An Archaeological Resource Assessment of Post-Medieval Nottinghamshire (1500-1750)

Mike Bishop, Virginia Baddeley, Jason Mordan, Nottinghamshire County Council

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Introduction

Inspite of, or perhaps because of, the comparative wealth of historical documentation, very little detailed archaeological work in Nottinghamshire has been focused on the period 1500 to 1750. We have a range of monuments from this time which is the equal of any other era, such as monastic sites, "deserted" and "survivor" villages, towns, churches and buildings, Civil War military structures and battlefields, industrial sites, or field systems. They come down to us in the full panoply of forms, as standing structures, ruins, earthworks, cropmarks, and finds. We have a fuller ranger of material culture than from any other preceding time, some of which is so well understood that it continues to be in daily use, and figures regularly not on Time Team, but on the Antiques Road Show.

Post Medieval remains have often been seen by archaeologists as "recent disturbance" and dealt with in the most shallow fashion. Many of the monuments just mentioned are studied only as the terminal phases of otherwise characteristic mediaeval archaeological remains. The interest and valuation of common types of site and feature, such as the urban deposits that are so vulnerable to more recent destruction, has been slight. Many of our most important sites, known of from documentary evidence, have not even been located. Attempts to develop approaches to the management of the resource that are consistent with those for earlier archaeological remains have been ill-supported by many of our peers. The result is that despite our wealth of knowledge, the extent and content of the archaeological resource of the period 1500 to 1750 is imperfectly known, understood, or addressed. Generally, the period has been treated with the contempt reserved for the familiar and left, with relief at not having to compete, to political, social, economic and art historians and historical geographers.

Yet it has great themes and issues which are readily identifiable. In Nottinghamshire, we can see the birth of the modern landscape through Enclosure, new building types, changes in the use of ritual sites, the emptying or shrinkage of settlements and their internal modification, continuity of settlement patterns, and stirrings of industrialisation with the introduction of brick, the development of textile working and the appearance of industrial landscapes through the expansion of the coal industry. In short, this was the time when the building blocks of the superstructure of our current environment and culture began to be put in place. It saw political, social and economic development that is still readable in the physical structure of Nottinghamshire today.

In recent years a considerable amount of work has been done on the period, particularly at the instigation of, and through the agency of, the County Council's archaeological and buildings conservation staff and resources. The survey of Early Coal Mining, the Village Earthwork Survey , the survey of Timber Framing in Newark, and a programme of dendrochronological dating of building timbers have all been such initiatives. Beside these can be put the Extensive Urban Survey and the Nottinghamshire Historic Landscape Character Map undertaken with English Heritage sponsorship.

Settlement

The pattern of settlement of Nottinghamshire during the 16th, 17th, and early 18th centuries continued to be that which was established during the Late Saxon and early Mediaeval periods. The vast majority of communities were able to respond to the changing circumstances in the later Middle Ages and to continue

to prosper, although not necessarily without protracted difficulties. Until the latter end of the period settlement remained largely based in villages. New farms beyond the village envelopes within, or adjacent to, their own discrete, perhaps ring-fenced, land holdings do not appear generally until the 18th century. The 16th century in particular was marked by the engrossment of vacant agricultural tenancies into occupied farms, creating more differential between large and small holdings and their tenants.

As indicated in the previous paper on the Middle Ages in Nottinghamshire such developments can be expected to have had an effect on village plan-forms. However apart from the commentaries which have been made already on specific communities, such as Laxton, or which are possible for others, this has not been studied. Currently, it is not possible to identify to what degree the village plan-forms recorded on historical maps are the product of developments in the period 1500 to 1750 rather than in the late 18th and early 19th centuries. Phenomena such as road-side or common-edge settlement, on the edges of villages or at a distance within their parish can not be attributed to a particular time-span or socio-economic context.

However, from an overall impression drawn from using available map sources over the last 25 years, it is possible to suggest that there is little evidence for wholesale replanning of communities. Plan-form elements that can be attributed to the Middle Ages survive in many, probably a majority of, settlements. Change largely appears to have been through piecemeal adaptation of farm plots as farms grew or shrank, through infill development within plots and through the addition of new houses or groups of houses outside of the original core. The engines of these developments are variable, and not solely agricultural. By the early 18th century they may relate far more to craft enterprises and proto-industrialisation. With personal capital and investment being another influence, the history of these is particular to each individual community. Settlement expansion and contraction, and changes in settlement foci and plan-forms, therefore are widely dispersed across the county and variable in their character. The range can be illustrated by reference to villages such as Sibthorpe, where a presumably mediaeval plan shown on William Senior's map of 1625 has very little relationship to the modern (ie early 19th century) form, or Eastwood, where an estate map of 1736 shows a village and dispersed settlement, whose extent may have been related to work in textile knitting and coal mining, and with new development on the edge of the common (later known as New Eastwood) being created by one individual freeholder, or a "Deserted Mediaeval Village" such as Whimpton emptied by 1547.

Mention of a "deserted mediaeval village" brings us to one particular characteristic of the period. In some places the socio-economic difficulties of the late Middle ages and later were particularly severe. Even after reorganisation of fields, where there continued to be too few people to work the land landlords had little choice ultimately but to convert fields to pasture and enclose them for sheep grazing. To some lords the profits from sheep were so attractive that they enclosed anyway, despite an apparent sufficiency of population. The 16th and 17th centuries also saw the exercise of lordship in the most naked sense, with the removal of communities from their mediaeval sites, usually to new ones, to make way for new parks around nobles' mansions. The result was the same whatever the particular circumstance, the villages involved disappeared as occupied sites. Although this "process" began in the late 15th century and continued into the 19th century, the bulk of the recorded "lost" villages in Nottinghamshire disappeared in the 16th and earlier 17th centuries. Again, it appears that individual circumstances were the determining factor in these losses, which accounts in part for their wide and largely patternless distribution.

Waxing and waning in population was another factor affecting settlement sizes and patterns. Once more a lack of research and/or data means that we have little secure basis for estimating this in Nottinghamshire, although it may be assumed to have followed the national trends. This may the message from the Archiepiscopal visitations that show a nearly 10% fall in the population of 138 parishes in 1676 as compared to 1603. However this has been attributed to a growth in urban parishes at the expense of those in the countryside. (Wood AC, TTS 1942).

Countryside

With reduced population and social change from the later Middle Ages there was a swing away from arable production towards animal husbandry, a general balance which was to be maintained until the Napoleonic

Wars. Marginal ploughlands and pastures were restored to grassland and open field rotations reorganised to allow for longer fallows, temporary grass and the creation of closes of permanent grass. This was maintained after 1500. As already mentioned, the engrossment of farms and land exchanges was common and the tendency grew for the larger farms to be made up of consolidated blocks of land in the open fields, and for the boundaries of these to become fixed.

The 16th Century saw the establishment of convertible husbandry, with a more balanced, mixed farming regime. Grassland increased and larger numbers of livestock were carried on it. In some areas, notably in a number of South Nottinghamshire parishes, sheep grazing became the principal use of land. Increasingly, this farming economy and the re-alignment of capital in the hands of a wider range of people created pressures to enclose.

Enclosure is the dominant theme in the Nottinghamshire landscape in the period between the late 15th century and the late 19th century. Although commonly associated with the later 18th and 19th centuries, the reality was a steady and gradually increasing trend towards enclosure from 1500 to 1750. Despite being illegal for much of the period, some 65,000 acres, over 12% of the county's land area, were enclosed by 1700 (Chambers 1966, 149-150).

This was not a uniform movement across the County, however. Much early enclosure is to be found in the south, in the Chambers' "Pasture District", where some 45,000 acres in 35 communities were enclosed by 1700. This area was geographically and economically part of a farming region with North Leicestershire that saw a large scale swing towards sheep farming. On the Coal Measures of the west, where small scale field systems associated with small hamlets and farms scattered about in the gaps between the larger communities and their open fields had long been a characteristic, unrecorded piecemeal enclosure seems to have continued. By contrast, only some 6,000 acres in 7 townships are recorded as enclosed before 1700 in the clay lands of central and north Nottinghamshire. This area of the Mercia Mudstones, Chambers' "Arable District", continued to be a centre of arable production and the majority of communities were not enclosed until the 18th and 19th centuries.

As with their settlements, the incidence of enclosure was entirely dependent upon local circumstances and local decisions, to the extent that the context of estate, township or parish is still visible in the distribution of field patterns shown on the Nottinghamshire Historic Landscape Character Map. Much enclosure between 1500 and 1750 was carried out without record, often developing through a gradual piecemeal process often beginning with closes adjacent to the village itself or on the peripheries of the open fields. Parishes were not always entirely enclosed therefore, and frequently it was only the fields themselves that were involved, leaving wastes and commons to later generations. Indeed it is the common pattern that an enclosed landscape of this period stands adjacent to another, or usually others, of the later 18th and 19th century.

Changes in land ownership

The Dissolution of the Monasteries is often credited with having resulted in a wholesale revolution in land ownership. In Nottinghamshire however, the picture is less dramatic. Land did change hands after the Dissolution, but not on a huge scale and not particularly suddenly. Much monastic land was already leased out. That which was not already in secular hands was often leased at first and not sold off until some years afterwards. Those with an interest in a particular establishment before the Dissolution, either by a family connection or by leasing monastic property, often made efforts to obtain that property, or even quite small areas that would augment their existing holdings. Those with the most influence, such as the Earl of Shrewsbury, were in the best position to get what they wanted, and probably benefitted the most. (Cameron A, TTS 1975).

Some new owners of former monasteries and their environs used their consolidated holding to create a compact estate, which often included in due course a remodelled house and park. Rufford, Newstead, Welbeck, Blyth, Wallingwells, Thurgarton, Felley, Shelford all became family seats. Of the ones that did

not, Lenton and Worksop were in unsuitable urban locations, Mattersey may have been too remote, and Beauvale may not have been adaptable.

A smaller scale process occurred on other monastic property such as granges, which were mostly rented out before the Dissolution anyway (Shireoaks, Dean Hall), and hence were easily taken over by local interested parties. This might be seen in records of early enclosure, as it produces a simpler land holding which could be used as the owner sees fit. While there are suggestions of this in the field patterns of some properties, the physical evidence for this has yet to be researched.

Another route to new property was via the break up of Sherwood Forest (and other royal property eg Clipstone Park), made possible by Royal disinterest in the forest, except in revenue terms. Clumber park was created in 1710, and Thoresby Park was hugely increased by a grant of land in 1683. Such large parks facilitated the beginnings of large-scale manipulation of the landscape which reached a peak in the later 18th century . This was achieved either by the remodelling of a huge park (such as at Thoresby in the 1730s, and Worksop and Welbeck in the 1740s), or, in more modest parks, by extension of features into surrounding farmland (as at Haughton and Shireoaks) (V Baddeley 1994).

Woodland

The degradation and diminution of the County's woodland referred to in the paper on the Middle Ages appears to have continued. The factors behind this were probably complex, and may have involved the changes of ownership just discussed, the wholesale clearance of the better royal woods under the Commonwealth, more short-term and exploitative management of timber resources by land owners and tenants, lack of control and interest by absentee landlords, the demand for timber by the expanding coal and other industries, and the continued demand for timber with which to build, especially the new houses of the rising yeomanry in the villages and merchants and service providers in the towns. In all events the extensive woods of Nottinghamshire in 1086 were mere remnants by the late 17th century.

The re-establishment of woodlands was predominantly a feature of the later 18th and 19th centuries, through estate policies and farming practices developed by the larger and more forward looking landowners, which were mimicked or otherwise taken up by lesser men. This was not necessarily a wholly new departure however, for woodland planting and maintenance was part of both the aesthetic and utilitarian concepts of the parks of the 16th and 17th century gentry and the great parks of the Dukeries after the restoration, and somehow the fearsome fuel requirements of the iron industry and other activities such as malting were met.

Buildings

A notable feature of the period 1500 to 1750 is that for the first time standing structures form a significant and increasing proportion of the archaeological record. A quick trawl of the Historic Building Record reveals some 75 listed buildings dating to 16th century (9 early, 1500-34; 7 mid, 1535-69; 16 late, 1570-99), compared to 368 from the 17th century (60 early, 1600-34; 52 mid, 1635-69; 141 late, 1670-99). The Early C18 (up to 1734) produces 322 records.

Timberframing

For much of the period timber-framing continued to be a significant construction method. Many timber-framed buildings appear to have been of higher status, whilst lower status buildings were presumably constructed of inferior timbers and other materials, such as mud (see below), most of which have not survived.

Newark has the best sample of timber framed buildings in the county, including the earliest, The White Hart which is dated by dendrochronology to 1508. The town core appears to have a number of buildings dating to the 16th century but few dating to the 'great rebuilding' of the 17th century. Recently dated examples of

half cruck buildings in this central area show that timber frame technology persisted, all be it in combination with brick, well into the 18th century (Potter Dyke House upper cruck dated to 1730. Millgate upper cruck early 18th century).

Elsewhere, timber framing has produced clusters of dendrochronology dates around 1590 and 1660.

Brick

Despite the ubiquity of timber-framing the greatest innovation of the period was the introduction and expansion of brick

Although the early use of brick, before 1500, is usually seen in the additions of hearths and chimneys to timber framed buildings, there are no known examples of early brick chimneys in Nottinghamshire. (For the most part the early chimneys tend to be of the 'inglenook' type, constructed of one large beam and daub infill. At the Saracen's Head, Southwell a type of chalk stone was used to produce a chimney.)

After 1500, the brick buildings of the Tudor period up to around 1615, are essentially 'polite' architectural constructions that are likely to have drawn their raw material from a source local to each site. The following is a list of the Early Tudor brick buildings in rough chronological order:

Holme Pierrepont Hall -	dendro date 1509
Hodsock Priory Gatehouse (1.29.2) -	E16
Manor House Rampton Gateway (1.43.6) -	E16
Old Farm Kneesall (3.47.1) -	First half of C16
Holy Rood church, Edwalton (8.54.14) -	Mid 16
?Staunton Hall (3.75.2) -	L16
Scrooby, Manor House (1.47.10) -	C16
Wollaton Hall (6.1.757) -	1588
Thrumpton Hall - 8.50.18	1608
Ragnall Hall Barn (1.42.9) -	E17

This list supports the general assumption that brick was initially restricted to use in particular high status projects.

After the Civil War however, the use of brick was expanded more generally. Current data does not allow this spread to be traced in detail. In general terms however, we see a move across to brick 'new build' towards the end of the 17th century, particularly for schools, including the fine example in the Artisan Mannerism style at Tuxford, plus others at South Leverton (1691), and Farndon. Certainly after about 1660 Nottingham became increasingly a brick city. For example, brick was chosen for the rebuilding of the church of St Nicholas in 1671-82, after its destruction during the Civil War (Barley and Clifton-Taylor 1979).

Alongside this there is a general introduction of brick nogging, replacing the wattle and daub and varieties of mud infill (see mud). An example of this is Keyworth Barn, where a dendro date of 1651 and the presence of holes for the staves of wattle and daub, suggests a date of the 1680's for the brick herring-bone infill. By the beginning of the 18th century all new building in Nottingham and the Trent Valley utilised brick, although as we have seen from Newark the timber frame tradition persisted in some areas.

Most brick was locally produced. Although there is evidence of production to the east of Nottingham, in the Mapperley and Carlton areas, as early as 1482-3 (Borough Records), the industry appears to begin with on-site production for prestige buildings (such as at Welbeck, Holme Pierrepont, Hodsock, Kneesall, Flintham), by itinerant brick makers who used the local coal supplies for firing their clamps. Later, the industry expanded to supply a wider market. Clay sources were not hard to locate in the Mercia Mudstones on either side of the Trent. To the south, the brick used was bright red owing to the iron oxides of the local clays, while to the north the bricks are browner in colour (Barley and Clifton-Taylor 1979). Clay itself was

also transported, for example into Nottingham to produce both brick and pottery. (Gorman MJ, EMG 1980) However, the presence of a 17th century brick kiln at Flintham Hall is evidence that larger building projects outside of the city still utilised local materials for production on-site rather than importing the finished brick (RC Alvey, TTS 1982). By the mid 18th century most communities on suitable geology probably had a local clay pit for brick making.

Tiles

The general use of tiles pre-dates that of brick, 14th century examples are known from Nottingham, Rufford. Kimberley and elsewhere. By the 18th century plain tiles were being replaced by pantiles, which were originally imported from Holland via the Trent but were being produced locally before the end of the century. They are likely to have offered a cheaper alternative to plain tiles as they allowed lower pitched roofs to be used and fewer were needed to cover the same area. New buildings of the early 18th century, such as examples at Bunny and Bole, can be found covered in pantiles but with steeply pitched roofs which indicate an original intention to use plain tile. Through both replacement and new build, pantiles gradually became the norm in Nottinghamshire.

Thatch

Only two examples of thatch roofing appear on the listed building records at Collingham and Upton (but this does not include Rushcliffe). In addition to those that would have had plain tiles, it is probable that many of the buildings that are now covered by steep pitched pantiled roofs were originally thatched.

Mud

To the south and east of the Trent, between Nottingham and Newark, there is evidence of a tradition of mud walled buildings which is said to be shared with Lincolnshire (Barley and Clifton-Taylor 1979). However, the 'mud and stud' of Lincolnshire is unknown in Nottinghamshire. No use of stud for support within the walls survives, instead the Notts examples are all of solid mud wall construction, as at Dove Cottage in East Bridgford and Robert Miles Junior School at Bingham. The other remaining examples of mud construction are boundary walls (Hawksworth and Thoroton) and the remains of dovecotes (two at Flintham), some of which are incorporated into later brick buildings (as at Flintham). Many examples have been lost in the recent past, the first edition of Pevsner for example, refers to 3 mud cottages in Aslockton, since demolished.

Churches

There is apparently little evidence for 16th century construction (windows of the crossing at St Mary's, Newark are probably post 1500, the porch at Holme Church). There is evidence of 17th century neglect, due to political and religious upheaval and population shift. A number which were probably beyond repair, often those left by village loss or shrinkage, became abandoned in the 18th century (N Leverton, Adbolton, Thorpe in the Glebe; Rempstone and Kinoulton were replaced with new buildings). Others, especially estate churches, were repaired, perhaps as confidence returned after the Restoration (Colwick, Holme Pierrepont, Rampton). There were also some churches that were newly built in expanding industrial communities, such as Awsworth and W Stockwith (SMR).

A characteristic of the period 1500 to 1750, especially after the Civil War is the increasing trend towards the erection of grave-stones in the churchyard. Whilst monuments, both within and outside the church, in the 16th and early 17th centuries were mainly erected for and by notable families, by the later 17th and 18th centuries monuments and gravestones marking the burials of lesser people were becoming usual. This marks a change in social and religious beliefs and attitudes which has continued to the present day.

Physical evidence to match that of documents for religious non-conformity in Nottinghamshire from the 16th century is elusive. There were Quakers in the north and west, and in the Vale of Belvoir from 1640s. Under the Toleration Act of 1689 private houses were registered as places of worship, while later they were bought or purpose built. Burial grounds were also purchased, as early as 1674 in Nottingham, but earlier burials would have been on their own land (Lomax J, TTS 1944). Apart from Quakers, 51 houses were licensed between 1689 and 1698, and 32 more between 1700 and 1717 (though apparently used by only some 18 congregations, totalling 4,000 people). These were concentrated in towns and industrial villages,

but there are rural examples also as at Collingham, Kneesall, and Misterton. All non-conformists appear to have been in decline in the early 18th century until the rise of Methodism in 1740s (Wood AC, TTS 1943).

Industry:

Coal -

The earliest development of the coal industry in Nottinghamshire was covered in the previous paper on the Middle Ages. More information from the post-mediaeval period allows the recognition of particular players like the Willoughbys. This family moved to Wollaton around 1460 to take advantage of the coal mines which were already producing the family's best income, which continued to rise into the 16th century. Sir Henry Willoughby had 5 pits working in 1489, and negotiated with Lenton Priory to cut a sough for drainage under their land, the rent for it to be paid in coal (this sough has still not been traced). He also had an interest in transport, via the Trent. He used his income to buy land, apparently to consolidate his existing holdings. (Cameron A, TTS 1970). Sir Francis Willoughby in turn used the money to build the new Wollaton Hall. In 1601 Sir Percival Willoughby contracted out the mining to Huntingdon Beaumont, who shut down the Wollaton pits to concentrate on those at Strelley, leased from Sir John Byron. Important technical innovations such as powered pumps were in use at Wollaton, and Huntingdon Beaumont is credited with creating the first recorded railway in Britain in 1604, running roughly two miles from the mines at Strelley to the road to the Trent (RS Smith 1989).

Although the Wollaton and Strelley pits have received a lot of historical attention, they have been little studied on the ground. Even the mining features recently scheduled at Strelley are of unknown date. There were other mines also operating during this period, and the physical remains of this industry are widespread in the west of the county, but have barely been looked at. The Early Coal Mining survey has identified a huge number of potential sites on the exposed coalfield, but this now needs to be followed up with the documentary work which will help to trace the development and spread of the industry - so far, we cannot identify the sites with the most potential. Questions regarding the settlement pattern and land use in this area are no doubt fundamentally tied up with mining from an early date. The MPP Step 1 assessment of mining in Nottinghamshire appears to be woefully inadequate, not least in failing to recognise the early date of development and innovation in this coalfield, ("the importance of this coalfield was limited until the introduction of the canal system during the later 18th century").

Iron -

The association of ironstone with the coal measures makes a connection between the two industries before coal can be used for smelting - Sir Charles Morrison's will of 1597, states that he had a coal mine at Selston (possibly acquired from Beauvale Abbey) and was intending to set up "iron mills" there (CL Stevenson TTS 1931). Before the use of coke for smelting, large quantities of charcoal were needed (an estimated 8,000 acres of coppice per year for a furnace - Palmer and Neaverson 1992). In theory this could be got from the wooded areas of the county however, as we have already seen, the County's woodland appears to have been already under pressure by 1500. Research into the use of woodland for this purpose has hardly been considered yet, although there are clues in placenames such as "Charcoal Plantation" (Thoresby). Humphrey Jennens of Warwickshire first got permission from the Duke of Newcastle to obtain wood and make charcoal in Kirkby Wood (1666) and then built a furnace at Kirkby (1671). In 1693 there were 2034 tons of cast iron for sale at this furnace, it appears to have gone out of use soon afterwards. A possible site for this furnace has been identified but not confirmed. Bulwell forge (for iron refining) was mentioned in 1615, supposedly built by Newstead Priory, and was still in use at end of the 17th century (R Johnson TTS 1960). There were other forges at Cuckney, Carburton, and Pleasley. New production methods and easier transport appear to have ended this industry in Notts.

Quarrying, -

Brick making and its necessary clay quarrying are a developing characteristic of this period and have been discussed already under buildings. Equally important, but more restricted by the occurrence of the raw

materials, were quarrying for building-stone in places like Mansfield and Linby, and for gypsum in South Nottinghamshire and the Trent valley. The former perpetuated a mediaeval industry that now served a developing local tradition of vernacular stone building, whilst the latter, gypsum, produced plaster, particularly used in "lime-ash" floors.

Alabaster -

The roots of the gypsum industry are probably to be found in the late mediaeval alabaster quarrying and carving. Medieval-style Alabaster panels from Nottinghamshire, dating up to the first quarter of the 16th century, are found as far afield as Spain, Italy and Germany. The later Tudor and Elizabethan alabaster monuments, which continued in vogue through to the 17th century, utilised the red veined Nottinghamshire alabaster, previously overlooked, which came from Red Hill near to the meeting of the Trent and Soar. There are numerous examples dating from the latter half of the 16th century to the first half of the 17th century (Pevsner 25-6, Barley & Clifton-Taylor 47-8).

Pottery -

The major local product was Nottingham stoneware, from the end of the 17th to end of the 18th century. From documentary evidence, some sites appear to have been on or near the sites of medieval kilns (A Parker TTS 1932).

Glass -

Sand was available, and coal was used as soon as the technology became available. At Wollaton, two glasshouses were set up by Sir Percival Willoughby in 1615 to make use of coal and sand there, but were not successful due to the high cost of transport via the Trent to Hull and on to London. Another was set up at Awsworth in 1617 (R.S.Smith, TTS 1962), and it appears to that glass was still being produced here until c 1700 (J Samuels, TTS 1998). In Nottingham, the industry was more successful, presumably supplying the local market and so avoiding the difficulties of transport. Glass production was associated with potteries, which were also making crucibles for the glass industry, and possibly working on the same site - Charles Morley owned both potteries and a glasshouse in the first half of C18 (A Parker, TTS 1932). The Wollaton glasshouses have not been found, but the probable site of the Awsworth glasshouse has been identified and the sites in Nottingham are known.

Malting -

Malting appears to have been largely, but not exclusively an urban industry. Newark, Worksop, and Retford were all involved. Nottingham had a built-in advantage, in the sandstone caves which provided a steady temperature (several have been excavated), but they were not suited to large scale production.

Tanning was also an urban industry, with activity recorded in Nottingham and Mansfield. However, the subject lacks research.

Framework knitting -

Hand knitting was an established local industry when William Lee of Calverton invented the stocking frame in 1589. It was some time before this was adopted in it birthplace, being taken up first in London and arriving back in Notts only by the middle of the 17th century. Although there are a few clues, the early industry is not easy to trace, as the characteristic framework knitters' windows can be later insertions (as at 1 Soar Lane, Sutton Bonnington), while purpose-built structures date chiefly from the 19th century. Most of the knitter's houses will have been of low status and cheap construction, and therefore unlikely to survive.

Framework knitting was ideally suited to a mixed economy, being domestic in scale until the use of powered frames in the 19th century, though the knitters had to be reasonably close to the suppliers of yarn,

as at Ruddington or Woodborough. This resulted in localised increases in population, visible later in the association of "open" villages with large numbers of framework knitters, compared to "closed" agricultural villages.

The primary product of the early hand knitters was silk stockings, and the industry was boosted by the application of water power to silk spinning, from the early 18th century in Derbyshire (beginning the evolution of factory production). However powered spinning in Notts developed later (due to the lack of suitable water power) and cotton was the first yarn to be produced on a large scale, in the later 18th century. Cheaper products of cotton, wool and worsted created more expansion in framework knitting in the early 18th century (DM Smith 1965).

Trade connections

Communications were a serious problem in the period 1500 to 1750, especially for the transport of bulky or fragile goods. Water transport was used as far as possible. The Trent had been in extensive use for transport throughout the medieval period, and was navigable as far as Nottingham. The Willoughbys of Wollaton considered it practical to access the London market for coal and glass, by land carriage to the Trent and then up to Hull, and via sea from there (though even this didn't keep their production costs low enough). Huntingdon Beaumont's famous rails were intended to get coal from Strelley to the Trent. Nottinghamshire could supply coal to a much wider market than was normal at this date, by transport down-river to Newark and Gainsborough. Products from the Trent hinterland were also using this artery - pottery, cheeses from Staffs, iron and lead from Derbyshire. Similar materials were also exported via the Idle, through the entrepot of Bawtry. With imports coming in the reverse direction, this laid the foundations of the port at West Stockwith.

Efforts were underway in the 16th century to extend the Trent navigation, and remove blockages (Sir Thomas Stanhope's weir on the Trent was the cause of legal action and was destroyed by local people, 1592-3). Opposition to improvements from those who wished to maintain local prices shows how widespread longer distance trade had become, and the results that were expected from any opening up of markets. The towns servicing the trade on the Idle also objected to improvements on the Derwent that could divert the lead trade. The necessary bill was eventually passed in 1719, the first boat reached Derby in 1721. An Act of 1699 to make the Trent navigable to Burton was obstructed by owners of wharves and boats on the river, who profited from the necessary transfers of goods. (AC Wood, TTS 1950)

Roads were dire, and one of the arguments used by those pursuing river improvements was that this would help to preserve the highways. Tolls presented a solution and the first turnpike in Nottinghamshire was a stretch of the Great North Road, from Grantham to Little Drayton, for which the act was passed in 1725/6. Two more were passed before 1750, from Nottingham to just outside Loughborough and from Bakewell and Chesterfield to Worksop (A Cossons 1994).

Improvements in transport systems were largely driven by trade, but in turn resulted in the failure of some classes of local production (eg iron, pottery, glass) as other areas of specialist production could undercut local prices. Nottinghamshire came to specialise itself, in coal, hosiery (and later lace), and malting.

Nottingham and other towns - Urban economy

By 1600 many of the rural markets had disappeared, leaving only Nottingham, Newark, East Retford, Mansfield, Worksop, Southwell, Bingham, Blyth and Tuxford, and leading to the suggestion that people were both willing and able to travel further to market (PTH Unwin, JHG 1981). Trade and industry would appear to be the major factors in determining which towns flourish. Wood's estimates show a steady increase in population through the period for Mansfield and Worksop, rapid increase in Nottingham (tripling from 1600 to 1739), while Southwell had only a slight increase and Retford, Newark and Tuxford all show a slight fall (Wood AC , TTS 1936 and 1937). There is evidence of infilling of empty areas from the mid 17th century in Newark; these were also used for industry as is indicated by a number of excavated lime kilns (G Fairclough, TTS 1976; M Todd, TTS 1977). Nevertheless, considerable open spaces

remained in many towns. In Nottingham, the 1624 Easter Book for the parish of St Peter's allows an estimate of 250 cows kept in the town. (A Henstock, TTS 1993)

Civil War

This is the one aspect of the period to which archaeological attention has been directed in any strength. Efforts have been made to trace the fortifications of Nottingham (MW Barley, TTS 1949), whilst the siegeworks at Newark have been studied by the RCHME and in a series of recent development-led excavations. Smaller local fortifications have also received attention, but we are still in the primary phase of research, in checking the physical remains against the maps and other documentary material from the period.

Research Agenda

The period 1500 to 1750 was one of revolution, no less than others which have already been discussed in previous papers, such as the "Dark Ages" and the Late Saxon period. It too exhibits the great themes of Change, Contiuity and Transition that are the focus of research in these earlier periods. These themes can be seen and read in the archaeological record but what more does this reading bring to our knowledge and understanding than has been established already by historians, geographers and architects on the basis of the copious documentary record and the vast range of historic buildings?

There are three reasons to apply archaeological method to this period. The first is that the great themes just mentioned are not wholly, or adequately, described in documents or by other students of history. Archaeology offers techniques to categorise the monuments, structures and features of the post-mediaeval period and can offer insight into the chronology of these, the use of materials and technology in their construction, and into the social organisation and costs that they represent. Through the study of physical remains archaeology can pose and address questions about social and economic change at levels of detail both above and below those possible or chosen by other historical disciplines.

The second reason is that the physical witness to this period and its achievements is under threat. This threat is the equal of, and is probably greater than, that to the archaeological legacy of earlier dates. For example, the Nottinghamshire Historic Landscape Character Map shows that only some 40% of all post-mediaeval field systems have survived into the 21st century without substantial modification.

Failure to value the familiar is not confined to archaeologists, but is a characteristic of many in our society who do not understand that our current environment not only contains historic elements, but is itself the historic environment, and further, that its common and visible post-mediaeval characteristics are no less valuable than the rarer and less omnipresent features of earlier times. The conservation and sustainable management of our present environment then, is in large part dependent upon knowing, understanding and valuing the post-mediaeval archaeological resource.

The third and final reason lies in the relative ubiquity of well preserved physical remains and features from this period and in the extent of the documentary record referring to them. We have the ability therefore, through these two resources, to develop a deep and multi-dimensional understanding of the activities and social organisation they represent, and to transfer this through analogy, models and questions, to less well preserved remains of like earlier periods.

So, what is the agenda ?

We must develop an archaeology for the period 1500-1750. We must identify, locate, describe, analyse, synthesise and report the monuments, sites and features of this period. This resource must be scoped and characterised no less than the earlier forms of the archaeological record. We must address the post-mediaeval period with the same vigour and discipline that we apply to the prehistoric or Roman periods, whilst using the documentary record to enhance and challenge recognition and interpretation.

Turning to specifics, we are spoilt for choice. If choose we must then in Nottinghamshire, we should seek to capitalise on existing work and to build on from the priorities identified for the mediaeval and earlier periods.

The detailed survey and recording of the structures of Enclosure field systems is therefore high on the list, as is the understanding of settlement morphology and of the character and causes of change in this after 1500, and particularly after 1650.

There is also the area of historic buildings, where the archaeological approach has much to add to conservation approaches. The two main clusters of dendro dates for timber-framed buildings in the 1590's and 1660's still require explanation, part of which may come through DNA studies of oak that should in theory be capable of linking certain areas of the forest with timbers in buildings. This would also enhance our understanding of the final degradation of the Royal Forest and its resuscitation under the ownership of the great estates of the Dukeries, which is itself a priority area for research.

Industry is another obvious and major theme, particularly the coal and brick making industries in which previous work has taken us some way towards an understanding but the potential has been hardly touched.

The application of the archaeological concepts of culture and assemblages could be usefully applied to the objects and finds of this period. Undoubtedly there are regional variations to be found here as well as differences between town and country and between classes. Field observation suggests that there are interesting questions to examine here, such as the degree to which pottery was in common use amongst the lower classes.

Finally, we know far too little about the people themselves. Post-mediaeval skeletal material has been little studied, in contrast to that of earlier periods. Yet it has much to tell about the conditions of the people in both town and country, and about the effects of social and economic changes upon them. We need to address our tendency to rebury post-mediaeval material with little or no anatomical study.