Characterisation Studies of Torksey-type ware from Cottam, East Yorkshire (ARC0802)

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Excavations at Little Westfield Farm, Cottam, East Yorkshire revealed a trackway and other features dated to the 10th century or later by the presence of Torksey-type ware in their backfills. Torksey-type was one of a large number of production sites in late 9th to 11th-century England which produced wheelthrown sandy reduced greyware (Hurst 1976). In Northern England, Torksey-type ware has been adopted as a general term for all such wares although in the 1950s they were termed Thetford ware (e.g. in Hurst's gazetteer Hurst 1956.

The actual source of the Torksey-type ware found in Yorkshire is not certain. There are no known kilns in the county but Torksey-type ware is found in South Yorkshire, North Yorkshire and East Yorkshire. A study of the fabric of Torksey-type ware from York was carried out by C Brooks and A Mainman, comparing samples from sites in York with those from the Torksey kilns Brooks and Mainman 1984. This study concluded that some of the York samples were probably Torksey products but that there was a second, group which was probably produced in the north. Various studies carried out by the author, mainly as part of the Northumbrian Kingdom Anglo-Saxon Pottery survey (NASP), funded by English Heritage, suggested that Torksey products contained a distinctive rounded quartz sand, typical of the Trent Valley and that grey sandy wares which did not contain this sand were probably of post-conquest date and should not be termed Torksey-type ware (Vince et al. forthcoming).

A sample of the Cottam Torksey-type ware, an inturned rim bowl, was selected for thin section and chemical analysis.

Thin section analysis confirms that it is a Trent valley product and chemical analysis indicates that the sample is closer in composition to Torksey products than to samples of a daughter industry at Newark.

Thin Section Analysis

The thin section was prepared by Steve Caldwell, University of Manchester and stained using Dickson's method (Dickson 1965). The following inclusion types were noted:

- Quartz. Abundant rounded grains up to 0.3mm across. A minority have a high sphericity (millet grain quartz). Sparse grains up to 0.5mm across with at least one flat face are also present.
- Chert. Moderate rounded grains up to 0.5mm across. Most of these have a coarser texture than flint and may include altered volcanic rocks as well as Carboniferous chert.

- Clay Pellets. Sparse rounded pellets up to 1.0mm across. Most are darker in colour than the groundmass. Probably mainly derived from concretions within the parent clay.
- Opaques. Sparse rounded grains up to 0.3mm across.
- Sandstone. Sparse rounded, fine-grained sandstone up to 0.3mm across.
- Calcite. Rare subangular fragments of ferroan calcite up to 0.4mm across. The origin of these grains is unclear.
- Tourmaline. A single well-rounded grain 0.3mm across.
- The groundmass consists of dark brown baked clay minerals with no visible inclusions. The clay is laminated parallel to the vessel surfaces.

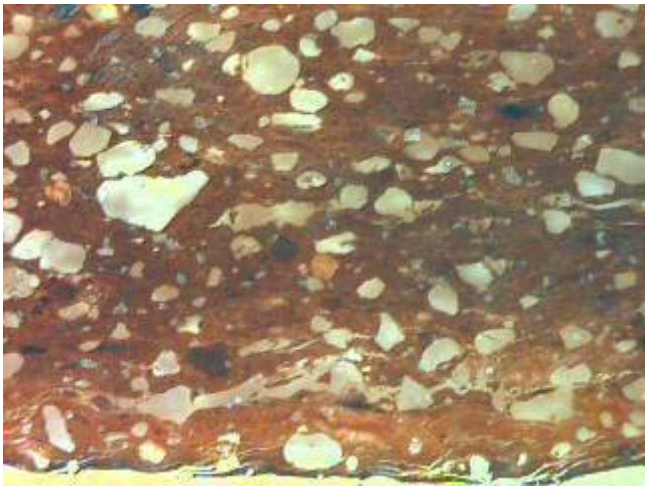

Figure 1

Interpretation

The quartzose sand, probably including the opaque grains, is probably a Trent Valley sand derived mainly from Triassic sands in Nottinghamshire with rare grains derived from coarse sandstone such as the Millstone Grit. No sands with such a high proportion of rounded grains with a Yorkshire origin has been observed by the author. However, similar sands are found in the Witham Valley and more widely in Lincolnshire on both sides of the Jurassic ridge in cover sands of varying origin.

Chemical Analysis

A sample was prepared for chemical analysis by making an offcut and then removing the outer surfaces. The resulting cube was crushed to a fine powder and submitted to Royal Holloway College, London, where it was analysed using Inductively-Coupled Plasma Spectroscopy (ICP-AES) under the supervision of Dr J N Walsh. A range of major elements

was measured as percent oxides (App 1) and a range of minor and trace elements was measured as parts per million (App 2).

The date were normalised to Aluminium and then compared with samples of Torksey ware from the seven kilns investigated by Barley (Barley 1964; Barley 1981); two samples of Torksey-type ware waste from Newark; samples of Torksey-type ware from consumer sites (Derbyshire, Lincolnshire and Yorkshire) and finally a sample submitted from Viborg, Jutland, as being possibly Torksey ware but which appears to be a local Danish product.

Factor analysis of this data using all measured elements found that the Viborg and Newark samples formed outliers but that all the remaining samples have similar compositions. However, in detail differences were found between the Torksey kiln waste and the samples from consumer sites.

Fig 2 shows a bi-plot of the Factor 1 and Factor 2 scores. The two Newark samples both have high F2 and negative F1 scores. Also separated are samples from Flixborough. These include early vessels with an unusually high calcareous content but the results may also be due to the blown sand rich soil matrix in which the samples were buried.

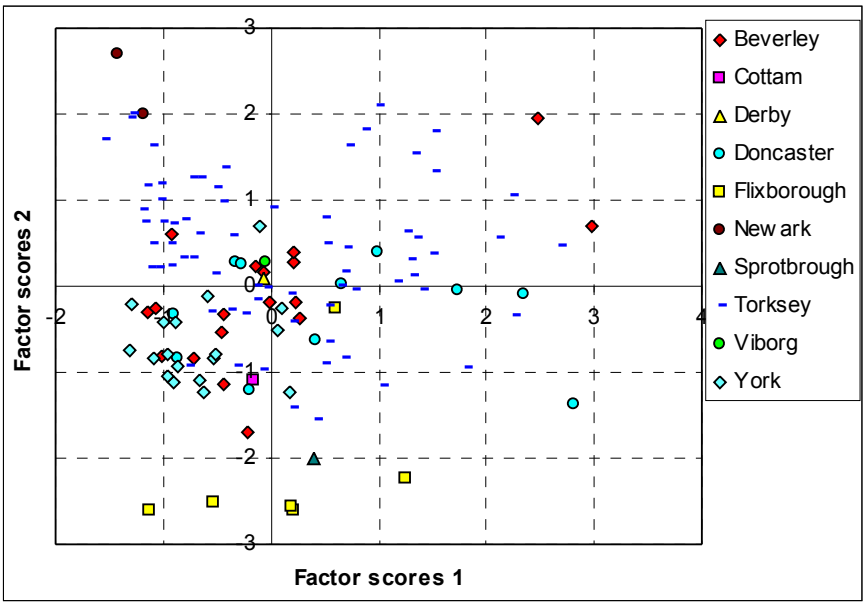

Figure 2

Fig 3 shows a bi-plot of the third and fourth factor scores. This clearly separates the Viborg and Newark samples, whilst still showing the distinctive character of the Flixborough samples. In both Figs 1 and 2 the Cottam sample has similar scores to the majority of the samples.

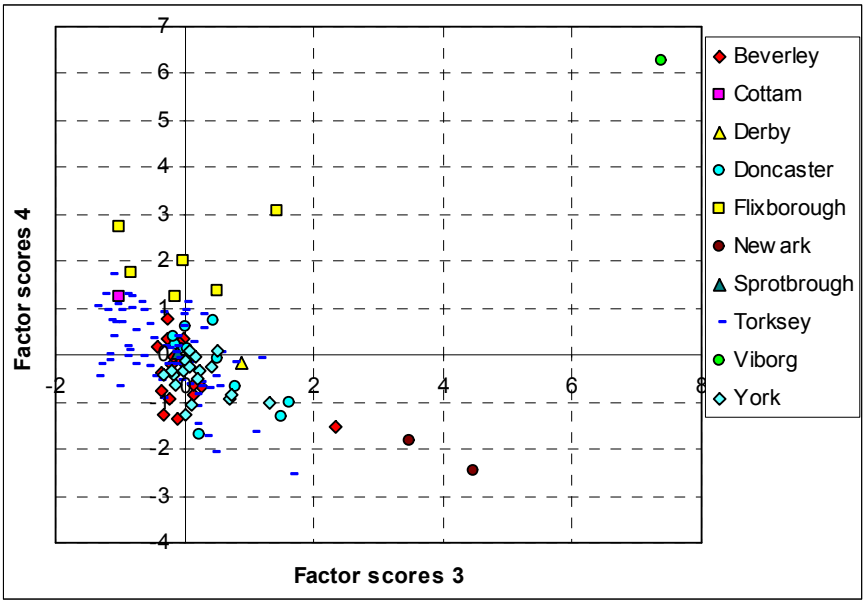

Figure 3

Finally, the Cottam sample was compared just with the Torksey kiln samples. Fig 4 shows a bi-plot of the F1 and F2 scores. The samples from Kilns 3, 5 and 7 do not overlap with the Cottam sample (due to their high F1 scores) but the remainder, from Kilns 1, 2, 4 and 6, do. However, it is clear that the many more kilns existed in the Torksey industry than those investigated by Barley.

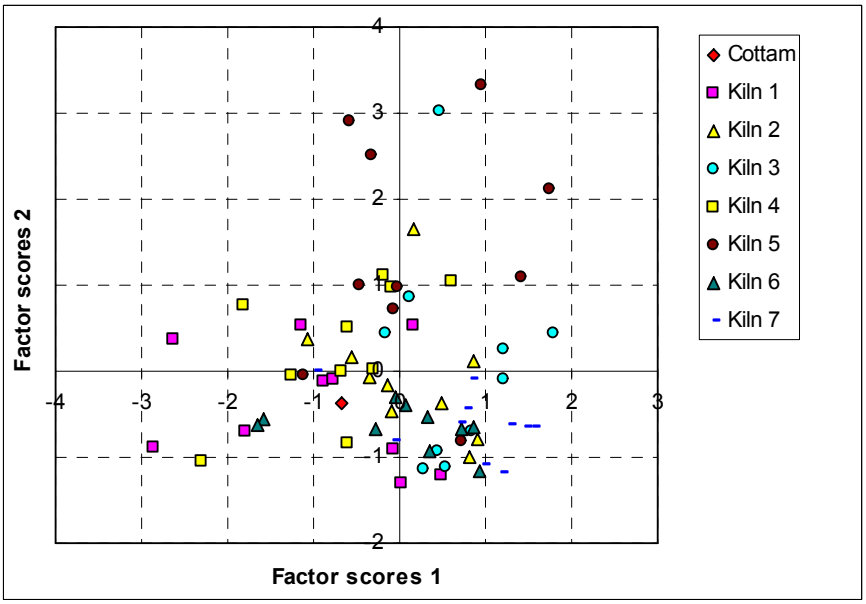

Figure 4

Conclusions

The thin section analysis indicates that the Cottam sample was produced south of the Humber, consistent with an origin in the Torksey potteries. However, on its own the thin

section evidence cannot prove a Torksey origin because of the widespread distribution of the Trias-derived cover sand in Lincolnshire and Nottinghamshire. However, the chemical analysis distinguishes samples from Viborg and Newark from definite Torksey products and similar samples from consumer sites. The Cottam sample, like those from York, Beverley, Doncaster and elsewhere in Yorkshire, is therefore identified as a Torksey product. Detailed comparison of the chemical composition with samples from Barley's seven kilns shows that three could not have been the source but that the remaining four produced vessels with similar chemical compositions.

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Appendix 1

TSNO	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
V5105	15.90	6.14	1.45	1.36	0.20	1.68	0.60	0.10	0.055

Appendix 2

TSNO	Ba	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zr*	La	Ce	Nd	Sm	Eu	Dy	Yb	Pb	Zn	Co
V5105	381	104	24	52	52	15	104	114	20	57	33	68	34	6	1	3	2	20	68	15