether it is feasible for them to be regarded as contemporary clusters, possibly associated with tribal sub-units. Overall there is a need for a much greater sample of excavated enclosure sites and their associated field systems to document better the cultural and economic process of continuity and transition that rather belatedly saw a greater adoption of Roman material culture in the later Roman period.

The hypothetical model for the differences in the nature of land division to the north and south of the River Don hinge on a limited amount of direct and indirect dating evidence and a perception of sparse settlement on the Magnesian Limestone to the south of the Don. The nature of the exploitation of this higher limestone area in the Iron Age and Roman period remains enigmatic, in terms of the apparent lack of field systems, the stone walled nature of some of the enclosures found there, and the atypical nature of certain artefacts found in the area. The absence of extensive field systems in this area needs to be verified by further aerial reconnaissance and geophysical survey, whilst the existence of any further extant sites within woodland areas needs to be ascertained by field survey.

The discovery through cropmark mapping of a further river fort at Long Sandall on the Don, as well as the identification of possible additional forts/camps at Scaftworth, Thorpe Audlin, and Rossington Bridge, demonstrates how our understanding of the Roman military infrastructure of the region is still developing. Investigation will be required to confirm the dates, and indeed the functions, of these sites in order to obtain a better understanding of how they might modify our perceptions of the Roman subjugation and defence of the region. Fieldwork will also be needed to confirm and track the courses of a number of proposed revisions to the Roman road network in the area.

Villas apart, there are no distinct settlement forms that can be attributed exclusively to the Roman period. Certain double ditched enclosures have been misinterpreted as military enclosures. Whilst these are clearly not forts, there have been too few investigated to determine whether or not these might be a solely Roman period phenomenon or a contemporary variant in the general later Iron Age/Romano-British repertoire of enclosures. There is too little evidence to elucidate the nature of rural settlement after the end of the Roman period. In an area where there was no Anglo-Saxon incursions until the 7th century AD, the possible continuity and eventual abandonment of an enclosed landscape that had evolved over a period of least 600 years is a process that is little understood.

Aggregates Extraction and Archaeological Mitigation

The catalogue of active quarries (Chapter 7) provides details of the archaeological potential and mitigation work that has taken place at each site and demonstrates the important role of archaeological investigation in advance of mineral extraction in our better understanding of the region's past. The following figures attempt to provide a degree of insight into the different approaches that have pertained at a county level over the last 25 years. Obviously many of the events that make up these statistics occurred prior to 1990, before archaeology became a material consideration in the planning process. Moreover, it is very likely that some archaeological events have not been registered because they have not yet entered the public domain. Equally, certain types of work might not form discrete or formal reports; such as desk-based assessments being integrated into broader Environmental Impact Assessments or negative Watching Briefs being reported only summarily. Nevertheless, the data offer, in the broadest sense, some indication of different county-based trends, although these will almost certainly have an historic aspect to them and cannot necessarily be taken as representative of current practice.

A full summary of archaeological mitigation events by County and quarry is provided in Appendix 2. On average three archaeological events have taken place for each of the quarries in the study area. This average, however, belies a rather uneven spread of events, both geographically and in terms of the type of archaeological work that has been carried out (see Table 9.1 below).

County	Quarries	Events	Average
West Yorks.	10	50	5.0
North Yorks.	11	46	4.2
South Yorks.	23	49	2.1
Notts.	12	22	1.8

Table 9.1. Average number of archaeological events per quarry by County

In very general terms the figures in Table 9.2 (below) are broadly comparable, but with a few notable exceptions. For example, the available figures would suggest that there has been marginally less use made of desk-based assessments and geophysical survey in the mitigation of quarrying in the Nottinghamshire part of the study area. In contrast there appears to have been a greater use of geophysical survey in West Yorkshire, probably reflecting its early adoption by the West Yorkshire Archaeology Unit in the mid-1980s. Systematic fieldwalking has rarely been employed anywhere, probably due to the low levels of finds that are recovered in the region generally, despite it being the only non-invasive way of prospecting for early unenclosed prehistoric sites. The main form of archaeological mitigation has been of the invasive type, that includes watching briefs, strip and record events and trial trenching, as well as set piece open-area excavation*.

One of the most remarkable statistics reveals that 22 quarries in the study area (almost 40%) have received no archaeological attention at all. Some of these quarries lie in blank areas within the cropmark landscape, although this, as has been demonstrated, should not preclude investigation (see Cropmark Visibility, Chapter 8). Notable un-investigated quarry landscapes include those to the south of the Roman fort at Newton Kyme (e.g. Firgreen, Highmoor, Jackdaw Crag and Copley Lane quarries in West and North Yorkshire; Cat. nos 1-2, 10 and 12) where extensive cropmark landscapes and a number of Roman roads have been identified. Perhaps the greatest potential unrecorded loss, however, is the larger part of the possible prehistoric promontory fort at Castle Hill, on the River Went in North Yorkshire. Although archaeological work has taken place in advance of the recent eastern extension to Went Edge Quarry, the earlier quarry workings and the site office and compound seem to have been superimposed directly upon the

area where the earthwork enclosures are recorded on the first edition Ordnance Survey mapping of 1853 (Fig. 2.12).

County	Quarries	DBAs	Geophys	Fieldwalking	Excavation
West Yorks.	10 (7)	8 (4)	14 (4)	4 (2)	24 (6)
North Yorks.	11 (6)	6 (4)	11 (4)	4 (3)	26 (6)
South Yorks.	23 (16)	11 (9)	13 (8)	3 (3)	22 (11)
Notts.	12 (6)	2 (1)	5 (2)	2 (2)	13 (5)

Table 9.2. Comparative numbers of different types of archaeological investigation by county. The numbers in brackets relate to the number of quarries investigated.

Into the Future

The mapping of the archaeology from cropmarks, geophysical survey and excavation results against present and future aggregates resources reveals that there are few areas of the aggregate-bearing landscape that one could be confident of having no archaeological implications. Aggregate extraction sites will obviously continue to have a big part to play in the future investigation of the archaeological landscape. Much of the impetus for major analysis and synthesis of the archaeology of the cropmark landscape of the region over the last ten years has come about as a result of archaeological work carried out on road schemes. Such schemes are, however, relatively infrequent events, whereas the regular large-scale work associated with archaeological prospection and phased aggregate extraction associated with over 56 quarry sites offers extraordinary potential for addressing many of the archaeological issues of the cropmark landscape in a structured and proactive manner, the requirements for the *in situ* preservation of significant sites notwithstanding.

The majority of active quarry sites have potential for informing on the blank areas of the landscape that are devoid of cropmarks, as well as furthering our understanding of rectilinear enclosures and field systems generally, a good example being Foxcliffe Quarry (Cat. no. 15). The quarries at Methley (Cat. no. 42) and Barnsdale Bar (Cat. no. 43) offer opportunities to investigate the interrelationship between mixed and strip field regimes, whilst any extensions to the Batty Holt/Glen/Holme Hall/Stainton quarry complex (Cat. no. 26) and Maltby Brickworks (Cat. no. 27) are ideally situated to provide further

information about the enigmatic nature of settlement on the limestone south of the Don.

The Preferred Area immediately to the west of Bawtry has been, by coincidence, ideally placed to provide a comprehensive investigation of the strip/brickwork field system on the Sherwood Sandstone on a scale that remarkably has not been possible to date. This area also holds potential for informing the route of the newly identified Roman road running south from the fort at Rossington Bridge. The proposed extraction at Brodsworth (Cat. no. 45) would provide the opportunity to investigate further the course of the Roman road between Doncaster and Castleford, and, moreover, its relationship with the strip field system that it appears to be superimposed upon.

The areas around Cadeby and Warmsworth Quarries (Cat. nos 21 and 22) are notable for producing large quantities of Roman artefacts and suggest a settlement in an area without cropmarks. Particularly significant excavations would be required in the event of permission to carry out any westward extension of Newthorpe Quarry (Cat. no. 41), an area that is occupied by a rare extended enclosure settlement. The only known potential villa landscape exists at Hazel Lane Quarry (Cat. no. 44) where a bath-house has been located. Here there may exist an opportunity to investigate issues of continuity and change in the evolution from a native Iron Age landscape to that associated with a Roman villa, an opportunity not realised in the study area since the excavations at Dalton Parlours in the 1970s.