

# **Landscape Analysis**

**Stephen Rippon**

## **Introduction**

The landscape all around us provides a remarkable record of past human achievement. Its buildings, settlement patterns, communication networks, field systems, and other land-uses might be just a few years old, or many thousands of years old, but all together they make an important contribution to a community's sense of place and identity. Research into the history of landscapes came relatively late to archaeology, but it is now a strongly interdisciplinary subject, particularly in historic periods when there are written documents, maps, and pictorial images as well as physical remains preserved within the landscape itself. An interdisciplinary approach is also required as human activity on a landscape scale is preserved in different ways. Firstly, there are "buried landscapes" where little or no trace survives on the ground due to natural processes such as flooding, or cultural processes such as plowing, but which can be studied through the traditional archaeological techniques of survey and excavation. Secondly, there are "relict landscapes" whose remains survive above ground, as earthworks or ruins, but which no longer serve their original function. Thirdly, there is the "historic landscape," a term created as recently as the 1990s by archaeologists to inform the likes of planners and countryside managers of the time depth that is present within the countryside and urban environments of today (for historiographies see Rippon 2009, 2012b). The historic landscape is the combination of the built and natural environments that are all around us: the buildings, settlements, religious sites, land-uses, communication networks, energy supply systems, and other infrastructure that enable us to

live our lives. It embraces both the natural environment – the topography, geology, soils, and drainage patterns – and features that have been hand-crafted by human communities.

### **Investigating the landscape through archaeological techniques**

Whereas early research into landscapes simply set out to provide a background contextualization for an excavated “site” that was the main focus of attention, investigating the origins and development of the historic landscape has now become an important activity in its own right. Understanding landscape history – and I use the term “history” here in its broadest sense of studying the past (by whatever means), as opposed to its common association with written evidence – requires a wide range of sources and methods. Buried landscapes can be studied through the familiar range of archaeological techniques of survey and excavation that need little discussion here, other than to reflect that the relatively rich range of material culture that survives from the historic period makes studying the landscape through methods such as fieldwalking particularly rewarding. One of the very great strengths of fieldwalking is that it can be applied on a variety of scales, from the in-depth analysis of individual deserted settlements through to large-scale surveys that record changing patterns of settlement and land-use over time (e.g., Jones 2012; Parry 2006). Fieldwalking cannot be used within currently occupied settlements, but here the technique of small-scale test pitting is proving extremely effective both as a research tool, for example in establishing the periodic expansions and contraction of settlements (e.g., Gerrard with Aston 2007; Hall 2016; Page and Jones 2007; Rippon 2006; Wright 2015), but also as a means of engaging with the public (e.g., Lewis 2016). It is also impossible to fieldwalk permanent pasture, and as such a particularly innovative piece of recent

research has been the systematic collection of cultural material from molehills at the deserted medieval port of Monnikerede in Belgium (Trachet et al. 2017).

For relict landscapes, there are now a wider range of resources to complement the traditional aerial photographs, including LiDAR and satellite imagery, much of which is now freely available online (e.g., Crutchley 2015). Any remote sensing technique provides a snapshot of a landscape at a particular time, but as we develop archives of imagery taken over the course of many years the chances of features showing up will increase. As LiDAR and satellite imagery become more widely available (e.g., Lasaponara and Masini 2015), however, we must resist the temptation to assume that it will make earlier aerial photographs redundant: a recent study of currently occupied medieval villages across central England, for example, revealed that modern LiDAR was nowhere near as useful as the late 1940s aerial photographs taken by the Royal Air Force, as so many areas of shrunken settlement earthworks have now been built over or destroyed through plowing in recent decades and so do not appear with LiDAR (Blair *et al.* forthcoming).

The move toward developer-funded archaeology has led to a huge increase in the amount of both survey and excavation. Our understanding of past landscapes has benefited in many ways, including the extensive investigation of individual sites in ways that rarely happened in the past, and the way that areas are now being explored that had seen little previous work (e.g., Quirós-Castillo 2013). On the Boulder Clays of eastern England, for example, a series of major new roads and other infrastructure developments have led to a series of medieval and post-medieval settlements being excavated, and around Stansted Airport, in Essex, these have included moated and other farmsteads, windmills, a hunting lodge, pottery kilns, and what

remains from Stansted's use by the US Air Force during the Second World War (Cooke et al. 2008; Havis and Brooks 2004; Timby et al. 2007).

The growing commercialization of archaeology does, however, have a downside if there is a separation of traditional below-ground archaeology and the historic landscape. A good example is the excavations carried out at Bishop Burton College in Yorkshire, England. The report noted that this site "either adjoins or overlies the projected course of the eastern boundary of the medieval deer park," but the archaeologists located their trenches where the modern Ordnance Survey map does not show this putative park pale (Goode et al. 2008:1, fig. 2). Two substantial ditches were excavated, the lower fill of one producing three sherds of early Romano-British pottery and two medieval sherds: the latter were inexplicably dismissed as "likely to be intrusive" (Goode et al. 2008:19). If, however, the trench had been superimposed upon the nineteenth century Ordnance Survey map then it would have become clear that the excavated ditches were in fact the park pale, and that the medieval sherds were therefore not residual (Rippon et al. 2015:fig 3.18).

### **The use of environmental data**

Alongside this increase in developer-funded research has been an expansion of the amount of palaeoeconomic data, such as assemblages of animal bones and cereal remains (e.g., McClatchie 2015; Sykes 2015). The use of pollen analysis has been of limited importance in studying the historic period, due to the inaccuracies associated with radiocarbon dating, although the appearance of ornamental pine trees in the eighteenth century does appear in many pollen sequences that cover this period and provides a useful chronological horizon. Long-term trends within land-use are discernible in pollen sequences that cover the historic period (e.g., Exmoor in

UK: Rippon et al. 2006; Scania in Sweden: Lagerås 2007), although short term events – while historically important – are more difficult to detect. A recent review of the impact that the Norman Conquest had on the landscape of England did find some changes in land-use which may have been associated with the “Harrying of the North” (Creighton and Rippon 2017), but the evidence was far from clear.

There has also been a growing interest amongst climate change scientists in studying past trends. Data on fluctuations in temperature and precipitation comes from a variety of sources, but it is indirect and relies upon different proxies, such as how communities of plants and animals appear to have responded to climatic changes (e.g., Langdon et al.’s (2004) study of chironomids (midges) and plant pollen, and Charman et al.’s (2006) use of microorganisms known as *testate amoebae*). In both cases the samples were derived from upland peat bogs across northern Britain, and were used to reconstruct fluctuations in precipitation and temperature by studying the changing proportions of species that prefer wetter or drier conditions, or cooler and warmer temperatures. Analysis of the ratios of different oxygen isotopes can similarly be used to plot changing temperatures, such as McDermott et al.’s (2001) analysis of a speleothem (stalagmite) in South West Ireland, and Daley et al.’s (2010) study of sphagnum cellulose from the peat bog at Walton Moss in northern England. There are, however, many problems with interpreting these proxies for climate change, not least that the trends seen in upland areas will not necessarily have been followed in the lowlands (which will normally be warmer and drier). It should also be borne in mind that where dating relies upon radiocarbon determinations of the material within which the palaeoenvironmental material is preserved, the accuracy will be relatively poor especially compared to the precise historical chronologies of the more recent past. Dating is not, however, a problem with the analysis of tree rings although it is still not clear how accurate the

relationship is between the width of an annual growth ring and precipitation, as there are other facets of the environment that will influence the health of a plant including atmospheric pollution (e.g., Wilson et al. 2013). Scientific advances are, however, coming thick and fast, such as the extraction of carbon and oxygen isotopes from tree cellulose which may reveal well-dated fluctuations in temperature and precipitation more accurately (Young et al. 2015).

While reconstructing past climate is in itself difficult, interpreting the results – and in particular determining their implications for the wider study of society – is extremely complex. There is a worrying trend within modern climate science for simplistic correlations to be drawn between reconstructed trends in temperature and precipitation on the one hand, and changes within society on the other (e.g., Buntgen et al. 2016; Turney et al. 2006; van Geel et al. 2004). Klimenko (2016: 365), for example, plots fluctuations in temperature across northeastern Europe and draws simplistic correlations with documented historical events, arguing that “it is virtually certain that the mode and speed of development and north-eastward expansion of the Russian State from the Middle Ages to the Modern Time were in many ways dependent on natural and geographical factors.” Many of us, understanding the humanities, are however uncomfortable with the environmental determinism contained in the use of “dependent upon”! Such simplistic correlations between possible fluctuations in the climate and socioeconomic processes have thankfully been challenged within the palaeoenvironmental community (e.g., Coombes and Barber 2005), and G. Middleton (2012:268), for example, has expressed concern that “paleoclimate studies have already profoundly impacted the study of collapse and culture change, and a new determinism is in evidence.”

Unfortunately, some historians have also jumped on this climate change bandwagon. Cheyett (2008: 127), for example, argues that “reversion from arable to pasture affected regions

as far apart as Italy and Poland cannot simply be ascribed to the political and fiscal dislocation of the ancient world, but should be understood as one effect of the climatic anomaly.” Once again, socioeconomic trends are seen as an “effect” of climate change, although it is striking how the author fails to engage with the primary evidence for land-use – just a single pollen diagram is discussed – or to account for the wide range of other evidence for continuities in the landscape. Similarly, Ellenblum’s (2012: 3) *The Collapse of the Eastern Mediterranean* argues for “a series of well-documented climatic disasters that altered the face of the eastern Mediterranean” and which led to “the physical decline of some of the most important civilizations and cultural centres of the time,” whereas reviews of this book outline serious concerns over the critical use of source material (e.g., Burke 2013; Frankpoan 2012).

Overall, the use of scientific environmental data that has been so widespread within prehistoric periods for many decades, does have a place within the more recent past. Methodologies are constantly improving, but there remain major challenges in interpretation. It is important that we explore the relationship between human communities and the natural environment, but the drift toward simplistic, monocausal, and environmentally deterministic interpretations must be resisted: just because two phenomena appear to have occurred at the same time (bearing in mind the inaccuracies associated with scientific dating techniques), does not mean that one caused the other.

### **Characterizing landscapes**

A distinctive aspect of investigating landscapes within the historic period is that for the last few hundred years there are a wide range of cartographic sources. Just as an increasing amount of remote sensing data is now freely available online, so are increasing numbers of

historic maps (e.g., the National Library of Scotland that is making available Ordnance Survey maps for the whole of Great Britain: <http://maps.nls.uk/os/>). While most maps contain a similar range of basic information, notably the patterns of roads, fields, settlements, and major place names, there are considerable differences in the detail they depict. The First Edition Ordnance Survey Six Inch to One Mile maps, for example, are a common starting point for landscape research in Britain as they cover the whole country, at the same scale, and show individual fields and buildings. They are, however, simply two dimensional depictions of the landscape and lack information such as who owned each parcel of land, who occupied it (i.e. the tenement to which it belonged), and what the fields were called; there is also often only limited information on land-use. For some parts of Britain and mainland Europe, however, a remarkable series of mapping exercises in the eighteenth and nineteenth centuries do record this additional socioeconomic information, and the analysis of these maps can add enormous depth to our understanding of the historic landscape (e.g., eighteenth- and nineteenth-century cadastral maps in Sweden: Ersgård 2016; see Figure 1 for some of the information on a British Tithe map).

[INSERT FIGURE 1; FIG. 1 CAPTION: Transcription of the Combeinteignhead tithe map, in Devon, UK, by Phil Knibb showing the pattern of land-occupancy (recorded in the Tithe apportionment) that was highly fragmented in the vills of Netherton and Combeinteignhead itself, with virtually all the land in Buckland Barton lying within a single tenement.]

One reason why the historic landscape is so remarkable is that its character varied from place to place. These local and regional variations in historic landscape character can be mapped in a variety of ways, ranging from simple distribution maps of particular facets, through to more



holistic assessments. The technique of “Historic Landscape Characterisation” (HLC) is one such method, developed in slightly different ways across the United Kingdom over the past three decades. The core feature of HLC is that each parcel of land – an agricultural field, parcel of woodland, area of industrial activity, or block of contemporary properties within a town – is attributed to a specific “historic landscape character type.” The result is a map showing the distribution of each type, such as fieldscapes that retain their medieval character, areas that have seen the restructuring of field boundaries in recent years in response to the intensification and mechanization of farming, different types of industry, communication systems, and urban areas of different periods and characters.

As HLC evolved, different approaches were adopted in different areas, and there was much debate about its value (including a series of papers in the journal *Landscapes* volumes 7(1), 8(2), and 9(2) in 2006-08). In England, English Heritage (now called Historic England) sponsored program of mostly county-based HLCs (Aldred and Fairclough 2003; <https://historicengland.org.uk/research/methods/characterisation-2/>) many examples of which are now available online through the Archaeology Data Service (<http://archaeologydataservice.ac.uk/archives/view/HLC/>). Early HLCs focused mainly on rural landscapes but the technique has now been applied to urban and suburban townscapes (Thomas 2006; e.g., Sheffield, Rotherham and South Yorkshire: <http://sytimescapes.org.uk/home>; The Black Country: Quigley 2010) and well as marine areas (Historic Seascape Characterisation: <https://historicengland.org.uk/research/methods/characterisation-2/historic-seascapes/>). In Scotland a variant of HLC – “Historic Land-Use Assessment” – was developed, the results of which are online (<http://hlapmap.org.uk/>; Millican *et al.* 2017). In Wales, the scheme that was developed initially by Cadw and the Countryside Council for Wales (now Natural Resources

Wales) is known as Landmap (<http://landmap-maps.naturalresources.wales/>), and there has also been an identification of Marine Character Areas (<http://naturalresourceswales.gov.uk/evidence-and-data/maps/marine-character-areas>). Broadly similar projects are being developed elsewhere (e.g., Catalonia in Spain: Bolòs 2010).

### **Beyond morphology: adding depth to characterization**

An early criticism of these historic landscape characterizations was that they focused on the morphology of landscape features, notably field boundary patterns (as agricultural fields cover by far the greatest proportion of the landscape of any land-use in lowland areas). There are, however, a wide range of other evidence that can be integrated with morphological analysis in order to add depth and understanding to characterization (in 2004 this author explicitly used the more holistic term “Historic Landscape Analysis” for this subject instead of “Historic Landscape Characterisation” when writing a practical handbook for the Council For British Archaeology; Rippon 2004). The morphology of field systems can sometimes be used to indicate their age, with some rigidly rectilinear layouts, for example, being provably recent (because they post-date maps which show the land before it was enclosed). Other morphologies can be indicative of past land use, such as long, narrow fields that are reversed-S in shape and which it can be proved are derived from the enclosure of strips within open arable fields (again, because there are maps that both pre- and post-date enclosure). Some field boundary patterns are, however, more difficult to interpret based upon morphology alone, although other evidence contained within the historic landscape can help. Some maps record patterns of land ownership and land occupancy, and this can be extremely useful when interpreting field boundary patterns. Those derived from the enclosure of former common land, whether it be arable, pasture, wood-pasture, or meadow, for

example, often resulted in highly fragmented patterns of landholding, as each land-owner/tenants that held rights in the common land received one or more parcel of land following enclosure (Comeau 2012; Rippon 2006, 2012a; Williamson 2008).

An example of how the patterns of landholding can help understand the history of a landscape is the parish of Combeinteignhead in Devon, UK. Figure 1 is an ArcGIS-based transcription of the Tithe map of 1837, linked to a transcription (in Microsoft Excel) of the accompanying “apportionment” that lists the land-owner, land-occupier (i.e., tenant), land use, value, and field name of each parcel of land. In Figure 1 the land belonging to each land-occupier is shaded differently. The nineteenth-century settlement pattern comprised two substantial hamlets (Combeinteignhead in the east of the parish and Netherton to the middle), and an isolated farmstead (Buckland Barton) in the west (the southern part of the parish comprised parts of Haccombe, the rest of which was in a separate parish of the same name). Combeinteignhead and Netherton were both substantial settlements in 1837, with their surrounding areas dominated by very long, narrow fields suggestive of former arable open fields: this impression is supported by the extremely fragmented patterns of land ownership and land occupancy (resulting from the way that landholders had strips scattered across the open fields in order to give everyone an equal share of the good and bad land). Nine hundred years earlier, however, the Domesday survey of 1086 recorded just two manors: *Cvbe* (Combeinteignhead) that was assessed as half a “hide” (the measure of taxation used in early medieval England equivalent to four virgates), and *Bochelant* (Buckland) that comprised one “virgate” (a quarter of a “hide”; Thorn and Thorn 1985: 19,28; 19,41). That Netherton is not listed does not mean that it did not exist: it is possible (indeed likely) that it was simply included in the entry for another place – owned by the same person – most obviously the neighboring *Cvbe*. What we

probably had in 1086 was, therefore, three vills each of a virgate (Combeinteignhead, Netherton, and Buckland), two of which (Combeinteignhead and Netherton) were now part of the same estate.

The total area belonging to the farmsteads in each of Combeinteignhead, Netherton, and Buckland was very similar, and when these are plotted, a remarkably clear boundary emerges between Combeinteignhead and Netherton on the one hand, and Netherton and Buckland on the other (see Figure 1). The distinctive feature of Buckland, however, is that all but two fields – an area amounting to 473 ac (191 ha) – belonged to the one farm. In the nineteenth century it was unusual to find estates this large: in 1870, across Devon as a whole, 20% of the land-holdings were under five ac (2 ha), 23% 5-19 ac (2-8 ha), 18% 20-49 ac (8-20 ha), 18% 50-99 ac (20-40 ha), and 15% 100-299 ac (40-121 ha), and just 5% were over 300 ac (121 ha) (Overton 1996, table 4.13). Back in the medieval period it would have been impossible for a single farmstead to manage all of the land in Buckland, and in the twelfth and thirteenth centuries a typical farmstead in Devon had just 30 ac (12 ha) (a “Devon ferling”: Fox 2012:210). The size of Buckland would therefore suggest that it too was once a hamlet, perhaps with around 15 farmsteads, and it is likely that it had open fields like its neighbors. These fields were, however, presumably enclosed relatively early, probably because the hamlet shrunk in size and the individual tenements “engrossed” (absorbed) by what was to become the single surviving farmstead.

It is not only field boundary patterns that contribute to landscape character, but the field boundaries themselves. In some districts they reflect the local geology, with earthen banks and ditches in areas of softer rock, and drystone walls in areas of harder geology. There are, however, also cases where the form taken by field boundaries is down to the individual preferences of

local farming communities, such as preference for earthen “hedgebanks” in southwestern England (Rippon 2012a). Field names can also add great depth to our understanding of landscape history. Around the fringes of environmentally marginal areas, field names can help decipher the sequence of enclosure as some name elements were prevalent in medieval times, while others only came into use during the post-medieval period. Field names can also contain habitative elements that are suggestive of deserted settlements, former land-use practices (e.g., “Dolemoor” is suggestive of a common meadow, “dole” meaning “to distribute”), or darker practices (e.g., “forches” is indicative of a gallows). The creation of regional identities is reflected in other facets of agricultural practices such as animal breeds, dialects, and the design of tools that – although fast disappearing – are sometimes recorded in the reports of early agricultural writers, topographers, and folklorists.

### **Integrating data: giving context to documentary sources**

One of the many great advantages a holistic approach toward studying the landscape is that it can provide a spatial context – and hence a better understanding – of places referred to in textual documents. Although some early medieval documents – notably charters (land grants) – include references to landscape features, especially if they include a boundary description, it is mostly during the later- and post-medieval periods that we have large numbers of documents that refer to natural and man-made features such as settlements, rivers, fields, gates, pathways, roads, and bridges. Some of these early place and field names will have continued in use, to appear on recent maps and as such are easy to locate, while others require some detective work. Figure 2 show the landscape of Puxton, in Somerset, UK, as depicted on the Ordnance Survey First Edition Six Inch map of 1887. The light gray shading shows areas of former common land

(including Puxton Moor), while the common meadow known as Dolemoor is stippled (both were enclosed by Act of Parliament in 1816). The darker shading relates to selected places referred to in earlier documents, and how these can be located by reference to places recorded on the nineteenth-century maps. In 1494, for example, the manorial court rolls record that John Hayman and Adam Stephens damaged the Lord's "ward" [a bank and ditch] between "Dolemore" and "Twyndyke," while in 1568 John Cooke was ordered to repair the bank and ditch between "Twyndyke" and the "Common": these features cannot be located based purely on the 1494 reference – there is no accompanying map – but the "Common" (later known as Puxton Moor) and "Dolemore" are recorded on later maps, and so the position of "Twyndyke" and the "ward" can now be determined. "Rushworths," recorded in 1468, can be located as it lies to the north of the common way to Congresbury, and is important as it provides evidence for a former open field to the east of Puxton village as it lay "to the east of the furlong of Thomas Crossman called Elleneacris in the East Field." There was, presumably, also a West Field, traces of which are preserved within the field boundary patterns southwest of Puxton village. The "five severall grounds" recorded in the glebe terrier of 1636 [i.e., five enclosed fields called "Priests Leaze"] can be identified because the "Hardingforth" – that lay to the east – is named as such on later maps (see Figure 2).

[INSERT FIG. 2: Fig. 2 caption: An example of giving a spatial context to documentary references: Puxton, in Somerset, UK (after Rippon 2006, fig. 2.5).]

### **Pre-modern land capability**

Most of our cartographic and textual material dates to a particular point in time. The Tithe maps and apportionments produced for many English parishes ca.1840, for example, record the use to which land was put in that year, and the patterns of land use they record reflect the prevailing economic conditions and available technologies of the time. As these Tithe surveys post-date the Agricultural Revolution, the patterns of land use they record may well have been very different to those of earlier times. Determining the suitability of soils for modern agriculture is quite straightforward as a series of sources systematically describe and map it. The former Ministry of Agriculture, Fisheries and Food's (1979) map of "Agricultural Land Classification," and the mapping of "Land Use Capability" by the Soil Survey of England and Wales (Mackney 1979), for example, combined the physical properties of topography, soils, and climate with the demands and technologies of modern agriculture. *The Land of Britain* describes the situation in the 1930s with a series of county-based reports (e.g., Willatts 1937) drawn together in Dudley Stamp's (1948) "Classification of Land."

Determining the agricultural capabilities of soils in the more distant past, however, requires the use of even earlier sources and an understanding of the inherent properties of different soils and how these may have changed since the development of farming. The late eighteenth-century reports prepared for the Board of Agriculture, for example, often provide qualitative accounts of the soils within particular districts, such as the high Boulder Clay plateau of southwestern Suffolk described as "a much poorer country" than the rest of the county (Marshall 1811:408). Indeed, Butcher (1941:362-364) cites the early seventeenth-century writer Reece who observed that "the ground is so heavy [that] the best husbands without six strong horses in one plough will not till their land so that generally the country in winter time ... is very foul." Late eighteenth-century accounts of the London Clay were similarly damning, describing

it as “The most tenacious, obdurate and ungrateful soil known” (J. Middleton 1798:20), while nineteenth-century accounts describe it as “three horse land” as opposed to “two horse land” on the Boulder Clay and “one horse land” on the Thameside terraces (Collins 1978:51). It should be remembered, however, that qualitative judgements such as these are subject to the author’s own prejudices and those of the prevailing orthodoxies of the day, and this is clearly evident in Malcolm’s (1794:18) account of Buckinghamshire where his description of the clay-with-flints on the Chiltern Hills as appearing “under good management as that soil is capable of” was part of his agenda to praise the farmers there for using enclosed fields, as opposed to the continued use of open fields in the clay vale to the north.

### **Beyond the fieldscape: wider aspects of historic landscape character**

Although traditional HLC has focused upon the morphology of fieldscapes, there are many other aspects that need to be investigated in order to achieve as complete a landscape history as possible. This is, however, not without its problems, as research into aspects of the historic landscape is fragmented across so many specialist groups: in Britain, for example, there is the British Agricultural History Society, English Place-Name Society, Society for Landscape Studies, Society for Medieval Archaeology, Society for Post-Medieval Archaeology, and the Vernacular Architecture Group.

It has long been known that vernacular building traditions form an important part of landscape character, and there have been some important examples of integrating the study of standing buildings with agrarian history (e.g., Somerset Vernacular Buildings Research Group 2010) and HLC (Lake and Edwards 2006a, 2006b). Another important physical component of historic landscape are its communication systems. Until the Industrial Revolution most people,



livestock, and goods travelled by road, although the extent of water transport may have been underestimated (e.g., Blair 2007). The building of first canals and then railways transformed the ability to travel over long distances, and this also contributed to a homogenization in landscape character as locally distinctive building materials started to be replaced by mass-produced brick and tile. (The coming of the railways also led to the standardization of time across regions and nations.) Communication systems also form landscapes in their own right, and while standardized designs and materials means that there is little local variation in their appearance, the multilayered networks of transport networks form an important part of the economic history of any region (e.g., Ruiz et al.'s (2012) study of Spain).

Designed landscapes of the historic periods – most notably parks and gardens – have seen considerable research, although some cultural practices have left relatively few traces. In Midland England, for example, the enclosure of open fields was also associated with the development of modern fox hunting practices, an example of how landscape character is not just about physical and function components of the landscape (Finch 2004).

The study of historical botany was pioneered by Oliver Rackham (1980) whose studies of trees within the landscape are still hugely important. Hooper's (1970) early work on the dating of hedgerows – and the idea that the number of tree and shrub species in a 30 yd (27 m) length of hedgerow increase with age at a rate of approximately one per hundred years – was very popular for a while but was soon found to be wanting (e.g., Westcott 1988). Recent work has shown that the ecological composition and diversity of a hedge may at least be an indicator of its age relative to others in the vicinity, especially when studied in combination with other facets of landscape character such as field boundary patterns (e.g., Barnes and Williamson 2006; Hill 2007). Some tree species are also of particular cultural significance – ancient yews, for example,

are the tree mostly commonly associated with English churchyards – while some individual trees were of particular historical importance. The place name Heavitree, in Devon, for example, is derived from the Old English *hēafod-trēow*, “tree on which the heads of criminals were placed” (Gover et al. 1932:439-440), and Heavitree saw the last woman to be hanged in England for witchcraft, in 1685 (Exeter Civic Society 2017; and see Whyte 2003 and Tarlow and Dyndor 2015 for studies of the landscapes of execution). Other landscapes that reflect the darker periods of human history include those associated with slavery and plantations (e.g., Montserrat in the West Indies: Miles and Munby 2006).

Many landscapes have more positive cultural associations. The regional name of “Wessex,” in central southern England, was revived by the writer Thomas Hardy who based novels such as *Far From the Madding Crowd* there, while the Stour valley on the Essex-Suffolk border is known as “Constable country” (National Trust 2017a, 2017b) due to its strong association with the painter John Constable. It is also important to try and understand how past communities perceived the landscape, whether through the research of folklorists, the records of travel writers (e.g., Malcolm’s (1794:18) account of Buckinghamshire above), contemporary pictorial representations (e.g., Sillassoo’s 2014 study of Austrian and South German paintings), and theoretical approaches to research (e.g., Johnson’s 2010 study of vernacular architecture).

Some landscapes are associated with defense and conflict. Many military sites were designed to be highly visible statements of power and a deterrent to invasion, such as one of England’s greatest castles that looms above the iconic White Cliffs of Dover. Such landscapes instill a great sense of national pride, although landscapes of conflict can also be extremely poignant. (The vast, silent cemeteries scattered across the Fields of Flanders, for example, are a fitting memorial to the carnage of the First World War.) Within the historic period it may be easy

to assume that there is no need for archaeological investigation of these landscapes as everything is recorded in written form. This is, of course, far from true (e.g., Tipping 2014). More recently, however, the infrastructure of war has become more secret and gone underground – often literally – and as such it is even more vulnerable to being lost without adequate record (e.g., see a series of recent studies of Cold War landscapes in Germany and the UK, and their associated social history: Cocroft and Schofield 2010; Gould 2016; Phimester and Tait 2014).

### **Pulling the evidence altogether**

The sources and techniques that can be used in historic landscape research have been reviewed elsewhere, including this author's *Making Sense of an Historic Landscape* (Rippon 2012a) and *Historic Landscape Analysis* (Rippon 2012b), and Chavarria Arnau and Reynolds' (2015) *Detecting and Understanding Historic Landscapes*. Crucial is the ability to integrate a wide range of data within a spatial framework provided by the physical framework of the historic landscape, most notably the patterns of fields, roads, and settlements as shown on the earliest cartographic sources that accurately depict them. This can be done within the context of a GIS system, or a simpler graphics package. Layers of other data can then be added, including those that underlie the cultural landscape (the natural geology, topography, and soils: e.g., Langhor *et al.* 2015), and those that add depth to our understanding of it. These include sequences of maps of different periods from which datasets -- such as field and place names -- can be derived (e.g., Jones 2015). Other layers of data that can be added include aerial images and LiDAR data from which earthworks and other elements of relict landscapes can be transcribed (e.g., Cowley 2015; Crutchley 2015). A key process is gradually adding landscape components that have been lost in

recent years, and peeling away other features that are provably recent in date (the best demonstration of this “retrogressive” approach remains Williamson’s seminal 1987 paper).

With such an extensive range of data it is important that a research design is carefully thought through. The scale of a study area needs to be matched to the project’s research question: the detailed analysis of a discrete area, such as an individual parish, would allow a very wide range of source material to be used, whereas if a large regional-scale project was to be undertaken with the same amount of staff time then it would only be possible to use a far smaller range of data sets. If research questions are focused on the distinctiveness and identity of a particular community, then a study area needs to cross boundaries in order to contrast the distinctive features of that community or landscape with those in adjacent areas. This can be addressed in a number of ways. Rather than a simple study area focused on just one landscape, a transect could cut across a variety of contrasting landscapes. It is also possible to design a data collection and analysis strategy based upon “nested” study areas where a limited range of source material is studied across a relatively large study area, and a far greater range of material analyzed in depth for a sub-set of that area (e.g., Rippon 2006, 2012a).

The results of this endeavor will hopefully be a better understanding of how the landscape all around us came into being. This can be written in a variety of ways including thematically, exemplified by Wickham-Jones’s (2001) *The Landscape of Scotland* in which a series of chapters explore topics such as settlements, land management, fortifications, industry, transport, religion, and burial. Another approach is chronological, such as Mitchell and Ryan’s (2001) *Reading the Irish Landscape* that takes the reader through each period in the landscape’s history one by one. An alternative approach is to start with a characterization of the modern countryside and then gradually peel off successive layers of evidence, working back toward the

landscape's origins (e.g., Rippon 2012a). Relatively straightforward narratives such as these, whether they be chronological or thematic, all need to be underpinned with clear research questions, aims, and objectives. It is crucial that we record sites and landscapes carefully and objectively, and that this process of description is complemented by improving our understanding of the past, although how this can be achieved has been the subject of much debate. Matthew Johnson's (2007a) *Ideas of Landscape* examined the theoretical framework within which the British tradition of landscape archaeology developed, arguing that it has lacked theoretical rigor. A response from Andrew Fleming (2007) – “Don't bin your boots” – in turn led to Johnson's (2007b) vigorous reply “Don't bin your brain,” while the present author has argued that we need both the objective recording of landscapes and insightful interpretation (Rippon 2009:245).

## **Conclusion**

Over fifty years ago, the landscape historian W. G. Hoskins observed that: “The great Cambridge historian, Maitland, regarded the Ordnance map of England as one of the finest records we have, if only we could learn how to decipher it, and indeed it is. But the landscape itself is an equally revealing document, equally full of significant detail, and difficult to interpret” (Hoskins 1952:289). His somewhat pithier comment, that the landscape is “the richest historical record we possess,” makes the same point (Hoskins 1955:14). Studying the landscape is an inherently interdisciplinary undertaking, and starting with an understanding of the morphology of landscape – its settlement, road, and field boundary patterns – is both a valuable piece of research in itself, and the best way of providing a spatial framework for integrating a wide range of other datasets such as field names, patterns of landholding, and vernacular

architecture. The growing interest in palaeoenvironmental research within the historic period presents us with important challenges, and the need to encourage climate change scientists to engage in a proper dialogue with scholars from the humanities. Hopefully, however, a better understanding of the past will enable us to manage our historic landscapes in ways that both preserve key character-defining features while accommodating change.

## **Bibliography**

Aldred, O. and Fairclough, G. 2003. *Historic Landscape Characterisation: Taking Stock of the Method (The English Heritage National HLC Method Review 2002)*. English Heritage and Somerset County Council, London. <https://www.historicengland.org.uk/images-books/publications/hlc-taking-stock-of-the-method/>.

Barnes, G. and Williamson, T. 2006. *Hedgerow History: Ecology, History and Landscape Character*. Windgather Press, Macclesfield.

Blair, J, ed. 2007. *Early Medieval Water Management*. Oxford University Press, Oxford.

Blair, J., Rippon, S., and Smart, C. forthcoming. *Planning in the Early Medieval Landscape*, Liverpool University Press, Liverpool.

Boldòs, J. 2010. Two Thousand Years of Landscape in a Mediterranean Country: the *PaHisCat* Project and the History of the Catalan Landscape. *Medieval Settlement Research* 25: 1-10.

Buntgen U., Tegel W., Nicolussi K., McCormick M., Frank D., Trouet V., Kaplan J.O., Herzig F., Heussner K.-U., Wanner H., Luterbacher J. and Esper J. 2016. Cooling and Societal Change during the Late Antique Little Ice Age from 536 to Around 660 AD. *Nature Geoscience* 9: 231-6.

- Burke, E. 2013. Review of R. Ellenblum, *The Collapse of the Eastern Mediterranean: Climate Change and the Decline of the East, 950–1072*. *American Historical Review* 118(4): 1286.
- Butcher, R. W. 1941. *The Land of Britain: The Report of the Land Utilisation Survey of Britain, Parts 72-3, Suffolk (East and West)*. Geographic Publications, London.
- Charman D. J., Blundell A., Chiverrell R. C., Hendon D., and Langdon P. G. 2006. Compilation of Non-Annually Resolved Holocene Proxy Climate Records: Stacked Holocene Peatland Palaeo-Water Table Reconstructions from Northern Britain. *Quaternary Science Reviews* 25: 336-350.
- Chavarría Arnau, A. and Reynolds, A. eds. 2015. *Detecting and Understanding Historic Landscapes*, SAP Societa Archeologica S.R.L., Mantova, Italy.
- Cheyett, F. L. 2008. The Disappearance of the Ancient Landscape and the Climatic Anomaly of the Early Middle Ages: A Question to be Pursued. *Early Medieval Europe* 16(2): 127-65.
- Cocroft, W. D. and Schofield, J. 2010. Hohenschönhausen, Berlin: Explorations in Stasiland. *Landscapes* 11(1): 67-83.
- Collins, E. J. T. 1978. *A History of the Orsett Estates 1743-1914*. Thurrock Museums Department Publication 2, Thurrock.
- Comeau, R. 2012. From Tref(gordd) to Tithe: Identifying Settlement Patterns in a North Pembrokeshire Parish. *Landscape History* 33(1): 29-44.
- Coombes, P. and Barber, K. 2005. Environmental Determinism in Holocene Research: Causality or Coincidence, *Area* 37(3): 303-311.
- Cooke, N., Brown, F. and Phillpotts, C. 2008. *From Hunter Gatherers to Huntsmen: A History of the Stansted Landscape*. Framework Archaeology Monograph 2, Oxford.

- Cowley, D. C. 2015. Aerial Photographs and Aerial Reconnaissance for Landscape Studies. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 37-66. SAP Societa Archeologica S.R.L., Mantova, Italy.
- Creighton, O. and Rippon, S. 2017. Conquest, Colonisation and the Countryside: Archaeology and the Mid-11th- to Mid-12th-Century Rural Landscape. In *The Archaeology of the Eleventh Century: Continuities and Transformations*, D. Hadley and C. Dyer, eds., pp. 57-87. Society for Medieval Archaeology Monograph 38, Routledge, London.
- Crutchley, S. 2015. Using Airborne Lidar for Interpreting Archaeological Landscapes. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 67-92. SAP Societa Archeologica S.R.L., Mantova, Italy.
- Daley, T. J., Barber, K. E., Street-Perrott, F. A., Loader, N. J., Marshall, J. D., Crowle, S. F., Fisher, E. H. 2010. Holocene Climate Variability Revealed by Oxygen Isotope Analysis of Sphagnum Cellulose from Walton Moss, Northern England. *Quaternary Science Review* 29: 1590-1601.
- Dudley Stamp, L. 1948. *The Land of Britain: Its Use and Mis-Use*. Longmans, Green, London.
- Ellenblum, R. 2012. *The Collapse of the Eastern Mediterranean: Climate Change and the Decline of the East, 950-1072*. Cambridge University Press, Cambridge.
- Ersgård, L. 2016. Change, Desertion and Survival: An Archaeology of the Late-Medieval Crisis. In *Environment, Society and the Black Death: An Interdisciplinary Approach to the Late Medieval Crisis in Sweden*, P. Lagerås, ed., pp. 69-103. Oxbow, Oxford.
- Exeter Civic Society 2017. The Devon “Witches.” Accessed August 22, 2017.  
<http://www.exetercivicsociety.org.uk/plaques/devon-witches/>.
- Fleming, A. 2007. Don't Bin your Boots! *Landscapes* 8(1): 85-89.



- Finch, J. 2004. "Grass, Grass, Grass": Fox-Hunting and the Creation of the Modern Landscape, *Landscapes* 5(2): 41-52.
- Flieshart, J. 2014. Bridging Cultures During the Cold War: the British Army of the Rhine's (BAOR) Dortmund Garrison and their German Civilian Workers. *Landscapes* 15(2): 132-42.
- Fox, H. 2012. *Dartmoor's Alluring Uplands: Transhumance and Pastoral Management in the Middle Ages*. University of Exeter Press, Exeter.
- Frankpoan, P. 2013. Review of *The Collapse of the Eastern Mediterranean* by R. Ellenblum, *History Today* 63(2): <http://www.historytoday.com/blog/2013/01/collapse-eastern-mediterranean>
- Gerrard, C. with Aston, M. 2007. *The Shapwick Project, Somerset: A Rural Landscape Explored*. Society for Medieval Archaeology Monograph 25, Leeds.
- Goode, A., Proctor, J. and Taylor-Wilson, R. 2008. *Archaeological Investigations at Bishop Burton College, York Road, Bishop Burton, East Riding of Yorkshire*. Unpublished report: Pre-Construct Archaeology. Accessed August 22, 2017. <<https://doi.org/10.5284/1029994>>.
- Gould, D. 2016. St. Thomas's Head and the Archaeology of the Mundane. *Landscapes* 17(1): 45-61.
- Gover, J. E. B., Mawer, A. and Stenton, F. M. 1932. *The Place-Names of Devon, Part II*. English Place-Names Society Volume IX, Cambridge.
- Hall, T. 2016. The Winscombe Project, Somerset, 2014 and 2015. *Medieval Settlement Research* 31: 67-9.

- Havis, R. and Brooks, H. 2004. *Excavations at Stansted Airport 1986-91, Volume 2*. East Anglian Archaeology 107, Chelmsford.
- Hill, D. J. 2007. Hedgerows, Woods, Trees and the Historic Landscape. In *The Shapwick Project, Somerset: A Rural Landscape Explored* by C. Gerrard with M. Aston, 323-32. Society for Medieval Archaeology Monograph 25, Leeds.
- Hooper, M. D. 1970. Dating Hedges. *Area* 4: 63-65.
- Hoskins, W. G. 1952. The Making of the Agrarian Landscape. In *Devonshire Studies*, W. G. Hoskins and H. P. R. Finberg, eds., pp. 289–334. Jonathan Cape, London.
- Hoskins, W. G. 1955. *The Making of the English Landscape*. Hodder and Stoughton, London.
- Johnson, M. 2007a. *Ideas of Landscape*. Blackwell, Oxford.
- Johnson, M. 2007b. Don't Bin your Brain. *Landscapes* 8(2): 126-128.
- Johnson, M. 2010. *English Houses 1300-1800*. Pearson Education, Harlow.
- Jones, R. 2012. *Manure Matters: Historical, Archaeological and Ethnographic Perspectives*. Routledge, London.
- Jones, R. 2015. Place-names in Landscape Archaeology. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 209-224. SAP Societa Archeologica S.R.L., Mantova, Italy.
- Klimenko, V. 2016. Thousand-year History of Northeastern Europe Exploration in the Context of Climatic Change: Medieval to Early Modern Times. *The Holocene* 26(3): 365-379.
- Lagerås, P. 2007. *The Ecology of Expansion and Abandonment: Medieval and Post-Medieval Land-use and Settlement Dynamics in a Landscape Perspective*. National Heritage Board, Stockholm.

- Lake, J. and Edwards, B. 2006a. Farmsteads and Landscape: Towards an Integrated View. *Landscapes* 7(1): 1-36.
- Lake, J. and Edwards, B. 2006b. Buildings and Place: Farmsteads and the Mapping of Change. *Vernacular Architecture* 37: 33-49.
- Langdon, P. G., Barber, K. E., and Lomas-Clarke, S. H. 2004. Reconstructing Climate and Environmental Change in Northern England Through Chironomid and Pollen Analyses: Evidence from Talkin Tarn, Cumbria. *Journal of Paleolimnology* 32:197-213.
- Langhor, R., Nicosia, C., and Devos, Y. 2015. Reading the Soilscape and the Anthropic Impact on its Evolution. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 273-296. SAP Societa Archeologica S.R.L., Mantova, Italy.
- Lasaponara, R. and Masini, N. 2015. Reconnaissance of Archaeology Marks Through Satellite Synthetic Aperture Radar. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 93-108. SAP Societa Archeologica S.R.L., Mantova, Italy.
- Lewis, C. 2016. Test Pit Excavation Within Currently Occupied Rural Settlements: Results of the English CORS Project in 2015. *Medieval Settlement Research* 31: 53-62.
- Mackney, D. 1979. *Soil Survey of England and Wales Map of Land Use Capability*. Ordnance Survey for the Soil Survey of England and Wales, Southampton [Also see <http://www.landis.org.uk/soilscapes/>].
- Malcolm, W. 1794. *General View of the Agriculture of the County of Norfolk*. Philips, London.

- Marshall, W. 1811. *The Review and Abstract of the County Reports to the Board of Agriculture from the Several Agricultural Departments of England in Five Volumes. Volume the Third: Eastern Department*. Longman, Hurst, Rees, Orme and Brown, London.
- McClatchie, M. 2015. Archaeobotany and Past Landscapes. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 297-324. SAP Societa Archeologica S.R.L., Mantova, Italy.
- McDermott F., Matthey D. P. and Hawkesworth C. 2001. Centennial-Scale Holocene Climate Variability Revealed by a High Resolution Speleothem <sup>18</sup>O Record from SW Ireland. *Science* 294: 1328-1331.
- Middleton G. 2012. Nothing Lasts Forever: Environmental Discourse on the Collapse of Past Societies. *Journal of Archaeological Research* 20: 257-307.
- Middleton, J. 1798. *General View of the Agriculture of the County of Middlesex*. Macmillan, London.
- Miles, D. and Munby, J. 2006. Montserrat Before the Volcano: A Survey of the Plantations Prior to the 1995 Eruption. *Landscapes* 7(2): 48-69.
- Millican, K., Dixon, P., Mcinnes, L. and Middleton, M. 2017. Mapping the Historic Landscape: Historic Land-Use Assessment in Scotland. *Landscapes* 18(1): 71-87.
- Ministry of Agriculture, Fisheries and Food. 1979. *Agricultural Land Classification of England and Wales*. Ministry of Agriculture, Fisheries and Food, Pinner.
- Mitchell, F. and Ryan, M. 2001. *Reading the Irish Landscape*. Town House, Dublin.
- National Trust 2017a. Where is Thomas Hardy's Wessex? Accessed August 22, 2017. <https://www.nationaltrust.org.uk/features/where-is-thomas-hardys-wessex>.

- National Trust 2017b. Flatford and Constable Country Walking Trail, East Bergholt, Suffolk.  
Accessed August 22, 2017. <https://www.nationaltrust.org.uk/flatford/trails/flatford-and-constable-country-walk>.
- Overton, M. 1996. *Agricultural Revolution in England: The Transformation of the Agrarian Economy 1500-1850*. Cambridge University Press, Cambridge.
- Page, M. and Jones, R. 2007. Stability and Instability in Medieval Village Plans: Case-Studies in Whittlewood. In *Medieval Landscapes*, M. Gardiner and S. Rippon, eds., pp. 139-152. Windgather Press, Macclesfield.
- Parry, S. 2006. *Raunds Area Survey. An Archaeological Study of the Landscape of Raunds, Northamptonshire 1985-94*. Oxbow, Oxford.
- Phimester, J. and Tait, J. 2014. Corsham's Hidden Landscape, *Landscapes* 15(1): 3-22.
- Quigley, P. 2010. Suburbanisation and Changing Landscape Character: The Example of the Black Country. *Landscapes* 11(2): 45-59.
- Quirós-Castillo, J. A. 2013. Medieval Deserted Villages in Alava (Spain): the Zaballa Project, *Medieval Settlement Research* 28:1-8.
- Rackham, O. 1980. *Ancient Woodland: Its History, Vegetation and Uses in England*. Edward Arnold, London.
- Rippon, S. 2004. *Historic Landscape Analysis: Deciphering the Palimpsest*, Council for British Archaeology, Practical Handbook 16, York.
- Rippon, S. 2006. *Landscape, Community and Colonisation: The North Somerset Levels During the 1<sup>st</sup> to 2<sup>nd</sup> millennia AD*. Council for British Archaeology, Research Report 152, York.

- Rippon, S. 2009. Understanding the Medieval Landscape. In *Reflections: Fifty Years of Medieval Archaeology 1957-2007*, R. Gilchrist and A. Reynolds, eds., pp. 227-254. Society for Medieval Archaeology Monograph 30, Leeds.
- Rippon, S. 2012a. *Making Sense of an Historic Landscape*. Oxford University Press, Oxford.
- Rippon, S. 2012b. *Historic Landscape Analysis* (2nd ed.). Council for British Archaeology, Handbook 12, York.
- Rippon, S., Fyfe, R. M., and Brown, A. G. 2006. Beyond Villages and Open Fields: The Origins and Development of a Historic Landscape Characterised by Dispersed Settlement in South West England. *Medieval Archaeology* 50:31-70.
- Rippon, S., Smart, C., and Pears, B. 2015. *The Fields of Britannia*. Oxford University Press, Oxford.
- Ruiz, R., Rodríguez, F. R., and Coronado, J. M. 2015. Exploring Landscapes Through Modern Roads: Historic Transport Corridors in Spain. *Landscapes* 16(1):44-62.
- Sillasoo, Ü. 2014. Landscapes, Vegetation, and Folklore in Late Medieval Art: An Iconographic Study Based on Selected Austrian and South German Panel Paintings. *Landscape Research* 39(4):455-479,
- Somerset Vernacular Buildings Research Group 2010. *Traditional Buildings in the Parish of Stogursey*. Somerset Vernacular Buildings Research Group, n.p.
- Sykes, N. 2015. The Landscape Zooarchaeology of Medieval England. In *Detecting and Understanding Historic Landscapes*, A. Chavarría Arnau and A. Reynolds, eds., pp. 325-334. SAP Societa Archeologica S.R.L., Mantova, Italy.
- Tarlow, S. and Dyndor, Z. 2015. The Landscape of the Gibbet. *Landscape History* 36(1): 71-88.

- Thomas, R. M. 2006. Mapping the Towns: English Heritage's Urban Survey and Characterisation Programme. *Landscapes* 7(1):68-92.
- Thorn, C. and Thorn, F. 1985. *Domesday Book: Devon*. Phillimore, Chichester.
- Timby, J., Brown, R., Biddulph, E., Hardy, A., and Powell, A. 2007. *A Slice Through Rural Essex: Archaeological Discoveries from the A120 Between Stansted Airport and Braintree*. Oxford Archaeology and Wessex Archaeology, Oxford.
- Tipping, R. 2014. Reconstructing Battles and Battlefields; Scientific Solutions to Historical Problems at Bannockburn, Scotland. *Landscapes* 15(2):119-131.
- Trachet, J., Poulain, M., Delefortrie, S., Van Meirvenne, M. and De Clercq, W. 2017. Making a Mountain Out of a Molehill? A Low-cost and Time-Efficient Molehill Survey of the Lost Medieval Harbor Site of Monnikerede (Belgium). *Journal of Field Archaeology* 42(6) doi: <http://hdl.handle.net/1854/LU-8501123>.
- Turney C., Baillie M., Palmer J. and Brown D. 2006. Holocene Climatic Change and Past Irish Societal Response. *Journal of Archaeological Science* 33(1):34-38.
- van Geel B., Bokovenko N. A., Burova N. D., Chugunov K. V., Dergachev V. A., Dirksen V. G., Kulkova, M., Nagler, A., Parzinger H., van der Plicht J., Vasiliev S.S. and Zaitseva, G. I. 2004. Climate Change and the Expansion of the Scythian Culture After 850 BC, a Hypothesis. *Journal of Archaeological Science* 31(12):1735-1742.
- Westcott, K. A. 1988. *Roadford Reservoir Project Hedgerow Survey*. Unpublished report: Exeter Museums Archaeological Field Unit Report 88.09, Exeter.
- Whyte, N. 2003. The Deviant Dead in the Norfolk landscape. *Landscapes* 4(1):24-39.
- Wickham-Jones, C. 2001. *The Landscape of Scotland*. Tempus, Stroud.

- Willatts, E. C. 1937. *The Land of Britain: The Report of the Land Utilisation Survey of Britain, Part 79, Middlesex and the London Region*. Geographic Publications, London.
- Williamson, T. 1987. Early Co-axial Field Systems on the East Anglian Boulder Clays. *Proceedings of the Prehistoric Society* 53:419-432.
- Williamson, T. 2008. *Sutton Hoo and its Landscape: The Context of Monuments*. Oxbow, Oxford.
- Wilson, R., Miles, D., Loader, N. J., Melvin, T., Cunningham, L., Cooper, R. and Briffa, K. 2013. A Millennial long March–July Precipitation Reconstruction for Southern-Central England. *Climate Dynamics* 40:997-1017.
- Wright, D. W. 2015. *Middle Saxon Settlement and Society: The Changing Rural Communities of Central and Eastern England*. Archaeopress, Oxford.
- Young, G. H. F. *et al.*, 2015. Oxygen stable isotope ratios from British oak tree-rings provide a strong and consistent record of past changes in summer rainfall.” *Climate Dynamics* 45: 3609–3622.

[CAPTIONS]



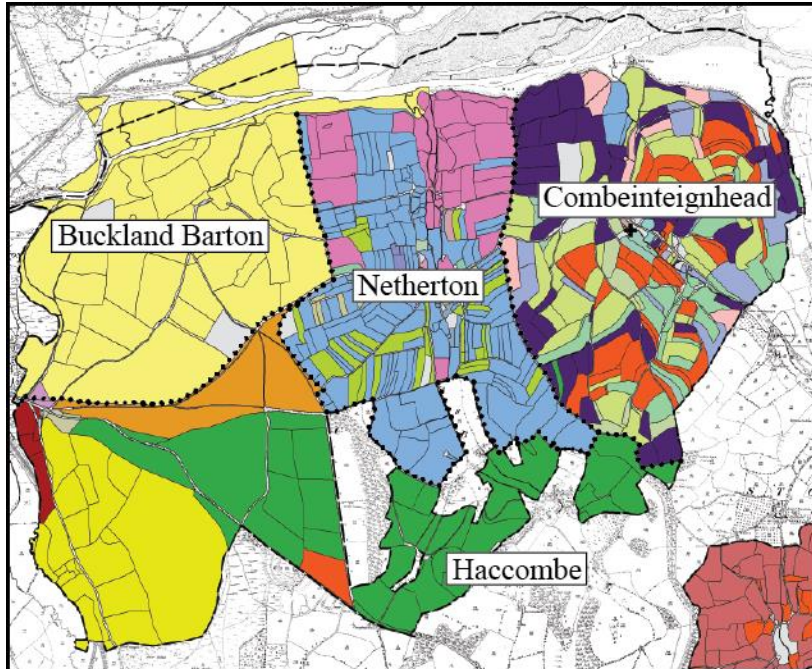


Figure 1: Transcription of the Combeinteignhead tithe map, in Devon, UK, by Phil Knibb

showing the pattern of land-occupancy (recorded in the Tithe apportionment) that was highly fragmented in the vill of Netherton and Combeinteignhead itself, with virtually all the land in Buckland Barton lying within a single tenement.

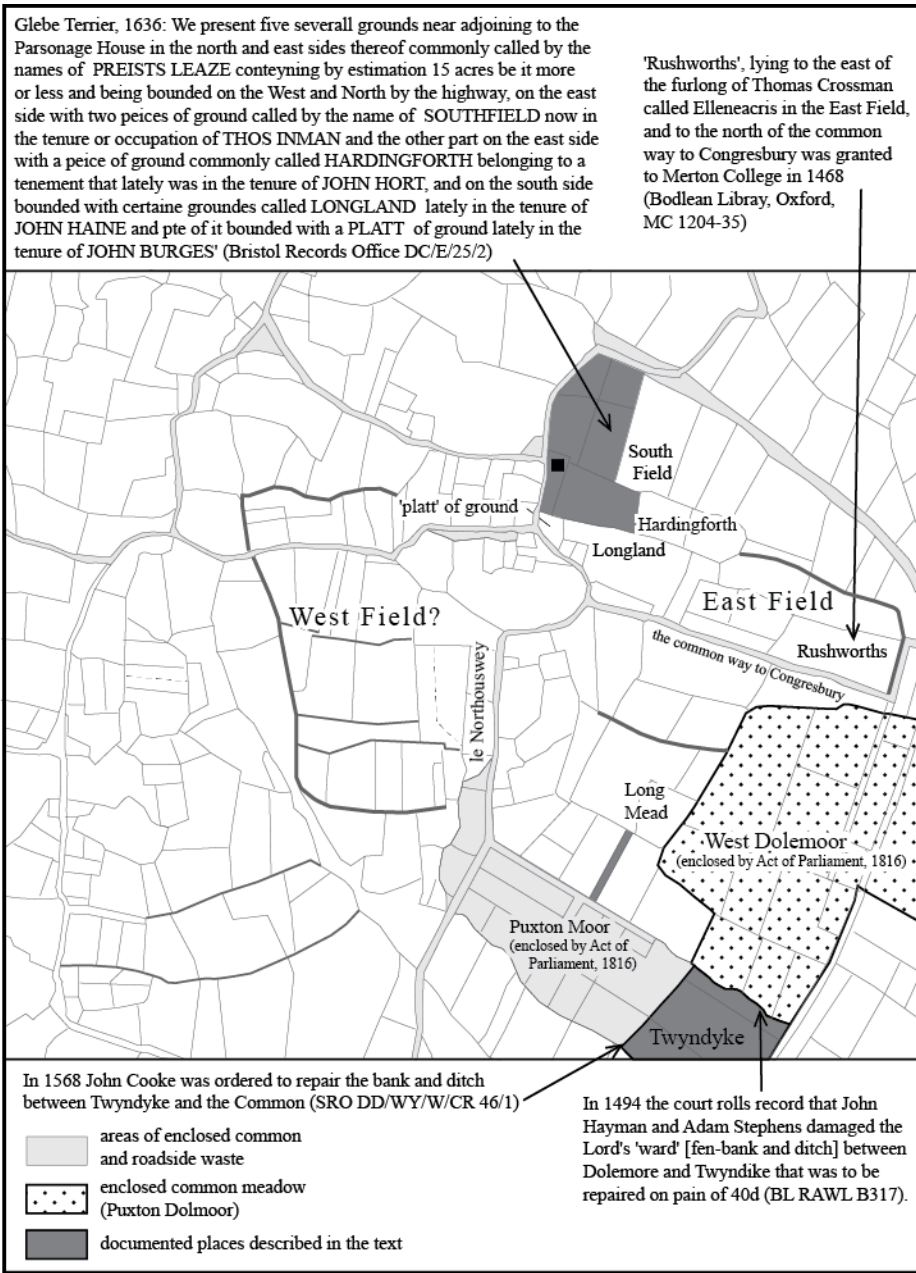


Figure 2: An example of giving a spatial context to documentary references: Puxton, in Somerset, UK (after Rippon 2006, fig. 2.5).