

The Late Bronze Age and Iron Age

The Late Bronze Age and Iron Age Specialist Group was convened by David Heslop and included Ed Caswell, Colin Haselgrove, Tom Moore, Don O'Meara, Ben Roberts, Ed Caswell, Steve Sherlock, Peter Topping and Rob Young

History of research

The study of later prehistoric period in North-East England has often seemed overshadowed by work on the preceding Neolithic and Early Bronze Age periods and the succeeding Roman era; both periods which left upstanding and often spectacular archaeological remains. Over the past decade, however, advances have been made in all of the major research themes that apply to this period, allowing new models of settlement development to be drawn-up and tested against new discoveries.

The planning system (Planning Policy Statement 5, which briefly superseded PPG16, before being replaced by the current National Planning Policy Framework) has continued to promote the excavation of important settlement sites using open-area techniques, allowing them to be understood in their wider landscape context. Perhaps this period has been the greatest beneficiary of routine reconnaissance prospection in advance of development.

For much of the 19th and 20th centuries, archaeological research did not focus on later prehistory; the emphasis at the universities of Newcastle and Durham was traditionally on Roman military and Anglo-Saxon ecclesiastical archaeology. Although there was a small amount of 19th century antiquarian work, such as the plans of hillforts drawn by the Duke of Northumberland's antiquarian, Henry MacLauchlan (MacLauchlan 1919-22, 469), there was little significant archaeological endeavour. Notable exceptions include the Berwickshire Naturalist's Club, which led to the pioneering work of George Tate in the 1860s (Tate 1863a; 1863b) and Revd George Rome Hall (in the 1880s) on native settlements in Northumberland (e.g. Hall 1879).

During the 1930s important work continued in Northumberland, including Thomas Wake's investigations at Witchy Neuk, and those of Howard Kilbride-Jones at the Roman Iron Age settlement at Milking Gap (Wake 1939; Kilbride-Jones 1938). The first major phase of research into this period, however, only commenced after World War II. The most important figure in establishing later prehistory as a significant field of study in the region was George Jobey, who was probably inspired by work carried out in the Scottish Borders by Peggy Piggot, Kenneth Steer and Richard Feachem in the 1940 and 50s (e.g. Piggot 1948; Steer 1949; Feachem 1956; 1960). Following his appointment as a tutor in the extramural department at King's College, Newcastle (later the University of Newcastle), Jobey excavated major sites at Huckhoe, West Brandon, High Knowes, Hartburn and Belling Law (Jobey 1959; 1962; 1968; 1973a; 1977). Following the establishment of the Department of Archaeology at Newcastle in the early 1970s he was appointed first to a Readership and then to a personal Chair in Prehistoric Archaeology. The importance of Jobey's work centres on his systematic classification of the numerous, and previously largely ignored, native sites in the area, testing out hypotheses against excavation work and developing a chronology for the prehistoric period. Although best known for his work in the Cheviots, he also studied sites in

lowland areas, such as Burradon, Hartburn and Marden (Haselgrove 2002, 57; Jobey 1963; 1970; 1973a).

To the south of the Tyne there was no equivalent to the work of Jobey in the 1950s to 1960s. In the following decade, however, the work of Denis Coggins in Teesdale culminated in an MA thesis at the University of Durham (published in 1986) which laid the groundwork for the study of the later prehistory of parts of the North Pennines. Coggins collaborated with Kenneth Fairless on several key sites, including Forcegarth Pastures (Fairless and Coggins 1980; 1986) and Bracken Rigg (Coggins and Fairless 1983), who was to write his PhD thesis on the Iron Age in the North-East (Fairless 1989). There has been little work on the North Pennines outside Teesdale, however, though Rob Young and Jane Webster have completed an extensive programme of work on Bollihope Common (Young and Webster in prep).

In the lowlands of Durham, the increased number of aerial photographs of the area in the 1970s began to enhance the knowledge of a poorly understood area (e.g. Harding 1979). A more detailed understanding of the archaeology of the region was provided by the Durham Archaeological Survey (1983-87), which took five study areas (c. 250 sq km) and field-walked around 5% (c. 10% of available arable land) (Haselgrove *et al* 1988). Only a small quantity of later prehistoric pottery was recovered, however, and Haselgrove has expressed scepticism about the use of field-walking in identifying settlements of this period (Haselgrove 2002, 54).

Overall, the contribution of aerial photography has been extremely significant in expanding our knowledge of later prehistory, with individual flyers focusing on specific regions, for example, Norman McCord (1991) and Tim Gates in Northumberland (2004); Raymond Selkirk (1983) and Denis Harding (1979) in County Durham; and Blaise Vyner and Leslie Still on Teesside (Still and Vyner 1986; Still *et al* 1989). In Central Durham and Teesside, for example, aerial photography has revealed the cropmarks of a series of rectilinear enclosures (Haselgrove and Allon 1982, 26-27, fig 1). Several of these have now been excavated, including Coxhoe, West Brandon and Thorpe Thewles (Haselgrove and Allon 1982; Jobey 1962; Heslop 1987). Whereas sites such as Coxhoe and Shadforth are situated on the boundary between the boulder clay deposits and the Magnesian Limestone, similar enclosures are largely absent from the Magnesian Limestone Plateau itself.

If the tremendous rise in the number of archaeological sites followed what might be termed the *aerial photography revolution* of the seventies and eighties, starting in the late 90s, a second wave of site recognition and recording might be termed *the geophysical revolution*, resulting from the routine geophysical survey of green-field sites in advance of proposed development. With the general release of Environment Agency LIDAR data in 2016, we are perhaps on the verge of a third revolution in site recognition and discrimination. It will have greatest impact in marginal and upland areas, where the LIDAR data can show sites covered in woodland, but even on heavily ploughed agricultural land, it is proving surprisingly useful. At Morley Hill Farm, north of Newcastle, geophysics in advance of house building revealed a second enclosure next to the previously known earthwork enclosure. There is no trace on the ground in the ploughed field but it can be seen on the LIDAR coverage, as a very faint earthwork. At Newcastle University, David Astbury is researching the archaeological uses of LIDAR and satellite imaging for the northern part of our area, complimenting similar initiatives in the North Pennines by Paul Frodsham and others.

The 2007 research framework highlighted the impact of PPG 16 in the scope and character of archaeological mitigation in advance of development. The changes noted then have accelerated with improvements in the efficiency of reconnaissance fieldwork and extensive, strip-and-record excavation strategies. Of particular importance has been the drive from central government for Local Authorities to produce strategic plans aimed at releasing land for house building. Regional Spatial Strategies, although revoked as planning guidance in 2010, established housing targets for Local Authorities which informed individual Core Strategies and Local Plans. By 2031, over 150,000 new houses will be constructed in the region (see Appendix 1 for details), and at a rule-of-thumb average of 30 dwellings per hectare, that represents over 5,000 hectares of largely green-field landscape newly subject to investigation. By 2017, the pre-decision assessment and evaluation of these new allocations was well advanced, and a large number of new later prehistoric sites have become subject to recording before destruction. It should be stressed, however, that this does not represent a random transect across the landscape. Most of the new build is on the periphery of existing conurbation (Fig 1) with almost nothing in the coastal margins or more than a mile or two west of the A1. Further discoveries have resulted from infra-structure improvements and continuing, though decreasing, surface-mining and quarrying.

The period has continued to benefit from an excellent record of publication of fieldwork, so that all of the major excavations described in NEERF1 as “forthcoming” are now in print. The published record has been supplemented by the dissemination of research from academic institutions, with Phds on settlement (Anderson 2012, and Sherlock 2012), dating (Hamilton 2010, and metalwork hoarding (Poyer 2015). Catherine Ross has looked at evidence for the tribal structure of the region (Ross 2011), The Tyne-Forth Prehistory Forum, led by the Universities of Newcastle, Leicester and Stirling, has given a major impetus to the study of later prehistoric Central Britain, holding seven colloquia and producing a major publication of new work, “Prehistory without borders” (Crellin *et al* 2016).

Perhaps the most important single development has been the improvement in site dating made possible by the application of Bayesian modelling of sites that have stubbornly refused to yield dateable artefacts (Hamilton 2010 and 2016). This takes two main dimensions; improving confidence in stratigraphic sequences within site phasing, most strikingly seen at Stanwick (Hamilton 2016, &&) and in dating developments between sites, as for example charting the beginning and end dating brackets for Cheviot hillforts (Passmore and Waddington 2012, 228, Table 7.3) or assigning a date to the appearance of the large ditched enclosure in the Late Iron Age (Hamilton 2016, 238, Fig 17.10).

In the north and west of the region, innovative landscape research programmes have made major advances in our understanding of settlement, interlacing developer funding with academic collaboration in the Till-Tweed Programme (Passmore & Waddington 2009 & 2012), or utilizing community archaeology resources in the North Pennines with the Altogether Archaeology Project, led by Paul Frodsham.

Existing research frameworks

Unlike, for example, the Romano-British period (Historic England 2012), the Iron Age lacks a current Historic England Research Strategy, and the 2002 Prehistoric Society/Trust for Wessex Archaeology position paper “Understanding the British Iron Age: An Agenda for Action” (Haselgrove *et al* 2002) remains the most recent national overview. At a local or sub-regional level, only the Northumberland National Park has a published agenda that comprehensively covers this period (Northumberland National Park 2010).

Further afield, the Scottish Archaeological Research Framework is a multi-authored, multi-disciplinary collaborative programme which aims to provide a dynamic and reflexive research resource, with modules covering the regions of the country. The South East Scotland Research Framework covers the local authority areas of the City of Edinburgh, East Lothian, West Lothian and the Scottish Borders. It started in June 2017 and is due for completion in June 2019.

Climate and landscape

Palaeo-environmental research has been focussed on the river catchments that drain the northern uplands under university direction, with less being done where development-led archaeology predominates on the lowland fringes of the modern conurbations. Community archaeology schemes do not lend themselves to this type of work, but perhaps more could be done in the future.

Richard Tipping’s Bowmont Valley research spanned the Scottish border, and examines the climatic context of prehistoric settlement and agriculture (Tipping 2010). It generated a robust, fine-grained data set which could be dated with confidence. The dramatic shifts in population, interpreted by Colin Burgess as the result of catastrophic natural events taking place from the 12th cen BC, are explained in terms of social and subsistence responses to climatic variation: a warmer, drier Mid-Bronze Age cooled after 1150 cal BC with a fluctuating but decisive “wet-shift” noted across N-W Europe until the mid-first millennium BC (Tipping 2016, 195). A warmer period followed, with a peak in the late pre-Roman Iron Age, where temperatures were perhaps a degree higher than mid-20th century levels (Passmore and Waddington 2012, 230). In southern Scotland the apparent abandonment of the higher ground, from Early Bronze Age levels, is seen in terms of adaptations to farming practice that involved grazing but not living on the higher moors (Halliday 1993).

Site-based work has been successful in defining the ecological environs of the site, for example at East and West Brunton, where macro-fossils from the water-logged enclosure ditch primary fills show an open landscape, with herb to tree ratios consistently around the 50-70% in favour of the former. Pollen was poorly preserved, hinting at periodic drying of the ditch (Hodgson 2012, 181 and Fig 98). At nearby Morley Hill Farm, Newcastle, current evaluation by Durham University recommends further work on the Late Iron Age enclosure ditch there (Archaeological Services Durham University 2015 Report 3815).

Climate data can be inferred from wider archaeological interpretation. Steve Willis suggests that one possible reason for the apparent abandonment of salt-making on the North East coast may be climatic variations in coastal evaporation rates (Willis 2016, 261). The onset of

wetter conditions in this period is argued at Street House, Loftus, where the presence of wetland taxa like sedges and spike rush, reflect both the increase of wetland and the need to expand cultivation into those less-favourable margins (Sherlock 2007, 41). At East Wideopen South, Newcastle, the contemporary environment was characterized as a lowland heathland, a habitat usually associated with bogs, scrub woodland, scattered trees and acid grassland (Archaeological Services Durham University 2017, 38).

There is a high degree of regional variation in the survival of later prehistoric field systems in the North-East. In lowland areas they are highly degraded, with survival limited to the most resistant, subsoil penetrating sections of field-boundary, but such features are becoming increasingly familiar through large scale excavation, in addition to those known from aerial photographs. This contrasts with the better-preserved upland networks, where both boundaries and the textured surfaces resulting from agricultural activity can survive in exceptional circumstances. Here, the impact of LIDAR coverage has been most dramatic, with extensive new systems being recorded on the North Pennines and the northern uplands. (refs)

On the lowlands, further systematic plotting of existing aerial photographs and would undoubtedly reveal more systems. Geophysical work around some sites, such as Dinnington in County Durham (Biggins *et al* 1997), already shows evidence for the presence of linear pit alignments which may have served as some kind of land division. Short lengths of field boundaries are frequently found in geophysical surveys in advance of green-field development, although it is often difficult to discriminate between field boundaries and smaller enclosures.

For a number of sites when landscape plans are available, either from geophysics, excavation or a combination of both, the patterns of linear boundaries are often linked to one long arterial boundary, which is often utilized to form one side of a ?later enclosure. These may be the primary landscape divisions, and might be equivalent to the pit alignments, which in certain instances, could be replaced with substantial ditched boundaries, as at Ferrybridge, West Yorkshire (Roberts 2005, fig 60) or linked into continuous ditches, as happens adjacent to the enclosure which appears to be appended to the pit alignment at Shotton North East (Hodgson *et al* 2012, 107, fig 55). Further south, the Scots Dyke runs for almost 10 km s between Stanwick and the Swale, and is thought to have run north for an unknown distance (Haselgrove 2016, 23). Like the group of four pit alignments north of Newcastle (Hodgson *et al* 2012, 107), it is on the same general alignment to the Great North Road. Arterial boundaries are seen at in the far north of the region at Ford Westfield, near Berwick; Marleyknowe, Wooler (Passmore and Waddington 2012 Fig 3.13) and Mardon SE1, Cornhill-on-Tweed (Gate2012, 92, Fig 3.19, TT2, 105) at Pegswood Moor (Proctor 2009, 5) at Shotton north-East (Hodgson *et al* 2012, 99, Fig 54) at Brenkley Lane Open Mine (Headland Archaeology 2015, Fig 1), possibly at East Wideopen South (ASUD 2014, Fig 3, where the west side of the curvilinear ditched enclosure appears to be laid-off a N-S ditch which runs beyond the excavation area). Further south, the Tees Valley sites often display this arrangement; eg Dixon's Bank, Middlesbrough (Ditch A; Sherlock 2012, 116, Fig 7.6), Street House, Loftus (Sherlock 2007, Fig 16), Manfield, Crabby Plantation and possibly Rock Castle, near Stanwick (Fitts *et al* 1994). In several instances, the arterial boundary is double-ditched,

to form a drove-way (Ford Westfield, Berwick, Gates 2012, 92) or connects with a driveway (Marleyknowe, Street House).

The smaller ditched boundaries spread out from the focus of settlement, branching off the arterial boundaries, when present. There is less evidence of settlements being embedded into existing field systems. In many instances, field boundaries do not appear to extend into the landscape between settlements, as is seen with, for example, the pre-Roman Iron Age rectilinear 'brickwork-like' field systems at Low Common, Whitwood and Ferrybridge, West Yorkshire (Burgess and Roberts 2004; Roberts 2005) or the coaxial fields at Wattle Syke (Martin *et al* 2013, 17). The palaeo-environmental evidence shows that the landscape is largely de-forested by the turn of the millennium (Tipping 1997, 245) but the open areas are not partitioned into field blocks but may be a shifting pattern of open ploughlands and stock runs, divided by belts of shrub and forest, which would have provided their own suite of resources for foraging and fuel collection. Labour was only expended on digging ditched boundaries to manage the arable/livestock interface in proximity to the settlement. The social importance of this activity is postulated by Adrian Chadwick (1999, 163) where the ditched boundary is important in affirming communal relations and identity.

In the uplands, particularly in Northumberland, aerial survey remains crucial (Gates 1997; 1999; 2000; 2012; Gates and Deegan 2009) and reveals some relative dating information. For example, at Greenlee Lough, cord rig is overlain by a Roman camp, and at Cawfield Shield a Roman aqueduct cuts through the cord rig (Gates 2004, 243, fig 16.3). Field systems also survive, often associated with hillforts, such as West Hill, Kirknewton (Oswald 2004). Cord rig and lazy beds also appear to be associated with Wether Hill. There are also large areas of cord rig and terracing in Coquetdale and other parts of the National Park. "The major discovery of the South-East Cheviot Project was the recognition of the survival of evidence for extensive prehistoric landscape organization and land-use, ranging in scale from major linear boundaries articulating large tracts of the landscape to field systems and small agricultural plots"(South-East Cheviot Project, 11). These earthworks are of national importance, but remain frustratingly undated.

Field boundaries survive as earthworks across swathes of the North Pennines. Areas of particularly good survival include the South Tyne Valley below Ayle common and the Nent Valley below Newshield Moss (Oakley *et al* 2012, 25). In the Nent Valley, the field boundaries follow the contours, but in the South Tyne Valley, they run obliquely down the slope. Close to Stanhope there are surviving coaxial field systems linked to hillside lynchets (Young pers comm) reminiscent of published landscapes on the Yorkshire Pennines, eg in Swaledale, where the major divisions, which demonstrably started in the Bronze Age, were still visible, respected and used, during the Late Iron Age and Romano-British periods, perhaps as remnant hedges (Laurie *et al*, 2010, 2). The longevity of landscape features is seen around Alston, at Kirkside Wood and also at Fairhill, where three curvilinear enclosures post-date the surrounding fields system of positive and negative lynchets (Oakley *et al* 2012, 26)

The subsistence economy

Environmental evidence for the later prehistoric period in the North-East is hugely varied. The sequence of woodland clearance in advance of permanent agricultural regimes has now been established across much of the region, with the exact pace being dependant on local condition. Tipping has established that the increase in agriculture in the region dated to the Late Iron Age and was not related to the impact of Roman settlement, an opinion echoed by McCarthy and Huntley (McCarthy 1995; 1997; Huntley 2002).

Evidence from plant macrofossils has also been of assistance in determining patterns in farming. Bronze Age sites such as Eston Nab (Teesside), and Whitton Hill site 2 (Northumberland) produced a range of cereals, including emmer wheat, barley and small amounts of spelt (Vyner 1988; van der Veen 1984; 1992). Elsewhere, the Late Bronze Age and Early Iron Age are still under-represented in the data, for example on the Northumberland Coastal Plain sites, where the early phases did not sample well, but spelt was probably more important than emmer (Hodgson *et al* 2012, 166). Hillfort assemblages from Dod Law and Murton in Northumberland were dominated by hulled barley (Smith 1988; van der Veen 1985). A very small sample from Harehaugh excavated in 2002 had spelt wheat, barley and hazelnut (Carlton 2011, 104).

For the later Iron Age, the pioneering work by van der Veen, (1992) still holds true, but needs modification. Two modes of cereal production were recognised, a Group A mode of intensive, well-manured, cultivation of emmer and barley north of the River Tyne, and a Group B which saw spelt and barley being grown on a larger scale, often on poorer soils south of the Tyne. A number of new assemblages have tested this model, which remains robust apart from the need to include sites in the Northumbrian lowland, possibly up to the Tweed, in Group B. With that proviso, all the sites excavated in the region conform to the model.

Bone survival in the acidic soils of northern Britain is, in general, poor, with an acidity gradient in the soil often leaving only the enamel of teeth and fragments of the most robust part of the skeleton. The publication of the Stanwick assemblage provides, for the first time, comparative data to Thorpe Thewles (Stockton), noting that the assemblage at Stanwick equates with the later, unenclosed phase at Thorpe Thewles. James Rackham looked at both assemblages (Rackham 1987; 2016) and noted significant similarities in the makeup of the livestock and in the patterns of husbandry, showing on both sites that meat was a very important part of the diet, with beef predominating over mutton and lamb (although the species count might be the same). At Stanwick, about a third of the cattle were culled in the 3rd to 5th year, with perhaps 50% achieving full maturity. At Thorpe Thewles the Phase II (c 300-100 BC) figure was 40%, rising to 60% in Phase II (1st Cen BC-1st cen AD). The smaller, less well-preserved assemblage at Catcote shows similar proportions, with mandibles showing over 50% of the beasts reaching maturity (Hodgson 1968 & Vyner and Daniels 1987). It is difficult to use data from the more poorly preserved assemblages; at Needles Eye the only group was from large enclosure ditches (Phase 2.5-2.8) and the heavy predominance of adults is probably a survival bias (Reilly 2012, 87).

The well preserved assemblages have low percentages of other domesticates and extremely low counts for wild fauna. Pig are present but at low levels. At Thorpe Thewles they were slaughtered young and only a very few adults were present in the deposits, but that their

importance increased in the later periods (Rackham 1987, 105-6). At Stanwick there was insufficient data for any analysis of the slaughter age of pigs. Rackham notes a general survival bias that under-represents the importance of pig in the Iron Age diet – the number of loose pig teeth is much higher than the number of surviving mandibles would predict, hinting at food preparation practices that fragment pig bones disproportionately. (Rackham 2016, 318).

The Red deer proximal at Needles Eye may be significant, being one of 12 age-able and species identified bones, whereas at Thorpe Thewles there were three fragments from over 8,000 and at Stanwick, one red deer and two roe deer from 34,604 (Reilly, 2012,90; Rackham 1987, 106; Rackham 2016, 319). As with most Iron Age communities, on north east sites, fish forms almost no part of the protein intake on sites in our region (Willis 2009; Rackham 2016, 319).

Settlement

The NEERF1 observation that later prehistoric settlement archaeology settlement archaeology is heavily biased towards the later Iron Age remains largely true, but the frequent recognition of Late Bronze Age and Early Iron Age antecedents on many later settlements, particularly in the north of the study area, has shown that this may well be a factor of archaeological observation rather than a reflection of the density of occupation of the landscape. Earlier settlements lack easily identifiable deep enclosure ditches and substantial house ring ditches that are such diagnostic features of post 4th century BC sites. This is not a local problem; Knight observes the same situation in the Trent Valley (Knight, 2007, 193). A further factor which has not been discussed may be the extent to which late Iron Age and R-B activity, particularly ploughing around settlements. This may have edited the archaeological record by removing the faint traces of the ring-groove houses and shallow ditched boundaries of early first millennium occupation, and giving enhanced survival to the space covered by later, unploughed enclosures, long before the damage done by modern deep ploughing has further obliterated evidence.

As the pace of excavation has increased, there has been a concomitant move away from the dominance of AP inspired morphological studies, and although still the only landscape-wide source of evidence, the dangers of defining cultural identity by the distribution of deep ditches is well appreciated (Haselgrove 2016, 371.). It is possible that ditched enclosures, rather than representing the typical architecture of the average agricultural settlement, were structures specially created for social events within the life of the community, and that their size, form, relationship to the surrounding landscape and life-span were determined by complex social and ideological dynamics.

Cleveland and east Durham

The more-extensively excavated sites described in the previous Resource Assessment are mainly found in Cleveland, the most significant being Thorpe Thewles, Stockton (Heslop 1987), Catcote, Hartlepool (Long 1988; Vyner and Daniels 1989), Foxrush Farm, Redcar

(ref??), , Dixon's Bank and Bonnygrove Farm, Nunthorpe (Annis 1996), Ingleby Barwick, Stockton Willis and Carne, 2013) and Street House Farm (Sherlock 2007). To this list can be added further work at Street House Farm, Loftus (Steve Sherlock, forthcoming); Greatham, Hartlepool (Northern Archaeological Associates 2016), Sandhill, Ingleby Barwick (Archaeological Services Durham University 2014) and Green Lane, Yarm (Northern Archaeological Associates 2014)

In South Durham, sites excavated in the decades up to 2006 (Coxhoe, West Brandon, and Pig Hill, Haswell (Haselgrove and Allon 1982; Jobey 1962; Figure 20 Holme House, Piercebridge (Harding 1984), have been supplemented by a further half dozen sites: Hilltop Farm, Durham (Proctor 2007); Wheatley/Bowburn, Durham (Archaeological Services Durham University 2008); Haswell Wind Farm, Easington (Archaeological Services Durham University 2012); Thrislington Quarry Ext ((MAP 2007); Great Chilton, Sedgefield (Archaeological Services Durham University 2014) and Amazon Business Park, Newton Aycliffe (WA 20, with perhaps the same number again going through the planning process, but not yet at full mitigation stage. Almost all of the new excavations between Durham and Yarm are located in a band running north-south through the Magnesian Limestone of South-East Durham, Hartlepool and Sedgefield, with a small group in the Tees Valley on Permian sandstone. Only Street House, Loftus, is above the 125 m contour.

The evidence of social stratification and a hierarchy of settlement types can be found at an increasing number of larger focal points across the lowlands and around the upland periphery. Eston Nab remains the only site of the later Bronze Age and early Iron Age to combine absolute dating with pottery, macro-plant fossils and a comprehensible structural sequence. (Vyner 1988). The earliest defences at the hillfort were Late Bronze Age in date; there was also an Early Iron Age boulder wall and an early 5th century BC ditch and bank. Evidence from sites like these suggests that, throughout most of later prehistory, the region was weakly centralised and may have been based on household groups, interconnected by the loose ties of kinship and personal affiliation. A small number of other possible “lowland forts” or “central places” are known, such as Maiden Castle, Durham; possibly nearby Mountjoy, Durham (although evaluation to date has produced only Mid Bronze Age material, Grogan and Hodgson 2011), and Shackleton Hill, Heighington, but these sites remain poorly understood. At Castle Hill, Kirklevington, a possible high-status site has been evaluated during infrastructure works, and yielded eight RC dates from the Early to Mid Iron Age, but this is not yet published (info in Green Lane report, Northern Archaeological Associates 2014, 39.)

When sites do become visible in the Later Iron Age., the pattern of settlement in the Tees Valley has much in common with the lowland regions to the south and north, but Steve Sherlock's synthesis has shown that significant differences observed in the archaeological record identify this area as a sub-region that displays a separate identity to Central Yorkshire, Durham and Tyneside. Differences are seen in the construction, use and after-use treatment of round-houses, in the range of artefacts in use and in the way these objects are used, fragmented and deposited (Sherlock 2012, 118).

For the last two centuries before the Roman conquest, the character of settlement and social organisation in this area must have been dominated by the rise of the royal site at Stanwick, although this is outside the geographical boundary of this study .For this period,

along with the northern fringes of Tyneside, the Tees Valley has the greatest density of known and excavated sites in the North-East. 148 sites are listed in the Stanwick environs survey (roughly between the Wear and the Cleveland hills), at a predicted density of one or two sites per km² (Haselgrove 2016, 372) which compares closely with Nick Hodgson's estimation for enclosure density for the later Iron Age on the Northumberland coastal plain (Hodgson, *et al* 2012, 188).

The Tees Valley distribution is predictably dominated by rectilinear enclosures (96) with only 7 curvilinear and 12 D-shaped. 26 are classed as "open" but with only 20% of the known sites having been excavated, clearly this is a major under-representation, as it often transpires that open phases both precede and follow episodes of enclosure (Haselgrove 2016, 365-8). What, if anything, these differences signify, is not immediately apparent – but there are more D-shaped types south of the river. Less than 10% are curvilinear and none has been excavated in the Tees Valley or Durham. Further afield, the curved enclosure at Pallet Hill, Catterick was found to predate a rectilinear type, but this sequence was reversed at Fawdon Dean, Northumberland (*op cit* 368). Anderson has shown that curvilinears tend to be at higher altitudes to other forms of enclosure (2012, 302). Derek Hamilton's Bayesian modelling has shown that the curvilinear forms are both earlier and later than the rectangular sites, which form a believable horizon around 200 BC (Hamilton 2016, 238). What has been demonstrated is that landscape was both structured and fully occupied, with subsistence technologies that were as advanced as anywhere in the country.

Many of these sites were established, and were flourishing for several generations before the construction of the royal capital of Stanwick, *circa* 80 BC. It is a proof of the productive capacity of the population to generate huge, disposable surpluses that the regional elites were able to build the largest oppida in Northern Europe, the outer perimeter being 7.28 km long and perhaps taking three or four million man hours to erect (*op cit* 458). The extent of the territory that supported such a focus is a topic of intense interest. The Gallo-Belgic imports from Thorpe Thewles and Catcote may well have been re-distributed through Stanwick, but a lack of comparable excavations further north defeats any attempt to map the area of allegiance beyond Teesside. Lindsay Allason-Jones has suggested that the Wear formed a major boundary between polities, arguably more significant than the more usually referenced River Tyne (Allason-Jones 2009)

Recent excavations in Stockton, Hartlepool and South Durham have been filling in gaps in the distribution maps, extending the database of settlement plans and house types, and contributing to the on-going debate about the impact of the Roman Occupation on the local population, without challenging current paradigms. Iron Age enclosures have been recorded at Low Newton and Wynyard Business Park, Stockton, Hilltop Farm, Durham and Thrislington Quarry, Sedgfield.

At Great Chilton, an enclosure and external features discovered by aerial photography were subject to surveyed by geophysical survey and archaeological investigation as part of a community archaeology project. In advance of the RC dating for the site, the earliest possible date is provided by a Phase 1 pit which produced an iron single-jointed snaffle-bit of a type assigned to the 5th cen BC at the chariot burial at Newbridge, Edinburgh, excavated in 2001 (Carter *et al*, 2010, 31-74). The earliest roundhouse was contained within a concentric

palisaded enclosure. It was replaced by a ring-ditch 18 m in diameter defining a platform 14 m across (Archaeological Services Durham University 2014, 12), which is very comparable to the much better preserved ring ditch at Thorpe Thewles (the best-preserved Central House III), which was around 20 m in diameter, with a central platform 13 m across (Heslop 1987, 22).

More complex landscapes running into the Roman period, were recorded at Sandhill, Ingleby Barwick, six phases of Iron Age and Romano-British activity were recorded, in the vicinity of the more fully explored villa excavated in 2003-4 (Willis and Carne 2013). At Green Lane, Yarm, a complex of structures, including two round houses and 12 penannular gullies, was described by the excavator as a “succession of irregularly enclosed and partially enclosed areas was neither completely ‘open’ nor formally enclosed” (Northern Archaeological Associates 2014, 37). A single RC date would suggest a 1st cen BC/AD date. At nearby Mount Leven, Middlesbrough. In 2012, field boundaries, ditched boundaries and overlapping enclosures were excavated in advance of housing development (Archaeological Services Durham University 2012a).

The evolution of a settlement from the fifth cen BC to first cen AD can be followed at Amazon Business Park, Newton Aycliffe. On land originally occupied by a mid Bronze Age flat cremation cemetery and clay quarries, in the mid Iron age two separate but almost certainly contemporary foci were recorded, the northern, open and with three round houses aligned along a linear boundary, the southern with two circular structures, may have been enclosed, but if so, by ditches sufficiently insubstantial to have been ploughed-out around much of the circuit. By the late Iron Age, the later iterations of these two groups seem to be interlinked in a complex landscape of adjoining enclosures, one a D-shaped more substantial enclosure, connected by linear boundaries (Wardell Armstrong 2015)

Another highly significant site, showing how settlements could respond to local environmental conditions, was excavated in 2013 at Greatham, Hartlepool, in advance of engineering works on the edge of Cowpen Salt Marsh. Like Newton Aycliffe, proximity to a Bronze settlement and activity zone may be significant, presumably exploiting the broad spectrum of resources from the nearby carr-lands. Rising sea-levels in the Late Bronze Age may have made these littoral zones more attractive, although the only dates from RC dates from this period are from less-reliable tooth enamel. In the late Iron Age, on the higher ground to the north-east, a series of enclosures were laid of a significant linear boundary, which was re-cut several times, enduring well into the Romano-British period. The horizontal stratigraphy showed the sequence, interpreted as a pair of small enclosures around the being re-fashioned and then incorporated into two-phase field system, which gave R-B C14 dates and which were filled with industrial waste, Roman pottery and midden material. The excavators concluded that the main focus of habitation was nearby, but outside the area excavated. Given the close proximity to the salt marsh, the possibility that salt-production could have formed part of the economy of the settlement, but no briquetage or kiln furniture was recovered. Of interest was the discovery of a small ring-ditch with a second circle appended, separate from the enclosure group and interpreted, on East Yorkshire parallels, as a funerary structure (barrowlet), although no burials survived. (Northern Archaeological Associates 15)

It is now clear that a range of sites made up a mosaic of complex land-uses in our region on the eve of the Roman Conquest. Sites composed of the same basic range of components (round-houses, pen-annular and rectangular gullies, and a wide range of bounding and enclosing linear features of differing scale and function) could be assembled in a variety of different configurations, reflecting differing social functions and status, with some flourishing, while others appear to be abandoned or subject to landscape re-organisation, or possibly being absorbed into larger agglomerations.

The North Pennines

The last decade has seen the sub-region receiving the designation of UNESCO Global Geopark in addition to its AONB status, reflecting a recognition of the importance of the geo-physical heritage. The pastoral/upland environment has exceptionally good earthwork survival but the Alston Block, the Weardale Granite uplands and the limestone pavements of Teesdale are associated with thin, acidic soils with poor potential for the study of organic material.

The relative dearth of development-led archaeology has been balanced by successful programmes of university research and community archaeology, continuing the tradition of detailed fieldwork survey and very carefully targeted research excavation pioneered by Dennis Coggins in the 1970 and 80s. This has been supplemented by work commissioned by English Heritage (now Historic England), principally the Miner-Farmer aerial investigation and mapping project on Alston Moor, as part of the National Mapping Programme.

The Newcastle University research and training excavations at Bollihope has moved on from the Iron Age period to investigate Romano-British metalworking and the development of the later landscape. The publication of the excavation report of the Iron Age round-houses in a small farmstead enclosure is imminent (Rob Young *pers comm*).

The Miner-Farmer aerial mapping has greatly enhanced the understanding of prehistoric settlement and agriculture in the 234 sq km of broad brush survey, 96 sq km of commissioned LIDAR survey (at 50 cm resolution) and a slightly smaller area subject to rapid analytical field survey [area not specified in report]. The survey, based on the historic manor of Alston parts of which are in Northumberland and Durham, addresses a particular lacuna noted in NERRF1 (p££), the absence of archaeological survey in the northern part of the sub-region. 30 enclosures, undated but probably Iron Age/Romano-British, were recorded in the study area (Oakley *et al* 2012, 20). Of these, 25 are thought to represent settlements, and a further three have conjoined enclosures attached to field systems. These may to represent proto-nucleation that developed following the abandonment of the dispersed farmstead, possibly continuing into the post-Roman period. Four isolated and unenclosed circular structures could equally be of Bronze Age date

Community archaeology projects continue to enrich the archaeological record in this region, providing the local HERs with new data of the finest quality, in terms of detail and reliability. Altogether Archaeology has conducted both Historic England Level 1 surveys and detailed Level 3 site investigations at a number of locations.

The Holwick, Upper Teesdale, Survey mapped the landscape of the township of Holwick, with 2.35 sq km being subject to intensive reconnaissance and ground-truthing. Five sites were surveyed at Level 3 of which two have relevance to this period; Wynch Bridge, a Scheduled Iron age /Romano British complex consisting of both circular and rectangular structures amid a multi-period or multi-phase field system; and Holwick Head, a small enclosure on a river terrace, containing a single round house within the levelled, D-shaped platform of the interior (Oxford Archaeology North, 2011)

The Allen Valleys and Hexhamshire Lidar Landscape Survey (Ainsworth 2016) developed methodologies tested at Holwick and in the Miner-Farmer survey to the south-west, tackling a similar sized area to the latter (285 sq km). Lidar was the primary remote-sensing information source, supplemented with aerial photographs and historic mapping. 20 settlement sites were assigned to the prehistoric or Romano-British periods, along with five undated field systems. It was not possible to undertake more detailed, secondary investigation.

The extension of Middleton Quarry, Force Garth, Teesdale, in 2011 required assessment and “strip and record” excavation. A number of possible prehistoric field boundaries and lynchets were recorded by Oxford Archaeology North to enhance the environs of the Coggins sites of Force Garth Pasture North and South.

Across the North Pennines, the cumulative effect of all this archaeological effort has been to transform the information base available for study. The “Lidar revolution” permits archaeologists to be confident that all sites that survive as earthworks within the survey area will be recognised and recorded, and it is possible to take a landscape-wide perspective of land-use and settlement, and address fundamental research questions relevant to this landscape, like the impact of climate change on human occupation.

Along the North and South Tyne Valleys, settlements are found in a relatively narrow strip on south or south/west facing slopes, often terraced or scooped into the hillside, up to about 400 m OD, the upper limit of modern agriculture (Oakley *et al* 2012, 28). Above this contour, the moor-top are completely empty of settlement, although this might be more apparent than real, if the extensive blanket peat and dense moorland are masking earlier landscapes, as was dramatically evidenced following peat fire on Fylingdales Moor, on the North Yorkshire Moors (Vyner 2007). Dennis Coggins identified the 475 m contour as the upper limit of agriculture in Upper Teesdale, where blanket peat is less common (Coggins 1985, 167).

Where complex settlements have developed, like Wych Bridge, Holwick, elements of land boundaries have persisted into the medieval period and it is suggested that episodes of medieval cultivation have been more important in obliterating earlier traces than post-medieval or modern land-use (Oxford Archaeology North 2011, 67).

After a long period of relative neglect, the past two decades have seen the absorption of the North Pennines into the mainstream of archaeological discourse. It is hoped that the next

few years continue the existing trajectory and the opportunity is taken to integrate the wealth of data now available for study into a comprehensive synthesis.

Coastal and South-east Northumberland

Development-led fieldwork has provided the first evidence of landscape organisation and settlement in the lowlands in the Late Bronze Age, north of Newcastle, providing a range of absolute dates for pit alignments, a class of monument more widely known as cropmarks in North Northumberland and South Scotland (Gates and Deegan 2009, 135). Four examples have been excavated, at Fox Covert, Blagdon, Shotton village and Shotton North-East (Hodgson 2012, 107) and another nearby is suspected, but not confirmed, on a geophysical survey at Gardiner's Houses, Dinnington (Biggins 1997). In addition to acting as landscape boundaries, these enigmatic monuments may be useful as markers, in this instance being associated with the movement of people and stock along the major North-South route that became the Great North Road (Vyner 2008, Heslop 2013, 24). To the south, this route crosses the River Tyne at the ancient fording point at Newcastle, where dredging in the late 19th century produced the largest assemblage of late Bronze Age votive weaponry from any river in the country, with the exceptions of the Thames and the Witham.

Andrew Poyer's Phd has catalogued the metal finds from the Tyne, noting the river's pre-eminence in the North-East as a provenance for metal votives, but also that most were dredging finds and the other rivers in the regions have not been subject to river improvement to anything like the same degree (Poyer 2015, 138). A comparison of the number of objects recovered from the Tyne and the Wear is illuminating. Nineteen objects were recovered from the Tyne and five from the Wear. 1886 was the year of maximum dredging activity in the Tyne, when 5,273,585 tons were dredged, whereas in 1885, the peak year for the Wear, less than a tenth of that (428,590 tons) were dredged (Heslop 2013, 25). Excavations in advance of the construction of the Sage Music Centre revealed the presence of a large undated ditch, with a terminal suggesting an opening. This may be a high status enclosure commanding the river crossing and used during ceremonies associated with this significant place in the sacred landscape, but it could equally be a causewayed enclosure, or, as suggested by the excavator, the *vallum* for the lost monastery of Saxon Gateshead (Nolan 2007, 160).

The theme of periodic congregation is significant in describing a class of site becoming increasingly important in the region, the lowland equivalent of the hillfort. With significant earthworks but typically univallate, these enclosures are defined by their scale, being greater than a hectare in size, often using topographical features to supplement the constructed boundary, but not with an eye to maximize the defensive potential of the site. When excavated, they display little evidence of substantial permanent occupation. Needles Eye enclosure, Berwickshire, excavated in 2004-5 and published in 2012, is the most securely dated and fully understood, although less than 15% of the interior has been examined. Evidence of occupation was present – carbonised grain, pottery and quernstones - but no round-houses or other possible dwellings in the area examined, leading the excavator to interpret the site as “a gathering place for the wider community where salt and other commodities were traded and exchanged” to a catchment of densely-settled agricultural and

pastoral land encompassing, perhaps the Tweed, Till and Breamish valleys. (Proctor 2012, 113 & 2016, 200).

The round houses discovered at Tynemouth may be an indication of a coastal promontory fort, though they could be of Romano-British date (Jobey 1967). A site at the Vaux Brewery, Sunderland, evaluated in has revealed a Late Bronze Age enclosure overlooking the River Wear (PCA North 2004). Also in Sunderland district, the site of Humbledon Hill, the subject of geophysical survey in 2003 and evaluation in 2006 and 7, has an inner palisade with late Bronze Age pottery and an outer ditch, 9 m distant, with rampart, dated by Iron Age pottery. The interior had early Bronze Age pits and but most of the eastern half has been destroyed by the construction of a Victorian reservoir.

There may also have been some form of larger fort or enclosure at Dunstanbrugh, which has in the past produced late Iron Age metalwork, (Bosanquet and Charlton 1936) including a recently recognised sword fragment. An important group of ten beehive querns, currently in the English Heritage store at Helmsley, were recorded by John Cruse in 2005. Survey work has recognised earthworks outside the south curtain wall at variance to the medieval defences and overlain with ridge and furrow (Northumberland HER 23479; Oswald *et al* 2006, 30). In the north of the coastal zone, Dod Law West has mid3rd century BC ramparts (Smith 1988-1989). There are, however, no equivalents of the large, fortified sites found in Scotland, such as Eildon Nab or Traprain Law.

As mentioned above, there is little structural evidence that these larger sites were permanent settlement, as still less that a socially separate elite controlled the agricultural production of the population. It may be that the specialness of these sites is displayed in their capacity to accommodate large numbers, if only for short periods, and, by implication, in the type of activities taking place within them. Direct evidence of this comes from Needles Eye, working hollows, pits and levelling deposits contained 89 fragments of briquetage, and salt-affected pottery point to the processing of the raw material rather than the consumption of the traded commodity (Proctor 2016, 209), but too little excavation has taken place on the others to test this hypothesis. These sites were vital in the replication of social structures, being religiously and ideologically significant, but not necessarily the residences of high-ranking individuals, they give physical expression to the way apparently dispersed and socially unstratified communities were interlinked and capable, as at Stanwick or Yeavinger Bell, of colossal feats of co-ordination.

To a large degree, the focus of investigation has continued to concentrate on the south-east of the region (Fig 1, map), following the spatial pattern of development, unlike earlier research excavation, primarily by George Jobey, which could be spread across the geological and topographical range of the county, for example, at Burradon, Hartburn, Huckhoe and Marden (Jobey 1959; 1970; 1973) Most of these sites were small enclosures, probably sufficient for only one household. The site at Burradon was larger in size, and contained several round houses, though it is not clear whether more than one was occupied at any one time (Jobey 1970). The database of settlements of this period has expanded, notable through the systematic analysis of LiDAR data and Google Earth © satellite imagery. These discoveries, which include numerous rectilinear enclosures, increase the overall distribution and density of this site type in the region. In some cases, the analysis has added further

detail to already known sites, including the identification of possible associated boundaries and trackways (David Astbury pers comm).

A number of important sites were in process of excavation and writing-up when NERRF1 was produced in 2006 and many of these are now fully published. Two publications merit special mention a taking forward the research agenda in the region: the excavation of Pegswood Moor, Morpeth (Proctor 2009) and the group of sites on either side of the A1 excavated by Tyne and Wear Museums between 2002 and 2008, and collectively published with the Arbeia Society in the monograph “The Iron Age on the Northumberland Coastal Plain” (Hodgson *et al* 2012), at Dehli Surface Mine, Blagdon Park, Northumberland, extensive field boundaries and roundhouses (Blagdon Park 1) were located just to the south of an unenclosed/palisaded/ditched enclosure sequence (Blagdon Park 2). 6 kms to the south, West Brunton, Newcastle followed a broadly similar trajectory to Blagdon Park 2, whereas at nearby East Brunton,, a palisaded/unenclosed/ditched enclosure sequence was recorded. Much of the evidence cited for the period in this review is derived from these two sources.

As the rate of house-building on the fringes of the conurbation has accelerated, several new sites have been evaluated and excavated in the past decade. In Northumberland, SDA Blyth (AD Archaeology 2016) and St George’s Hospital, Morpeth, (ARS 2016/70); in Newcastle, Brenkley Lane Open Mine (Headland Archaeology 2015), Cell C of the Great North Park (Archaeological Services Durham University 2014), Morley Hill Farm (AD Archaeology 2015), Front Street, Dinnington (Wardell Armstrong 2017) ; in North Tyneside, two sites in East Wideopen (South; Archaeological Services Durham University 2014a: North; Northern Archaeological Associates 2017), West Shiremoor (Archaeological Services Durham University 2017), Cobalt Business Park (TWM 2010), Station Road, Wallsend (Wardell Armstrong 2017); in Sunderland, Murton Lane, Easington (Tyne & Wear Museums 2011) and several sites in Gateshead are at different stages of investigation.

The scope of these excavations, the pioneering application of Bayesian modelling for radiocarbon dates by Derek Hamilton, the quality of the research, combined with the promptness of publication has meant that the results from these sites have formed the framework for a new model of settlement development, that attempts to describe the trajectory of lowland settlement from the mid first millennium to the mid second century AD, in landscapes unhindered by topographical or geological constraints.

The pit alignments of the Late Bronze Age to Early Iron Age date noted earlier (p #3) are evidence that “ landscape clearance, settlement and division were taking place on the Northumberland coastal plain at the same time and in the same way as in regions much further south” (Hodgson *et al* 2012, 186). A site at Murton Lane, Easington, Sunderland, has a rectangular uneven-sided enclosure (longest side 70m, shortest 45 m) with a further ditch parallel to the long axis, forming a possible driveway 5 m wide, although neither of the two entrance gap is on that side of the circuit. No other structures survived in the 1.29 hectares stripped. The ditch was around generally around 1.5 m wide and 0.6 m deep, with sloping sides and edge-derived fills. A range of C14 dates, from wood charcoal or hazel nut shell, focused on the Mid to Late Bronze Age, if the earlier Neolithic dates were excluded as residual. There were no ceramic finds and no diagnostic flint in stratified contexts (TWM 2011). The plan

The contemporary population lived in round-houses in open clusters, sometimes in association with palisades of uncertain function. At Blagdon Park 1, isolated round-houses were either single or possibly grouped in pairs. One, close to a pit alignment, was burnt down in the Early Iron Age (Hodgson 2012, 13). 200 m to the north, a much denser group of possibly 25 circular structures predated a later massive enclosure, but between those two events, a palisaded phase could conceivably have encircled some of the round houses. A gully in the round-house sequence was dated to the Early or Mid Iron Age. (op cit, 17). At Cell C in the Great Park Development, some 7 km to the south, an isolated round-house with a ring-groove and concentric drip gully, was RC dated to the Early Iron Age (Archaeological Services Durham University 2014).

Surface mining around Shotton led to the strip-and-record operations across a wide swath of landscape, over 1 km sq, where it might be expected that all surviving sites in the landscape would be recorded. Four foci of occupation were observed. To the south of Shotton village, among Anglo-Saxon rectangular buildings, a solitary large roundhouse was adjacent to a pit alignment, and to the east of the village, a fragmentary field system of LBA date was in close proximity to the overlapping arcs of two circular structures. NE of the village, a cluster of round houses were associated with the small possibly palisaded rectangular enclosure attached to another length of pit alignment (Hodgson et al 2012, 97), which in plan and form is very similar to the slightly larger Murton Lane enclosure mentioned above.

Undated open settlements of possibly similar character, with at least five curvilinear ditches were recorded at East Wideopen, North, adjacent to but clearly outside a possible contemporary large enclosure or paddock (Northern Archaeological Associates 2017, 15) and at the SDA site at Blyth, where excavation revealed a single round-house along with pits and a number of short gullies of unknown function (ref). Dating of plough-truncated features is often frustrated by the lack of dateable artefacts associated with these early settlements, and the high rate of failure of C14 samples. Given the small size and low visibility of this type of site, it is likely that many more await discovery, and they formed an important part of a complex settlement pattern.

An unenclosed phase at West Brunton had over 40 individual circular ditches, ranging in diameter from 5 m to 12 m, the largest within a small palisade or fence-line (Hodgson et al 69, Fig 39). This phase gave dates in the Mid Iron Age and later, when the number of known sites greatly increases. Clearance of woodland and an intensification of agriculture has been noted above (p#) associated with an increase in population (Tipping 1997, 244).

Almost all of the early first millennium sites have some sort of linear feature within the overall plan. Where enclosure is found, it usually takes the form of timber palisades or fence-lines. These take a wide range of structural forms, and plan sizes. At East Brunton, Phase 1 has three or four concentric palisade lines, the socket of one of which gave a RC date of 770-400 (Hodgson 2012, 49). The purpose of the palisaded boundary is rarely questioned but many do not appear to have easily identifiable practical functions. It is not uncommon for the line of posts to stop abruptly, as is the case at the East Brunton group, none of which makes a complete circuit (Fig 28): if it is argued that the individual feature has been ploughed-out, the palisade cannot have been substantial or robust. At St George's

Hospital, Morpeth, the rectangular middle Iron Age palisades are on the south and west sides (25 m and 30 m resp) of the internal round house, but only part of the western side and not at all on the northern. The ring grooves of the adjacent round houses haven't been ploughed out (Archaeological Research Services 2017, Fig 55). At East Wideopen South, an irregular feature interpreted as a palisade (F311; Section 120, Fig 8) cuts less than 30 cm into the subsoil. From the presence of cobbling within one of the round-houses (8a) and the fact that the edges of the enclosure ditches grade gently to the horizontal (eg S213, Fig 35), no great depth of stratigraphy has been lost to plough erosion (ASDU 2014).

There are no excavated examples of a palisade completely enclosing a round house in the dozen or so sites subject to area excavation, but examples of both curvilinear and rectilinear forms are known on aerial photographs, where accurately plotted, 1 (eg Gates 2012, figs 3.4 and 3.5).

The earliest ditched enclosure from the South East Northumberland sites dates to the Early Iron Age (Phase 2? at Blagdon Park 2; Hodgson 2012, 19). It is relatively small (less than 1.5 m across) and only known on one side, the eastern, with entrance gap, in the same position as the entrance into later massive late Iron Age enclosure, the assumption being that the other three sides were removed by the later ditch in the same position.

Around 200 BC, many of the sites were given very substantial ditched enclosures, with rectilinear plans becoming the predominant form. The sub-region now has excavated plans for ten massive ditched enclosures surrounding one or more circular structures. The five that are fully published (Blagdon Park 2; two at both East and West Brunton) form the basis of a thorough re-appraisal by Neil Hodgson of an archaeology that had changed little from the 1970s. This covers a series of crucial issues: the form and monumentality of the enclosure, the interior spaces and their structures, the contemporary environment and subsistence economy and the social structure and material culture of the local population, and these will not be repeated here (Hodgson et al 2012). Since the publication of that monograph, five new enclosed sites have been excavated; Brenkley Lane Open Mine; East Wideopen-South; West Shiremoor and Station Road, Wallsend, which test the basic models of settlement development outlined at Blagdon Park and the Bruntons.

A massive double-ditched enclosure, excavated by Headland Archaeology in 2015 at Brenkley Lane Open Mine, has an internal element which directly matches that at Blagdon Park 2, less than 3 km to the north (Headland Archaeology 2015). The outer ditch at Brenkley is smaller than that at BP 2 but it is in turn enclosed by a further ditch and driveway system. The Brenkley Lane landscape developed just downslope from a small Bronze Age cremation cemetery on a locally prominent hillock. There are three separate loci of round-houses but the value of the sequence is lessened by the failure of many of the samples to produce C14 dates. The inner enclosure has a fence-like structure which mirrors the eastern side of the enclosure, with entrance gap in the same position, like a ditch in an equivalent position at Blagdon Park 2 - the Phase 2? ditch mentioned above (Hodgson 2012, 19).

The corner and half of one side of large enclosure ditch divided into internal cells was excavated in 2015 at West Shiremoor, but most of the site was under the adjacent A19. The eastern zone, with east facing gateway, contained a sequence of overlapping circular

structures but the observable portion of the western area was empty. A possible palisade was observed in the same position on the eastern ditch as postulated above at Blagdon Pr 2, Phase 2? and Brenkley Lane. Two phases of occupation were recognised in the interior, the latest running into the second century AD.

At Station Road, Wallsend and East Wideopen – South, the interior ditches are very reminiscent of the smaller ditch, Enclosure 1, at East Brunton, being of irregular trapezoidal shape and in having the interior seemingly full of circular structures. Station Road, Wallsend, excavated by Wardell Armstrong in 2015 and 2017, developed from a small open settlement of three or four circular structures of mid-late Iron Age date, into a double enclosure, the outer being later than the inner. In having internal partitions near the entrance, it resembles Blagdon Park 2. The upper features of the latest features contained a small quantity of late first and early second Cen AD R-B pottery, but there is no later activity on the site (Wardell Armstrong 2017).

The East Wideopen – South enclosure develops from a double palisaded site dated by RC to 756-444 cal BC (95.4% probability). This was dismantled and subsequent development saw thirteen stratigraphically discrete round-houses located in the small area that was subsequently enclosed. This enclosure is unusual in having a sequence of ditch re-cuts, with one phase engaged to a substantial landscape feature or part of an embracing massive enclosure like East Brunton, Enclosure 3 (Hodgson et al 2012, 51, fig 28). The south-western corner of the circuit has a sub-circular adjunct, roughly 25 m in diameter, encircling four short, straight gullies, which may drain the platform (or be earlier), but no other surviving structures. Further houses are thought to post-date the enclosure, being the last structures in the settlement sequence, with an associated RC date of 92 BC – 62 AD (at 95.4% probability). The site produced a small assemblage of Iron Age pottery but nothing Roman (Archaeological Services Durham University 2014).

When sites develop substantial enclosures, the principal round-house often has a massive eaves-drip ring-ditch, often with internal posts hinting at the possibility of a second story, as postulated at East and West Brunton (Hodgson et al 2012, 199) while smaller buildings and structural remains suggest a variety of different structural designs, presumably for other functions. The data available from these new excavations offers great potential for research into the functioning of enclosure interiors and building traditions.

Not all Late Iron Age sites developed massive enclosures. At Front Street, Dinnington, a small group of late Iron Age/early R-B circular structures but with only one or two in use at one time show no evidence of being associated with a substantial enclosure. It may be significant that there was no prehistoric pottery recovered from the five circular structures and other linear features on the site, which provided five RC dates within a bracket of 147 BC to 145 AD at 95% probability (Wardell Armstrong 2017).

At Pegswood Moor, Morpeth, it was possible to chart the evolution of a small community over a period of more than five centuries, starting in the fourth century BC, with a group of four larger roundhouses. In the Late Iron Age, a landscape of complex enclosures spread across the site and beyond in all directions, with two lines of circular structures representing settlement over a couple of centuries. In the late 1st cen. AD, a further occupied enclosure

was aligned to earlier boundaries but a more substantial boundary cut across earlier enclosures that were no longer in use. The reorganisation of the landscape around the need to manage stock suggests a change in the emphasis towards animal husbandry in the early Roman period. The requirements of the military garrison on the Northern Imperial Frontier are one possible interpretation for that change. (Proctor 2009)

The nearby St George's Hospital site, Morpeth, echoes the sequence at Pegswood. As seen at Brenkley Lane and sites further south, like Greatham Hartlepool, the earliest phase is a Bronze Age cemetery. In the Middle Iron Age there is a multi-phase palisade with internal round houses and a large circular structure outside, which has two, opposed, entrances, and was interpreted as having a different, possibly agricultural function. In use for perhaps 175 years, it was interpreted as a single household unit, with one or two structures with each iteration of the palisade. There is a gap in the sequence before a substantial enclosure of 0.63 hectares with four entrance gaps around the sinuous circuit, An element of continuation is seen with the construction of a substantial round house adjacent to the mid Iron age cluster. Other houses were spread around the site, inside and outside the enclosure. A series of smaller enclosures or paddocks and droveways to the north and south, re-inforce the pastoral emphasis of the complex. This later phase ran from the 1st cen AD, or slightly later, into the late Roman period (Archaeological Research Services 2017).

From the range of different sites coming into view we can see that there is a consistent pattern of development that settlement progress through, but that this model does not cover all sites and, crucially, it is not scalable, with smaller and larger settlements diverging from the palisaded/open/ditched model.

Advances in Systematic analysis of LiDAR data and Google Earth © satellite imagery north of the Tyne has identified numerous previously unknown archaeological sites, some of which are thought to date to the Bronze Age or Iron Age based on morphological characteristics. These discoveries, which include numerous rectilinear enclosures, increase the overall distribution and density of this site type in the region, enabling more robust analysis of later prehistoric settlement in both individual and collective contexts. In some cases, the analysis has added further detail to already known sites, including the identification of possible associated boundaries and trackways.

North Northumberland

In the uplands of the Cheviots extensive remains of presumed later prehistoric date can still be seen, while the adjoining lowland Tweed-Till catchment was densely settled throughout prehistory. Numerous upland settlements, boundaries, tracks and traces of agricultural practices including field boundaries, terraces and rig plough marks have been identified through recent systematic LiDAR analysis in the Northumbrian uplands. Whilst few of these discoveries can be dated precisely, LiDAR enables a degree of horizontal stratigraphy to be implemented between features, entailing that many can be assigned prehistoric dates. With good survey coverage, huge swathes of upland archaeological features have been mapped and interpreted, in ways unimaginable before the LiDAR was available (David Astbury pers comm).

Much of the groundwork for the study of the region was laid by the work of George Jobey, though he himself was advancing earlier work carried out in the 19th century by George Tate and others. In more recent years, a series of related projects has been carried out under the auspices of the Northumberland National Park. In particular, the aerial photographic survey carried out by Tim Gates of the Hadrian's Wall corridor, the College Valley and the Otterburn training area has exposed the complexity of the relict landscapes of these upland areas, placing previously known sites within a dense landscape of other features (Gates 1997; 1999; 2000; 2004). Two major programmes of survey and research concluded just before the production of NERRF1. The South East Cheviot Project of the long-term programme of intensive aerial and fieldwork survey of 66 sq km in a block between the Breamish and Aln valleys (Historic England Research Report 83-2008; Topping 2008). Northumberland National Park's important Discovering Our Hillfort Heritage project has increased our knowledge of these monuments and their landscape settings (Frodsham *et al* forthcoming;; Oswald *et al* 2007 & 2008).

Since NERRF1 was produced, a further multi-disciplinary landscape research programme has been brought to publication; the Till-Tweed Studies Project, by David Passmore and Clive Waddington, This brought together a wide range of palaeo-environmental and archaeological data to write a new archaeology of North Northumberland. Published in two volumes, the first (Passmore and Waddington 2009) presents the body of field data with AP coverage from the Till Catchment (in two blocks: the Till from Ingram to Belford Moor and the Tweed from Wark-on-Tweed to Berwick) and the second (Passmore and Waddington 2012) fills in the AP coverage between the two Vol 1 blocks (the Millfield Basin and environs) and provides a period narrative of the archaeology.

Pit alignments have been described as “a persistent component of the archaeological landscape in Northern Northumberland and Southern Scotland” (Gates and Deegan 2009, 135 with over 21 listed in the Till-Tweed survey (Gates 20012, 109 Table 3.11). Dating from the Neolithic period at Ewart 1 (Miket 1981). The sub-rectangular pits have stratigraphy that suggests slow accumulation of edge-derived fills, and they are therefore difficult to date as they typically have few finds. There are none dated to the LBA-IA in North Northumberland and the only one excavated at Redscar Bridge, Millfield yielded five Roman C14 dates (Passmore and Waddington 2012, 267).

The results of excavation across the border as part of the Traprain law environs project, recording curvilinear palisaded sites dating to the later second millennium (Haselgrove 2009) have not so far been matched in North Northumberland. The earliest enclosures not part of what palisades as part of what has been described as “the Late Bronze Age Enclosure Horizon” (Gates 2012, 71). The value of the term “palisade” as an defining principle has been questioned (Harding 2004) given the range of structures revealed by excavation, from complex proto-box ramparts to insubstantial fence-lines and the variation in size, from 0.1 ha up to 4 hectares at Yeavinger Bell 1. (Passmore and Waddington 2012, 237). Palisaded sites are certainly more common than the open clusters of circular buildings now known from excavations in the south of the county. Some of the isolated ring-ditches known from the most A-P conducive soils (listed in Gates 2012, 94, Table 3.2), when not dating to earlier periods, might fill this lanunae.

There appears to have been a later phase of small, enclosed settlements. In the south of the area enclosures were mainly rectangular, whereas north of the Coquet there are more curvilinear enclosures or simple scooped settlements. In some cases, however, more than one phase of enclosure is known, such as at Fawdon Dean, where an earlier 'egg-shaped' enclosure was replaced by one more rectilinear in form (Frodsham and Waddington 2004, 184-187). This shift may have occurred in the early Roman period. It is likely that there was similar broad continuity elsewhere, and later prehistoric sites have been found beneath Romano-British settlements at both Hetha Burn, in the College Valley (Burgess 1984, 168), and Kennel Hall Knowe, North Tynedale (Jobey 1978). The main problem of interpretation remains the dating of the many non-defensive ditched enclosures of which are common on all but the highest landscapes (Passmore and Gates 2012, 262, Fig 8.2). Similarly, the dating of the replacement of timber houses by stone, recognised but not dated at Hetha Burn remains, as Tim Gates has pointed out (2012, 87), essentially the problem posed by George Jobey. If the dating remains uncertain, greater understanding of their currency has come from more detailed field survey, as exemplified by the NNP Hillforts Project (Oswald et al 2006, 87).

The Northumberland uplands are perhaps most famous for the survival of a significant number of hillforts; according to the authoritative discovering Hillforts survey, 43 within the National Park, and a further 11 sites have palisades surviving as earthworks (Oswald *et al* 2007, 61). Although there is a considerable local variation in the shape, situation and layout of the hillforts, there is enough consistency to suggest they are all drawing on the same broad tradition (with the exception of Yeavinger Bell).

The chronological development of hillforts is complex. Some sites, such as High Knowes and West Hill, Kirknewton, appear to have been preceded by a palisade (Jobey and Tait 1966; Oswald 2004). In some cases, as at Harden Quarry, Biddlestone, the site did not develop further (Frodsham 2004, 40). At others, palisades were succeeded by stone ramparts. In 2013, Peter Topping's excavations at Wether Hill, Ingram, concentrated on pair of pair of palisaded enclosures underlying a 12 m ring-groove structure. These were sampled but failed to yield dating evidence. The ring-groove is aligned to the north-west entrance, and so may well belong with the later phases of defensive construction. The 2015 season returned to the north-west entrance causeway as well as uncovering a small cairn on the summit of the hill, with adjacent ring-groove structure and also looked at the north-east entrance of one of the palisaded enclosures (Topping pers comm). The work has demonstrated that the hillfort follows the broad trajectory of development first described by C M Piggott in 1948 at Hownam Rings in south-east Scotland, (1950, 193-225). The validity of this model has been repeatedly questioned but with the pace of research activity in the uplands have significantly slowed over the past twenty years, there is little prospect of a coherent model of hillfort evolution emerging as a replacement.

Radiocarbon dates are available for five hillforts and these have been modelled in the Till-Tweed project, giving a start of hillforts date of 440-250 cal BC (95% probability) and an end date of 110 cal BC – cal AD 100 at 95% (Passmore and Waddington 2012, 226, fig 7.3).

The landscape setting of hillforts was explored in the South East Cheviot Project. A pattern of Iron Age territories was identified around ten hillforts along the Breamish and College valleys, defined by both natural features and linear earthworks. The boundary features, like the cross-ridge dykes adjacent to Wether Hill and Brough Law, are often slight and are easily circumnavigated, suggesting that they are “token sign-posting of an area, and not designed to primarily impede movement” (Topping and Pearson, 2008, 12). Although largely undated, some fields appear to be laid off the hillfort ramparts, as at Prendwick Chesters and Middleburn Dean. Fields within the territories were both irregular, suggesting organic growth as at Chester Burn 1 and Knock Hill, or regularly-planned, co-axial systems, imply greater social cohesion, as seen at Grieve’s Ash and Knock Hill (*op cit* 72).

One hillfort which stands out due to its sheer size compared with the others is Yeavinger Bell. At over 5ha in area, it contains about 130 house platforms. This site has been the subject of a detailed survey (Pearson 1998), while earlier work placed it in its wider landscape context (RCHME 1986). Excavations took place on the hillfort in the 1950s and the pottery was reassessed in 1990 (Ferrell 1990).

At Harehaugh, Richard Carlton has published the 2002 excavations which, within tight conservation constraints, was able to elucidate the sequence of development and provide RC dates of the mid-late Iron age for the rampart sequence (Carlton 2011, 105). The univallate hillfort of Ros Castle, on the Northumberland Sandstone Hills between Alnwick and Chatton, has been the subject of a comprehensive management plan, which reviewed the history of the site and made recommendation for its conservation and interpretation.

The Altogether Archaeology Project has conducted field-survey and investigation of the upland landscape north of Hadrian’s Wall, led by Jamie Quartermaine and Pete Schofield of Oxford Archaeology North, recording extensive later prehistoric or Roman period field systems were recorded (<http://www.northpennines.org.uk/our-work/altogether-archaeology/>).

The North of the Wall Group has undertaken field survey and documentary survey of sites in Melkridge parish both previously known through Tim Gate’s aerial photography and newly discovered during reconnaissance fieldwork. Stone and timber round houses, field banks and extensive cord rig has been surveyed at three locations; Ventners Hall North, Ventners Hall South and Edges Green. In all three cases, the cord rig overlays the circular structures (Tynedale Archaeology Group, *Beyond the Wall*, 2017, 59).

New work at Kirklandlee by Rachel Pope is investigating a site of possible late Bronze Age to Iron Age currency.

Trade, transport and communications

There is some limited evidence for long-distance trade and exchange in the later prehistoric North-East, although it does focus on the later part of the period.

There may have been localised trade in dolerite-tempered and calcite-tempered pottery (Evans 1995; Willis 1999). Roman imports, including Samian, Gallo-Belgic amphora and wares, were reaching Stanwick in significant quantities in the Pre-Roman Late Iron Age, and the re-distribution to sites like Catcote and Thorpe Thewles has been mentioned. An awareness of southern pottery is seen at the latter, where an imitation of a rusticated beaker is fired in the local fabric (Swain 1987, Fig 47,224). At Brenkley Lane Open Mine, Newcastle, the small quantity of R-B pottery in the ultimate levels included a wine straining vessel from a ring-ditch in Enclosure A (Headland 2017, 107) and high-status feasting is also suggested by the Dressel 20 amphora (olive-oil) and the wine-carrying Gallic amphora both from West Shiremoor, North Tyneside (Archaeological Services Durham University 2017, 30). The absence of pottery of any sort at some of the smaller late Iron Age open sites, like Front Street, Dinnington, might indicate that ceramics were only produced for feasting and other social gatherings, when the normal tableware of wood and leather was insufficient for the numbers congregating. Willis has suggested that pottery was of infrequent, episodic, manufacture, which partly explains the lack of distinct, regionally diagnostic form development (Willis 1999, 90).

Ceramic evidence has also indirectly provided evidence for another traded good: salt. Manufacture has been demonstrated at Street House, Loftus (Sherlock and Vyner 2013 and strongly suggested at Needles Eye (Proctor 2011, 73). Kilton Thorpe has also produced coarse pottery pillars related to the process of salt production (Sherlock and Thompson forthcoming). The excavators of the Iron Age site at Greatham, Hartlepool, suggested that the settlement would be involved in this industry (Northern Archaeological Associates 2016, 34).

Briquetage has been found at a numerous sites in the region (see Proctor 2016, Fig 15.8). The recent excavations at Brenkley Lane, Newcastle, West Shiremoor, North Tyneside (Archaeological Services Durham University 2014, 30) have added to the known distribution, and its absence at sites like Amazon Business Park, (Wardell Armstrong 2015, 35); East Wideopen – North (Archaeological Services Durham University 2014) and Great Chilton, Sedgfield (Archaeological Services Durham University 2014) is perhaps something that should be given further thought. Evidence of salt is a key indicator to the likelihood that meat commodity trading was possible as a way of capitalising and exporting surplus production. The socio-economic impacts of this are potentially profound, and the clear indication is that it was fully developed before the first Roman contact.

Quern movement across considerable distances has been shown across the north of England (Hayes et al 1980, 298; Heslop 2008, 47). Corn grinding was an essential part of the agricultural economy, and the many settlements located on boulder clay or limestone subsoils would need to procure coarse-grained sandstone querns by exchange or other social transactions. The highest quality lithologies, like Millstone Grit and the coarser Yoredale sandstones are found up to 50 kms from source (Heslop 2008, 34, Fig 15). Conversely, the less well integrated and poorly socially connected communities, like those from higher Teesdale, use locally collected boulder erratics with very poor milling properties (op cit 16). A mechanism for transporting objects weighing up to 40 kgs, might be the seasonal grazing of herds between upland and lowland pasture; there is a marked

concentration of Yoredale sandstone querns in the Leven Valley, which might have developed from seasonal transhumance and driving stock to the dales, where the rock outcrops, as part of the seasonal farming cycle. (op cit 47).

Riverine transport is attested on the Tees, Wear and Tyne in the form of the discovery of several dug-out canoes, which might be seen against a north European tradition of votive offerings associated with travel. Two log boats were found on the Wear at Hylyon (Tyne & Wear HER 340 and 346) and a further four in the Tyne around Newcastle (Graves and Heslop, 2013, 27, Table 2.3).

It is difficult to reconstruct Iron Age routeways. On the edge of the North York Moors, around Percy Rigg and Kilburnthorpe for instance, they may have acted as corridors between the moors and the coast. The suggestion that the Great North Road followed a Roman road was put forward by Paul Bidwell and Margaret Snape in discussing the location of the fort of *Pons Aelius* (2002, 257), and attunes with Blaise Vyner's view that the later road followed a major Neolithic routeway (2007, 69). The position of the Tyne crossing at the intersection of the river and this route may explain the presence here of Late Bronze Age metalwork (Graves and Heslop 2013, 24). It is also possible that other Roman roads may have followed pre-existing late prehistoric alignments, though this is speculation.

Religion and ritual

Unlike earlier prehistory, the later Bronze Age and Iron Age are notable for their lack of monumental religious sites. The focus should perhaps be on ritual activity rather than ritual sites. Datable evidence for mortuary behaviour is slight, however. Some inhumations in barrows may be of late Bronze Age or Early Iron Age date, though it is most likely that the majority of bodies were disposed off in an archaeologically invisible way, such as excarnation or unurned cremation. A recent review of Late Bronze Age burial evidence listed four dated examples in this region, with a further eight in southern Scotland (Warden *et al* 2016). Apart from the general observation that they were located at significant spaces in the landscape, the four English burials were all in different contexts; a cave at Heathery Burn, a re-used henge at Whitton Hill, a river bank at Egglestone and beneath a cairn at Sandyford Quarry (op cit 163, Table 11.1).

Archaeological evidence for later Iron Age burial in the region is discussed by Colin Haselgrove, in connection with the inhumations in the ramparts at Stanwick (Haselgrove 2016, &&). The catchments of the Wear and Tyne are particularly devoid of of this type of activity. Further north, an unusual square barrow burial was excavated at Alnham by George Jobey (Jobey and Tate 1966), while possible Iron Age burials have been found at Catcote (Teesside) (Long 1988, 18), and a figure of 8 shaped pair of ring-ditches from Greatham, Hartlepool, that may be two joined barrowlets, have been mentioned as pertaining to mortuary practice (Northern Archaeology Associates 2016, 11). A cave burial from Bishop Middleham is probably also of Iron Age date (Raistrick 1933b).

The main visible form of ritualised activity appears to have been the placing of hoards. The best-known examples of this hoarding tradition are Late Bronze Age, such as Heathery Burn

(Co. Durham) and Gilmonby (Co. Durham) (Greenwell 1894; Coggins and Tylecote 1983). The context of the hoards varies; the Heathery Burn hoard was from a cave, but many were from more watery contexts. The hoards from Wallington, Whittingham and Corbridge (Northumberland) were all found in boggy land or during drainage works. The structure of these depositions could be complex, as was shown at High Throston (Teesside) where a range of bronze and jet objects were found with ash, burnt bone and a pot (Daniels 2003).

A major study by Andrew Poyer examines Bronze Age hoarding across the north of England, analysing the links between hoard content, topography and context. While existing firmly within the North Sea Basin tradition of votive practice, he notes specific regional characteristics, for example, Ewart Park LBA metalwork (1020 -800 BC) being associated with the sandstone uplands, and mainly in the river valleys floors and sides, whereas later Lyn Fawr types (800 – 650 BC) are almost exclusively from the rivers themselves, places active in contemporary cosmologies (Poyer 2105, 190). He concludes that, within the wider tradition, local conventions affected the choice of object, its treatment and condition, and the place and type of location into which it was implanted (op cit 270). Connections with special human locations, specifically Northumbrian hillforts are explored (op cit 260). In north-west Northumberland, the pattern of single sword deposition across river valleys hints at a practice at local level, with small groups competing through the consumption of martial metalwork (op cit 257).

The Ewart Park swords of Northumberland are the subject of a review of the data collected by Ian Colquhoun and Colin Burgess (Colquhoun 2016). Twelve swords from nine locations are considered, and great care is taken to check the sourcing of the find and locate the precise context of deposition.

This practice of votive deposition continued into the Iron Age and on into the Roman period (Hunter 1997). For example, a sword was found in a probable riverine context at Sadberge (MacGregor 1976, 156). Other finds from a similar context are also known from the Tyne (Miket 1984b).

Although the main form of deposited object seems to have been metalwork, other items have been recorded in a probable ritual context. For example, the Yorkshire Quern Survey notes the probable hoarding of querns from a number of places such as Hutton Rudby, though this practice seems more common to the south of the region in North Yorkshire

Our understanding of structured deposition has benefited from the increase in the number of structures and features excavated. Assemblages suitable for this topic include Stanwick, Street House, Faverdale, Amazon Park, Great Chilton, Bollilhope Common, Blagdon Park 2, East and West Brunton, Brenkley Lane, Pegswood Moor, St George's Hospital and Needles Eye. The related question of cosmological orientation can be tested on the new material. Pope has questioned the interpretation that house doorways are aligned to the rising sun (Pope 2009). The number of excavated circular structures available for study has more than doubled in the past 15 years.

Material culture and technology

Pottery and ceramic evidence

Although pottery is not plentiful, it is widespread and often the most common excavated artefact type, and Anderson has calculated that 85 % of sites excavated in the region produced pottery (2012, 85). This is in contrast to areas west of the Pennines, where the absence of pottery seems more typical. The pioneering overview of A J Challis (1975) has been updated by Evans (1995) and Anderson (2012) and further synthesis is often included in reviews of the ceramic tradition included in the publication of assemblages from major sites (Willis 2016; Morris 2011). In addition, the gradual accumulation of material from new excavations is slowly increasing the geographical spread and chronological range of material. However, the vast majority of sites produce small assemblages not amenable to quantification and, only sequences with Bayesian modelling, ideally taken from carbonised residues, or other reliable dating, like the imported Gallo-Belgic and south Gaulish Samian from Stanwick, can be used to compare fabric types and forms between sites.

Identification of the geological source of the inclusion added to the clay matrix to reduce shrinkage during drying and thermal shock during firing is one useful line of enquiry. On many sites, eg the , Pegswood Moor and Thorpe Thewles (Swain and Heslop 1984, 65), local production can be demonstrated by the ready availability of inclusion types on-site or nearby.

but at the high-status sites like Stanwick and Needles Eye, a wide range of sources have been identified, suggesting a movement of objects, both as consumption vessels and as containers of more precious commodities, possibly linked to the function of the site as a locus for periodic congregation.

Evans and Anderson have wrestled with the complexities of looking at form and vessel function (195 and 2012). A fine-grained analysis is not yet possible, but broad distinctions can be made between southern half of the area, where a wide range of both open and closed forms were used for consumption, cooking and storage, and the northern site, where closed storage vessels predominate. Analysis of this latter group, covering both north Northumberland and southern Scotland has led Elaine Morris to suggest that this ceramic tradition constitutes a Tyne-Forth style zone (Morris 2012, 71; 2016, 211).

Flints and stone objects

Although a later prehistoric flint knapping tradition may have existed, by this date relatively few changes in the knapping process are chronologically diagnostic (Young and Humphrey 1999).

Apart from a steady and relentless increase in the numbers recorded, quern studies have not radically transformed since the last review. The author's corpus of beehive querns from Central Yorkshire and Durham has been published, as well as a review of a quern survey of Northumberland and Tyne & Wear (Heslop 2009 and 2016).

Stone querns, both saddle and rotary, are widely found in the region. Stone types included Millstone Grit, probably from the South Durham exposures, sandstone from the Coal Measures, and occasional glacial erratic and riverine boulders. Stone querns from the North Pennines could be traded up to 40km into the lowland areas.

Over the next few years the study will develop in two ways: one methodological - will be the use of 3D scanning technology to transform the quality and accessibility of quern recording; and the other geographical - in an initiative to liaise with our Scottish colleagues to look at the full spatial range of beehive querns, which extends beyond the Forth.

Spherical stone balls have been observed from a number of sites. Three were interpreted as sling-shots at Pegswood Moor, two of andersite and a third also igneous but unidentified (Wright 2009, 57). Of six from Street House, five were of Jurassic siderite the other being quartzite (Sedman and Sherlock 2007, 30). Four of various local lithologies were recovered with a collection of querns at Holywell Grange Farm, Shiremoor, North Tyneside. The querns were ploughed-up together from what appears to be a votive deposition (Heslop 2016, 222). Given the time and care invested in the fashioning of these objects, it is unlikely that they would be used as sling-shots, and some social usage perhaps for gaming (?boules) or some undefined ritual function seems more likely.

Bronze objects

Late Bronze Age metalwork is not uncommon in the North-East, with several major hoards known as well as numerous single artefacts. Chronologically the pattern of distribution rises from the Wallington phase, reaching a peak in the Ewart Park phase. The 'type site' for both these phases lies within the region. The Wallington Hoard included fifteen axes, four spearheads, three swords and three armlets (Burgess 1968a), and was discovered at a poorly drained site close to the Middleton Burn. The Ewart Park finds comprised three swords discovered in the early 19th century (Colquhoun and Burgess 1988, 97).

Other major hoards from the region include the Eastgate Hoard (Cowen 1971), the Heathery Burn hoard (Greenwell 1894; Hawkes and Smith 1957) and the Gilmonby Hoard, which included over 27 bronze axes, 37 spearheads, 14 swords, tools, parts of a cauldron, ornaments, nine copper ingots and several pieces of iron (Coggins and Tylecote 1983). The Gilmonby find is just one of a distinct cluster of casual finds of prehistoric metalwork around Bowes (Pickin and Vyner 2001). An unusual hoard from High Throston, Hartlepool, contained ash, burnt bone, and a bronze spearhead on top of the ash, along with a number of bronze pins, fragments of a bronze vessel and a ring with a loop projecting from one edge; above this was a pot containing six wire rings, one tin-alloy bead, one circular spoked rouelle, four amber beads and two jet beads. Bronze rings, a large jet bracelet, strips of bronze and a rectangular jet spacer with two holes were also recovered at the same site (Daniels 2003). Research is taking place on both the High Throston and Gilmonby hoards by Brendan O'Connor. Several bronze swords have also been dredged from the Tyne around Newcastle (Cowen 1967, 444-445).

After the Late Bronze Age there was an apparent decline in the deposition of metal objects until the Late Iron Age, when there may have been a revival in the practice. Swords have

been found at Sadberge (Co. Durham), Brough and Carham (Northumberland), and a hilt guard is recorded from Dunstanburgh (Northumberland) (Piggot 1950). MacGregor's catalogue of Celtic art in North Britain includes items of late La Tène style, such as chapes, horse fittings and other items, such as a beaded torc from Benwell (MacGregor 1976, no. 198; Simpson and Richmond 1941, 23-25, pl. ii). Many of these items are, however, from Roman forts and must be post-conquest in date.

This area of research continues to benefit from the steady flow of new information from the Portable Antiquities Scheme, which, as Andrew Poyer notes, challenges interpretations made on the basis of few, well provenance finds. The discovery of the Amble LBA hoard in 2014 represents the first reliable discovery of a sword on the coastal plain (Poyer 2015, 281).

Evidence for metal production and working is slight. Iron smithing is known from West Brandon, Catcote, Greatham, Thorpe Thewles, Foxrush Farm, the two sites at Brunton, Blagdon Park 2, Brenkley Lane and and Pegswood. Evidence for bronze and metalworking in the Tees Valley is summarized by Steve Sherlock (2012, 61-23). Two bowl furnaces were found at West Brandon (Jobey 1962). Fragments of metalworking crucibles were recovered at Thorpe Thewles (McDonnell 1987), and ingot slots have been recorded cut into the grinding faces of re-used beehive querns across the region (Heslop 2008, 67). Parts of Later Bronze Age and Iron Age moulds for making bronze objects are known in Northumberland from the Kaims, Adderstone and Lucker, and from Wallington Demesne. An unfinished bronze axe was found at Felton in the late 19th century and still retains mould marks (Hodgson 1904, 375).

Scientific analysis has provided insight into early metal technology. The metalwork of the Wallington tradition has been shown to have had a different composition to contemporary styles in the south of England, with the alloys lacking lead (Tylecote 1968). By the Ewart Park phase, however, northern traditions were identical to those further south (Northover 1988). The alloys used in the Iron Age continued to parallel those used in the south of England, with brass replacing bronze in the early 1st century AD (Dungworth 1995; 1996).

Iron objects

Relatively few iron objects are known. This may be a genuine reflection of a low level of use, or may instead be related to preservation factors, or even be a function of high levels of recycling. A number of iron spearheads are known (e.g. Broomlee Lough, Forden Dean, Turf Knowe, Rochester), though it is possible that they may be of later date. An oven, possibly used for the carburisation process has been excavated at Catcote, but the few iron objects recovered were of Roman date (Long 1988, 21, 28; Vyner and Daniels 1989, 19). The spate of excavations in the last decade have added few significant new finds. At East Wideopen south, an iron fire shovel was found in a round house ring-ditch which has an RC date of 357-94 BC at 95% (Archaeological Services Durham University 2014, 28)). At Great Chilton an important equestrian find was an iron snaffle-bit, identified by Hunter Fraser, the closest parallel for which is a 5th cen BC example from a chariot burial at Newbridge, Edinburgh (Archaeological Services Durham University 2014, 22).

Other materials

Apart from the objects mentioned above there is relatively little other material culture - most items from sites are 1st century AD or later. Sherlock has reviewed the evidence for the south of the region (2012, 59-73), but there is no synthetic equivalent for the north. Few items of personal dress survive and due to the nature of these materials they are often fragmentary and difficult to date. Isolated glass beads have been found at Bishop Middleham, Prickly Knowe, East Brunton and Blagdon Park¹ and Dod Law (Raistrick 1933b; Hodgson 2012, 151; Smith 1988-89), and a Late Iron Glass bracelet is an occasional find in 1st cen AD horizons at Thorpe Thewles, Needles Eye (Proctor 2011, 87), Pegswood Moor (2009, 60). A Romano-British ring pin was recovered with a burial at Alnham (Jobey and Tait 1966). A worked bone toggle comes from Thorpe Thewles (Swain 1987). There is also a small number of shale or jet objects from local sites, including Harehaugh, Kilton Thorpe and Thorpe Thewles (Swain and Heslop 1987), Street House (Sherlock 2007, 32) and Kilton Thorpe (Sherlock and Thompson forthcoming). Textile production and working is indicated by loom weights and spindle whorls which have been found at Catcote, Thorpe Thewles and Forcegarth Pasture, Street House, Needles Eye (Long 1988, 31; Vyner and Daniels 1989, 21; Swain and Heslop 1987; Fairless and Coggins 1986; Sherlock 2012, 32; Proctor 2011, 87).

Museum holdings

Collections of Late Bronze Age and Iron Age material are held at a number of museums. Outside the region, the most important collection is that held by the British Museum, which contains the Heathery Burn hoard, the Iron Age swords from Sadberge (Co. Durham) and Carham (Northumberland), as well as a torc from Greenhill (Northumberland).

In the south of the region, the most important material can be found among the archaeological collections of Tees Archaeology, which includes items from Catcote and Thorpe Thewles, as well as the archives for a number of other sites, for example Eston Nab and Catcote. The Dorman Museum also holds material from Eston Nab. In County Durham, the Bowes Museum holds the Gilmonby hoard, as well as finds related from planning-related archaeological sites in the region. This will include those from Ingleby Barwick and Faverdale. The Old Fulling Museum collection has been transferred to Palace Green Library. In Tyne and Wear, the Great North Museum holds a major collection of Bronze Age finds, comprising over 150 weapons and tools, including the Ewart Park swords. The holdings of Iron Age material here are not as extensive, but include the finds from George Jobey's excavations at West Brandon. Tyne and Wear Museums meanwhile stores material from development-led excavations in the Tyne and Wear area, including that from South Shields. Finally, Alnwick Castle Museum holds a range of Bronze Age tools and other items, including shields from Inghoe and Aydon Castle, swords from Great Tossion and Whittingham and a bronze axe from Corbridge (Collingwood Bruce 1880).

APPENDIX I

District/County	SLA period	No. of houses	Reference
Northumberland	2017-2031	24,320	Northumberland Core Strategy, in prep
Newcastle	2015-2030	19,000	Planning for the Future, Joint Core Strategy
Gateshead	2015-2030	11,000	Planning for the Future, Joint Core Strategy
North Tyneside	2017-2032	16,593	Local Plan, July 2017
South Tyneside	2017-2021	5,540	Core Strategy, June 2007
Sunderland	2017-2032	11,823	Core Strategy Consultation, Aug 2013
County Durham	2017-2030	38,200	The County Durham Plan, in prep
Stockton	2010-2024	11,140	Core Strategy Development Plan , March 2010
Hartlepool	2016-2031	6,135	Hartlepool Local Plan, in prep
Middlesbrough	2004-2021	6,800	Local Development Framework, Feb 2008
Redcar & Cleveland	2007-2021	840	Local Development Framework, July 2007

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