8. Discussion

by I. Roberts with A. Deegan and D. Berg

Introduction

A mapping project of this nature cannot hope to resolve issues of dating, phasing and function of settlement and field system, and is no substitute for appropriately scaled and targeted archaeological excavation. Nevertheless, in being able to appraise the archaeological landscape in a global way it is possible to gain insights and see patterns that certainly cannot be appreciated on a site-by-site basis, and can rarely be realised through larger focused landscape investigations. From previous excavation work we may reliably draw parallels for certain unexcavated sites whose distinctive cropmark (or geophysical) plans may suggest a certain period or type of site. In this way the distributions of the various site types and field systems may be appraised over a wide area and any patterns, concentrations and absences recorded to inform a regional research framework. Thus, the intention of this 'Discussion' section is to reflect upon the themes presented in the 'Archaeological Background' section of this report and review to what extent the results of this project, in terms of a broad overview of the landscape, has challenged our archaeological perspectives. All the sites mentioned in the text are displayed in Figure 8.0.

Cropmark Visibility by A. Deegan and D. Berg

As is typical for lowland Britain, most of the prehistoric and Roman features that are visible on aerial photographs had been levelled by the middle of the 20th century. The few exceptions are however notable. The vestiges of the earthwork enclosures on Sutton Common, north of Doncaster are well known, but another remarkable survival of possible Iron Age or Roman enclosures and ditches around the edges of Loversall Carr has only recently been documented (Deegan 2004). In both cases it is likely that post-abandonment land use is a significant factor in their survival but the wetland nature of these areas is likely to be the overriding factor. Some short stretches of Roman road appear to have survived as earthworks at least until the middle of the 20th century to the west of Thorner and to the north of Aberford and some of the linear earthwork monuments also retain some height but often within woodland.

As might be expected, given the conditions under which cropmarks form (see Appendix 3), most of the evidence of Roman or earlier activities comes from the more freely draining soils; in particular those formed on the Cadeby and Brotherton Formations, such as at Barnsdale Bar, Darrington and Ferrybridge, on river terrace deposits around Methley, Hatfield and Edenthorpe, and over glaciofluvial sands and gravels, such as Newton Kyme and between Rossington and Bawtry (Fig. 8.0.1). Cropmarks are sparser, though not entirely absent, from the slower draining rocks and deposits. This is demonstrated on West Moor to the north-east of Armthorpe (SE 648 640) where the extensive cropmarks at Edenthorpe terminate abruptly around the rim of a circular depression *c*. 2.5km wide and 5m deep (Fig. 6V.5)[*]. The visible cropmarks in this area all overlay river terrace deposits while the depression contains glaciolacustrine silts and clays or peat, and are devoid of cropmark evidence.

Interventions at Normanton Golf Course (Whittingham 1997) and east of Goldthorpe (Merrony 1993) confirm that prehistoric remains are present on some heavier soils in some locations at least. But others such as geophysical surveys near Finningley (Webb 2000a; 2001a), Whinmoor (Whittingham 1999b) and Sherburn in Elmet (Pacitto n.d.) appear to confirm the absence of large cut features on the less permeable soils and geology.

Undoubtedly though, even in the most favourable conditions it is unlikely that the recorded cropmarks reflect even the smallest fraction of the full extent of the underlying archaeology both in terms of complexity and extent (Wilson 1975a). The archaeological excavations undertaken at, for example Ferrybridge (Roberts 2005b), demonstrated that even on the thin, very-freely draining soils not all the features that were ultimately revealed by excavation could be detected on aerial photographs (Roberts 2005b, cf. figs 8 and 10) and therefore although permeable and semi-permeable ground make up approximately half the overall survey area, not all of this

[*] [As a geological feature the depression is inexplicable in terms of fluvial, aeolian, glacial, volcanic or tectonic activity, and the possibility that the depression is a bolide impact crater cannot be precluded (Geoff Gaunt pers. comm.)]

is amenable to cropmark formation. The other factors to consider are modern development, the impact of the extraction industries and to a lesser extent the distribution of past and present woodland and earthwork ridge and furrow.

The survey area is now occupied by numerous small and medium-sized towns, the largest being Doncaster. Together with small villages these cover approximately one sixth of the survey area. These settlements, for historical reasons, are more prevalent on the Coal Measures in Leeds, Wakefield and South Yorkshire, particularly along the river valleys, and on the Sandstone around Doncaster. The relative scarcity of settlement on the Magnesian Limestone is apparent. Modern settlement obscures any surviving underlying archaeology but some features may be recorded on pre-development aerial photographs.

The known extraction sites cover approximately 20km^2 or 1.3% of the overall study area (this figure excludes nearly 30km^2 of peat extraction on Thorne and Hatfield Moors) which is undoubtedly an underestimation of the present extent of the impact, not least because it relies on vertical coverage that is now at least twelve years old. Extraction sites covering 0.5km^2 to 3km^2 are both numerous and widespread. These workings comprise quarries and spoil heaps; the former will have removed archaeological features but remains may survive under some spoils heaps. The aerial photograph data, informed by the available map sources, indicate that the greatest impact, over 50% by area, has been from coal extraction, particular from open-cast mining. The aggregate industries - sand and gravel extraction and limestone quarrying - have contributed 13% and 5% by area respectively, although as 28% of workings from the aerial photographs were not attributed to a specific resource these may prove to be underestimations. Not all workings are devoid of archaeological cropmarks. In some cases, particularly where extraction started within the last 50 years or so, cropmarks on the former land surface can be seen on earlier photographs, for example, Newlands Lane (Chapter 7, Cat. no. 5) photographed in the 1950s to Stancil (Chapter 7, Cat. no. 47) photographed as recently as 2003. In some cases this evidence may prove to be the only record of the destroyed archaeology.

The distribution of extraction sites across the study area is uneven. There are very few quarries or mines north of Aberford or around the area where the rivers Went and Don merge. The greatest impact has been felt in the area around the Calder and Aire confluence, which has been heavily exploited for coal. Elsewhere collieries, open-cast mines and aggregates quarries are fairly widespread.

Woodland that is ancient, i.e. having continuous cover since at least AD 1600, and semi-natural in character, and plantations on former ancient woodland sites cover approximately 1.5% of the survey area (English Nature 2006). Data are not readily available for plantations on former open ground but these probably increase the woodland coverage to *c*.2-2.5%. Archaeological features that are buried under woodland cannot generally be detected from the air using conventional photography, although it is occasionally possible to trace upstanding earthworks through sparse tree cover. The majority of woodland lies on the permeable soils, which produce most cropmarks, however the overall impact on distribution patterns is likely to be negligible. What is significant is that ancient woodland may have provided better conditions for the preservation of archaeological sites than open and ploughed ground. It is known that the complex remains visible as cropmarks to the east of Highroyds Wood, Micklefield continue as upstanding earthworks through the plantation on former ancient woodland (McNaught 1997). There are approximately 42 other ancient woodland sites with adjacent cropmarks in the study area.

Almost 200 km^2 of ridge and furrow has been recorded, almost 13% of the study area. The majority of this is probably post-medieval or perhaps even later in date, rather than medieval. Earthwork ridge and furrow most often completely masks earlier features but only one fifth appears to be extant on the most recent aerial photographs and this is largely concentrated in the area between the rivers Went and Don and the ancient settlements of Sykehouse and Fishlake. Depending on how far the plough ridges have been truncated and other conditions, such as soils and geology, earlier features can and do appear as cropmarks through cropmarked ridge and furrow. So

although levelled ridge and furrow is widely dispersed across the study area it is not necessarily an obstacle to the visibility of earlier features.

The distribution of cropmarks generally reflects the expected pattern, based on the geology soils and land use (see above). From Kirk Deighton in the north as far south as High Melton, the limestone geology has a high density of levelled prehistoric monuments, mainly Iron Age or Roman field systems and enclosures.

Perhaps the most marked contrasts in the distribution of cropmarks in the study area is their relative absence from the Magnesian Limestone south of the River Don, an absence that continues into north Nottinghamshire. This disparity has not gone unnoticed in the past (e.g. Bishop n.d.a, 1; Buckland 1986, 36; Chadwick 1999, 152; Riley 1975, fig.1; 1980, 7; 1983, 61; Dearne and Parsons 1997, 69), although the possible reasons behind it have not really been addressed.

Riley notes that although the soils north and south of the Don are essentially the same, few cropmarks have been found on the Elmton Series (1983, 64). This soil is not mapped on the 1:50,000 soil map (Soil Survey of England and Wales 1983) but is identified by Carroll *et al*. (1979) as Unit 39, occurring within the Aberford Series where it appears on steeper slopes and rocky outcrops and is generally thinner and stonier. Its main limitation is a low available water capacity of 75mm and a soil depth of 250mm compared to 145mm and 600+mm on the Aberford soils (Carroll *et al*. 1979, table 5) causing wilting in dry years. In theory this should enhance any cropmark evidence, which appear best on thin soils with moisture deficiency (Riley 1983, 72) but the shallow rooting depth may be too far outside the optimum range of 300-600 mm (Jones and Evans 1975, 1) for cropmarks to appear. It is the occurrence of soils of this nature on the Permian outcrop that led Yarwood to conclude that some parts of the limestone area may have been too dry and shallow for efficient cultivation in the past (1981b, 38).

A clear difference between this area and that further north is the limited amount of relatively flat open land that could accommodate the field systems present elsewhere

in the study area. The comparatively high altitude, up to 140m OD, is restricted to this area, and a small area to the west of Barwick in Elmet in the north, and is cut by the valleys of Hooton Dyke and Maltby Dyke. The contoured landscape may have deterred settlement and enclosed field systems at a time when the general trend from earlier periods was for occupation to move to lower altitudes and nearer to water sources (Clay 2002), an average of 103.07m AOD by the Late Iron Age, with average distance to a water source, 0.42 km. Although both the Sherwood Sandstone and Magnesian Limestone are classed as major aquifers, access to water sources may have been an issue, as yields from the latter are variable (EA 2003) and it must have required considerably more effort to dig wells into the limestone. The area south of the Don does not have a major water source crossing the area from the Pennine uplands, as is the case further north and so water supply may have been a much more important factor in determining areas for settlement (Yarwood 1981b, 61), which, historically, are largely located at springs and not the higher waterless areas and dry valleys (Carroll *et al*. 1979).

It is generally considered that the region was probably cleared of natural woodland as early as the beginning of the Iron Age (Buckland and Magilton 1986) or at least prior to the arrival of the Romans (Van der Veen 1992) and, despite the mostly poor survival of environmental data, there is evidence to support a predominantly open landscape under arable or pasture, from macrofossils and pollen (Richardson 2001) and from insects (Garton and Salisbury 1995; Yarwood 1981b). This is the case for all the solid geologies of the study area but particular note has been made of the marked absence of later place-name evidence for woodland on the Magnesian Limestone compared with adjacent areas in both West Yorkshire (Yarwood 1981b) and South Yorkshire (Jones 1993) suggesting little woodland regeneration prior to Danish and Anglo-Saxon occupation. The cropmark evidence on the Humberhead Levels clearly demonstrates the open aspect of the landscape that must have prevailed. It is, however, unlikely given the importance of the woodland resource that the landscape would have been devoid of trees, and pollen evidence in particular is local rather than regional. For this reason evidence of clearance can be contradicted

within a short distance, such as at Porter's Drain where, following a recovery of tree pollen *c*. 40BC there are no further indicators of major clearance until *c*. AD720 (Van de Noort and Ellis 1997). Copses and areas of woodland no doubt survived in the landscape, from the oak, birch and hazel stands on the Coal Measures (Neal and Fraser 2004) to the alder carr woodland on the lowland sandstones (Jones 2005). The sinuous route of some Iron Age and Romano-British field boundaries suggests the presence of woodland adjacent to newly cleared areas, in the same way that curved irregular boundaries of extant ancient woodland are a record of medieval 'assarting' creating small irregular fields (Jones 1993, 41). It is likely that some parts of the area remained wooded, particularly the remoter places such as hilltops, steeper slopes and narrow valley bottoms.

Ancient or semi-natural woodland, and plantations on ancient or semi-natural woodland sites, cover a small area south of the Don, 3.5km^2 and 3.3km^2 respectively (English Nature 2006) but are, nevertheless, more frequent than on other parts of Permian outcrop (Fig. 8.0.2). The largest area of predominantly deciduous woodland on the limestone in South Yorkshire is Edlington Wood, 4km south-west of Doncaster. An ancient woodland, the 99.7ha area of lime, ash, elm, oak, birch and hazel is claimed to date from Romano-British times (English Nature SSSI ref. SK 59/5) but the presence of rubble walls and ditches (Ramm 1980, 36, fig 4.5) described in the 19th century as 'the remains of an entrenchment named Double Dykes' (Lewis 1848, 147) would indicate the wood is not primary. Other woods contain similar evidence of enclosure walls: at Scabba Wood at Sprotbrough, north of the Don (Merrony 2007); and to the south, outside the study area, at Old Spring Wood at Thorpe Salvin, Smarson Hill Wood, Swinston Hill Wood and Scratta Wood (Dearne and Parsons 1997).

The use of walled boundaries in the past, as identified in woodland, has been posed as a possible reason behind the lack of cropmarks in this area (e.g. Ramm 1980, 35). It has been suggested that in areas of shallow topsoil over solid bedrock, boundaries of dry stone walling would be easier to construct than ditches (Dearne and Parsons 1997,

citing Sumpter 1973), which would be superfluous in areas on and adjacent to the Coal Measures with a ready supply of sandstones and shale. There is no doubt that stone was used for boundaries when readily available on the Millstone Grit and Coal Measures (Yarwood 1981b, 56). In some areas of West Yorkshire boundaries assumed to be hedges when dated from documents were found to be stone walls on field examination (Hall 1982) and in parts of South Yorkshire post-medieval banks and ditches used to stock-proof woodland were replaced by dry stone walls where building stone was readily available (Jones 1993, 37). There is, however, little evidence for the widespread use of walled enclosures in the area under consideration, and the recent data in any case does reveal a landscape of dispersed cropmark enclosures and nucleated complexes, though very few field systems. It is also evident from sites elsewhere on the Magnesian Limestone, discussed in other parts of this volume, that the excavation of bedrock was no obstruction to the construction of boundary ditches.

It is perhaps apposite that the areas of woodland containing extant structures and earthworks are north and south of the immediate 'problem area' (Beswick *et al*. 1990, 29) and their original function, particularly the ditches in Edlington Wood, may be connected with territorial defence and the role of the linear earthworks further west and north (see above). The very fact that, following abandonment, these cleared enclaves were allowed to regenerate to woodland and remain so, would suggest they occupy areas that, for at least the last 400 years, proved unattractive for agricultural clearance, or indeed, mineral extraction. For similar reasons, the survival of other woodland south of the Don when so much has been lost to development in other areas, an estimated 50% of ancient woodland in West Yorkshire since 1935 (MAFF 2000), confirms a distinction in this area over other parts of the Permian outcrop further north. This is supported by examination of the medieval and post-medieval ridge and furrow identified from aerial photographs (Fig. 8.0.3). The distribution of ridge and furrow in the west is unambiguously restricted to the soils overlaying the Upper Coal Measures stopping, almost without exception, on the transition to Magnesian Limestone. In the east, the quantity of ridge and furrow cropmarks shows

a clear pattern that is not apparent from the limited Iron Age and Romano-British cropmark data. The incidence of ridge and furrow is largely restricted to the Edlington Marl and to a lesser extent the Brotherton Formation on the Permian, and there is a clear relationship between the location of ridge and furrow, and water sources. Cropmarks are virtually absent from the Brotherton Formation, and where they appear it is adjacent to a stream or beck. It is no coincidence that the most convincing rectilinear field system in the area is located on the Coal Measures in the valley of the tributaries of Maltby Dike, to the west of Maltby Quarry (SK 500 195). The most notable sites on the Brotherton Formation are the Romanised settlement at Holme Hall, Stainton (ARCUS forthcoming) and the cropmark complex at SK 539 953, both adjacent to one of the few water sources in the area on this limestone formation.

The general absence of prehistoric and Romano-British rectilinear field systems compared to other parts of the study area is remarkable, but is convincingly related to topography: altitude, slope, soil quality and water supply. This conclusion, however, needs to be tested with more evidence. It is understandable that opportunities for aerial survey flights should concentrate on sites of known responsiveness to cropmark formation at the expense of areas that have previously produced limited or negative results. Riley has emphasised that aerial survey of the limestone should be continued for a greater number of years than for that of more productive areas in order to produce comparable completeness (1983, 65). For example, evidence of the small group of cropmarks south of Maltby (SK 525 911) was compiled from seven sorties between 1963 and 1992; a similar quantity of data could have been recorded from a single flight in the right conditions over the Sherwood Sandstones. The effect of few visible sites is commensurately few archaeological investigations but the limited amount of cropmark evidence in the area is not in itself evidence of non-occupation and the level and type of settlement or land use, if it existed, can only be tested by a programme of archaeological investigation, fieldwalking and surveys of extant ancient woodland.

Early Prehistoric Sites

Ritual Monuments

The possible short *cursus* at Whitwood must remain unconfirmed until it and its relationships with the enclosures and field system are tested by excavation, although if upheld it would be a rare discovery both regionally and nationally. As a prehistoric ritual monument it does not appear to have the usual landscape associations with a henge, as found elsewhere. Moreover, although morphologically it is typical of the square-ended types, it is (at 160m by 40m) still quite short compared to others in the 'short cursus' category (English Heritage 1988), although a cursus variant is not out of the question. Interestingly a monument of similar form and size has been found through excavation in close proximity to a group of three barrows at Colton. In this instance the enclosure has been attributed a Saxon period date (Johnson 2003).

The problems of misidentification with roundhouses notwithstanding (Chapter 6), the distribution of round barrows may be seen to have a more general spread throughout the study area, with over 100 individual ring gullies representing potential ritual monuments identified from a combination of cropmarks, geophysical surveys and excavations. Ring gullies found within enclosures have generally been taken to be roundhouses, an assumption which could have implications for perceptions about the distribution of ritual monuments and the incidence of unenclosed settlements.

The scarcity of ritual monuments on the Sherwood sandstone in the south-eastern part of the study area is confirmed, although there are a number monuments recorded on the higher Magnesian Limestone to the south of the Don, where cropmarks generally are scarce. The vast majority of known round barrows are concentrated between the valleys of the Aire and Don, with the most obvious concentration being in the vicinity of the Ferrybridge henge, where 22 circular monuments are known. There are a number of round barrows in the lower reaches of the Don valley, though no significant clustering that might signify a henge monument in that area (see Manby *et al.* 2003, 97-8). It is notable, however, that there is a large number of round barrows known from cropmarks on the limestone to the south-east of Pontefract, which are

supplemented by additional examples known from geophysical survey in this area. Whilst there are no apparent clusters here, there seems to be a greater preponderance for single field monuments, which might suggest a higher level of ritual activity in the area. The contrast in ritual monument distribution to the north of the River Aire seems, at face value, to be marked. Here, apart from the known barrow groups at Methley (7), Ledston (6) and Swillington Common (3), there are virtually no round barrows known from cropmarks between the Aire and the Wharfe, the group on the latter almost certainly owing its existence to the presence of the henge at Newton Kyme which itself has eleven known monuments in close proximity. This absence is not real, as we know from the discoveries made at sites such as Boston Spa, Thorp Arch and Manor Farm Garforth (see Chapter 2). Moreover, there is no apparent visibility issue for this part of the study area, though perhaps the presence and scale of the ring ditch are factors in this case. Whatever the reason, a wider coverage of prehistoric burial monuments, beyond those represented by cropmarks, must be envisaged.

The only known timber circles remain those four identified during the excavations at Ferrybridge Henge, although it is conceivable that the concentric outer circles of pits seen around the ring gullies at Methley and to the east of Pontefract (Fig. 6.3) may reflect a form of monument evolution that includes timber circles. A similar possibility may be proposed for the internal post-ring found within the hengiform monument (155) excavated at Ferrybridge (Wheelhouse 2005a, 24-29). As Deegan has noted (Chapter 6) the Methley and east of Pontefract examples are part of a small number of the circular cropmark monuments that display a penannular or opposed entrance plan that might be equated with hengiform monuments. As well as the above, the most convincing examples may be found at Ledston and Burton Salmon, whilst others may be identified near Norton, Kirk Smeaton and Badsworth (Fig. 6.9).

That only one potential new long barrow has been revealed through cropmark mapping, on Bramham Moor to the west of Newton Kyme (Figs 6.2 and 6.3), reinforces the impression that they are a monument type that was not common to the

limestone. Remaining equally rare are square barrows. Although the cropmark data reveal a number of discrete square enclosures of between 16 and 30m in size, without excavation none can be regarded as a ritual monument and they could equally represent small livestock enclosures.

Settlements

Although the distribution of ritual monuments, and in particular round barrows, would suggest that early prehistoric activity was largely confined to the higher ground of the Magnesian Limestone, the face value distribution of early prehistoric artefacts would suggest exploitation over the whole study area, with the exception of the Humberhead levels and the Vale of York (Fig. 8.1).

Very few unenclosed settlements may be identified with certainty from the cropmark record and the few that have been identified have been found serendipitously during the excavations targeted upon enclosed parts of the landscape. In truth there may well be small homesteads reflected in the cropmarks, which have, because of their isolated nature been regarded as barrows. Whilst no unequivocal examples may be cited, the cropmark site on the north bank of the river Went at Norton would seem to be a good candidate. This site, better known for its multi-ditched enclosure and convoluted entrance arrangement, appears to lie in an area of earlier settlement, only five of the observed roundhouses falling within the enclosed area (Fig. 6.15).

As noted by Deegan (Chapter 6), curvilinear enclosures, including the D-shaped variety, do not form a coherent archaeological type. The larger examples are very few in number (Figs 6.1 and 6.3), whilst the smaller examples are more numerous (Figs 6.9-6.11), though all suffer from a lack of excavation. Little may be read into the distribution of the five larger curvilinear enclosures, none of which has been excavated, although the close proximity of three of them to Ferrybridge Henge is compelling when looking for evidence for the contemporary population for such large ritual monuments. Small curvilinear enclosures are more generally spread throughout the study area, although they are relatively sparse south of the Don. Although D-

shaped enclosures have been dated to the Roman period, the vast majority of curvilinear enclosures appear to pre-date articulating elements in rectilinear field systems, into which they are invariably incorporated, implying their general survival as extant earthworks. Rectilinear field systems seem to date either to the later Iron Age of the Roman period and therefore, as a broad rule-of-thumb, the evidence suggests that curvilinear enclosures are most likely to be of earlier prehistoric (Neolithic to Early Iron Age) date.

Later Iron Age and Roman Period

Settlements

The vast majority of recorded enclosures are of rectilinear plan. The ubiquitous nature of rectilinear enclosures generally within the study area (Fig. 6.11) makes this trait in itself of little consequence diagnostically. Even though the enclosures occur in a range of sizes and circumstances, without the benefit of a greater corpus of excavated examples with good dating resolution and clear-cut functions, plotting their distribution has little validity. In very general terms, however, it might be concluded that rectilinear enclosures tend to be more numerous on the Magnesian Limestone to the north of the River Don and tend to occur in areas where mixed field systems predominate (cf. Figs 6.4 and 6.11).

The distribution of certain rectilinear enclosure forms with very distinctive morphological traits does perhaps have greater validity at this level of analysis. The greatest concentration of broad-ditched enclosures lies on the Magnesian Limestone to the north of the River Don, but with very few to the north of the Cock Beck (Fig. 6.14). The limestone between the River Aire and Cock Beck also contains the very localised group of extended enclosure groups (see Fig. 6.8). The enclosures possessing very distinctive extended trackway entrances also appear to fall in a cluster, with 85% of those recorded (including four examples just outside the study area) occurring between the Don and the Aire, with occasional outliers to the north and south (Fig. 6.14). The distribution of enclosures with outer compounds is even

more restricted, with all eight examples lying north of the River Went, and all but one south of Cock Beck, though not all of these are on the limestone.

Discrete rectilinear enclosures and field corner enclosures are found throughout the study area. One form, however, has a less even distribution. Enclosures defined by multiple ditches (generally two) predominate to the north of the River Don. Only two examples, the triple ditched enclosure at Potteric Carr and the polygonal example at Carlton in Lindrick at the southern extremity of the study area, occur to the south of the Don. This apparent scarcity may not in fact be that significant given the fact that Riley records a number of double ditched enclosures in north Nottinghamshire, one of the best examples being at Elkesley (Riley 1980, map 27).

Certain enclosure traits suggest particular functions, some of which have been borne out by excavation. Many broad ditched enclosures display internal roundhouses as cropmarks, whilst others have only been realised upon excavation. Not all, however, might be regarded as solely for human occupation and the partitioning of a large proportion of them suggests that they are multi-functional, probably involving animal husbandry and/or crop processing (see Fig. 6.15). Extended entrance enclosures and enclosures with outer compounds might be regarded as typical of an economy geared to livestock, although this might be argued for all ditched enclosures and field systems (see Chapter 2). An interesting parallel may be drawn with the excavated Iron Age enclosure at Mingies Ditch in Oxfordshire, a curvilinear settlement enclosure that possessed both an extended entrance and an outer compound, which has been interpreted as a provision for managing livestock (Lambrick 1988, 94-5). Further evidence of livestock management might be seen in the bulges and passing places in trackways and the open areas at the ends of trackways, which are on a scale such that they may be interpreted as temporary holding points or assembly areas for flocks and herds (see Figs 6.7 and 6.8).

Field Systems, Trackways and Boundaries

The term 'mixed field system' has been adopted for the majority of the field systems mapped within the study area. The term is appropriate in that it accommodates the fact that most of the field forms are the product of incremental evolution, over a period of time, in patterns that have almost certainly been influenced by a combination of the natural topography and the rate of intake of previously un-cleared land (see below). The vast majority of these fields cannot be categorised properly without being chronologically differentiated, which can only be subjective without the benefit of excavation. On first impression, the landscape can appear to be of one phase as there are very few areas of palimpsest. Excavation, however, has demonstrated that mixed field systems are nearly always the product of several phases of development and expansion, often involving elements of strip field.

Strip fields have been deemed the key morphological trait in Deegan's rationalisation of the 'brickwork' field phenomenon (Chapter 6). As a result strip fields are seen to have a wider distribution beyond the Sherwood sandstone of South Yorkshire and north Nottinghamshire, although the places where they might be deemed to have been laid out as a single phase of planning, are effectively very localised. These areas naturally include the flatter areas of the Sherwood sandstones, where they effectively characterise the landscape, but also parts of the landscape further north, such as the areas around Went Hill and to the west of Aberford (Fig. 6.4). Small areas of strip fields are to be found in many parts of the study area, invariably integrated with mixed regimes of fields and enclosures and often formed over a period of time.

Whilst the vast majority of the cropmark boundaries are manifested as continuous ditches, there are some which are formed in intermittent fashion, either as pit alignments, which are relatively rare (Fig. 6.4), or as segmented ditched boundaries, often found defining trackways (Fig. 6.6a). Within the study area such boundaries are only seen as cropmarks to the north of the River Don, otherwise their distribution is well spread, although they are generally found on the limestone. The intermittent nature of some of these boundaries may be a result of differential truncation of

irregularly dug features. The absence of these boundaries in the southern part of the study area is curious and may just be a consequence of the different sandstone geology. That the absence of segmented boundaries and pit alignments from this area may not be that significant is hinted at by the existence of examples at Glebe Farm, Sutton and Babworth, 5km to the east of the study area (Riley 1980, 23, map 23), and by evidence for the replacement of segmented boundaries by continuous ditches at Edenthorpe (Chadwick and Cumberpatch 1995, 43).

The purpose behind intermittent boundaries is unclear, but we should perhaps discriminate between alignments of pits and intermittent linear (or segmented) boundaries, which would appear to have different functions. Where the latter have been excavated, such as at Went Edge Quarry, Ledston, Roman Ridge, Hook Moor and Ferrybridge, they have been found to be relatively shallow and little more than gullies and incomparable to the field ditches proper which replaced them (Gidman and Whittaker 2004; Holbrey and Roberts 2005; O'Neill 2001b; Richardson 2005d, 72, 82). It is difficult to envisage how these may have functioned as stockproof boundaries, unless they were used in tandem with hedges.

Whilst pit alignments are distinctly different from segmented boundaries, they are hardly better understood. They, too, have been considered as reflecting hedge lines, although such ideas, along with the notion that they have been created to retain posts and trees, cannot be sustained archaeologically (see Thomas 2003). Most of the pit alignments identified within the study area appear to be integrated into the later Iron Age/Romano-British landscapes. They can also have clear ritual associations, as demonstrated by the excavations at Ferrybridge, where they were related to the reuse of the Neolithic henge, (Roberts 2005d, 210). Apart from the Ferrybridge example, no other pit alignment in the study area has been excavated. On the basis of the cropmark evidence, however, there does appear to be some correspondence between them and early prehistoric ritual sites. Ferrybridge apart, four of the locations where pit alignments have been identified might tentatively be deemed to have landscape associations with such ritual sites (Fig. 8.1.1). These include Newton Kyme and in the

landscapes around hengiform monuments at Burton Salmon and Darrington (see Fig. 6.9). A similar juxtaposition may also possibly be demonstrated at Glebe Farm, Sutton and Babworth, outside the study area (Riley 1980, map 23). Only at Barnburgh is there a pit alignment that cannot readily be associated with a likely prehistoric ritual monument. The association is supported by evidence from further afield, pit alignments having been found in association with ritual monuments at Thornborough Henge, West Heslerton and Scorton, all in North Yorkshire (Harding 2003; Haughton and Powlesland 1999; Fraser pers comm.).

It has been demonstrated by excavation that the pit alignment at Ferrybridge was created in the Iron Age and, on the basis of their conformity to the field systems, most of the others known examples would appear to date to this period. Iron Age and Roman reuse of early prehistoric ritual monuments, as has been proven at Ferrybridge and at a number of sites nationally (see Roberts 2005d, 211), is a distinct possibility and it is noteworthy that the findings from the hengi-form monument at Upton Moor Top Farm, Badsworth (Keith and Lowe 1982) suggest reuse in the Roman period.

Roman Roads

Our understanding of the Roman road network of the region has been enhanced to a degree by the mapping of cropmarks, with a number observations confirming known and suspected routes, whilst others have provided new perspectives (Fig. 8.2). In the southern part of the study area an 800m stretch of east-west parallel ditches to the west of Letwell (SK 5502 8898) is probably part of the anticipated road that ran between Templeborough and Littleborough (Margary's 189). To the south of Rossington two parallel north/south ditches ran for a distance of 3.7km, seemingly superimposed upon an earlier meandering trackway and its associated field system (Fig. 6.6b). The northern end of this road section terminates at the western side of the fort at Rossington Bridge, but it is unclear where this road comes from. The road was not recorded by Margary, nor curiously mapped by Riley (1980, map 8), although the latter must have seen it as a cropmark and dismissed it as a modern feature. The road could be an early route of, or a loop in Margary's 28a, which ran along the western

edge of the higher ground here, whereas the generally acknowledged route ran along the eastern edge. Both roads presumably focused upon crossing points of the Idle and Torne at Bawtry and Rossington Bridge respectively.

To the north of the River Torne there has been no additional evidence revealed for the course of the road known as the Cantley Spur (Margary's 281), although, its virtually straight course to the river Don to the east of Doncaster seems assured given the discovery of the fort at Long Sandall at this location, so confirming the long-held predictions of a fort in this area (see Chapter 2). It is interesting to note that the projected line of this road would coincide with the site of the other known river fort at Roall Manor Farm on the River Aire, although there is no cropmark evidence to support this. Nevertheless, it is tempting to view this as a more direct dry season route across lowlands to the east of the Magnesian Limestone, possibly to Tadcaster or York.

Just north of South Elmsall (*c.* SE 4667 1289) are the cropmarks and a small section of extant earthwork, representing two parallel ditches and roadside quarry pits. These ditches run north-east to south-west for a distance of about 530m and are, like the Rossington example, superimposed upon a seemingly earlier field system. It would appear to orientate towards the Roman fortified site and settlement at the River Went crossing at Thorpe Audlin. Where this road's southern terminus might be is debatable, but it must be a strong candidate for the predicted extension of Margary's 18e between the forts at Templeborough and Castleford (Bishop 1999, 308-9, Buckland 1986, 8), the only variation being its junction with the 28b some 10km to the south of Castleford to take advantage of the River Went crossing.

At Methley, parallel cropmarks of a similar nature to those at South Elmsall and Rossington are recorded running north-west to south-east over a distance of some 500m (*c.* SE 3851 2632). This feature also cuts across an extensive meandering trackway and associated enclosures and fields and has been equated with the parkland landscape around Methley Hall (Deegan 1999b), although there is equally no firm

evidence for a later avenue at this location. As a potential Roman road the orientation of the Methley cropmarks would suggest a terminus at Castleford, just 4km to the south-east, but its destination to the north-west is unknown. Continuing straight it may have provided a link to Roman settlements in the Rothwell area, before linking Castleford with Margary's 721 to the fort at Elslack.

The Roman road network to the west of Tadcaster must be regarded as one of the more complicated arrangements in the region, made more so by Ramm's (1976; 1980) claims for centuriation, claims for which the recent cropmark mapping cannot really sustain. The line of Rudgate (Margary's 280) is confirmed as a 650m north-south extant *agger* spur off the 28b (*c.* SE 4588 4183), and as a 550m stretch of parallel cropmark ditches approaching the Newton Kyme fort (*c.* SE 4565 4450). Branching off this to the west is Margary's 72b, the course of which is confirmed by a 430m stretch of extant *agger* flanked by parallel cropmark ditches 3km to the west of Bramham (*c.* SE 3949 4268), at which point there may be a north-western branch represented by parallel cropmarks. The route of the 'loop' off the 72b (Margary's 729), created in facilitating a link to the road to Slack fort (Margary's 712), has been confirmed in two locations: one a 1km section of *agger* branching westwards off Rudgate (*c.* SE 4530 4206); and the other a 500m stretch of *agger* 5km to the west, near Thorner (*c.* SE 3948 4105). Its course between these two points is not straight and has been reconstructed by picking a route between areas of visible cropmarks where it surely would have been manifested had it been superimposed upon them. One of these cropmarks (*c.* SE 4416 4158) has been identified as a possible villa (Chapter 6; Fig. 6.12). The conjectured route, based upon invisibility in cropmarks and the avoidance of a potential villa, is slightly to the south of the previously supposed route. Interestingly, to bring it back on course with the known course to the west, demands a north-east to south-west orientated section at the crossing of the small watercourse here, which happens to correspond to the headlands between the medieval ridge and furrow regimes plotted from aerial photographs at *c.* SE 4281 4146 (Fig. 8.3).

Another possible Roman road in this area is represented by a pair of parallel cropmark ditches about 1km to the south-east of the Newton Kyme fort (*c.* SE 4619 4437). The cropmarks run approximately east-west, parallel with the River Wharfe for a distance of some 500m, and form a coaxial boundary for rectilinear fields to the north and south. This arrangement might reasonably be interpreted as one of many rural trackways through the fields, although in this instance the projection of the cropmark does seem to be aligned with a rather idiosyncratic junction of the roads to the south of the fort. Moreover, the fields associated with it appear to be in keeping with the planned lay-out that respects the fort to the north. Further intermittent sections of trackway on the same alignment may be found both to the east and the west. It is by no means certain that they represent a Roman military road, but it would not be out of the question for a road linking the Roman crossing points of the River Wharfe at Tadcaster, Newton Kyme and Wetherby.

Roman Roads and the Chronology of Field Systems

The evidence from several excavations has confirmed that field systems were established in both the later Iron Age and the Roman period (see Background). The present mapping project has provided the opportunity to assess the degree to which the landscape may have been enclosed prior to AD 70 through the observed, or perceived, relationship of field systems with the known Roman roads. Riley (1980, 25) had already noted that parts of the rectilinear 'brickwork' field system in the Rossington area clearly pre-dated the Roman road (28a) there, whilst excavations on Roman Ridge at Hook Moor, have shown a direct stratigraphic succession between a Late Iron Age enclosure and the quarry pits and *agger* of the 28b (O'Neill 2001b). The present mapping, as well as providing a revised map of the road network (see below), offers a much broader perspective on which to assess the relationship between roads and fields.

Most stretches of known Roman roads follow modern highways and therefore do not reveal themselves as cropmarks, although there is often little doubt as to their course. In other places they appear spasmodically as straight double ditched features or as

soilmarks or extant earthworks over short distances. Consequently, there are relatively few areas where cropmark field systems interact with the cropmarks or earthworks of Roman roads. Nevertheless, even where there is no physical link, the extrapolated alignments of field systems relative to those of the roads passing through the same landscape is revealing. In summary, there are very few instances where one could demonstrate a Roman road having dictated the field pattern prior to the medieval period. The vast majority of cropmark field systems are orientated at oblique angles to Roman roads and thus, it is assumed, pre-date them (Fig. 8.4). The most convincing instances are to be found at New Rossington and Methley where the cropmarks of Roman roads cut across the lines of earlier trackways and adjacent fields and enclosure complexes. The New Rossington road also cuts through the broad-ditched settlement enclosure with a roundhouse that lies to the east of Hesley Hall. On the aerial photograph, the northern enclosure ditch is obscured between the parallel ditches, presumably where a remnant of the *agger* has prevented the formation of a cropmark (Riley 1980, pl. 12).

At Hook Moor part of the field system may have been reorientated to respect the Roman road (Deegan 2001a, fig. 17), but this would seem to have been a rare occurrence. It is possible that some of these field systems had gone out of use by the time of the Roman incursions, but excavation generally suggests otherwise. Indeed, the lay-out of many of the fields does not seem to have changed, although they were invariably redefined in the Roman period. Recent excavations have revealed evidence for new rectilinear field systems being created in the Roman period, such as those at Swillington Common, Parlington Hollins East, Balby Carr and West Moor Park (Howell 2001; Holbrey and Burgess 2001; Jones 2005; Richardson and Rose 2004). It is noticeable that these known later field systems occur in areas of new land intake on the edge of pre-existing field systems. Moreover, they do not lie on the Magnesian Limestone, the chosen route for the 28b, and possibly a geographical zone that had been selectively well exploited before the Roman period. There is ample evidence for a well-organised rural economy well before the Roman conquest elsewhere in England, particularly in the south (Dark and Dark 1997, 94), so the evidence here is

certainly not anomalous. The limestone seems to host most of the prehistoric ritual monuments in the region and has long been supposed a corridor of communication from earliest prehistoric times. It is thus a distinct possibility that by AD 70 the limestone, and indeed much of the Sherwood Sandstone, was already shaped in terms of land division, which the superimposition of the Roman road had little long-term effect on, especially given the apparent cultural continuity of the native Iron Age in the region, as revealed by excavation.

Roman Forts

The discovery of a new fort on the south bank of the River Don at Long Sandall is significant in itself, but its riverside location lends further credence to the notion of a network of fortifications controlling the navigable rivers, as has been hypothesised since the discovery of the Roman fort at Roall Manor Farm on the River Aire (Bewley and Macleod 1993).

Another new fort, or fortlet, may be represented by Scaftworth 2, an enclosure of not dissimilar size and plan to that of the more well known Scaftworth 1 enclosure, both in close proximity on the south bank of the River Idle, where there is now also the possibility of a marching camp (see Chapter 6). The riverside location of Scaftworth 1, and what was perceived to be a similar enclosure at Sandtoft on the River Don, resulted in similar theories for late Roman riverside defences to combat seaborne raiders. Although this possibility still exists, it seems less credible given the un-fort-like appearance of the Sandtoft enclosure from the recent cropmark mapping work (Fig. 6.19).

Because the forts at Doncaster and Castleford are concealed within the modern urban landscape (as are the environs of Long Sandall to all intents and purposes), and because the forts at Burghwallis and Thorpe Audlin have no recorded cropmarks within their immediate vicinity, we have only a small amount of evidence on which to gauge Roman military policy towards the existing native landscape when establishing forts, although from the evidence of the road building, Ramm's concept of Roman

ruthlessness (1980, 33) would appear to have substance. Nevertheless, there is some room for debate. It is not yet known whether the forts at Burghwallis and Thorpe Audlin were established within native field systems that have yet to be identified or if it is just shear coincidence that their strategic locations did not involve any impact upon existing field systems or settlements. It has been proposed that the fort at Hayton in East Yorkshire was deliberately sited to avoid the pre-existing Parisian enclosures (M. Millett pers. comm.) and there is a distinct possibility that such consideration may have taken place with the placing of the vexillation fortress at Rossington Bridge. Although the Roman roads here appear to have run through the Iron Age field systems, the main fort here seems to have been placed in an area relatively devoid of earlier features (although the same case might not be argued if the geophysical anomalies identified there do represent additional forts or camps (see Fig. 2.13; Van de Noort and Fenwick 1997, 275-77)). There would, however, appear to be little doubt from the cropmark evidence that the forts founded at Newton Kyme were superimposed upon a native field system, an impression confirmed to a degree by excavation (Monaghan 1991). A similar conclusion might also be drawn from the cropmark and geophysical data from the fort at Roall (Bewley and Macleod 1993; Yarwood and Marriott 1992). Whereas new Roman roads may have had little scope for avoiding an already intensively used Late Iron Age landscape, there is possibly some small evidence for a more discriminating attitude towards the placing of their 1st-century forts; one where Brigantian possessions may have been dealt with less sympathetically than those of their less troublesome Parisian and Corieltauvian client kingdoms.

Evidence for Iron Age Territorial Units

Conventionally the Don has been seen as the pre-Roman boundary between the territories of the Brigantes and the Corieltauvi to the east of the Pennines (Hartley and Fitts 1988, 5). Later, possibly together with the River Torne, it probably formed part of the frontier between the Brigantes and the Roman Empire between *c*. AD 50 and 70. The Roman forts at Templeborough, Doncaster, Long Sandall and Rossington Bridge, on the south side of the Don and Torne respectively attest the latter, but there

is also some evidence for earlier defensive works on both the north and south sides of this natural boundary. To the east of Doncaster are the Humber wetlands which formed a significant natural barrier in the Iron Age, as did the Don gorge through the Magnesian Limestone to the west of Doncaster. Thus, the most easterly vulnerable section of the frontier was probably immediately to the west of the Don gorge, which is precisely where evidence for linear earthwork defences is found.

On the south side of the Don, cropmark mapping has identified four earthworks in the valley of the Hooton Brook and another tributary of the Don. At Thrybergh (*c.* SE 4705 9685) three parallel straight sections of ditch and bank up to 100m long have been identified at different heights up the valley side. Just 1km to the west at Ravenfield (*c.* SE 4823 9623), and in similar circumstances, is what appears to be a curving multivallate defence work on the western side of the north-facing valley. The date of these earthworks is unknown, but there is a circumstantial possibility that they are a Corieltauvian measure to defend against Brigantian incursion from the north (Fig. 8.5). To the north-west on the opposite bank of the River Don is the extensive linear earthwork complex of Roman Ridge. These earthworks are considered to be Brigantian and extend over a distance of about 10 miles between Mexborough in the north-east and the Wincobank hillfort in the south-west (Boldrini 1999). The association of Roman Ridge with Wincobank is conjectured, but the juxtaposition is similar to that of the Barwick-in-Elmet hillfort with the Aberford Dykes and Grim's Ditch, further north (see below).

With the possible exception of the earthworks on the Don, little purpose may be gleaned from the locations of the known fortifications in the rest of the study area. It is conceivable that the apparent lack of internal coherence in defensive works could itself be a product of the fractured nature of the Brigantian tribal confederation. In their resume of the evidence for the Brigantian territory Hartley and Fitts (1988) noted that the concept of the Brigantes being composed of smaller tribal sub-units 'would be entirely consonant with the remarkably varied physical geography of the area'. These remarks were made with regard to the territory as a whole, but it was

specifically concluded that the Magnesian Limestone was likely to have been divided into several sub-units (Hartley and Fitts 1988, 2-3) (Fig. 8.6).

It is tentatively suggested that subdivision within the Brigantian territory might be subtly reflected in the distributions of the certain types of enclosure identified by Deegan (Chapter 6). Whilst the distributions of certain distinctive enclosure types (and the overall relative diversity of enclosure and field system forms) would support the notion of the River Don as a notable territorial and cultural boundary in the Iron Age, not all the distributions can reasonably be related to the other major rivers in this way. Extensive enclosure groups have a very localised distribution between the Aire and the Wharfe (Fig. 6.12), whilst enclosures with extended entrances appear to be concentrated between the Aire and the Don, although the distribution of enclosures with outer compounds seemingly covers the area between the lesser watercourses of the Cock Beck and the River Went, to the north and south of the Aire respectively.

The distribution of the Iron Age forts and earthworks to the north of the Don is perhaps more instructive. The geographical unit between the Aire and the Don contains four potential Iron Age fortified sites, if the one at South Kirby is included. Two of these are situated 4km apart on the River Went at Castle Hill and Norton, but on opposite sides of the river, so presumably defending approaches from different directions. The forts at South Kirby and Sutton Common are both situated on the Lanthwaite Beck/Hampole Beck watercourse to the south. Sutton Common lies on the edge of the wetlands that might *de facto* at this time have formed the edge of the Brigantian territory. It is possible that these forts punctuated tribal sub-unit boundaries based upon the lesser watercourses, within larger territorial subdivisions based upon the major rivers. To the north, the hillfort at Wendell Hill, Barwick in Elmet sits equidistantly between the Aire and the Wharfe. It may have acted as a hub to a succession of articulating territorial sub-unit boundaries represented by the Aberford Dykes and Grim's Ditch, which are orientated towards attacks from the south and east respectively. Again, these earthworks exploit the natural topography, Becca Banks and part of Grim's Ditch being constructed along the course of Cock

Beck, whilst other sections of Grim's Ditch took advantage the Grimes Dike watercourse and a natural scarp (Wilmott 1993, 65, fig. 2). The scale of the earthworks in this area is similar to that of Roman Ridge on the Don, and is more in keeping with major territorial defence works than the sub-unit divisions envisaged for the Aire-Don catchment. Why such a major defensive boundary as Becca Banks did not exploit one of the major rivers to enhance its effectiveness is a mystery, but the answer probably lies in its association with the Barwick hillfort, which has been mooted as a possible seat of Queen Cartimandua (Hartley and Fitts 1988, 18). There remains, however, uncertainty as to whether any of the forts were even occupied during Cartimandua's time. Certainly Sutton Common, the only fort in the study area to undergo investigation, appears to be of earlier Iron Age date (Parker Pearson and Sydes 1997). The radiocarbon dates from Grim's Ditch also suggest an earlier Iron Age origin, and only the Aberford Dykes, which are poorly dated, could be construed to be of later Iron Age date (Wheelhouse 2001b, 129; 2001c; 144; Burgess 2001d, 131-2). There cannot really be any resolution of the suppositions and conjecture regarding the territorial divisions within this part of Brigantia until a better understanding of dates of construction and use of the major forts and defence works has been obtained. In the absence of such, the interpretations and situations of the recently mapped sites must suffice in providing what is at best additional circumstantial evidence for territorial sub-units.

Field Systems, Topography and Land Clearance

It is inevitable that topography will play a major part in dictating field patterns anywhere and in any period. Consequently, the rolling landscape of the Magnesian Limestone to the north of the River Don might be seen as a principal reason behind the predominance of 'mixed field systems' in that area. We may envisage that a similar mixed pattern would have prevailed on the limestone to the south of the Don, had this area been subject to the same level of exploitation. That this was apparently not the case might be explained by the slightly higher relief, which in combination with dry thin soils and poor water supply, could have effectively rendered it marginal and thus not subject to the same level of clearance that took place throughout the Iron

Age and Roman period elsewhere in the region. Other factors must not be excluded, however, and it is notable that the distributions of prehistoric and Roman finds for this area are not very different from the rest of the study area (Figs 8.1; 8.1.2). There is however, some circumstantial evidence in the form of decorative diagnostic metalwork recovered by metal detectorists from several sites in this area that might suggest it had a distinct cultural identity (Dearne and Parsons 1997).

Although it has been demonstrated that some strip/brickwork field systems are the product of aggregated development, often demonstrating several phases upon excavation (Chadwick 1995; 1999), they are on a scale that requires certain preconditions. Such field systems occur predominantly, but not exclusively, on well-drained soils on relatively higher ground, as may be seen to best effect on the sandstones bounding the Humberhead levels in South Yorkshire (Figs 6V.1 6V.6). But if good, well-drained soils were preferred, they were not the principal criterion in the creation of large regular field systems. Critical to this is the availability of a large cleared area, to allow for the lines of sight needed in laying out an extensive field system, and relatively flat ground, that would enable ditches to be dug in straight lines without too many compromises for the topography, although inevitably there will have been slight curvatures and idiosyncrasies due to rivers and microtopography, as has been noted for other regions (Deegan 1996, 21; Robbins 1998; Halkon and Millett 1999, 29). As has been demonstrated (Chapter 6), areas of strip fields may be identified on the plateaus and terraces of the Magnesian Limestone and the river gravels, but are mainly found on the flatter expanses of the Sherwood sandstones (Figs 6V.5 and 6V.6).

Nationwide, the pollen evidence indicates progressive forest clearance throughout the first millennium BC (Dark 1999; Cunliffe 2005: 439; Harding 2004, 10-11). Pollen records for West Yorkshire, however, suggest that there was probably no significant woodland clearance until the later Iron Age (Berg 2001, 8-9), the period that in the north at least, generally saw the introduction of enclosed settlements with their associated compounds and field systems. The possible exception to this rule is the

landscapes around major ritual monuments such as Ferrybridge, which appears to have been cleared by the Late Neolithic period (Carrott 2005; McHugh 2005). By contrast, pollen records for South Yorkshire suggest that parts of the Humberhead Levels around Doncaster had been subject to clearance and some regeneration by the Iron Age, with forest clearance for mixed farming continuing throughout the Iron Age and Romano-British periods (Buckland 1986, 33; Dinnin 1997).

Small-scale clearance for new intakes in the evolution of aggregated cropmark complexes is readily envisaged, but large-scale clearances for the sole purpose of creating strip field regimes has demanded that we think in terms of central organisation and planning, and cultural diversity to explain the 'brickwork' phenomenon. There is no doubt that there are more strip/brickwork fields to the east of the Magnesian Limestone south of the Don, but whether this predominance really marks any radical cultural, political or agricultural differences is highly debatable. Whilst perhaps social organisation beyond the household scale is implied (Harding 2004, 291), it has already been pointed out (Robbins 1997) that the regularity of fields need not necessarily imply centralised planning. It is possible that the greater exploitation of the Sherwood Sandstone occurred due to the relative non-viability of the adjacent Magnesian Limestone, whether because of its greater height or because it remained relatively well forested. Either way the sandstone appears to have offered better prospects, having, it seems, already been cleared at an earlier period. In such a scenario the creation of strip field systems, even incrementally over a period of time, is entirely credible and would have been the natural way for field complexes to develop where they are not constrained. In essence the differences in field patterns that are seen between the Magnesian Limestone to the north of the Don and the Sherwood Sandstone to the south of it may be largely the product of contemporary landscapes developing in the same way but on different terrain.

Whilst a prerequisite for the creation of the majority of larger field systems must have been large-scale clearance, several cropmark complexes reveal elements that would seem to hark back to a period before the landscape was completely open and when

settlement and agriculture must have taken place in small gradually expanding assarts, some of which we might equate with the morphology of aggregated enclosure complexes that are common throughout Yorkshire. The particular revealing features in this are erratically meandering trackways and sinuous principal boundary ditches which cannot be explained entirely by the topography. The meandering nature of a number trackways appears anomalous within the rectilinear field pattern that subsequently developed around them, usually in a way that has maintained the geometry of the field pattern, with little concession to the morphology of the trackway. Examples include the landscapes between Dalton Parlours and Lead and Hickleton and Marr, the Methley gravels, Barnby Dun and Edenthorpe, although the most striking example is to be found to the south of Rossington, where the trackway weaves its way to the river crossing point later focused upon by the Roman road (see Fig. 6.6.b). If ditched trackways were a means of moving stock around the landscape they must also have provided a means of communication between different settlement enclosures. In this they would almost certainly have taken a line of least resistance, thus, if their creation took place before they were 'contained' by the field system, in a period before forest clearance was advanced, the adoption of sinuous courses, that manifest themselves as cropmarks today are surely due as much to the avoidance of un-cleared parts of the landscape, especially where their contortions cannot be attributed to topographic factors. Remnants of such an arrangement might be reflected in the umbilical links between enclosures near South Elmsall, Normanton, Wetherby, Ledston, Micklefield and generally around Barnby Dun and Darrington (Fig. 8.7).

Such lines of communication between early settlement enclaves seem to have become so well established in the landscape that the later introduction of quite radical regimes of land allotment were still obliged to respect them. Such a sequence was also envisaged by Branigan (1989, 162) with regard to trackways passing through the 'brickwork' fields, and it is perhaps in such instances that we see evidence of the symbolic purpose and reverence invested in ancient boundaries alluded to by Chadwick (1997, 6-7). That the earliest enclosure complexes probably preferentially exploited areas of earlier clearance is suggested by the evidence for early prehistoric

activity more often than not being found on later prehistoric sites. It seems unlikely that this is due to the ubiquitous distribution of early prehistoric material across the landscape and may be more reasonably explained by later prehistoric enclosures selectively exploiting sites where clearance had already occurred. This need not necessarily reflect continuity, but perhaps advantageous reoccupation of a less regenerated areas.

Like meandering trackways, a number field ditches, often those which appear to be primary features in the perceived developments of Late Iron Age enclosure or field systems, are also found to display erratic traits. The Late Iron Age ditch that divided the field system from the ritual zone around Ferrybridge Henge was probably created in an open landscape, but its course was dictated by a pit alignment which itself followed a low ridge (Richardson 2005a, 53). Not all instances, however, are so easily explained, especially as ditches that articulate with them, or form enclosures that are appended to them, will often be straight. Particularly good examples of this phenomenon may be seen at Wattle Syke, Collingham and Leyfield House, Aberford (Fig. 6.12). In the absence of any other evidence it is supposed that such erratic field boundaries were probably a consequence of them defining the edges of clearance phases at the time of the creation of the site. Like the trackways, such features, preserved and integrated into a later field or enclosure complex, thus stand out as being anomalous.