From 'House of Caves' to nexus of central England: future research directions for Nottingham, c.AD 650-1250

Gareth Davies, David Knight, Scott Lomax and Christopher Loveluck

Introduction

Nottingham, as one of the Five Boroughs of the Danelaw, a key strategic pre-Conquest borough[1], and the most important royal governmental hub in central England by the time of the Angevin kings, from Henry II to John (1154-1216), is a city with a fascinating story to tell. However, the study of its origins and early development has been somewhat neglected. Numerous histories of the pre-Conquest borough begin no earlier than the creation of the town defences and the Anglo Saxon Chronicle, with its references to the Viking winter camp of 868, the creation of the Five Boroughs (Hall 1989), Asser's *Life of Alfred* (893) with its identification of Nottingham as Tig Guocobauc (translated as 'house of caves' or 'cavy house'), and consistent references to Nottingham in charters from the reign of Athelstan (924-939) onwards (e.g. Hart 1975; Roffe 1997). Comprehensive studies of the post-Conquest town at the height of its medieval geopolitical importance under the Angevin kings are also lacking. The Pipe Rolls from 1155–6 to 1216 provide plentiful evidence for the importance of Nottingham as a royal governmental and economic hub of national importance. This is emphasised by Nottingham's location at the core of the remaining tract of territory under Angevin royal control in autumn 1216, at the time of John's death in Newark Castle; at that pivotal moment, England to the north of Sherwood was in rebellion or in the hands of the king of Scotland, while south-eastern England was under the control of the heir to the French throne, with support from a French army and rebellious Anglo-Norman barons (Carpenter 2003, 299; McGlynn 2011, 173–75).

The development of Nottingham is thus a topic of significant national importance and public interest and ranks as a key priority for further research. Until recently, however, it has not been possible to give archaeological evidence and textual sources equal consideration (e.g. Foulds 1997; Roffe 1997), a notable exception being Richard Hall's case study in his seminal article of 1989 'The Five Boroughs of the Danelaw' (Hall 1989, 187-89). A major contributory factor is that key archaeological excavations undertaken in the city between 1969 and 1980 (Young 1983) remain unpublished. Furthermore, since 1980, the outcomes of development-led excavation have not provided sufficient opportunities to investigate key areas on an equal scale. Consequently, researchers have had to focus on the wider landscape around the confluence of the Rivers Trent and Leen (Dixon, Knight and Forman 1997) instead of talking about what form concentrated human activity took in what later became the historic core of the city.

Fortunately, in the last few years, preliminary evaluation of material from the unpublished excavations (Knight, Lomax and Young 2012) and an increase in archaeological investigation has again started to highlight the wealth of potential insight to be gained from the archaeological deposits preserved beneath Nottingham's streets. Exploring and interpreting these remains are crucial if we are to start to address some of the key questions that have been asked of Nottingham's past. In particular, how far back can we trace the settlement of Nottingham; when were the caves that are such a distinctive feature of Nottingham first constructed and how did they develop; when was Nottingham established as a nucleated settlement; can we identify multiple foci of activity that later coalesced (cf Loveluck 2013); what did the Viking Great Army find when it arrived in Nottingham in 868 and how did Nottingham develop during the Danish occupation; and why did Nottingham emerge as the principal royal governmental hub in central England during the pre- and post-Conquest periods? We will consider these and other questions in greater detail below, but to set the scene will focus first upon the untapped potential of the unpublished excavations conducted between 1969 and 1980.

The Unpublished Excavations of 1969-80

Background

[1] Within this paper, the term 'borough' refers to the pre- Norman Conquest settlement of Nottingham. The use of 'burgh' in the sense of a defended settlement may be more appropriate, with the term 'borough' having a specific post-Conquest legal definition. However, as 'borough' has historically been used to describe the pre-conquest settlement of Nottingham (e.g. Dixon, Knight and Forman 1997) this convention has been followed.

Key evidence for the early development of Nottingham lies buried in archives compiled during excavations carried out in the pre-Conquest borough between 1969 and 1980 at the instigation of Professor Maurice Barley (University of Nottingham). Barley persuaded Nottingham City Council to employ a full-time field archaeologist in advance of major redevelopment of the Broadmarsh Shopping Centre and other city centre sites. These excavations were managed by Charles Young (1982; 1986) and focused upon sites at Drury Hill, Woolpack Lane, Fisher Gate, Boots Garage, Halifax Place and Goose Gate. They were seen as opportunities to test models for the development of Nottingham's pre-Conquest defences that had originally been developed by Stevenson (1918) and Wildgoose (1961) and to investigate the archaeological potential of the interior of the early medieval settlement coinciding with the city's historic core (Lomax 2013, 22-27). They have yet to be fully published, but a detailed assessment of their significance has been completed recently as part of the Origins of Nottingham project: a Historic England-funded initiative to secure, consolidate and enhance the surviving material and documentary archives (Knight, Lomax and Young, 2012)[2]. A report highlighting the research potential of these archives was compiled as part of this project (Knight and Lomax 2016) and identified two research themes that are of particular relevance to the subject of this paper, namely the layout and development of the Early Medieval defences, and the internal spatial organisation and functions of the settlement itself.

Layout and development of the pre-Conquest defences

Excavations on the west side of the pre-Conquest borough at Drury Hill revealed an impressive perimeter ditch and rampart, constructed after a phase of Middle Saxon occupation, with a major recutting of the ditch thought to date to the 10th century. Whether the original construction of the ditch occurred before or during the Danish occupation remains unclear (Knight, Lomax, Young 2012, 45–46), but it can be argued that the defences may have been constructed in the second half of the 9th century (see Lomax this volume). No dating evidence was recovered from the ditch that could help date its cutting or later recutting. Another length of recut pre-Conquest ditch, flanked internally by a levelled rampart, was excavated at Woolpack Lane. No datable finds were retrieved from the ditch, but it was cut by another substantial ditch, separated from an internal bank by a wide berm; this later ditch was interpreted as part of the 12th century defences that had enclosed the post-Conquest town. The postulated course of the defences, which can still be traced in many places in Nottingham's street layout, is shown in Figure 1.

Some of the most interesting (and problematic) observations from the 1969–80 excavations are based on Charles Young's interpretation of the Fisher Gate and Boots Garage sites (Young 1983). Excavations at Fisher Gate revealed a wide and fairly shallow west-east ditch which was interpreted as the southern boundary of an even earlier defended settlement, perhaps dating to as early as the 7th to 9th centuries on the basis that the ditch was later cut by occupation features tentatively dated to 650-850 by the presence of handmade pottery (Young ibid.). The area south of this ditch seems to have been unoccupied until the construction of a timber building in the late 9th or 10th century. Another ditch, running parallel with the Fisher Gate feature and of similar morphology, was observed at Boots Garage, and was interpreted as possibly the northern boundary of the same early defended settlement. Young speculated that this early settlement would have extended eastwards of the sandstone outcrop on which the pre-Conquest borough sits, as far as the Beck watercourse. It is important to emphasise, however, that the full extent of these ditches and hence their relationship cannot be established, and their date and purpose remain unclear (Knight, Lomax, Young 2012 48-49).

Internal spatial organisation of the pre-Conquest settlement

Some of the most important discoveries relating to the origins of Nottingham were made within the area defined by the pre-Conquest defensive ditch, not only at Boots Garage and Fisher Gate but also at Halifax Place, close to the summit of the sandstone ridge encircled by the defences. Excavations here identified an east-west ditch of uncertain function, dated on the basis of associated pottery to between 650 and 850; this was stratified beneath at least three phases of large timber buildings, all of which were argued to have been constructed earlier than *c.*1000 (Young 1987). The discovery of this ditch, plus the identification farther west at Drury Hill of part of features thought by the excavators to predate digging of the defensive ditch, suggests that by the 10th century, settlement had extended from Halifax Place to beyond the perimeter ditch and rampart. The proximity of these

[2] A report highlighting the key research themes that may be investigated by study of the excavation archives considered during the *Origins of Nottingham* project (Knight and Lomax 2016) can be viewed on the Archaeology Data Service website, together with digital versions of the site archives

remains to St Mary's Church, which occupies the summit of this ridge, is potentially very significant and merits further attention. At present, the earliest architectural fragment that definitely derives from the church comprises a late Romanesque stone capital, dating from the mid to late 12th century (Alexander and Monckton 2014). However, a church, believed to have been St Mary's, was mentioned in the Domesday survey and is likely to have been the mother church of the pre-Conquest settlement, with potentially early origins.

Research in other medieval towns since 1980

The observations derived from evidence from the 1969-80 excavations certainly bring us back to fundamental questions, such as what, exactly, did the Viking Great Army find when it arrived in Nottingham in 868 AD? When and why was Nottingham established as a nucleated settlement, and what had existed in preceding centuries? Was there a fixed and enclosed western limit during the 7th to mid-9th centuries, and what was the relationship between the early settlement focus and the original St Mary's church? Unfortunately, interpretation of the origins of Nottingham has, to date, been forced to start from the spatial framework of the borough defences, with very little modern data from further afield, attempts to define the true, potentially polyfocal, extent of pre-Viking settlement activity and how this then developed after 868 have not been possible.

In contrast to Nottingham a number of urban areas can illustrate the benefits of fundamental and 'narrative-shifting' campaigns of archaeological investigation and interpretation. As early as the 1970's, the Norwich Survey, following the example of Kings Lynn (Clarke and Carter 1977), took a multi-disciplinary approach which incorporated individual below-ground excavations into a research design that included systematic work on medieval and later documents, standing buildings and historic topography (Carter 1978; Wade Martins 2017; King 2020). This quite quickly led to the targeting of specific urban zones to address specific questions; for example, the waterfronts and the deep deposits along the Rivers Wensum and Yare were targeted to address questions concerning the location, organisation and variety of mercantile activity and the development of property boundaries (Ayers 1987; 2016). In York, a slightly different approach emerged. The detailed biographical analyses of the social fabric conducted in the analysis of major urban sites, such as Coppergate (Hall and Hunter-Mann 2003; Hall with Evans et al 2014) were combined due to the expense of urban excavation and the desire to preserve certain remains in situ, with the development of a deposit model for the entire historic core of the city. This deposit model combined data from historic excavations and new archaeologically observed boreholes, and became an important tool for the management and research of cultural remains, enabling developers and researchers alike to identify deposits of high archaeological potential (Hunter-Mann and Oxley 2018, 200-204).

Within the East Midlands, cities like Leicester and Lincoln have experienced a huge amount of archaeological exploration in comparison with Nottingham (in part, perhaps, because of the prominence of Roman remains in these cities). In Lincoln, the extensive excavation and publication between the 1960s and 1990s resulted in English Heritage funding a comprehensive urban archaeological resource assessment, underpinned by a spatial database - LARA, the Lincoln Archaeological Research Assessment (Jones et al 2003). Importantly, the research questions that needed to be answered for defined 'character areas' were also set out. This approach has allowed recent development to proceed in the historic core of the city, much of it using piling, to address both research questions and curatorial and economic needs.

Another key research theme of the last twenty years has been the relationship of towns with their hinterlands, in terms of the roles of these central places and their range of networks. The hinterlands of larger administrative towns, like Nottingham, were dynamic landscapes in the early medieval period, containing complex hierarchies of multifunctional settlement types and economic ties, including smaller market towns and rural boroughs (Perring 2002, Davies 2010; Loveluck 2018). Within the East Midlands, recent archaeological exploration and interpretation of modern-day small towns such as Torksey and Repton – both important early medieval sites and overwintering camps of the Viking Great army - provide important comparanda for Nottingham in that they did not become the paramount urban centre of their regions (Hadley and Richards 2016, Davies *forthcoming*). Understanding the relationship between Nottingham and other small medieval towns that grew up along the Trent valley, such as Southwell and Newark, by the archaeological profiling of their networks is also key to understanding the development of Nottingham's role as a regional central place. Establishing these relationships can also be aided significantly by the establishment of deposit and developmental models for these smaller urban centres. For example, the Yarmouth deposit model now allows for the 'archaeological microhistory' of individual sites or 'localities' to be placed within the wider context of the social and historical development of the town and its relationship to Norwich (Davies, D. 2017, 4-5).

Archaeological research priorities for Nottingham, from its origins to its medieval zenith (c. AD 1250)

For Nottingham the key research agenda themes, questions and methodological approaches that are considered the norm for understanding the development, importance and public heritage of major towns have never been set out in detail. Nottingham does receive some important consideration in the *East Midlands Historic Environment Research Framework*, particularly with its call to prioritise syntheses of urban excavations, surveys and documentary data to enhance understanding of town development (Knight *et al* 2012, 96), studies of the provisioning of medieval towns (*ibid.* 98) and analysis of the morphology and use of Nottingham's caves (*ibid.* 111). As yet, however, the key archaeological research questions for the whole city, together with the methodologies for advancing understanding of these, remain to be detailed.

There is now an exciting opportunity, building on the experience of other urban centres, and drawing upon the results of recent developer-funded investigations and archaeological projects such as the Nottingham Castle redevelopment and the Caves of Nottingham Regeneration Project, to develop a new framework for research. Increased archaeological exploration over the last few years has emphasised the need for a new evaluation of all phases of activity in the city, from the prehistoric to modern periods, and has highlighted a number of key priorities for further research. We now consider below some of the key priorities for the medieval period, as highlighted by recent work that emphasises the potential of the archaeological and environmental resource; after this we conclude with recommendations on how understanding of these key questions might be advanced.

Establishing the spatial extent and character of early medieval occupation

More remains to be learnt from detailed study of the excavation archives deriving from the 1969 to 1980 excavations and from other excavations that have not been fully published. Particularly important evidence for early settlement was provided during excavations in 1998 prior to construction of the Nottingham Ice Centre, which sits at the eastern extent of Young's proposed Middle Saxon settlement. Finds included sherds of Ipswich ware pottery deriving from an almost whole pitcher dated to the period between *c.*720 and 850, and certainly an import from the trading port of Ipswich in East Anglia (Marsden 2001). On the basis of the deeply stratified and well-dated sequences from the settlement at Flixborough (Lincs.) in the lower Trent valley, and at Lurk Lane, Beverley, East Yorkshire, the arrival of Ipswich Ware on settlements around the Humber and along the major rivers flowing into it seems to have occurred from the early 9th century (Loveluck 2013). As a vessel type, pitchers have tended to be found on settlements of higher social status, whether secular or ecclesiastical in nature (Blinkhorn 2009). A detailed reassessment of the archive is recommended to establish the potential of the site for revealing further significant insights into the early medieval development of Nottingham.

In addition to past excavations, there is still scope for significant remains to be uncovered during investigations of undisturbed locations within the area thought to encompass the early medieval settlement. The preservation of stratified archaeological deposits between or even below areas disturbed by cellars and other dug features has been demonstrated many times, notably during Charles Young's 1969–80 excavations in the Lace Market (Knight et al 2012) and more recently at sites such as Shire Hall (Kinsley 1994), Garners Hill (see Kinsley this volume) and an excavation adjacent to Charles Young's site at Halifax Place (Renner and Collins 2018). At the last-mentioned of these sites, a sequence of deposits and post-medieval pits, at least 1.2m thick, was identified. At the base of the sequence, a deposit interpreted as possibly pit fill yielded pottery of 11th to 12th century date. Whilst no additional information about the early development of the site was revealed, sites such as this, as well as a recently excavated site at High Pavement which revealed Thirteenth century deposits (Higgins pers comm), emphasise the continued preservation of features and deposits of high interpretative potential within Nottingham's historic core.

Recent excavations beyond the Lace Market, in Sneinton, Lenton and on the Trent floodplain, have provided evidence that early medieval activity may have extended to the higher land east of the Beck at the former Sneinton Fruitmarket. Finds made here in the 19th century of Viking swords probably indicate the existence of at least two Viking burials, possibly of 10th century date (Lang & Ager 1989, 103). Following an archaeological evaluation (Roushannafas 2017), an excavation identified two northwest to south east aligned parallel ditches. These ditches lay 16 to 16.5m apart and flanked the upper terrace of the Beck watercourse. The southern ditch was a simple feature, with a single naturally silted fill, but the northern ditch comprised three phases (Phases 1-3) of ditch digging, suggesting sustained use and a degree of intensity of land-use. On the basis of associated artefacts and radiocarbon dating evidence, it is suggested that the initial Phase 1 ditches were constructed during

the 10th century, although given the paucity and somewhat contradictory nature of the available dating evidence, a date any time between the 6th and 12th centuries is possible. Following this, the ditch was most likely re-cut in the late 10th to early 11th century. Common finds of hammerscale (of potentially Anglo-Saxon date) in both the northern and southern ditches suggest that they may be roughly contemporary, and that specialised production was occurring in the vicinity, raising interesting questions about the nature of landuse, some 300m beyond the eastern extent of the Anglo-Saxon borough (Davies 2019)

Moving to the western extent of the medieval town, excavations undertaken recently during the redevelopment of Nottingham Castle have also identified some interesting early finds. In the Outer Bailey of the Castle radiocarbon dating of an organic-rich deposit identified in boreholes has returned age determinations of 1070 to 1154 cal AD and 993 to 1058 cal AD (BETA-500324: 880-796 cal BP and 957-892 cal BP at a depth of 5.44m bgl (Kinsley and Keyworth 2018, WS22). Unfortunately excavation of these deposits was not achieved. A further intriguing find that may corroborate this statement is a fragment of Anglo-Scandinavian grave cover that was found rebuilt into a late eighteenth or early nineteenth century wall during recent excavations (Figure X). The stone is classified as 'mid-Kesteven type' (Wright 2018, Everson and Stocker 2015, 53-61) and dates to the late 10th to early 11th century. Unfortunately there is no way of knowing if the grave slab was originally utilised at the castle site or whether it had been moved from further afield. However, this find, and the radiocarbon dates, raise the possibility of early medieval activity on Castle Rock promontory.

Further west still, excavations around Lenton Priory have highlighted mainly post-Conquest remains. However, excavation of a service trench for the realignment of an electricity cable in 2013, on the southern side of the main Priory church, revealed a buried soil containing sherds of roulette-decorated pottery thought to date from the 10th to 11th centuries. Additional pottery also dated to the 10th to 11th centuries was found, some 75 metres to the north, during trial trench excavations in St Anthony's Churchyard: formerly part of the inner precinct (Davies and Flintoft 2015). On the basis of the existing evidence, it can be suggested that a settlement of uncertain character had occupied the site prior to construction of the Priory. However, a large tract of Lenton is described in the Domesday survey (TRW[3], 1086) as waste land owned by King William (DB 281c, 48; 287c, 19; 287c, 24). It is interesting to speculate whether this land may at one time have contained a high status settlement, such as a manor, that had been abandoned some time before or during the Conquest period. Many former estates of the West Saxon kings or the earls of Mercia and Northumbria in the northern Midlands and Yorkshire were held by William and recorded as 'waste' in 1086, and the exact relationship between Lenton and Nottingham is an extremely interesting question for the later pre to post-Conquest period.

Waterfronts and modelling deposits

Recent discoveries on the Trent floodplain to the north of the culverted River Leen have also yielded new insights into the extent and character of early medieval activity. Several sites have been evaluated in the area immediately below the sandstone cliff which defines the southern edge of the medieval town. Boreholes at Brewhouse Yard (Parker forthcoming), Broadmarsh Car Park (Poole et al 2018) and London Road have revealed a zone of deep deposits with high potential for reconstructing the early medieval environment and for elucidating the economy and possibly the social conditions of the communities occupying the area beneath the cliff. On Speed's Map of Nottingham (1610) the River Leen is depicted as a complex multiple-channelled river. Along London Road, towards the Leen-Trent confluence, the fluvial environment is represented in borehole cores as a complex sequence of alluvial clays, silts and sands indicating intermittent high- and low-energy phases of river channel activity (Keyworth 2018). At a depth of 4.5m below ground level, radiocarbon dates from waterlogged wood yielded a date of 1270 to 1316 cal AD (BETA490498: 680+/-30 BP). A similar sequence, buried c.2m below ground level, has been observed farther west at the Broadmarsh Car Park. Here, the southern precinct wall of the Greyfriars Friary, founded in the thirteenth century, was abutted by medieval waterlogged deposits rich in animal bones interpreted as tanning waste and preserving environmental remains (Poole et al 2018). The evidence now emerging from the River Leen floodplain suggests that in some places, during the medieval period or earlier, the highly dynamic watercourse truncated earlier deposits down to Mesolithic levels (Kristina Krawiec: pers comm.). We do not yet know whether areas exist where fluvial erosion has disturbed early medieval deposits. There are certainly some places, however, where such conditions might exist, particularly around the Broadmarsh Centre where later medieval deposits are more shallowly buried. A key question to resolve is whether areas of drier ground provided opportunities for pockets of concentrated early

[3] TRW, meaning tempore regis Willhelmi (land held in the time of King William, i.e. 1086).

medieval activity in the floodplain. The *in situ* evidence for later medieval tanning recently observed at the City Hub site at Canal Street (approximately 2m below ground level) suggests that such pockets of activity did occur (Higgins 2017). More systematic deposit modelling and evaluation, combining deep trenching and boreholes, should be encouraged as this might identify well-preserved and waterlogged early medieval deposits; evidence for scattered industrial activity or sites intended for purposes such as waterfront mooring might also survive.

Investigating developments of the 9th and 10th centuries

The arrival of the Viking Army at Nottingham in 868 is likely to have transformed significantly the pre-existing settlement, although many questions may be posed regarding its impact. In particular: how might the existing defences, assuming that these were not Viking foundations, have been transformed during their occupation; what impact did Viking activity have upon the building types, activities and spatial organisation of the town; and when was the rectilinear pattern of streets, many with Scandinavian names, developed?

There is also the difficult question of the location of the Viking camp. It has often been assumed that it was situated within the area that developed later into the Anglo-Saxon borough. However, work at Torksey has now demonstrated that Viking Camps might have extended over at least 55 hectares (Hadley and Richards 2018) and hence an alternative and more spacious riverside location might have been more attractive. Recent work in Nottingham has highlighted several early medieval sites beyond the defended core that may have been attractive to the Vikings, notably within the Fruitmarket and at Lenton and other outlying settlements close to the Trent that are referred to in the Domesday Survey, including Wilford, Sneinton and Radford. As yet, however, the only evidence for Viking activity in these areas significantly postdates the overwintering of 868. This is provided by the discovery near the Fruitmarket in 1851 of two swords dated stylistically to the 10th century (Anon 1851; Lang & Ager 1989, 103) and interpreted as possibly grave goods associated with Danish settlers (Lomax 2013, 50).

After the later 9th century, with the establishment of Nottingham as a central place and its transformation into a 'burh' shire centre by the reign of Aethelstan (924– 939), we can more easily recognise Nottingham as a place of regional importance, administration and trade. However, the extent to which it should be defined as a shire 'town' during the 10th century is more debatable. Excavations at other centres transformed by the Vikings between the mid-9th and 10th centuries, such as York and Lincoln, show abundant archaeological evidence for large and diverse populations engaged in specialist production and trade, alongside secular and ecclesiastical administrative groups. In contrast, most 'burh' shire centres in West Saxon England, such as Worcester, Stafford and Oxford, have proved to be sparsely occupied within their defended circuits until the end of the 10th century (Loveluck 2013; Dalwood 2004; Carver 2010; Dodd 2003). Nottingham is a key centre for the evaluation of central place and urban traditions as they developed during the 10th century, as it was a Scandinavian centre for only forty years before incorporation into the West Saxon kingdom of England. Its character may have changed radically between the mid-9th and later 10th century. Roffe's research would suggest that by the mid-11th century it was very much a West Saxon-style 'burh' shire town that acted as a key strategic military hub (Roffe 1997). More comprehensive analysis of the excavated remains from Nottingham, identifying where possible land-use and functional zones and seeking comparisons with the evidence from the West Saxon and Anglo-Scandinavian spheres of England, is required to investigate further these themes and to identify socio-economic transformations from the 7th to 11th centuries.

Elucidating the origins, development, morphology and functions of caves

Key questions also remain regarding the origins, development, morphology and functions of Nottingham's caves which, from a reading of the monk Asser's *Life of Alfred*, would appear to have been well known by the 9th century. Writing in 893 about the overwintering at Nottingham of the Danish army in 868, Asser records the Welsh and Latin names for the place, although whether the names are derived from Welsh sources or were invented by Asser from his personal experience has been debated (e.g. Keynes and Lapidge 1983, 241, note 59). Gover, Mawer and Stenton (1979, 14) record these names as *Tigguocobauc*/*Speluncarum Domos*, translated as 'cavy house', while Keynes and Lapidge (1983, 77) record them as *Tig Guocobauc*/*Speluncarum Domus*, translated as 'house of caves'. Curiously, both translations suggest a single habitation rather than a settlement (Kinsley and Knight 2019, 13) but it would be unwise to read too much into this reference.

The recently completed *Caves of Nottingham Regeneration Project* (Kinsley and Knight 2019) has provided a valuable foundation for future research, while research by Anja Rohde on artefacts from the caves that are

preserved in the collections of the University of Nottingham Museum and Nottingham City Museums and Galleries has provided another valuable resource for further study (University of Nottingham; funded by AHRC-Midlands3Cities DTP). The report on the former focuses on a laser survey of Nottingham's caves, distils the results of earlier work and makes recommendations for further research. It complements the Supplementary Planning Document for Nottingham's caves that has recently been adopted by Nottingham City Council. Readers are referred to both documents and to the signposting report accompanying the *Origins of Nottingham* project (Knight and Lomax 2016) for more detailed information on the research priorities for Nottingham's caves and the methodologies that it is recommended be employed for recording and analysis.

Urban Developments from 1066 to 1250

Following the Norman Conquest, Nottingham experienced a period of intense development as it grew from a small Borough occupying what is now the Lace Market, to form the larger town, reaching its zenith between the later 12th and the mid-13th century. The process began with the construction of the castle in 1068. Initially of timber construction, the castle was gradually rebuilt with stone, with this rebuilding begun in 1171-73 (Drage 1999, 59). By the end of the twelfth century, the strategic geopolitical-economic importance of Nottingham as a royal centre is emphasized by the fact that 7000 marks of silver from the war reparations paid by the King of the Scots, under the Treaty of Norham (1209), were sent to John's Treasury from the mouth of the River Tweed to Nottingham, rather than to London (Pipe Roll 13, John, 1210-11, ed. 1953, p. 40).

In the shadow of the castle, a new 'French Borough' was formed, extending eastwards towards the former pre-Conquest borough. This pre-Conquest borough in turn expanded and began to be known as the 'English Borough'. The extents of the two boroughs, and their different customs, have been researched by Mastoris (Mastoris 1981, 68-75). A new network of streets and lanes was also created, with key routes leading from the English Borough towards the castle, and towards the new market (held on Saturdays where the Old Market Square can be found today); and streets connecting the two new churches (St Peter's and St Nicholas'),the Greyfriars friary (founded by 1230; the Carmelite Friary further south was not founded within the timeframe of this paper) and the gated entrances of the town.

During the 11th century, and most likely following the Norman Conquest, the pre-Conquest borough defences became redundant and were largely filled in, providing space for housing and other uses (Lomax, this volume). Further research, in particular appraisal of the archives of the unpublished excavations of Drury Hill and Woolpack Lane, may enable the establishment of the timeframe during which the defences ceased to be used, and the sequence of their infilling. Defining the chronology of the post-Norman Conquest defences and their modifications is of equal importance, as is gaining a greater understanding of their precise course around the town. The new defences, in the form of a ditch and bank, enclosed the town around its western, northern and eastern sides, with a cliff and the River Leen forming a natural southern defence (Lomax 2013, 70-84). The defence of the town was not, however, a pressing concern, with excavation of the ditch at Woolpack Lane indicating it was not created before 1100.

The ditch was widened, along at least part of its circuit, during the mid-13th century. Documents dating to the mid-13th century referred to the 'new ditch' near St John's Hospital, suggesting it had been re-cut at a time recent to the writing of that text (Foulds 1997, 60). The ditch was not widened at Woolpack Lane, but this may have been because of the topography and marshy conditions in this area, as well as The Beck, which would have provided additional, natural, defence (Lomax 2015). A postulated extension to the defences, and thereby the town, during the mid-13th century has been demonstrated to be incorrect (Lomax 2015). A defensive wall was later built around part of the town, but the first murage grant was not levied for its construction until 1267 and there is no compelling evidence that work had begun prior to that year, although the possibility cannot be excluded (Lomax 2013, 73).

Historians have suggested there is little evidence of 'ribbon development' or suburbs outside the town defences, (Foulds 1997, 61). Indeed, Hoskins' analysis suggested that the refusal of Nottingham burgesses to give up rights of pasturage among the 1100 acres of open-field system to the north and south of the medieval town actively curtailed urban spread and suburb development, resulting in the terrible urban slums of the 19th to early 20th century (Hoskins 1955 (1981 ed), 282). Yet, some occupation and activity did extend up what is now Glasshouse Street (the old York Road) and Huntingdon Street. At least two medieval caves and evidence of pottery production have been excavated north of the defences, with the latter having been found as far north as

St Ann's Street (Poole and Kinsley 2019; MacCormick 2001, 75, 77, 95; Lomax 2013, 146-147). Pottery production is believed to have taken place in the St Ann's Street and Union Road area during the early 13th century. Close by, at the western end of Woodborough Road, on a number of occasions in the 18th and 19th centuries, antiquarians observed large numbers of human skeletons and remains thought to be of either a chapel or church, all believed to have been of medieval date. It has been suggested these were the remains of an intriguing settlement named Whiston (first mentioned in 1217). Although this is the subject of debate (Stevenson and Stapleton 1898, 139-144; Foulds 1997, 61; Lomax 2013, 110-113). Further investigation to the north of the medieval defences and re-appraisal of antiquarian observation, in tandem with thorough documentary research, has the potential to establish whether occupation was more than just 'ribbon development'.

Also outside the defences, on the northern side, during this period were at least two religious institutions. St John's Hospital (founded by 1208), was located on the eastern side of Glasshouse Street towards its southern end (Lomax 2013, 107). St Leonard's Hospital, which was first mentioned in 1230 but is believed to have been founded during the reign of Henry II (Page 1910, 173). The precise location of the hospital is uncertain. The earliest certain reference to the Hospital of the Holy Sepulchre dates to 1267 but it may have been established prior to 1250 (Page 1910, 168). The location of this hospital is also uncertain. Although 19th and 20th century development of the land to the north of the defences may have significantly truncated remains of these religious institutions, recent excavations, in particular at the Confetti site, have demonstrated that archaeological remains can survive (Poole and Kinsley 2019). Further excavation in advance of future development has the potential to help locate these hospitals.

Although a zone of pottery production existed to the north of the town defences during the first half of the 13th century, potters also worked within the defences, in the town's northeastern corner. A double-flu pottery kiln was excavated at Goose Gate in 1976/77 and was believed to date to c. 1225-1250 (Young 1983). A possible second kiln was excavated at the same site but it was severely truncated. Early 19th-century antiquarian observations of kilns and pottery waste at George Street represent evidence of this trade, as do kilns and pottery waste excavated on land adjacent to the Newmarket Hotel in 1932. The excavations and observations were understandably poorly recorded by modern standards, though Parker's 1932 paper remains an invaluable source of information regarding this important aspect of medieval activity (Parker 1932, 79-134). More recent excavation at Western Street indicated that pottery production continued in this area of the town, perhaps into the 14th century (Walker 2006).

Other trades which formed a key component of the town's economy, and which can be expected to leave a trace in the archaeological record include textile production, tanning and metalworking. Although documented in medieval texts, significant archaeological evidence for these trades during the period 1066 to 1250 is currently lacking.

Documentary references to caves for this period are numerous, but few can be conclusively dated to the 13th century or earlier. The malt kiln complex beneath 8 Castle Gate may have originated in c. 1250 before being enlarged, as may part of the Drury Hill complex beneath the Broadmarsh Shopping Centre. Mortimer's Hole, at Nottingham Castle, is likely to have been hewn prior to 1250 but this is uncertain. Early caves may have been destroyed or modified so much so that early features are no longer present. The dating of caves is difficult, with deposits within a cave usually dating to the end of its use. Despite recent research projects relating to Nottingham's caves, there are still vast gaps in our knowledge and careful archaeological excavation of caves, as they are discovered, has great potential to enhance our understanding of their chronology.

Exploring town and hinterland relations and environmental impact of human activity

Another key research theme of the last twenty years has been the relationship of towns with their hinterlands, in terms of the roles of these central places and their range of networks (see, for example, Elliott, Jones and Howard 2004, 175–9). The hinterlands of larger administrative towns, like Nottingham, embraced dynamic landscapes in the early medieval period, containing complex hierarchies of multifunctional settlement types and economic ties, including links with smaller market towns and rural boroughs (Perring 2002: Davies 2010; Loveluck 2018). Within the East Midlands, recent archaeological exploration and interpretation of modern-day small towns such as Torksey and Repton – both important early medieval sites and overwintering camps of the

Viking Great army – provide important comparanda for Nottingham, as they did not become the paramount urban centres of their regions (Hadley and Richards 2016; Davies forthcoming). Understanding the relationship between Nottingham and other small medieval towns that grew up along the Trent valley, such as Southwell and Newark, by the archaeological profiling of their networks is also crucial for understanding the development of Nottingham as a regional central place.

Archaeological exploration of the relationship between Nottingham and its immediate satellite settlements and wider hinterland has been relatively limited for the period between c. 650 and 1250. This is in contrast to some excellent documentary research. For example, David Roffe's analysis of the social fabric of Nottingham and its immediate environs, based on the TRE 1066 records[4] of the Domesday survey, has highlighted the concentration of king's thegns in its hinterland, and has emphasised its role as a strategic military hub for the last of the West Saxon kings (Roffe 1997). More recently, a number of excavations in and around the site of the Cluniac priory at Lenton, founded by 1106-7, have partially redressed this imbalance and point the way for further research (Flintoft and Davies 2015). These investigations were conducted prior to construction of Nottingham's new tram network in 2013 and included a sizeable excavation in the outer precinct. This revealed a sequence of activity, dating between the 11th and 17th centuries, relating mainly to the site of Lenton Priory's famous Martinmas fair. It demonstrates the complexity of medieval ecclesiastical sites, with Lenton Priory providing a forum for both religious and commercial activities. A rental of 1516, which describes the fair in detail, noted also that all trading in Nottingham had to stop for eight days during the fair: a requirement that the Corporation of Nottingham was far from happy with (Barnes 1987; Greig 1992) and an important reminder of the nuanced relationship between different communities in towns and their immediate hinterlands.

Studies of the artefactual and environmental remains recovered during excavations provide significant opportunities for investigating the relationship of Nottingham with the Trent Valley, Sherwood Forest and its wider hinterland (Elliott, Jones and Howard 2004, 175–9). Important conclusions may be drawn, for example, from studies of pottery production and distribution and from palaeoenvironmental analyses of charred cereals, wood and other remains. The remarkable assemblage of charred plant remains that was recovered from a medieval grain-drying oven at Fisher Gate is particularly noteworthy (Young 1983, 4) and could potentially add significantly to our understanding of the range of cereals consumed and the medieval urban diet. In addition, studies of raw materials could shed important light upon the movement of materials to the town by river transport or by carting: for example, cartloads of coal from mines at Trowell and elsewhere (Goddard and Musson 2013) and iron from places like the industrial village of Keighton, owned by Lenton Abbey and partially preserved in the nearby University Park campus (Coppack 1969, 1971). The economic linkages between Nottingham, Sherwood Forest and other areas of forest, and fluctuations in these over time, provide additional key themes for research (Crook 2005; Dicken 2018). Looking farther afield, there is considerable scope for investigating the place of Nottingham within the Trent Valley transport corridor to and from the Humber (Elliott, Jones and Howard 2004, 157–60), and its connections thereafter with London and international networks across the North Sea and along the Atlantic coast towards the Bay of Biscay. In 1187–88, for example, 100 cart-loads of lead were transported from Castleton in the High Peak, along the Trent to the Humber Estuary, and then across the English Channel to Rouen; from there, the lead was shipped along the River Seine to its ultimate destination at the Cistercian abbey of Clairvaux (Pipe Roll 34, Henry II, 1187-88, ed. 1925, p. 199). Integrated textual and archaeological analysis has significant potential, therefore, for piecing together the complex web of provisioning and service relationships that linked Nottingham and its hinterland to the wider world of the Angevin/Plantagenet realm of the 12th and 13th centuries.

Further research is also required to investigate the impacts of medieval and later industrial activity and domestic coal-burning upon pollution levels, and for this purpose we recommend analyses of archaeological borehole data across the city for historic pollution elements such as lead, iron, copper, arsenic and mercury. This will help to determine pollution markers for industrial activities and the impacts of industrial and domestic fuel consumption practices on Nottingham's environment – and potentially the health of its population (More et al 2017). Nottingham and the border zone between Nottinghamshire and Derbyshire lay at the centre of one of the earliest coal-burning regions in England. The environmental impacts of this activity are recorded in documentary sources: for example, in 1258, Queen Eleanor refused to stay in the royal castle at Nottingham because the townspeople burned so much coal for fuel that the air was too acrid and unbreathable; consequently she stayed at Ashby-de-la-Zouch while her husband, Henry III, remained in Nottingham (Goddard and Musson 2013). Such early extensive coal-burning could have left significant mercury signatures in archaeological deposits from

[4] TRE, meaning tempore regis Edwardi (land held in the time of King Edward, i.e. 1066).

at least the thirteenth century. Systematic sampling for this and other pollution elements in sub-surface deposits is significant not only for advancing understanding of Nottingham's economy but also for managing the risk of legacy contaminants during the disturbance of polluted deposits in modern developments (Parliamentary Office for Science & Technology Post Note 579, July 2018).

Future research Priorities: Developing a strategy for investigation

This brief overview of some of the results from the unpublished excavations of 1969–80, together with tantalizing evidence from more recent discoveries, necessitates reconsideration of the key questions relating to the origins of Nottingham and the development of the early medieval town. In particular, when, how and why did Nottingham develop as a single and diverse nucleated settlement? There are hints that Nottingham, like many other early medieval European towns, may have developed from a poly-focal group of settlements that coalesced into one principal focus (Loveluck 2013). The extent, character and roles of these proposed earliest settlements are unknown: were they defended or were they unenclosed (as the evidence of the Fruitmarket might suggest) and, if unenclosed, how widely might they have been dispersed across the landscape?

Understanding of these and other questions may be advanced significantly by the interrogation of unpublished excavation archives, including detailed analyses of stratigraphic sequences and of associated artefacts. This might permit more detailed analyses of the functions and dating of the enigmatic sequences recorded at Boots Garage and Fisher Gate. Do they support the case for a concentration of settlement to the west of the Beck? Or, as indicated perhaps by the evidence of Halifax Place and Drury Hill, was early settlement spread more extensively? Settlement would have been constrained by the topography of the sandstone ridge and by the extensive marshland and multiple river channels of the Trent floodplain, but might there also have been ownership and other social constraints dictating the extent of settlement? There are also key questions relating to settlement identity. Was the settlement established by a secular or ecclesiastical authority in recognition, for example, of its potential as a centre for trade and exchange, or were there always competing social groups, including elites, freemen, craft specialists and merchants, within different foci that later coalesced?

Interrogation of unpublished excavation archives and, where appropriate, historic documentation and antiquarian research, is particularly important given that opportunities to excavate sites are limited for large parts of the historic core. This is especially the case for the post-Norman Conquest defences which are largely confined beneath major highways including Upper and Lower Parliament Street. Further research of previous excavations, most notably the unpublished site of Woolpack Lane, will make an important contribution but questions remain regarding the precise course of the defensive ditch at the eastern side of the town. A Ground Penetrating Radar survey, funded by Historic England, was undertaken at Cranbrook Street in 2015, but services within the road prevented the effectiveness of this method of survey (Lomax 2015). However, as technology improves it would be worth reconsidering the application of geophysical survey in the prospection of the defences as well as the investigation of sites where invasive methods of investigation are not currently possible.

Future archaeological work has the potential to greatly refine our understanding of the extent of occupation and industrial/trade activity in and around the medieval town and in particular can identify sites of trades such as pottery production.

A discrete research project which would greatly benefit our understanding of Nottingham, in particular for the period c. 1150-1250, and help more closely date archaeological remains, would be through the detailed analysis and reappraisal of pottery recovered from past and future excavations. End products of the analysis would be pottery reports for individual sites, where they do not currently exist, and, importantly, a pottery type series which would disseminate information for the benefit of pottery researchers who encounter Nottingham produced pottery within the city or elsewhere in the country. Our understanding of Nottingham pottery would be significantly enhanced by the full post-excavation analysis and publication of the well-recorded pottery kiln excavated by Young at Goose Gate in 1976/77.

Further study of many of the key questions highlighted in previous sections of this paper hinges upon the identification of locations preserving sub-surface deposits with significant potential for the preservation of artefacts, ecofacts and palaeoenvironmental remains (Figure 2). This can be achieved by using both developer-led and research-based projects to model sub-surface deposits and to refine the mapping of areas of optimum

archaeological and palaeoenvironmental preservation. Attention should also be focused upon refining our understanding of the chronology of deposit formation. Sampling for Optically Stimulated Luminescence (OSL) and radiocarbon dates and palaeoenvironmental data to support deposit modelling of the deep deposits adjacent to the River Leen or the Beck, for example, might facilitate the targeting during excavation of locations that could preserve evidence of significant waterfront activity. In more elevated areas, modelling could help to identify pockets of deep deposits with high interpretative potential. Many excavations have demonstrated that archaeological deposits survive in pockets across the sandstone ridge that forms Nottingham's historic core, some with the potential to contribute significantly to narratives of social and economic change.

Against this background, a number of urban areas have been cited to illustrate the benefits of intensive campaigns of archaeological investigation. It is hoped Nottingham will now follow the approach of cities like Leicester and Lincoln where a huge amount of archaeological excavation has been undertaken. In Lincoln, extensive excavation and publication between the 1960s and 1990s resulted in a comprehensive urban archaeological resource assessment, underpinned by spatial databases (e.g. Jones *et al* 2003). Future excavation results will be flagged in the Urban Archaeological Database (UAD) that has been developed recently by one of the present authors (SL) with support from Historic England and Nottingham City Council, enabling this resource to be used as an important predictive tool in urban archaeological research.

In tandem with new investigations, analysis still needs to be undertaken on unpublished archives. As noted above, particularly important evidence for the early development of Nottingham lies buried in archives compiled during major excavations carried out in the pre-Conquest borough between 1969 and 1980, and further analysis and publication of these remains a key priority. Data derived from studies of unpublished excavations can also contribute to current research by providing data that can assist the development of artefact type series and permit the refinement of stratigraphic sequences. Excavation resources should also be focused where possible upon sites lying adjacent to or overlapping historic unpublished sites, following the example of the recent excavations at Halifax Place that we have discussed briefly above; this enabled checking of the stratigraphic sequence recorded during earlier excavations and provided data that will facilitate interpretation of the unpublished archives. We suggest too that particular attention be focused upon sites that would permit re-examination of the defensive ditch sequence, as the origins and development of the defences remains a key issue for researchers interested in medieval Nottingham.

Conclusions

If the research questions highlighted in this paper are to be addressed successfully, traditional investigations aimed at identifying structural sequences or seeking potential linkages with political and cultural changes need to be combined with analyses focused upon research into the lifestyles of the inhabitants, their social, political and economic networks and their use of the built environment to create and express different social identities (Loveluck 2007; Reynolds 2003; Loveluck 2013; King xx). Comparisons may then be drawn with narratives based on top-down governmental control to explore the dialogue between power and the changing roles of the town and its communities (Loveluck 2018).

To advance understanding of the issues outlined above, we recommend the development of a city-wide Resource Assessment (incorporating a deposit model and publication of the 1969-80 excavations), Research Agenda and Strategy that can build upon the East Midlands Historic Environment Research Framework (Knight et al 2012; https://researchframeworks.org/emherf/) and complement the Nottingham Heritage Strategy (NCC 2016). This would facilitate more effective targeting of the resources available for academic or community-based research and the development of appropriate schemes of investigation for sites impacted by development – informing desk-based assessments and guiding project designs through subsequent stages of deposit modelling, evaluation, full excavation, analysis and reporting. Such an approach is best pursued by collaboration between the curatorial, contracting, consultancy, academic and community sectors, following the model developed for the wider region, and may be expected to provide a more thorough and meaningful understanding of Nottingham than might otherwise be achieved. We hope that future research into the origins and development of the city can proceed on this integrated basis and that the insights obtained by this approach will be richly rewarding for researchers and the wider public.

References

Alexander, J. and Monckton, L. 2014. 'Excellent, New and Uniforme yn work', St Mary's Nottingham, an Architectural and Archaeological Study', *TTS 118:* 39-60.

Anon. 1851. 'Antiquities and works of art exhibited', Archaeological Journal 8, 424–425.

Ayers, B. 1987. *Excavations at St Martin-at-Palace Plain, Norwich, 1981*, East Anglian Archaeology 37, Norfolk Archaeological Unit and the Scole Archaeological Committee, Witley Press, Hunstanton, Norfolk.

Ayers, B. 2016. *The German Ocean. Medieval Europe around the North Sea*, Sheffield: Barnes, F. A. 1987. 'Lenton Priory After the Dissolution: Its Buildings and Fair Grounds', *TTS 91:* 79-95.

Blinkhorn, P., 2009. 'Ipswich ware', in D.H. Evans and C. Loveluck, (eds.*), Life and Economy at Early Medieval Flixborough, AD 600-1000: The Artefact Evidence. Excavations at Flixborough, Volume 2*, 357-363, Series Ed., C.P. Loveluck, Oxford: Oxbow.

Carey, C., Howard, A.J.**,** Knight, D.**,** Corcoran, J. and Heathcote, J. (eds) 2018. *Deposit Modelling and Archaeology*. Exeter: Short Run Press Ltd

Carpenter, D. 2003. *The Struggle for Mastery. Britain 1066-1284*, London: Allen Lane/Penguin.

Carter, A., 1978. 'The Anglo-Saxon Origins of Norwich: The problems and approaches', Anglo-Saxon England, 7, 175-204.

Carver, M.O.H., 2010. *The Birth of the Borough: An Archaeological Study of Anglo-Saxon Stafford*, Woodbridge: Boydell.

Clarke, H. and Carter, A. 1977. Excavations in King's Lynn 1963-1970. The Society for Medieval Archaeology Monograph Series: No.7

Coppack, G., 1969. 'A medieval well and associated pottery from Keighton', *TTS 72:* 51-58.

Coppack, G., 1971. 'The deserted medieval village at Keighton', *TTS 75:* 41-58.

Crook, D., 2005. 'The Exemption of Nottingham from the Forest Laws of the Twelfth and Thirteenth Centuries', *TTS 109:* 69-73.

Dalwood, H., 2004. 'Chronological Synthesis', in H. Dalwood and R. Edwards, (eds.), *Excavations at Deansway, Worcester, 1988-89: Romano-British Small Town to Late Medieval City*, 55, CBA Research Report 139, York: CBA.

Davies, D., 2017. *The Development of Archaeological Post-Excavation Within British Professional Archaeology.* BAJR Guide Series 46, www.bajr.org/BAJRGuides.

Davies, G., 2010. 'Early Medieval 'Rural Centres' and West Norfolk: A Growing Picture of Diversity, Complexity and Changing Lifestyles', *Medieval Archaeology*, 54:1, 89-122

Davies, G., 2019. *An Archaeological Excavation at the former Fruitmarket Site, Bedford Row, Nottingham*, TPA Report 091/2019.

Davies, G., Forthcoming. Landscape and Social Change : Early Medieval Settlement Evolution in Repton, and its implications for the interpretation of the Viking-Age site. *Derbyshire Archaeological Journal 139*.

Davies, G. and Flintoft, 2015. *The Lenton Priory Project: An Archaeological Evaluation*. Trent & Peak Archaeology Report 061/2015.

Dicken, C.A. 2018. *Settlement, landscape and identity in medieval royal forests: the impact of Forest Law on Sherwood and the Peak, c. AD 650-1348*, PhD thesis, University of Nottingham.

Dixon, P., Knight, D. and Firman, 1997. 'The Origins Of Nottingham' in J. Beckett, (ed.), *A Centenary History of Nottingham*, 9-23, Manchester: Manchester University Press.

Dodd, A., 2003. '*Synthesis and Discussion*', in A. Dodd, (ed.), *Oxford before the University: The Late Saxon and Norman Archaeology of the Thames Crossing, the Defences and the Town*, Thames Valley Landscapes Monograph 17, 15-32, Oxford: Oxford Archaeology.

Drage, C. 1999. *Nottingham Castle: A Place Full Royal,* Nottingham: Nottingham Civic Society and The Thoroton Society of Nottinghamshire.

Elliott, L., Jones, H. and Howard, A.J. 2004. 'The medieval landscape', in D. Knight and A.J. Howard (eds), *Trent Valley Landscapes,* 153–191. Kings Lynn: Heritage Marketing and Publications Ltd.

Everson, P. & Stocker, D. 2015, *Corpus of Anglo-Saxon Stone Sculpture Volume XII: Nottinghamshire*. British Academy. Oxford University Press.

Flintoft, P. and Davies, G. 2015. The *Archaeology of Nottingham's NET 2 Tram, Monograph 2: Excavations in the Outer Precinct of Lenton Priory at Abbey Street, Lenton, Nottingham*. Trent & Peak Archaeology Report 091/2013.

Foulds, T. 1997. 'The Medieval Town', in J. Beckett, (ed.), *A Centenary History of Nottingham*, 56–71. Manchester: Manchester University Press.

Goddard, R., and Musson, J. 2013. 'A Rich Vein? Novel Disseisin and the Trowell Coalmine Case of 1258', *English Historical Review* 128, No. 531, 239-262, doi.org/10.1093/ehr/cet036.

Gover, J. E. B., Mawer, A. and Stenton, F. 1979. *The Place-Names of Nottinghamshire.*Cambridge: Cambridge University Press.

Greig, P. 1992. 'The Layout of Lenton Fairground, 1516', *TTS 96:* 130-134.

Hadley, D.M. and Richards, J.D. 2016. 'The Winter Camp Of The Viking Great Army, AD 872-3, Torksey, Lincolnshire' The Antiquaries Journal, 96, 23-67.

Hadley, D.M. and Richards, J.D. 2018. 'In Search of the Viking Great Army: Beyond the Winter Camps' in *Medieval Settlement Research, 33*, 1-17.

Hall, R.A., 1989. 'The Five Boroughs of the Danelaw: A review of present knowledge,' *Anglo-Saxon England*, 18, 149-206.

Hall, R.A., with Evans, T, Hunter-Mann, K. and Mainman, A.J. 2014. *Anglo-Scandinavian Occupation at 16-22 Coppergate: Defining a Townscape, The Archaeology of York*, Vol. 8, fasc. 5, York: YAT/CBA.

Hall, R.A., and Hunter-Mann, K., (eds.) 2003. *Medieval Urbanism in Coppergate: Refining a Townscape*, *The Archaeology of York*, Vol. 10, fasc. 6, York: YAT/CBA.

Hart, C.E., 1975. *The Early Charters of Northern England and the North Midlands*, London: Leicester University Press.

Higgins, T. 2017. An *Archaeological Evaluation on land at Cliff Road (Narrow Marsh), Nottingham*. ULAS Report No. 2017-059.

Hoskins, W.G. 1955 (1981 ed). *The Making of the English Landscape*, London: Hodder & Stoughton/BCA.

Hunter-Mann, K and Oxley, J., 2018. 'A review and case study of deposit modelling in York' in Carey, C., Howard, A., Knight, D., Corcoran, J. And Heathcote, J. (eds.) *Deposit Modelling and Archaeology*, University of Brighton.

Jones, M., Stocker, D. And Vince, A. 2003. *The City by the Pool: Assessing the Archaeology of the City of Lincoln*, Lincoln Archaeology Studies 10, Oxbow Books, Oxford.

Keynes, M., and Lapidge, S. 1983 *Asser's Life of King Alfred*. London: Penguin Books Ltd

Keyworth, T. 2018. *Lace Market Point, London Road, Nottingham. Archaeological Monitoring and Recording of Window Samples and Boreholes: Updated*. TPA Report 091/2017

King, C.K., 2020. *Houses and Society in Norwich 1350-1660: urban buildings in the Age of Transition*, Woodbridge: Boydell.

Kinsley, G. 1995. 'Excavation of medieval and post-medieval buildings at Nottingham Shire Hall', *TTS 99:* 55–64.

Kinsley, G. and Knight, D. 2019. *The Caves of Nottingham Regeneration Project (Historic England Project 5866): Desk-Based Assessment and Laser Surveys of Nottingham's Caves*. Archaeology Data Service, University of York

Knight, D. and Lomax, S. 2016. *Excavations of Nottingham's Pre-Conquest Borough from 1969 and 1980. Compilation of the Excavation Archive and Recommendations for Further Work*. Archaeology Data Service, University of York.

Knight, D., Lomax, S. and Young, G. 2012. 'The Origins of Nottingham: archaeological investigations in the medieval town from 1969 to 1980'. *TTS 116:* 45–52.

Knight, D., Vyner, B. and Allen, C. 2012. *East Midlands Heritage. An Updated Research Agenda and Strategy for the Historic Environment of the East Midlands.* Nottingham: University of Nottingham and York Archaeological Trust.

Lang, J. & Ager, B. 1989. 'Swords of the Anglo-Saxon and Viking periods in the British Museum: a radiographic study', in S.C. Hawkes (ed.) *Weapons and Warfare in Anglo-Saxon England*. Oxford: Oxford University Committee for Archaeology Monograph 21, 85-122

Lomax, S. 2013. *Nottingham: The Buried Past Of A Historic City Revealed*. Pen & Sword Archaeology, Barnsley.

Lomax, S. 2015. *Defining Nottingham's Medieval Defences: Establishing the defences and extent of the medieval town through ground penetrating radar* (unpublished report: Historic England project 7054)

Loveluck, C. 2007. *Rural Settlement, Lifestyles and Social Change in the Later First Millennium AD: Anglo-Saxon Flixborough in its wider context. Excavations at Flixborough, Volume 4*, Series ed. C.P. Loveluck, Oxford: Oxbow.

Loveluck, C. 2013. *Northwest Europe in the Early Middle Ages, c. AD 600-1150. A Comparative Archaeology*, Cambridge: Cambridge University Press.

Loveluck, C. 2018. 'Coopetition and Urban Worlds, c. AD 1050 and 1150: archaeological and textual case studies from northwest Europe', in R. Le Jan, G. Bührer-Thierry and S. Gasparri, eds., *Coopetition: Rivaliser, Cooperer dans les sociétés du Haut Moyen Âge (500-1100), Haut Moyen Âge **31***, 295-319, Turnhout: Brepols, doi.org/10.1484/M.HAMA-EB.5.114228.

MacCormick, A.G. 2001. 'Nottingham's Underground Maltings and Other Medieval Caves: architecture and Dating', *TTS 105*: 73-100

Marsden, J.F. 2001. *An Archaeological Evaluation, Exhumation and Watching Brief at Nottingham National Ice Centre Site, Lower Parliament Street, Nottingham*. JSAC Report JSAC/416/01/003

McGlynn, S. 2013. *Blood Cries Afar. The Forgotten Invasion of England 1216*, Stroud: The History Press.

More, A.F., N.E. Spaulding, P. Bohleber, M.J. Handley, H. Hoffmann, E.V. Korotkikh, A.V. Kurbatov, C.P. Loveluck, S.B. Sneed, M. McCormick, and P.A. Mayewski, 2017. 'Next generation ice core technology reveals true minimum natural levels of lead (Pb) in the atmosphere: insights from the Black Death', *GeoHealth **1,*** 1-9, doi.org/10.1002/2017GH000064.

Morris, J. (ed), 1977. *Domesday Book: Nottinghamshire, 28*. Chichester: Phillimore.

NCC 2016. Nottingham Heritage Strategy: A future heritage for the city. Nottingham City Council.

Page, W. 1910. *A History of the County of Nottingham, Volume 2*, London: Victoria County History

Parker, A. 1932. 'Nottingham Pottery', *TTS 36:* 79-134

Parker, L. forthcoming. *We Dig the Castle! A Community and Training Excavation in Brewhouse Yard. Interim Report for the 2018 Excavations.* TPA Report 2019.

Parliamentary Office for Science & Technology PostNote 579, July 2018. *Persistent Chemical Pollutants*, Houses of Parliament, London: HMSO.

Perring, D. 2002. *Town and Country in England: Frameworks for archaeological research*. Council for British Archaeology Monograph 134, York.

Pipe Roll Society, 1925. *The Great Roll of the Pipe for the Thirty-fourth year of the reign of king Henry the Second, AD 1187-1188*, Pipe Roll Society 38, London.

Pipe Roll Society, 1953. *The Great Roll of the Pipe for the Thirteenth year of the reign of King John, AD 1210-1211*, ed. D.M Stenton, Pipe Roll Society 66 (New Series Vol 28), London.

Poole, K., Renner, P., Hooley, T., Davies, G., Krawiec, K. 2018. *Broadmarsh Bust Station and Car Park, Nottingham: An Archaeological Evaluation*. TPA Report 165/2018.

Poole, K. and Kinsley, G. 2019. *Archaeological Excavations at the Confetti Building site, Convent Street, Nottingham.* Trent & Peak Archaeology 106/2019

Renner, P. and Collins, C. 2018. *44 St. Mary's Gate, Nottingham: An Archaeological Excavation.* TPA Report 072/2018.

Reynolds, A. 2003.' Boundaries and Settlements in Later Sixth to Eleventh-century England', *Anglo-Saxon Studies in Archaeology and History 12*, 97-139.

Roffe, D. 1997. 'The Anglo-Saxon Town and the Norman Conquest', in J. Beckett, (ed.), *A Centenary History of Nottingham*, 24-42, Manchester: Manchester University Press.

Roushannafas, T. 2018. *Fruitmarket Site, Nottingham. Report on Archaeological Trial Trenching*. TPA Report 152/2017.

Stevenson, W. 1918. 'Topographical and other early notes about Nottingham'. *TTS 22:* 51–74.

Stevenson, W. and Stapleton, A. 1898. *The Religious Institutions of Old Nottingham, Volume II.* Nottingham: T. Forman and Sons.

Wade-Martins, P., 2017. A Life in Norfolk Archaeology: Archaeology of an Arable Landscape 1950-2016. Archaeopress Archaeology, Cambridge.

Walker, D. 2006. *An archaeological watching Brief at Western Street*, Trent & Peak Archaeological Unit

Wildgoose, R.H. 1961. 'The defences of the pre-Conquest Borough of Nottingham' *TTS 65:* 19–26.

Wright, J. 2018. 'An Anglo-Saxon Grave Cover from Nottingham Castle', TTS 122: 43-45

Young, C.S.B. 1983. *Discovering Rescue Archaeology in Nottingham.* Nottingham: Nottingham City Museums.

Young, C.S.B. 1986. 'Archaeology in Nottingham: the pre Conquest Borough' in S.N. Mastoris (ed.) *History in the Making: Recent Historical research in Nottingham and Nottinghamshire 1985*, 1–4. Nottingham.

Young, G. 1987. 'Archaeology in Nottingham: the Halifax Place excavation', in S.N. Mastoris (ed.) *History in the Making: Recent Historical research in Nottingham and Nottinghamshire 1986*, 1–6. Nottingham 1987.