

APPENDIX C: ARTEFACT ASSESSMENT REPORTS

Flint: Swillington Brick Quarry (SWI 06)

Area A. Context 12135 unstratified.

One artefact, initially thought to be flint, was recovered from this context. The object measures 53 x 44 x 30mm in the maximum dimension in each plane, and weighs 71g.

The artefact has scarring over much of its surface, but all the scars are the result of thermal fractures and are not the result of human modification. One area on the surface has a bubbly appearance.

The object is clearly the result of exposure to intense heat and has a glassy appearance suggesting that the material is a glass slag. The material is very similar in form to glass slag recovered from glass factory sites within the York area (Stuart Ogilvy, Yorkshire Museum pers comm.).

The object is almost certainly modern in origin. It could represent a stray find from a nearby industrial site or, given the fact that the object was recovered from a brick quarry; it could potentially be a by-product of brick manufacture.

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February 2007.

Assessment of a Pottery Vessel from Swillington, West Yorkshire (SWI06)**Alan Vince**

Three sherds from a handmade, gritty jar were recovered from archaeological fieldwork at Swillington, West Yorkshire, by Network Archaeology Ltd. The sherds all fit together and come from a large, sagging-based jar of Anglo-Saxon or early medieval date.

Description

The three joining sherds come from two contexts, 18/101 and 18/102. They appear to have been recently broken, in that there are no soil concretions on some of the broken edges.

The vessel is a handmade jar base. The vessel has a straight, slightly flaring lower wall and a slightly sagging base. It has a black, carbon-rich, core, oxidized external margin and reduced light grey internal margin.

The fabric contains abundant angular quartzose sand, with grains up to 4.0mm across. Most of these grains are quartz with overgrown faces with some off-white kaolinite and red fine-grained haematite cement adhering. Sparse rounded quartz grains ranging up to 3.0mm across and feldspar fragments up to 4.0mm across are also present. The groundmass contains abundant angular quartz up to 0.1mm across but little or no muscovite

The coarse inclusions in this fabric are derived from the Millstone Grit and are typical of vessels from West and North Yorkshire of Iron Age and Anglo-Saxon date. The sagging base, however, precludes an iron age date and can be paralleled in the early to mid Anglo-Saxon period. In particular, some of the larger vessels used to hold cremations have a similar size and profile. In midland England, however, the most likely context for vessels of this size and shape would be the 11th to 13th centuries. In the north of England, similar handmade industries are found in the early post-conquest period (e.g. Beverley Reduced Chalky ware, Didsbury and Watkins 1992; Watkins 1991 or Durham ware, Carver 1979). However, in West Yorkshire in the late 11th to 13th centuries there is a strong tradition producing wheelthrown, cylindrical-bodied white gritty wares (York Gritty ware, Holdsworth 1995; Mainman 1990).

Assessment**Dating and Interpretation**

There are two possible contexts for the Swillington vessel. Firstly, it could be a large urn of early to mid Anglo-Saxon date, and, if so, more likely to date to the earlier than the later part of this period, since such large vessels are rare in mid-Saxon Fishergate, York (Mainman 1993; Vince and Steane 2005). Early Anglo-Saxon pottery is very rare in West Yorkshire. In fact, there is only two other vessels known to the author, from Dalton Parlours, Collingham (1990) and from Boston Spa, from a site excavated by West Yorkshire Archaeological Service (BTW04). For the mid-Saxon period too, there is very little pottery known from West Yorkshire and the only site known to the author is the Bishop's Palace at Otley (Hurst 1976) Fig 7.9 Nos 4 & 5).

Secondly, it might be an 11th to 13th-century handmade jar, made in a tradition which was introduced to northern England after the Norman conquest but which appears to be absent in West Yorkshire.

Whichever the correct interpretation, this vessel is unusual and the site from which it comes worthy of further investigation.

Further Work

The vessel should be illustrated and a thin section and chemical analysis undertaken, to compare with sample of the Otley and Boston Spa vessels.

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Assessment of Pottery from Swillington, West Yorkshire (SWI06)

Alan Vince

An archaeological watching brief carried out at Swillington, West Yorkshire produced sherds of an unusual Anglo-Saxon or early Medieval handmade vessel (Vince 2006). The date of this vessel could not be determined from internal evidence, since no good parallels were known. Subsequent fieldwork revealed further pottery which clarifies the date of the previously-assessed material, since that material is stratigraphically later than a feature which produced pottery of 10th-century date.

Description

Anglo-Scandinavian

Fragments of two vessels of York A ware (Mainman 1990; 1978) were found together with a single sherd of York Gritty ware.

Vessel 1 consists of 59 sherds comprising most of the base and about a third of the rim and sides of a jar. The base is flat but shows no sign of wheelthrowing or removal from the wheel. The lower body of the vessel also shows little or no sign of wheelthrowing but the shoulder and rim are clearly wheelthrown and show the ripple marks caused by the tension between the wheel and the potter's hands. It is not clear whether the pot was entirely thrown on the wheel and then the base reworked after removal from the wheel or whether a coil-built body was trued-up and finished on the wheel but it is possible that after reconstruction side-lighting and further study would establish the method of manufacture more clearly. X-radiography of the walls and base might also reveal the manufacturing method. The rim form is triangular and closely paralleled by vessels from Coppergate, York, dated by their Period 4 context to the mid 10th century (Mainman 1990, Fig 00 Nos. 00). The vessel has soot on the exterior from the underside of the base to the rim.

Vessel 2 consists of four sherds of a wheelthrown jar which provide a profile from the base to the shoulder. The base has been knife trimmed together with the lower 10mm of the wall.

Both vessels were oxidized and in places have a light grey core but vessel 2 is less reduced than vessel 1 and consequently has a lighter colour, 10YR 7/4 (very pale brown) as opposed to 7.5YR 7/6 (reddish yellow) for Vessel 1.

The fabric of both vessels is tempered with a well-sorted quartzose sand between c.0.5 and 1.0mm across with rounded brown mudstone fragments up to 5.0mm across. The groundmass is fine-textured with a micaceous sheen.

Recent analysis of material from the Coppergate and Fishergate excavations in York and from the production site at Thorner has demonstrated that the Thorner site was producing York A ware and therefore dates between the later 9th and 11th centuries (Cumberpatch and Roberts 1998-1999; Vince 2004). Chemical analysis indicates that the pottery contains a very high frequency of barium, probably as a result of the inclusion of vein barytes in the sand.

Medieval

A sherd of York Gritty was found in the same feature fill as the two York A ware sherds whilst single sherds were also recovered from two other features. York Gritty ware was produced from Coal Measure whiteware clay, often marbled with lenses of redder colour, and was tempered with a coarse gravel, composed of similar quartz and sandstone grains to those found in York A ware but ranging up to 3.0mm across. Although there is no archaeological evidence as yet for the location of the kilns producing this ware it is very likely that Potterton was one of the production sites, since it has a potting place name mentioned in Domesday and this ware was in use in York by the late 11th century (Holdsworth 1995). However, York Gritty ware was also used throughout the 12th and into the 13th centuries and no features yet allow the vessels to be closely dated.

Assessment

The material from 18/108 includes two smashed vessels one of which can be closely paralleled in a mid 10th-century context in York. The other can also be broadly dated to the

late 9th to early 11th centuries. The sherd of York Gritty ware from the same context might therefore either be intrusive from a mid 11th-century or later deposit, indicate that the filling took place over a century or more or perhaps indicate that York Gritty ware was produced before the Norman Conquest. However, at present the most likely context for York Gritty ware is in the decades following the conquest, since the rim form of York Gritty jars appears to have Norman parallels.

The previously-assessed vessel, from 18/101 and 18/102, is apparently stratigraphically later than 18/108 and therefore probably a late 11th to 12th century handmade vessel rather than an early to mid Anglo-Saxon vessel. As such it extends the known range of such vessels which are known in Lincolnshire and East Yorkshire but not West Yorkshire. Handmade wares, including glazed vessels, were produced in South Yorkshire, at Doncaster Market Place, probably in the mid 12th century (Buckland and Hayfield 1989).

Despite the location of the Thorner kiln in West Yorkshire, finds of York A ware are rare in the countryside and it had been surmised that the main market for this kiln site was York itself. The Swillington finds join a single vessel from Ingmanthorpe Manor (Vince 2005) and suggest that there may be a greater rural pottery use in 10th century West Yorkshire than otherwise supposed. Swillington is less than 10 miles to the south of Thorner, however, and Ingmanthorpe is about 10 miles to the north and it may be that in addition to its major market in York the Thorner products were traded directly from the production site for a short distance.

Further Work

The identity of the three vessels from 18/108 should be confirmed through thin section and chemical analysis. The vessels should be reconstructed, ideally professionally to a standard suitable for museum display, otherwise temporarily using tape so that they can be photographed and illustrated, and a report for publication produced.

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Appendix 1

| DN NO | Context | Action | class | Cname | Description | Form | Part | Nosh | NoV | Weight | Use |
|-------|---------|------------|---------|-------|---|------|------|------|-----|--------|------------|
| 0 | 18/108 | ICPS | POTTERY | YG | CYLINDRICAL WALLED | JAR | BS | 1 | 1 | 11 | SOOTED EXT |
| 1 | 18/108 | DR;ICPS;TS | POTTERY | YORKA | COMPLETE PROFILE;FLAT BASE;CYLINDRICAL BODY NARROWING TO TRIANGULAR RIM CF COPPERGATE PER 4 | JAR | PROF | 59 | 1 | 479 | SOOTED EXT |
| 2 | 18/108 | DR;ICPS;TS | POTTERY | YORKA | | JAR | BS | 4 | 1 | 62 | SOOTED EXT |
| 0 | 18/102 | | POTTERY | SSTMG | | JAR | BS | 1 | 0 | 16 | |
| 0 | 18/101 | | POTTERY | SSTMG | | JAR | B | 2 | 1 | 59 | |
| 0 | 022/096 | | POTTERY | YG | | JAR | BS | 1 | 1 | 4 | SOOTED EXT |
| 0 | 10/009 | | POTTERY | YG | | JAR | BS | 1 | 1 | 3 | |

Assessment of Special Finds from Swillington Brick Quarry, Swillington, West Yorkshire (SWI06)

Alan Vince

A small collection of finds from Swillington Brick Quarry, Swillington, West Yorkshire, was submitted for identification and assessment. This is the third group of finds from this site to be assessed.

The finds consist of medieval pottery, none earlier than the late 11th century, and a few late finds, probably all early modern (later 18th century and later).

Description

Copper Alloy

Two coins were recovered.

SF003. A halfpenny of George V, 1914 (Seaby 4051).

SF004. A penny of George III, 1797 (Seaby 3777).

Fired Clay

A single abraded fragment of fired clay was recovered. The fabric suggests that it was made from a Coal Measures clay and contains sparse fragments of tabular iron ore; sparse fragments of red sandstone; abundant rounded red clay concretions up to 2.0mm across; and sparse sub angular quartz grains up to 1.0mm across. The groundmass is a light brown, micaceous clay.

Pottery

Roman

Fragments of a flanged dish were recovered from two contexts on Site 14 (contexts 217 and 219). The fabric contains sparse rounded quartz grains of Triassic origin, not found in Eboracum ware from York but the source is otherwise not known. The form was introduced in Black Burnished ware in the early 2nd century and copied extensively in other industries. It is mostly found in 2nd century assemblages.

A sherd of jar from Site 16, context 235, contains sparse polished, rounded quartz grains. The closest source of such greyware to Swillington is Holme-upon-Spalding Moor, where a pottery industry emerged in the later 2nd century, becoming important in the 3rd and 4th centuries.

Medieval

Ten sherds of medieval pottery were recovered. All were abraded and are of a size typical of manure scatter, i.e. present with night soil and midden waste spread on the fields.

Nine sherds of York Gritty ware were recovered. These are of late 11th to early 13th century date and were produced in West Yorkshire. The closest source to Swillington was probably at Potterton, ten miles to the north.

A single sherd of Northern Gritty ware, the rim of a jug, was recovered. This type is probably of later 12th to 14th century date and several possible production centres are known in West Yorkshire.

Post-Medieval and Early Modern

Four sherds of post-medieval and early modern pottery were recovered. All were in an unabraded condition.

A single sherd of a slipware made from a red-firing Coal Measures clay was recovered (STRES). It comes from a bowl with an internal white slip and plain yellow glaze. Such vessels were produced in numerous centres in Yorkshire and the Midlands from the mid 17th to the mid 18th centuries.

A blackware vessel made from variegated red- and white- firing clays was recovered (STCOAR). The sherd comes from a large flanged bowl or pancheon, and is a type which was made at numerous sites in West Yorkshire and the midlands in the 17th and 18th centuries.

A rim from a grey salt-glazed stoneware jar was recovered (ENGS). The form is similar to that of vessels made in the later 19th and early 20th centuries as containers for preserves such as marmalade and jam. A similar date for this vessel is likely.

Two marbles were recovered. One of these appears to have been carved out of a brick fragment or possibly from a thick sherd of blackware whilst the other is a grey stoneware with decoration in the form of painted enamel lines. One set of lines was in a green enamel and the other, at 90 degrees to the first, is in a purple enamel. The colour of the enamels suggests an 18th-century or later date.

Assessment

The Roman finds are probably of different dates and come from different sites. Therefore, the level of activity they represent is limited. However, the flanged dish sherds consist of three sherds from a single vessel and this, plus the size and condition of the sherds, suggests that they may indicate occupation rather than a manure scatter.

The medieval sherds however were probably spread on the fields with manure whilst the post-medieval and later pottery show no evidence for abrasion and this suggests that they were not from a manure scatter.

Retention

Those finds from stratified contexts should be retained for potential re-examination at a future date. The marbles are unusual finds and should therefore also be retained.

Further Work

None of the finds require further study at present.

APPENDIX C: METAL, FIRED CLAY, POTTERY 3
Alan Vince

Appendix 2

| Trench | Context | Cname | Subfabric | Description | Form | Part | Nosh | NoV | Weight | Condition | Diam |
|--------|---------|--------|---|--|--------|-------|------|-----|--------|-----------|------|
| 9 | 23 | STCOAR | | BROWN SLIP INT AND EXT;BL GLAZE INT | BOWL | R | 1 | 1 | 14 | | 0 |
| 10 | 54 | STRES | | WHITE SLIPPED INT;YELLOW GL INT | BOWL | B | 1 | 1 | 7 | | 0 |
| 10 | 55 | ENGS | GREY | SALTGLAZED JAR WITH BEAD RIM AND GROOVE AROUND NECK | JAR | R | 1 | 1 | 20 | | 0 |
| 12 | 130 | ENGS | WHITE STONE-WARE | TWO SETS OF CONCENTRIC RINGS OF ENAMEL AT 90 DEGREES TO EACH OTHER.; ONE SET IS GREEN ENAMEL AND THE OTHER IS PURPLE | MARBLE | BS | 1 | 1 | 2 | | 13 |
| 14 | 219 | GREY | RQ TRIASSIC | FLANGED DISH | DISH | PROF | 1 | 1 | 22 | ABR | 0 |
| 16 | 235 | GREY | HOSM? SPARSE GSQ | JAR | BS | I | 1 | 17 | ABR | 0 | 0 |
| 18 | 93 | YG | GREY | | JAR | B | 1 | 1 | 14 | ABR | 0 |
| 18 | 93 | NGR | | COLLAR RIM;PLAIN SPLASHED GL | JUG | R | 1 | 1 | 9 | ABR | 0 |
| 18 | 123 | YG | | | JAR | BS | 1 | 1 | 5 | ABR | 0 |
| 20 | 291 | YG | | | JAR | BS | 3 | 2 | 25 | ABR | 0 |
| 21 | 239 | YG | | TRIANGULAR RIM | JAR | R | 1 | 1 | 11 | ABR | 0 |
| 21 | 239 | YG | | | JAR | BS | 1 | 1 | 4 | ABR | 0 |
| 21 | 239 | PMTIL | VARIEGATED RED/CREAM; FINE-GRAINED WHITE SST <3.0MM | PROBABLY A MARBLE CARVED OUT OF A BRICK FRAGMENT | MARBLE | WHOLE | 1 | 1 | 5 | | 0 |
| 22 | 79 | YG | | | JAR | B | 1 | 1 | 18 | ABR | 0 |
| 22 | 79 | YG | | | JAR | BS | 1 | 1 | 13 | ABR | 0 |
| 9 | 23 | STCOAR | | BROWN SLIP INT AND EXT;BL GLAZE INT | BOWL | R | 1 | 1 | 14 | | 0 |

Assessment of Slag from archaeological field evaluations at Swillington (SW106).

by Dr Roderick Mackenzie

Six fragments of slag were recovered during archaeological field evaluations at Swillington. A basic identification of the fragments has been carried out, the fragments have also been assessed for their archaeological potential, and the results of the assessment are summarised below.

| Trench No. | Context No. | Number of pieces. | Description | Weight |
|------------|-------------|-------------------|--|--------|
| 10 | 063 | 1 | Fragment of hearth, kiln or furnace lining | 2g |
| 14 | 218 | 1 | Fragment of vitrified hearth, kiln or bloomery furnace lining with metalliferous slag attached | 7g |
| 18 | 101 | 1 | Possible iron smithing slag | 48g |
| 18 | 108 | 1 | Possible iron smithing slag from the base of a smithing hearth | 495g |
| 18 | 123 | 1 | Possible iron smithing slag | 257g |
| u/s | 12134 | 1 | Fuel ash slag (clinker) | 3g |

Table 1: Slag finds from Swillington (SW106).

Discussion

The fragment of possible hearth lining found in Trench 10 has no metalliferous residues attached, and it impossible to be certain whether this piece relates to metal production. The fuel ash slag from context 12134 is a very common by-product of coal fired hearths and it could date from as late as the 20th century.

The slags from trenches 14 and 18 are likely to date from the medieval period, when iron was produced in a two-stage process. In this two-stage process, iron was extracted from the ore by smelting in bloomery furnaces and the metal was then worked into finished artefacts by smiths. Both smelting and smithing operations produced slags as a by-product. In some types of metal production, the slags and residues produced can be attributed to a specific process, although iron smelting and smithing slags are notoriously difficult to differentiate on morphology alone, especially those from the post-Roman period (Bachmann 1982:31; McDonnell 2001, 163). However, the presence and relative abundance of certain slag types, together with other archaeological evidence, can suggest the most likely source for the slag.

The morphology of the slags and supporting archaeological evidence recovered from Trenches 14 and 18 suggests that the slags relate to medieval iron smithing.

Recommendations

Smithing slags are far more common in the archaeological record than smelting slags and, apart from exceptional cases, further analysis of smithing slags is not normally recommended.

Although no further analytical work is required at this stage, it is recommended that the slag from contexts 101, 108, 123 and 208 be retained as part of the site archive and for possible future research.

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| | | |
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Clay Pipe

Wendy Booth and Andy Pascoe

Three fragments of clay pipe, weighing 8 grams, were recovered during the trench evaluations at Swillington Brick Quarry. The finds were located in trenches 9 and 10.

These fragments were counted, weighed and examined by eye and the results are detailed in the table below. The fragments were undecorated pieces of stem. Pieces of clay pipe such as these are commonly found in the plough soil and are often deposited as a result of manuring the fields with 'night soil' from local towns and villages. Due to the undiagnostic nature of the assemblage, it was not possible to gain any further information.

Clay Pipe Catalogue

| Trench | Context | Provisional Period | Count | Weight (gms) | Comments |
|--------|---------|--------------------|-------|--------------|---------------------------|
| 9 | 25 | Post medieval | 1 | 2 | Undecorated stem fragment |
| 9 | 28 | Post medieval | 1 | 2 | Undecorated stem fragment |
| 10 | 43 | Post medieval | 1 | 4 | Undecorated stem fragment |

Heat Affected Stone

Wendy Booth and Andy Pascoe

Twenty-four fragments of heat affected stone, weighing 12,200 grams, were recovered during the trench evaluations at Swillington Brick Quarry. The stones were located in trench 18.

These fragments were counted, weighed and examined by eye and the results are detailed in the table below. The stones were collected as samples 34 and 35. Sample 34 was recovered from context 109 and sample 35 from context 112. The stones from both samples were sandstone and moderately fractured. Both samples had been exposed to a moderate degree of heat in an oxidising atmosphere, resulting in a mid reddish – brown colour. Among the fragments were some flat sub- angular stones, which were probably a result of the natural splitting processes of the sandstone. However the majority of the stones, 19 out of 24, were sub-rounded. The stones ranged in size from 40mm to 220mm in length, and may have constituted part of a hearth or kiln type structure.

Due to the undiagnostic nature of the assemblage, it was not possible to gain any further information.

Heat Affected Stone Catalogue

| Trench | Context | Sample | Count | Weight (gms) |
|--------|---------|--------|-------|--------------|
| 18 | 112 | 35 | 12 | 3600 |
| 18 | 109 | 34 | 12 | 8600 |

APPENDIX D: PLANT MICROFOSSIL REPORT

AN ASSESSMENT OF THE CHARRED PLANT MACROFOSSILS AND OTHER REMAINS FROM SWILLINGTON, YORKSHIRE (SWI 06)

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March 2007

INTRODUCTION AND METHOD STATEMENT

Excavations at Swillington to the east of Leeds, undertaken by network archaeology, revealed a series of ditches, pits and other discrete features including a kiln or oven. Most were undated at the time of writing, but they were considered to be of probable medieval date, with the possibility of some residual roman material. Samples for the retrieval of the plant macrofossil assemblages were taken from across the excavated area and forty five were submitted for assessment.

The samples were processed by manual water flotation/washover. Dis-aggregation of the clay sample matrix proved very difficult, and all samples were pre-soaked in either Calgon or a bleach solution prior to processing. Flots were collected in a 500 micron mesh sieve and, once dried, were scanned under a binocular microscope at magnifications up to x 16. Plant remains other than charcoal fragments were extremely rare, but those recorded are listed on Table 1. Nomenclature within the table follows Stace (1997). All plant remains were charred. Samples containing only charcoal and/or other material types are listed on Table 2. Modern contaminants including fibrous roots, woody stems, cereal chaff, seeds and leaf fragments were present at a low density within most of the assemblages studied.

The non-floating residues were collected in a 1mm mesh sieve and sorted when dry. Artefacts/ecofacts were extremely rare, but those noted were retained for further specialist analysis.

Results

As stated above, plant macrofossils, including charcoal/charred wood fragments were extremely rare. Only two samples (17 from kiln 18/107 and 72 from pit 49/284) contained moderate densities of charred material and of these, only sample 17 contained macrofossils other than charcoal. Preservation of the material was generally quite poor; the charcoal/charred wood fragments were often severely abraded and the few cereal remains were puffed and distorted, possibly as a result of combustion at very high temperatures.

Cereal grains were present (almost always as single specimens) within nine of the assemblages studied. All were of an elongated 'drop' shaped form and, although originally thought to be rye (*Secale cereale*) (cf. evaluation statement February 2007), it is now considered most likely that all are of wheat (*Triticum* sp.). 'Drop' form grains are typical of the glumed wheats (particularly spelt (*T. spelta*)) and it is, therefore, tentatively suggested that many of the recovered grains are derived from residual Roman deposits, as spelt production had almost certainly ceased within northern England by the medieval period. The only other identifiable macrofossils recorded were a small number of orache (*Atriplex* sp.) seeds within sample 17 and a single possible small legume (Fabaceae) cotyledon fragment from sample 76 (ditch 40/302).

Mineralised soil concretions (some of which formed heavy coatings on the plant macrofossils) and small coal fragments derived from the local soils, were common or abundant within most assemblages, but other material types were rare. Fragments of black porous and tarry material were recorded, but it is considered most likely that these are associated with the coal fragments, possibly occurring naturally within the local soils.

Conclusions and recommendations for further work

In summary, plant macrofossils are exceedingly scarce within the assemblages and, with the possible exception of those from kiln [18/107], most are probably residual within the contexts. The rounded and heavily abraded condition of the charcoal/charred wood fragments would certainly appear to indicate that some material was probably either repeatedly disturbed post deposition or exposed to the elements for some considerable period prior to burial. Charcoal or wood were almost certainly the principal fuels used within oven or kiln 18/107, although dried plant material may have been used as kindling.

As none of the assemblages contain sufficient material for quantification (i.e. 100+ specimens), no further analysis is recommended.

Reference

Stace, C., 1997. *New Flora of the British Isles*. Second edition. Cambridge University Press

Key to Table

x = 1 – 10 specimens xx = 10 – 50 specimens xxx = 50 – 100 specimens xxxx = 100+ specimens

cf = compare fg = fragment

MC = mineralised concretions CH = charcoal BPC = Black porous 'cokey' material

CR/ST = charred root/stem BTM = black tarry material H.WAY = hollow way

APPENDIX E: ANALYSIS REPORT

Characterisation Studies of Anglo-Scandinavian to Early Medieval Pottery from Swillington Brick Quarry, West Yorkshire (SWI06)

Alan Vince

Archaeological investigations at Swillington Brick Quarry, Swillington, West Yorkshire, revealed a scatter of Romano-British finds and a series of ditches which from the few finds within them appear to be medieval field boundaries. However, an isolated pit produced a large number of potsherds which appear to date the filling to the Anglo-Scandinavian period. Although the feature produced a large number of sherds study showed that there were only three vessels represented in the main fill, context 108. Two of these were identified by eye as York A ware, a gritty wheelthrown red earthenwares produced at Thorner, West Yorkshire (Cumberpatch and Roberts 1998-1999; Vince 2004). This ware is dated between the late 9th and the 11th centuries at Coppergate, York (Mainman 1990). The third vessel, represented by a single sherd, is of York Gritty ware, which had replaced York A ware in York by the late 11th century. In particular, York Gritty ware is the only likely contemporary pottery type found in association with the construction of the Norman Minster which was complete by c.1100 (Holdsworth 1995). Later fills in the same feature, context 101/102, produced sherds of a fourth vessel which appears to be a thick-walled handmade jar with a sagging base. The appearance of this vessel suggested that it might either be of early to mid Anglo-Saxon date or mid 11th to mid 12th century date, being a local version of the various handmade wares which appear in the midlands and the east coast north of the Humber. The context suggests the latter option is most likely although no similar vessels are known to the author from sites in West Yorkshire or the Vale of York in North Yorkshire. Samples of the two York A ware vessels, the York Gritty ware sherd and the handmade gritty vessel were therefore taken for thin section and chemical analysis (Table 1).

Table 1

| Action | TSNO | Context | Cname | Form | Description | Part | Nosh | NoV | Weight | Use |
|------------|-------|---------|-------|------|--|------|------|-----|--------|---------------|
| | | 93 | YG | JAR | | B | 1 | 1 | 14 | |
| TS;ICPS | V4285 | 102 | SSTMG | JAR | | BS | 1 | 0 | 16 | |
| ICPS | V4286 | 108 | YG | JAR | CYLINDRICAL WALLED | BS | 1 | 1 | 11 | SOOTED EXT |
| DR;ICPS;TS | V4288 | 108 | YORKA | JAR | | BS | 4 | 1 | 62 | SOOTED EXT |
| DR;ICPS;TS | V4287 | 108 | YORKA | JAR | COMPLETE PROFILE;FLAT BASE;CYLINDRICAL BODY NARROWING TO TRIANGULAR RIM CF COPPERGATE PER 4 | PROF | 59 | 1 | 479 | SOOTED EXT |
| | | 93 | NGR | JUG | COLLAR RIM;PLAIN SPLASHED GL | R | 1 | 1 | 9 | |
| | | 123 | YG | JAR | | BS | 1 | 1 | 5 | |
| | | 101 | SSTMG | JAR | | B | 2 | 1 | 59 | |

Thin Section Analysis

York A ware (V4287-8)

The following inclusion types were noted:

- Quartz. Moderate well-sorted subangular grains up to c.0.8mm across. Most of the grains are monocrystalline and unstrained but polycrystalline strained grains and polycrystalline grains with a mosaic texture also occur. Some grains have one or more straight faces. V4288 also contains sparse rounded grains up to 0.2mm across.
- Sandstone. Sparse subangular fragments up to 1.5mm across containing subangular quartz grains. There is no sign of cement and the grains are either interlocking or have euhedral pores, formed by overgrowth of the quartz.
- Mudstone. Sparse rounded dark brown inclusionless laminated pellets up to 1.5mm long are present in V4287.
- Clay/iron pellets. Sparse (V4288) to moderate (V4287) pellets with a dark staining. Some grains have a poorly developed oolitic structure and are probably concretions.
- Feldspar. Sparse fragments of microcline and orthoclase feldspars up to 0.8mm across. The latter are mostly moderately to heavily altered.
- Graphic intergrowth. A single fragment was observed, 0.5mm across.
- Organics. Sparse rounded voids up to 0.5mm across with a darkened halo.

The groundmass of the two sections differs. V4288 consists of dark brown optically anisotropic baked clay minerals with abundant muscovite laths up to 0.1mm and sparse angular quartz and dark brown clay/iron grains of similar size. V4287 consists of highly birefringent, optically anisotropic, baked clay minerals and sparse angular quartz up to 0.1mm across.

The range of inclusions is probably due to the use of a sand derived mainly from coarse-grained sandstone, such as the Millstone Grit. The mudstone fragments could be detrital but are similar in colour and texture to V4287 and might therefore be classed as relict clay. The rounded quartz grains found in V4287 might be of Permian origin but are small enough to be transported by wind.

Both fabrics can be paralleled at Thorner where the pottery was made using local mudstone of Millstone Grit age and tempered with sand probably collected from the local river. Thorner village, and the kiln investigated in 1998, sits halfway up a hillside which cuts through Millstone grit sandstones and mudstones at its base and is capped by Permian sandstone. Veins of barytes run through both the Millstone Grit and Permian sandstone and are rare but distinctive inclusions in York A and Thorner kiln samples but no grains of barytes were present in either of these sections.

York Gritty ware (V4286)

The thin section of York Gritty ware contains a very similar range of inclusions to that in the two York A ware samples and has a groundmass similar to that of V4288, but with a lighter colour. The only absent types are: rounded quartz grains, dark brown mudstone pellets; graphic intergrowth.

Early Medieval Handmade ware (V4285)

The thin section of early medieval handmade contains a similar coarse sand to that in the York A and York gritty ware samples although the sandstone fragments are larger, up to 3.0mm across. However, the groundmass is of much coarser texture and consists of dark brown to black optically anisotropic baked clay with abundant angular quartz grains up to 0.3mm across, sparse rounded quartz grains up to 0.2mm across and moderate sheaves of muscovite up to 0.2mm long (and including sparse examples up to 0.7mm long).

The texture of the groundmass is much coarser than that of any Thorner products and is paralleled by early to mid Anglo-Saxon vessels from various sites in the Vale of York which are thought to have been made using fluvio-glacial silty clays, possibly lacustrine, which

overlie the boulder clay in large areas of the valley. Deposits of silt of this type occur a few miles to the east of Swillington.

Chemical Analysis

The four vessels were sampled for chemical analysis using Inductively-Coupled Plasma Spectroscopy. The analysis was carried out at Royal Holloway College, London, under the supervision of Dr J N Walsh. A range of major elements was measured and expressed as percent oxides (App 1) and a range of minor and trace elements was measured and expressed as parts per million (App 2).

Silica was not measured but an estimate was calculated by subtracting the total measured oxides from 100%. These estimates indicate that the York Gritty sample has the least silica, followed by the York A samples and finally the early medieval handmade vessel (Fig 1).

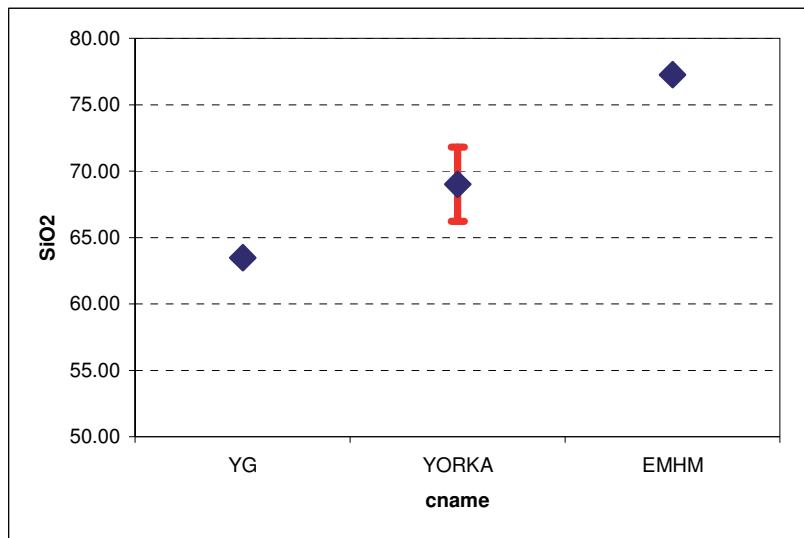


Figure 1

The ICPS data was normalised to aluminium, to take account of the dilution effect of variations in silica content, and the normalised data were then examined using factor analysis, to establish the structure of the dataset and the most variable elements. The most mobile elements, calcium, strontium, phosphorus and the rare earth elements, all of which are affected by post-burial alterations, were omitted from this analysis.

This analysis found that there were differences between the three fabric groups but less difference between the two York A vessels. The York Gritty sherds have higher frequencies of copper and lead. These are unlikely to be due to the presence of lead glaze in the kiln and are probably a reflection of mineralisation in the parent sand or clay. It also has less manganese, barium, nickel, cobalt and iron than the other two groups. The handmade vessel has higher vanadium, sodium and zinc frequencies.

York A and York Gritty wares

The Swillington data were then compared with a range of York Gritty and York A ware samples and samples from the Thorner kiln and its kiln walls. Factor analysis found two main factors (Fig 2). Factor 1 does not distinguish the two groups but factor 2 separates most of the York Gritty samples from the York A samples. However, the Swillington samples all fall into the York Gritty group, together with one example of York A ware from Beverley.

High Factor 2 scores are due to potassium and to a lesser extent magnesium, copper, chromium, barium and lithium. A plot of potassium against magnesium values shows the two

groups and again places all three Swillington samples, and the Beverley sample in the York Gritty group (Fig 3).

Barium values for this dataset are either very low (as is the case for all three Swillington samples) or erratically high (in the York A and Thorne kiln samples and one York Gritty sample. This is consistent with their being due to the presence of isolated barytes grains.

A plot of nickel against lithium values shows that high lithium is a Thorne kiln/York A characteristic whilst nickel shows no obvious correlation with any groups. In Fig 4 the aberrant Beverley sample has a high lithium content but the Swillington samples do not.

All of these features suggest that chemically the York A ware samples from Swillington actually belong to the York Gritty ware group. However, the York A ware samples have iron and chromium contents comparable with the York A and Thorne samples (Fig 5). They therefore can be seen as an intermediate group, closer in composition to York Gritty ware but with features paralleled in York A and the Thorne kiln.

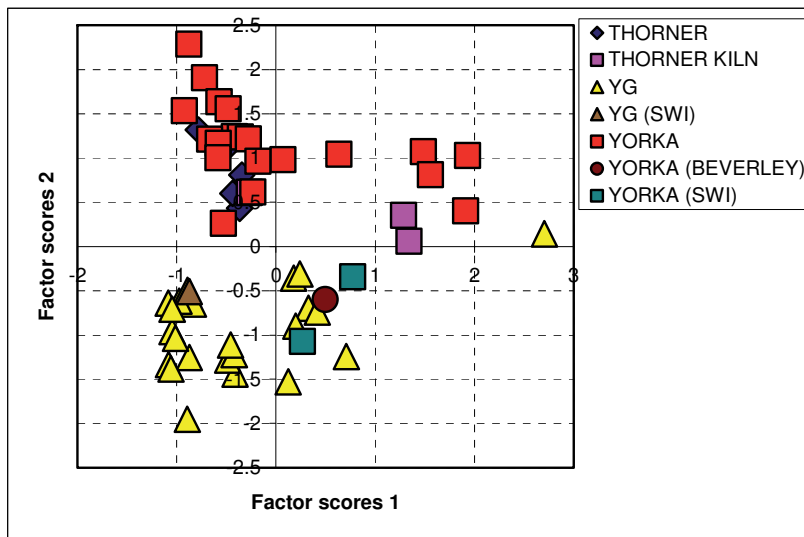


Figure 2

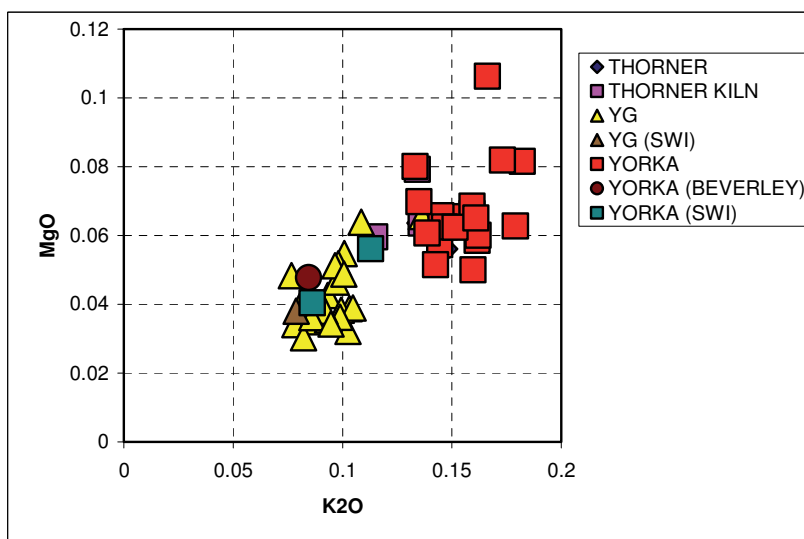


Figure 3

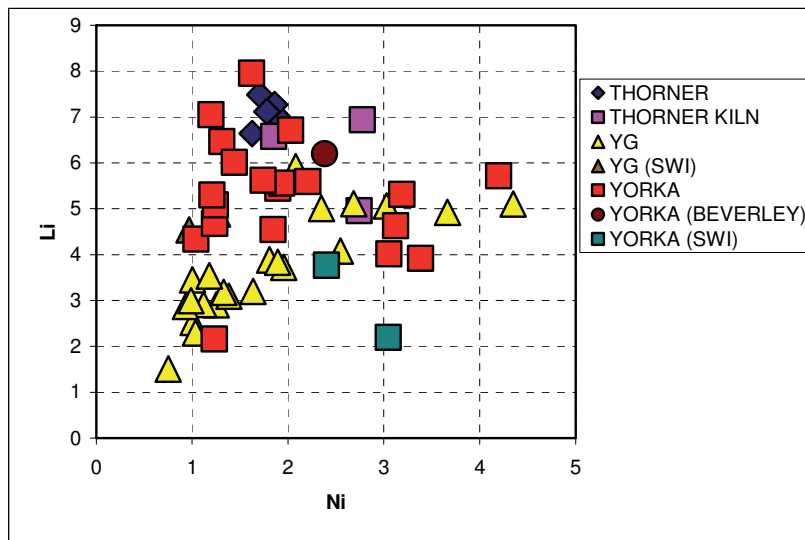


Figure 4

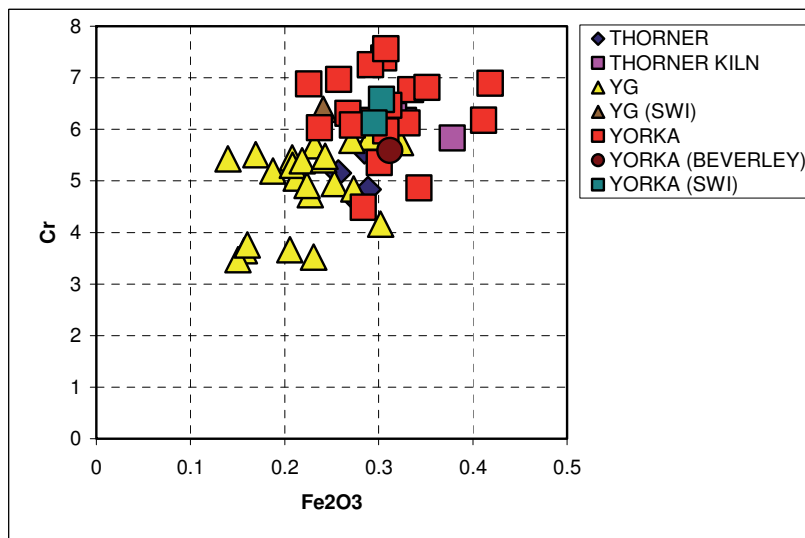


Figure 5

Early Medieval Handmade

The early medieval handmade vessel was compared with a series of samples of early to mid Anglo-Saxon date which contain similar sandstone-derived temper and in many cases share the silty groundmass found in the Swillington sherd. These samples come from a range of sites in the Vale of York, ranging from Catterick and Scorton in the north to York in the south, Otley in the west and Scrayingham and West Lilling in the east. Samples from Otley and Boston Spa are the closest geographically to Swillington. Factor analysis of this dataset indicates the presence of three main factors and a plot of the first two factor scores shows that there is a geographical component, although the samples from different sites have overlapping compositions. There is a correlation of the two factors, so that those with high F1 scores tend to have high F2 scores. There is also evidence for a systematic difference in F2 scores, so that the Ferrybridge, West Lilling and Scrayingham samples have the lowest mean F2 scores, and are both from sites located at the eastern side of the vale whilst

Catterick and Scorton have the highest mean F2 scores and come from sites in the northern part of the vale. The remaining samples, from York, Boston Spa, Otley, Swillington, and intermediate mean F2 scores and come from sites in the southwest part of the Vale. These groups probably reflect the source of the sediment feeding into the pro-glacial and post-glacial lakes and are consistent with the Swillington sample having a source using lacustrine clay in the southwest of the Vale of York.

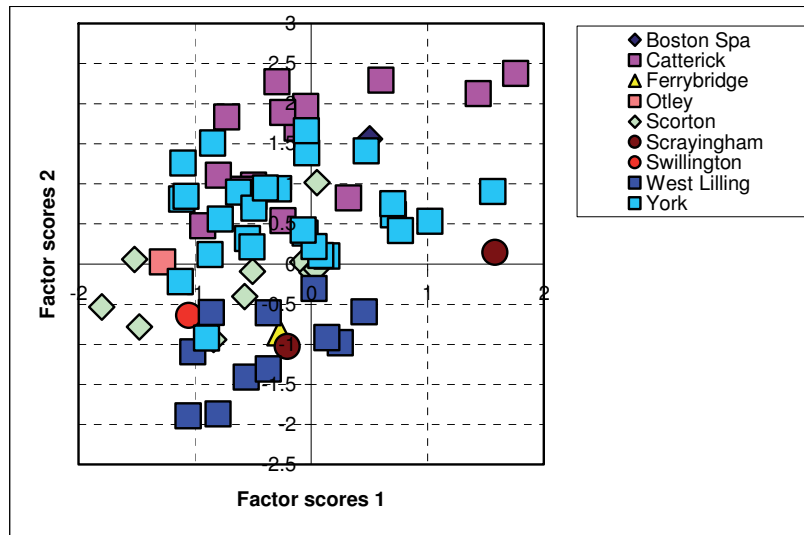


Figure 6

Conclusions

The Swillington pit includes one sherd from a typical York Gritty ware vessel. This is confirmed by both thin section and chemical analysis. The similarity of the grit found in York Gritty ware to that found in Thorner products suggests a similar source region and the light-firing body is typical of those produced from Coal Measures deltaic clays, especially those which form seatearths underlying deposits of coal. Potterton, situated immediately south of Thorner, has a place name which suggests the presence of potters in the late 11th century and at that date the only known pottery found in that part of Yorkshire is York Gritty ware. This makes it fairly certain that Potterton was one, if not the only, source of York Gritty ware at that time.

The two York A vessels, however, have a composition which is intermediate between the Thorner products and York Gritty ware, with a higher similarity to York Gritty ware. This suggests perhaps that they were made from red-firing clays in the Potterton area.

The colour of these Carboniferous clays and mudstones is due to the removal of iron and related elements by soil formation in sub-tropical deltaic conditions. It has been established through analysis of a series of test samples from Mirfield, West Yorkshire that iron content, and the frequency of elements correlated with iron, varies with colour but that other elements are unaffected. Thus, the similarity of the clay in most respects to York Gritty ware points to a Potterton source rather than a Thorner one. It is possible, therefore, that the earliest products of the Potterton industry include these two vessels (and possibly the Beverley example) which have a colour, tempering and rim form similar to that of the Thorner pottery and that these were rapidly replaced by the whiteware vessels whose collared rim forms suggest a strong Norman influence.

The early medieval handmade vessel is in all respects a successor to the early to mid Anglo-Saxon handmade wares which in this area probably date from the 7th to the 9th centuries. There is some evidence for the continued use of handmade vessels at Coppergate but these appear to be of the bag-shaped everted rimmed type current in the mid Saxon period.

However, it is possible that this industry continued into the later 11th (a similar pattern is found in Lincolnshire, where handmade shell-tempered ware, ELFS, has a similar fabric in thin section and similar chemical composition to its late 10th to 12th century successor, LFS (Young and Vince 2006).

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Appendix 3

| TSNO | Al ₂ O ₃ | Fe ₂ O ₃ | MgO | CaO | Na ₂ O | K ₂ O | TiO ₂ | P ₂ O ₅ | MnO |
|-------|--------------------------------|--------------------------------|------|------|-------------------|------------------|------------------|-------------------------------|-------|
| V4285 | 14.64 | 4.38 | 0.53 | 0.33 | 0.62 | 1.59 | 0.53 | 0.09 | 0.024 |
| V4286 | 25.80 | 6.22 | 0.98 | 0.38 | 0.17 | 2.03 | 0.83 | 0.12 | 0.010 |
| V4287 | 22.05 | 6.51 | 0.89 | 0.42 | 0.26 | 1.90 | 0.77 | 0.08 | 0.086 |
| V4288 | 18.70 | 5.67 | 1.05 | 0.39 | 0.23 | 2.11 | 0.75 | 0.09 | 0.042 |

Appendix 4

| TSNO | Ba | Cr | Cu | Li | Ni | Sc | Sr | V | Y | Zr* | La | Ce | Nd | Sm | Eu | Dy | Yb | Pb | Zn | Co |
|-------|-----|-----|----|-----|----|----|-----|-----|----|-----|----|-----|----|----|----|----|----|----|----|----|
| V4285 | 412 | 92 | 14 | 35 | 30 | 12 | 82 | 78 | 18 | 42 | 40 | 69 | 41 | 7 | 2 | 3 | 2 | 28 | 87 | 10 |
| V4286 | 467 | 165 | 51 | 117 | 25 | 21 | 108 | 111 | 14 | 131 | 54 | 87 | 53 | 5 | 1 | 3 | 2 | 59 | 33 | 9 |
| V4287 | 649 | 135 | 13 | 83 | 53 | 17 | 85 | 94 | 33 | 70 | 62 | 106 | 63 | 10 | 2 | 6 | 3 | 25 | 51 | 15 |
| V4288 | 614 | 123 | 15 | 41 | 57 | 16 | 57 | 85 | 28 | 52 | 60 | 102 | 61 | 10 | 2 | 5 | 3 | 29 | 63 | 15 |

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