Early Splashed Ware and Gritty Ware from Church Close, Hartlepool

Alan Vince

As part of the Northumbrian Kingdom Anglo-Saxon Pottery Project (NASP), the author and Kate Steane rapidly scanned the pottery recovered from the Tees Valley Archaeology excavations at Church Close, Hartlepool. This site revealed remains of a mid Saxon monastic complex with plentiful evidence for timber structures (Daniels 1988). However, no pottery associated with that phase was recovered nor was any found in the scan residual in medieval deposits.

A second aim of the scan was to look for evidence for pre-conquest or Norman period pottery, such as had been claimed at Hart Manor (Addis REF). For this, we were provided with a list of the earliest medieval contexts on the site and examined all of these. No shelly ware vessels comparable with Hart Manor were found and the earliest medieval pottery consisted of off-white gritty ware and rarer splashed vessels, in a red-firing fabric. One sample of each type was taken for thin section and chemical analysis (Table 1).

Table 1

TSNO	Action	Context	Cname	Form	Part	Nosh	Description	Sitecode
V1819	TS;ICPS	1004	DURC	JUG	BS	2	SPLASH GLAZED EXT	hcc84
V1820	TS;ICPS	1004	DURC	JAR	BS	1		hcc84

Thin Section Analysis

This sections were prepared by Steve Caldwell, University of Manchester, and stained using Dickson's method (Dickson 1965).

V1819

The sample comes from a red earthenware vessel (Munsell 00) with a reduced core and outer margin (Fig 1). Moderate quartzose sand up to 0.5mm across is present. In thin section, the following inclusion types were noted:

- Quartz. Mostly angular fragments up to 1.0mm across. Most of these have one or more straight faces as a result of overgrowth. Sparse well-rounded grains up to 0.3mm across and one possible plucked example appears to have been c.1.5mm across, highly spherical but cracked in half.
- Sandstone. Sparse fragments of varying grades, with mean grain size varying from c.0.2mm to 0.7mm. All show signs of overgrowth, and most have some dark brown cement, secondary to the overgrowth.
- Clay pellets. Moderate rounded dark brown pellets up to 0.5mm across.

- Chert/altered volcanics. Sparse well-rounded grains up to 1.0mm across of crypto-crystalline silica. In one case, these include a rhombic phenocryst 0.4mm long.
- The groundmass consists of optically anisotropic baked clay minerals, moderate angular quartz grains, subangular dark brown clay pellets and sparse muscovite laths, all up to 0.1mm long.

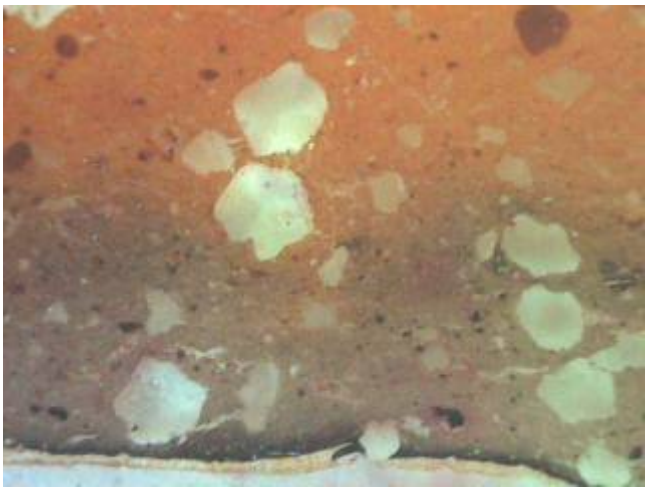

Figure 1 Reflected light image of thin section V1819. The field of view is c.3.4mm across.

V1820

The sample comes from an off-white earthenware with moderate coarse quartzose sand, with grains up to 2.0mm across (Fig 2). In thin section, the following inclusion types were noted:

- Quartz. Moderate angular fragments up to 1.5mm across. These mainly have at least one straight face. Smaller grains sometimes have a coating of haematite and sparse grains are well-rounded and highly spherical.
- Opaques. Sparse fragments, some well-rounded and others well-rounded but cracked, up to 1.0mm across.
- Sandstone. Sparse fragments up to 0.5mm across. Some have a fine texture with abundant red haematite cement. Others have little or no iron-rich cement and a slightly higher mean grain size.
- Clay pellets. Moderate rounded dark brown pellets up to 0.5mm across. Some of these have a lenticular cross-section and were clearly present in a plastic form.
- The groundmass is variegated and consists of lenses of optically anisotropic baked clay minerals, sparse angular quartz (absent in some lenses) which vary in colour and texture.

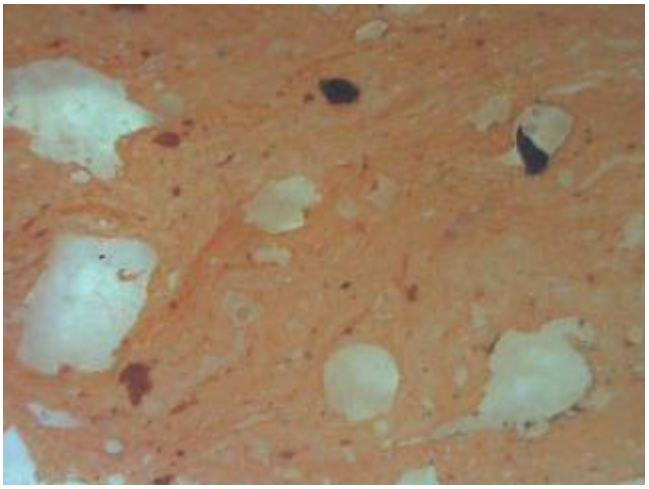

Figure 2 Reflected light image of thin section V1820. The field of view is c.3.4mm across.

Chemical Analysis

The samples were both prepared in Lincoln and submitted to Royal Holloway College, London, where they were analysed under the supervision of Dr J N Walsh using Inductively-Coupled Plasma Spectroscopy. A series of major elements was measured as percent oxides (App 1) and a series of minor and trace elements was measured in parts per million.

The data were normalised to aluminium before analysis using the Factor Analysis package in WinSTAT for Excel (Fitch 2002). This multivariate statistical technique seeks to replace the original N variables with a smaller number of factors, whose efficiency in summarising the variability in the dataset is expressed as a percentage. In this case only factors with an eigenvalue of 1 or more were sought.

The data were first compared with samples of North Yorkshire Whitewares, both from Hartlepool and other sites. This whiteware was made using Middle Jurassic seatearths deposited in deltaic conditions similar to those of the Carboniferous Coal Measures (Kent 1980). Little petrological or geochemical difference can be found between wares produced at various localities around the fringes of the North Yorkshire Moors (such as the Hambleton Hills, the Howardian Hills, Osmotherley, Whitby and Scarborough) although in many cases the various products can be distinguished by eye through slight variations in colour and texture. Five factors were found, of which the second and the fifth best distinguish the Hartlepool samples from the North Yorkshire Whitewares (Fig 3).

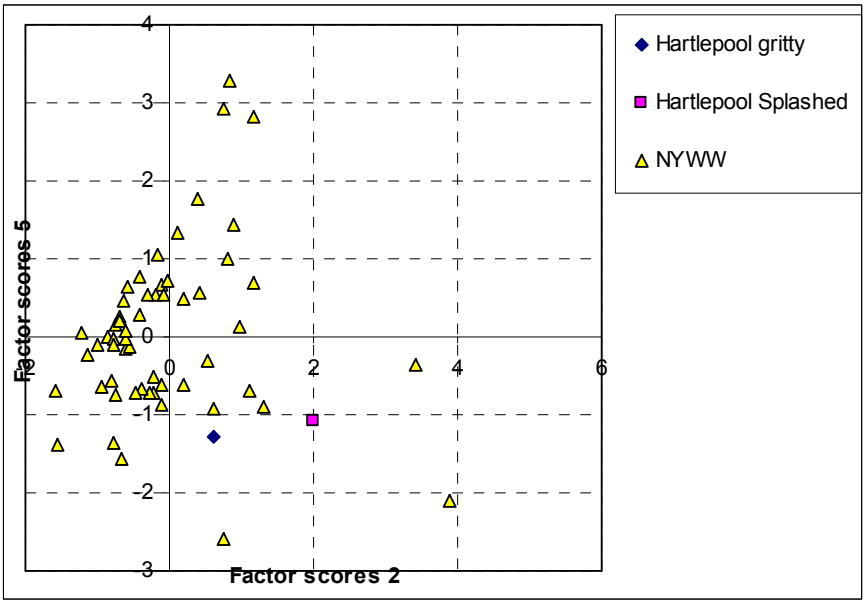

Figure 3 Factor Analysis of North Yorkshire Whiteware and Hartlepool samples

Only five vessels classified as North Yorkshire whitewares have similar compositions to the two Hartlepool examples. One of these is a Hartlepool find (AG516. HM 84 A 158 Fabric A) which on re-examination of the thin section can be seen to contain scattered inclusions of similar character to those in the present two Hartlepool samples. This sample has a different textured groundmass to either of the current samples. The others are York finds. One, V2377 from Coppergate, has a fine red-firing body and contains moderate basic igneous inclusions, not found in definite North Yorkshire whitewares. The remaining three samples all appear in thin section to be standard North Yorkshire whitewares. They all come from the same site, York Minster.

The samples were then compared with samples of off-white firing wares from various sites in the north-east (Durham, Aldin Grange and Newcastle-upon-Tyne) and with samples of Northern Gritty wares from production sites (starred) and consumer sites in West Yorkshire (Baildon *, Bardsey, Grantley *, Knaresborough, Sheffield, Ingmanthorpe Manor near Wetherby and York).

Factor analysis of this dataset shows a much closer correlation with the Hartlepool samples but it is difficult to separate those from the Northeast of England from those from West Yorkshire. Five significant factors were found and in most cases the factor scores do not differentiate samples from the two regions. However, two factors, F2 and F4, do separate the two groups and a scatterplot showing these two factor scores (Fig 4) places the two Hartlepool samples clearly in the Northeastern group.

Figure 4 Factor Analysis of Northeastern English and West Yorkshire Gritty whitewares and Hartlepool samples

A factor analysis of this Hartlepool and Northeastern comparanda places both Hartlepool samples with samples from the Dog Bank kiln in Newcastle-upon-Tyne rather than with the Aldin Grange and samples of off-white firing wares from Saddler Street, Durham (Vince et al. 2007). This is shown clearly by a scatterplot of the first and second factors (Fig 5).

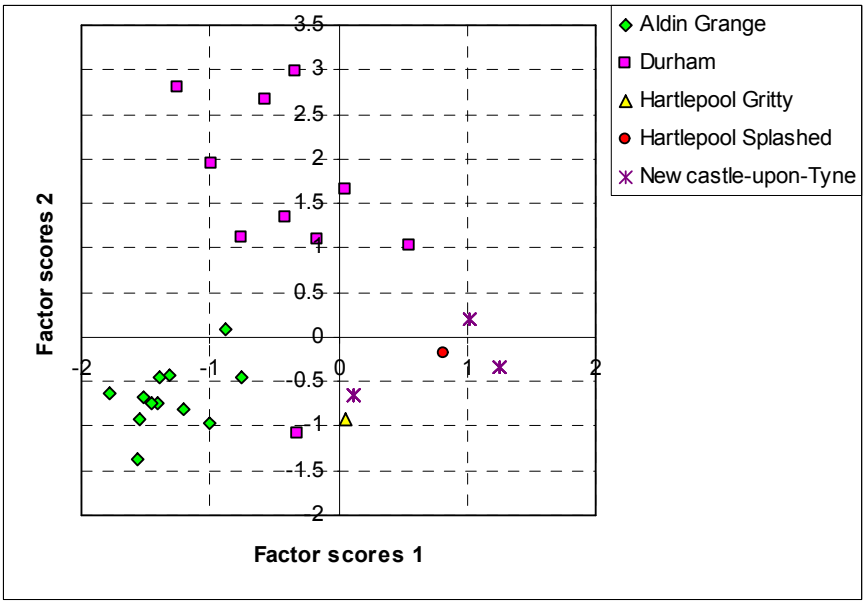

Figure 5 Factor Analysis of Northeastern English and Hartlepool samples

Discussion and Conclusions

The thin section analysis indicates that both the samples, although different in the range of inclusion types present and their character, can be paralleled in the north-east of England but not, in detail, in West Yorkshire, where otherwise very similar fabrics were used.

The section of the splash-glazed vessel has inclusions which in the main can be paralleled in the Millstone Grit but also includes grains derived from the wind-blown basal Permian sand. The section of the unglazed, off-white firing vessel includes both Millstone Grit derived quartz grains and sandstone fragments of Coal Measure origin. Again, well-rounded inclusions (quartz and opaques) derived from the basal Permian sand are present. Permian deposits outcrop along the western edge of the Vale of York but in these the basal sand is not a notable feature and most outcrops consist of dolomitic limestone. Comparable fabrics have been seen at Newcastle-upon-Tyne, including samples from the Dog Bank kiln, and on the occupation site at Saddler Street, Durham. The off-white clay used in the unglazed fabric is probably of Coal Measures origin, either directly or redeposited in a Quaternary deposit. The fine-textured, red-firing clay used for the splash-glazed vessel is probably also of Carboniferous origin.

The Coal Measures outcrop in the north western part of County Durham and in the Tyne valley around and west of Newcastle. They do not outcrop close to Hartlepool although it is likely that much of the boulder clay which outcrops over the eastern and southern parts of the county contain re-deposited Coal Measures clays. Casual observation, however, suggests that in most cases the original components of these tills have lost their discrete characteristics in the reworking process.

Combining the results from the two analytical techniques, it is likely that the two Hartlepool samples were produced in the north-east of England using Coal Measures clay and a Quaternary sand containing the same range of inclusions as that used at the Dog Bank kiln in Newcastle-upon-Tyne (Bown 1988). The most distinctive products of that kiln were unglazed and decorated with roller-stamping and no examples of unglazed roller-stamped vessels were noticed in the Church Close collection (although this is not to say that they could not be present, given the nature of the scan). The outcrop of the basal Permian sand is limited to the south of the Tyne and east of the Wear and it is unlikely that detrital grains from this deposit occur in sands much further to the north or west, making the Newcastle area a very likely source on petrological grounds as well as from the similarity in chemical composition.

Bibliography

Bown, L. (1988) "The Pottery." in C. O'Brien, L. Bown, S. Dixon, and R. Nicholson, eds., *The Origins of Newcastle Quayside, Excavations at Queen Street and Dog Bank*, The

Society of Antiquaries of Newcastle upon Tyne Monograph Series 3 The Society of Antiquaries of Newcastle upon Tyne, Newcastle-upon-Tyne,

Daniels, R. (1988) "The Anglo-Saxon Monastery at Church Close, Hartlepool, Cleveland." *Arch J*, 145, 158-210

Dickson, J. A. D. (1965) "A modified staining technique for carbonates in thin section." *Nature*, 205, 587

Fitch, Robert K (2002) *WinSTAT(r) for Excel: User's Manual*. R. Fitch Software

Kent, Peter (1980) *Eastern England from the Tees to the Wash*. British Regional Geology London, HMSO

Vince, A., Mould, Q., and with contributions by Ian Riddler (2007) *"New thoughts on the chronology of Saddler Street, Durham: pottery, leatherwork and some implications", Archaeologia Aeliana*, 5th Series XXXVI, 79-92

Appendix 1

locality	Sitecode	cname	TSNO	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
Hartlepool	hcc84	DURC	V1819	20.32	6.17	1.04	0.84	0.3705	2.32	0.87	0.16	0.06
Hartlepool	hcc84	DURC	V1820	20.02	4.73	0.89	0.48	0.3895	2.27	0.85	0.1	0.035

Appendix 2

locality	Sitecode	cname	TSNO	Ba	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zr*	La	Ce	Nd	Sm	Eu	Dy	Yb	Pb	Zn	Co
Hartlepool	hcc84	DURC	V1819	646	113	30	139	44	16	134	105	16	57	61	101	61	8	2	4	2	30,703	126	16
Hartlepool	hcc84	DURC	V1820	479	110	14	124	31	15	113	91	16	66	56	94	56	7	1	3	2	590	71	12