Characterisation of Anglo-Saxon pottery from Scrayingham, North Yorkshire (SWT 04)

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A watching brief at Scrayingham, North Yorkshire, directed by Oliver Cooper for Northern Archaeological Associations, revealed two sherds of pottery which were identified by P Didsbury as being of prehistoric or Anglo-Saxon date and submitted for visual, thin-section, and ICPS analysis.

All material came from the topsoil and was therefore unstratified. Topsoil [100] was located within the area of the treatment works, and topsoil [200] towards the southern end of the village. It is therefore unlikely that they come from the same vessel.

Visual examination confirms that the two sherds are indeed of Anglo-Saxon date. The larger sherd, from context 200 is the rim of a globular jar of moderate size with a rounded rim and very short neck. The interior of the vessel retains horizontal burnishing lines whereas the exterior is smooth but probably slightly weathered. There is no clear sign of use. A sample of this vessel was taken for thin section and chemical analysis (V2295). The sherd from context 100 is a featureless body sherd but is so similar in visual fabric to that from context 200 that a similar date and form is likely. A sample of this sherd was taken (V2294).

Petrological analysis

The following characteristics were noted in thin section:

Subangular quartz: Abundant subangular grains, mostly with at least one flat face indicating their origin in an orthoquartzite. Most have straight extinction but some have strongly undulose extinction indicating origin in a metamorphic rock. A few have kaolinite adhering to them and there are also angular kaolinite pellets in the fabric. These probably formed in the interstices of a sandstone as a cement, but might include heavily altered feldspar fragments.

Feldspars: Sparse angular perthite up to 1.0mm. Subangular microcline up to 1.0mm

Brown chert: Sparse subangular grains up to 0.5mm across.

Muscovite: Sparse laths of muscovite up to 0.2mm long.

Sandstone: Sparse fragments of sandstone composed of quartz grains similar to those described above.

The groundmass consists of optically anisotropic baked clay, which is almost opaque due to the presence of carbon. Moderate ill-sorted angular quartz grains are present.

These characteristics are similar to those of other Anglo-Saxon pottery fabrics from northern England, given the group code SSTMG by the author. The ultimate source of much of the clastic material is the lower Carboniferous rocks of the Pennines. This probably includes the angular perthite fragments, although these could be glacial erratics from the Shap Granite. There are no recognisable rock or mineral fragments from the Permian or later strata of Yorkshire present, despite the fact that Triassic rocks form the solid geology underlying Scrayingham. The inclusions are clearly detrital and indicate the use of deposits of boulder clay, fluvio-glacial sand or post-glacial lacustrine/alluvial clay. Examination of sands and gravels from boulder clays and archaeological pottery and fired clay samples indicates that those of the East Yorkshire claylands and the eastern part of the Vale of Pickering contain frequent rounded and angular fragments of basic igneous rock, erratics from the north-east of England, as well as fragments of fine-grained sedimentary rocks derived from the Jurassic strata of North Yorkshire. Thus, the two vessels were probably made from a boulder clay or Holocene clay from the western part of the Vale of Pickering or the Vale of York.

Chemical analysis

Subsamples of each sample were prepared by the mechanical removal of external surfaces and crushing about 1gm of the core to a fine powder. This powder was then submitted to Royal Holloway College, London, where Inductively Coupled Plasma Spectroscopy was carried out under the supervision of Dr J N Walsh, Department of Geology. A range of major and minor elements was measured (Appendix 1).

To minimise the dilution effect of the quartzose temper, an estimate of silica content was made (by subtracting the sum of all measured elements from 100%) and the data normalised to Aluminium, which is present in pottery mainly in clay minerals and feldspars. The data were then compared with those obtained from the analysis of similar Anglo-Saxon fabrics in the Vale of York, the Vale of Pickering, the Wolds and the East Yorkshire claylands.

Factor analysis was used to analyse the dataset. Because the comparative data was collected over a period of time in several batches, there is a danger of error being introduced through variations in instrument calibration, especially where the element frequencies are at the limit of detectability. Potential problems were found in the rare earth element frequencies. Furthermore, it is likely that the CaO and Sr frequencies were affected by post-burial alteration (both enrichment and depletion) as a result of the calcareous nature of the burial environment on the Wolds and the acidic nature of those in the Vale of York and elsewhere. Similarly, calcium phosphate has been noted in the pores of several thin sections and therefore P2O5 has also to be omitted from analysis. The remaining dataset consisted of 14 elements, and factor analysis found three significant factors (Table 1).

Table 1

Element	Factor 1	Factor 2	Factor 3
Zn	0.766090715	0.030631794	0.228890584
Zr*	-0.640901579	-0.100250864	0.088150506
Ba	0.626963128	0.352853154	0.209872046
V	-0.606467803	-0.132080835	0.308716367
TiO2	-0.600228785	-0.016551529	0.120813255
Li	0.488134934	-0.261327669	0.144234619
K2O	-0.08579045	0.857666101	-0.101545512
MgO	0.141202289	0.792543718	0.158117618
Na2O	0.219871855	0.432380601	0.093843161
Cu	0.29194524	0.36566123	0.035438615
Ni	0.129027171	0.220735583	0.698672591
Sc	-0.000570293	-0.071579825	0.640301477
Co	-0.129548282	0.36044865	0.553283277
Cr	-0.532548144	-0.136983325	0.545503184

Factor 1accounted for 23% of the variation in the dataset and the remaining factors accounted for a further 15% and 11% respectively.

Factor 1 scores were determined by high positive weightings for Ba and Zn and by high negative weightings for Zr, V, TiO2 and Cr. Factor 2 scores were determined by high positive weightings for MgO and K2O with no strong negative weightings. Factor 3 was determined by high weightings for Ni, Sc, Co and Cr.

A plot of Factor 1 against Factor 2 scores (Fig 1) indicates no separate clusters in the data although there is some patterning: samples from the following regions all had negative F1 scores: the Wolds, Scrayingham, the East Yorkshire Claylands and a samples from Scotland. Strong positive F1 scores were only found in samples from the Vale of York and the Vale of Pickering (where they were in a minority, 2 out of 30 samples). Strong positive scores for F2 occur only in samples from the Vale of York and Scrayingham. No patterning could be observed in the F3 scores. This patterning either indicates that there were several production centres for this ware or that there are post-burial alterations to the chemical composition. Two of the measured elements occur almost exclusively in detrital minerals which are resistant to weathering: TiO2 and Zr. A plot of the values for these two elements (Fig 2) indicates again no separation of the data but shows that the samples from the southern part of the Vale of York (primarily from in and around York) have lower TiO2 values and, mostly, lower Zr values than the two Scrayingham samples.

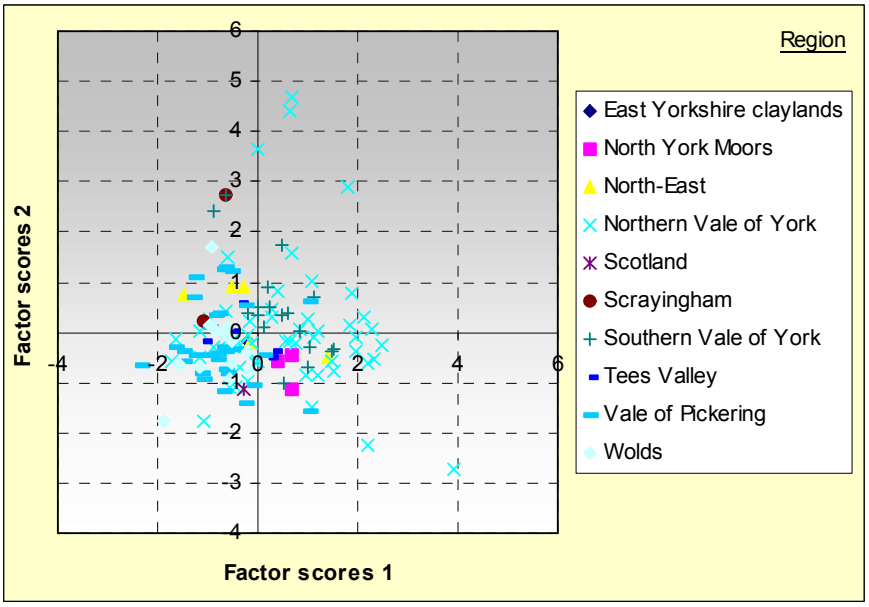

Figure 1

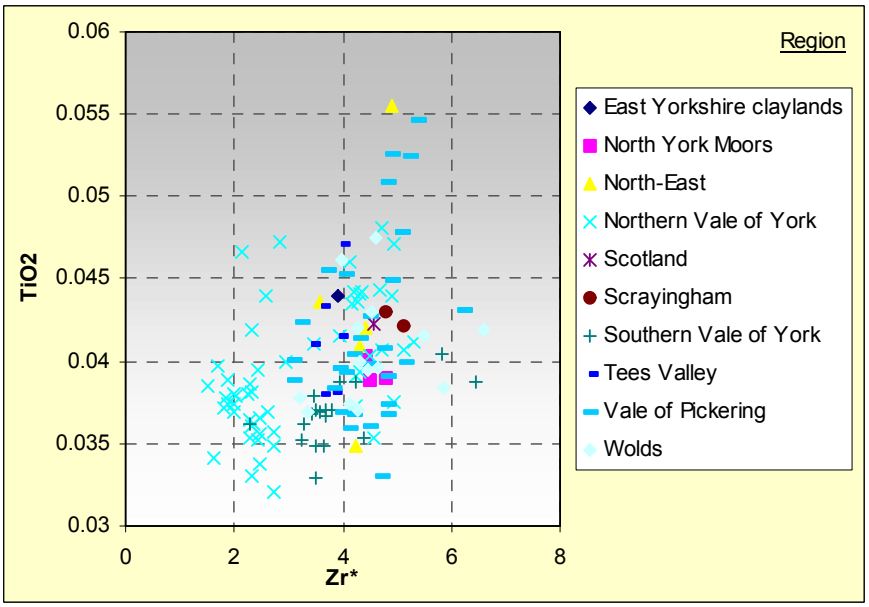

Figure 2

Discussion

Source

The petrological data indicate that the Scrayingham vessels were made from a boulder clay or Holocene clay containing reworked glacial outwash located somewhere in the western part of the Vale of Pickering or in the Vale of York.

The chemical composition of the Scrayingham samples shows that they are similar to those of other sandstone-sand tempered Anglo-Saxon vessels from northern England but that they

have a higher Titanium content than samples from the York area and a higher Zirconium content than most samples from the northern Vale of York (including all the samples from Catterick and most of those from Piercebridge). The source of the Scrayingham vessels is therefore probably in the Wolds, the Wolds edges or the Vale of Pickering which suggests that the two vessels may well have been made close to Scrayingham. There is a deposit of till at Scrayingham, but it is said to contain mesozoic sandstones (i.e. Permo-Triassic in this instance) and shales, neither of which are present in the samples. Furthermore, the local soil contains brown patinated flint, which is also absent in the samples. Therefore, it is unlikely that the vessels were produced at Scrayingham itself, although it would be possible to test this further by the collection of clay and sand samples and construction and firing of test briquettes.

Date

The form of the vessel from which the larger sherd came is typical of early Anglo-Saxon pottery in the north of England and the East Midlands. Unfortunately, it is apparently a long-lived form and was probably in use from the beginnings of Anglo-Saxon settlement, presumably some time in the mid 5th century if not before, until the cessation of accompanied burial, which is probably to be dated to the 7th century, but possibly later.

Handmade coarsewares from Fishergate, York, have been found in association with early 8th-century and later artefacts on a site with no evidence for earlier occupation. However, these vessels lack the globular form of the Scrayingham pot and usually have a flat topped rim and a more bag-shaped profile, sometimes with an everted rim and/or pronounced shoulder. Furthermore, they usually lack the fine burnished finish of the Scrayingham vessel.

It therefore seems likely that the Scrayingham vessels date to the early Anglo-Saxon period, between c.450 and c.700. In the absence of evidence for use, they might have been used for burial, accompanying a cremation or inhumation, or for domestic purposes. Such vessels are still scarce finds in Yorkshire, although it is clear that pottery was used domestically and for burial from the Vale of York eastwards to the North Sea and from the Tees valley southwards to the Humber.

Acknowledgements

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Appendix 1: ICPS Data: a) Major elements (measured as percent oxides)

TSNO	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
V2295	11.86	5.44	1.95	1.27	0.55	2.62	0.51	0.58	0.099

TSNO	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
V2294	13.29	5.22	1.01	1.03	0.23	1.93	0.56	0.13	0.039

Appendix 1: ICPS Data: b) Minor and trace elements (measured as parts per million)

TSNO	Ba	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zr*	La	Ce	Nd	Sm	Eu	Dy	Yb	Pb	Zn	Co
V2295	749	74	25	55	58	11	110	81	22	57	38	69	36.34	7.05	1.2648	4.7	2.2	48.496	115	15
V2294	431	74	21	58	39	12	92	88	20	68	40	80	36.37	6.89	1.2824	4.2	2.1	82.994	53	15