

Characterisation Studies of a Greyware Bowl from Scarborough

Alan Vince

A substantial part of a large, unglazed, wheelthrown greyware bowl was recovered from an excavation at Scarborough and submitted to the author for analysis. The bowl is made in a fine-textured sandy fabric and is visually similar in fabric to Low Countries Highly Decorated wares and to Low Countries Greyware, assumed to have been produced in the same area at the same time.

A sample of the vessel was thin-sectioned and a second sample submitted for chemical analysis using Inductively Coupled Plasma Spectroscopy (Sample no. V1715).

Description

Petrological analysis

The following inclusions were noted in thin-section:

- Sparse rounded chert and flint up to 4.0mm across
- Sparse rounded quartz up to 0.5mm across

The groundmass consists of anisotropic clay minerals with abundant angular quartz, rounded opaque grains, muscovite laths, subangular ferroan calcite grains, rounded ferroan calcite grains, thin-walled ferroan calcite shell fragments. These inclusions range from less than 0.1mm to c.0.2mm across.

The thin-section was compared with those of possible Low Countries Greywares from two other sites in the northeast of England (Table 1): the Bacchus in Newcastle upon Tyne (V1622), Jarrow (V861 and V864).

Table 1

TSNO	Sitecode	Context	class	cname	subfabric	Form	Action
V0861	jarrow	VARIOUS		LCGR	JARROW D3	JAR	PTS;ICPS
V0864	jarrow	various		LCGR	JARROW G13	JAR	PTS;ICPS
V1622	hb02	6110	ceramic	LCGR		JAR	TS;ICPS
V1715	qs96	201;202;204	CERAMIC	LCGR		BOWL	TS;ICPS

All three sections have a much coarser texture than the Scarborough vessel and all contain abundant rounded quartz grains up to 0.5mm across, rounded opaque grains up to 0.3mm across, rounded glauconite up to 0.3mm across, rounded flint and chert up to 0.5mm across, laths of muscovite up to 0.5mm long and laminated clay pellets with no visible inclusions, up to 1.5mm across. Two of the three comparative sections also contain sparse angular fragments of flint.

Two examples of Jutish ware were also compared. One is from Gateshead and the other Viborg, in Jutland. Both have a rounded quartz sand similar to that seen in the Newcastle and Jarrow samples although coarser in texture.

There is a clear difference in composition between the Scarborough vessel and these three comparative vessels. That found at Jarrow and Newcastle was clearly made using a lower Cretaceous glauconitic clay whereas the Scarborough vessel contains no glauconite and the only definitely Cretaceous rock present is actually a rounded flint pebble which has clearly seen a further cycle of erosion following its weathering from the upper Cretaceous chalk. Lower Cretaceous strata outcrop extensively on both sides of the North Sea, including just to the south of Scarborough, where the Speeton Clay forms a thin band at the base of the chalk, from Malton to the coast. However, texturally, this clay is quite different from that used in the Scarborough vessel. Silty micaceous clays with abundant iron oxide inclusions are found in the Gault clay of southern England, in Wiltshire, Hampshire and Sussex for example, but there is no tradition of manufacture of wheelthrown greywares in that area in the medieval period. It seems likely, therefore, that the vessel comes from the Low Countries, where such greywares are known. However, it differs in detail from the comparative samples and from the fabric of glazed red earthenwares made in Flanders which have also been sampled by the author and may have been made from a more recent estuarine clay from the Rhine-Meuse delta.

Chemical analysis

A range of major, minor and trace elements were measured. The major elements were measured as percent oxides and the remainder as parts per million.

The data were compared with samples of the following wares:

- Low Countries Greywares from various sites in the northeast of England
- Low Countries Highly Decorated wares from a kiln in Bruges and from consumer sites in Ieper and Aardenburg (and possibly local products)
- Glazed floor tiles from sites in Hull and York, thought to be of medieval Flemish origin
- Low Countries Red Earthenware vessels from Gateshead
- London-type wares from the London area and Sigtuna (the latter probably all from a single vessel)

A plot of PC1 against PC2, which ought to portray the major relationships of the various samples, shows a single elongate cluster with four outliers. The Scarborough sample is one of these outliers, the others being London-type ware samples from the London area. The outliers seem to be separated from the remainder by a mixture of P2O₅, CaO and Sr. In case of the London-type samples this is probably

due to the presence of sparse shell inclusions whereas the Scarborough sample has the highest CaO content in the dataset (1.74%).

A plot of PC3 against PC4 separates the dataset into two groups, one consists of the Flemish floor tiles and the Low Countries Red Earthenware samples and the other, including the Scarborough sample, consists of all the remaining samples. This result depends on the contribution of a number of elements but in particular K₂O is higher in the former group and Zr in the latter (it should be pointed out that it is not the absolute frequency of these elements which is responsible for the separation but the relative frequency of those elements to others).

A plot of PC1 against PC4 separates the dataset into three groups: PC1 separates the Low Countries Red Earthenwares from the Flemish floor tiles whilst PC4 separates these two groups from the remainder. Finally, a plot of PC1 against PC3 pulls the London-type ware samples away from the remainder, although there is still no clear separation.

This analysis shows that the Scarborough sample has an atypical calcareous content within this dataset but that otherwise it is similar to samples originating in Flanders and is distinguishable from the London-type wares, Flemish floor tiles and Low Countries Red Earthenwares all of which have visually similar fabrics (ignoring their firing).

This analysis did not include any samples of medieval sandy wares from the area of the modern Netherlands, for example there are known production sites in Utrecht and in north Holland and although it failed to find any significant differences between the Scarborough sample and Flemish products, apart from its calcareous content, this does not necessarily prove a Flemish origin. Samples of these more northerly Low Countries wares are required for further analysis.

Conclusions

Thin section analysis indicates that the Scarborough bowl has a fine-textured fabric unlike any of the Flemish glazed or unglazed wares with which it was compared. The analysis also suggested a lower Cretaceous origin for the clay (although it might have been made from a more recent clay formed by reworking lower Cretaceous strata). The most distinctive feature of the sample in thin section was the range of calcareous inclusions, some of which are certainly biological in origin. Such inclusions are present in most medieval Flemish sandy wares but have usually been destroyed by firing. Thus, the Scarborough vessel seems to have had a lower firing temperature than most Flemish products. The chemical analysis also pointed out the higher calcareous content of the Scarborough bowl but indicates that otherwise the vessel is chemically similar to those wares.

A Low Countries origin for the bowl is most likely but whether it is a minor product of Flanders or produced further north is not known. Excavated kilns producing Low Countries Greywares have been excavated at Utrecht and Amersfoort, for example and it would be worthwhile obtaining samples from those kilns for comparison.

Appendix. ICPS data

Major elements (percent oxides)

TSNO	SiO2	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
V0861	75.070	12.890	6.840	1.500	0.460	0.270	2.240	0.590	0.120	0.020
V0864	72.790	14.460	6.220	1.770	0.680	0.380	2.760	0.680	0.240	0.020
V1622	75.097	13.810	5.160	1.420	0.470	0.270	2.510	0.700	0.550	0.013
V1715	75.730	12.073	5.346	1.370	1.741	0.546	2.235	0.742	0.196	0.023

Minor and trace elements (parts per million)

TSNO	BA	CR	CU	LI	NI	SC	SR	V	Y	ZR*	LA	CE	ND	SM	EU	DY	YB
V0861	299.000	106.000	12.000	30.000	24.000	13.000	83.000	130.000	11.000	54.000	29.000	47.000	15.310	3.848	1.000	1.900	1.300
V0864	392.000	111.000	20.000	42.000	40.000	15.000	97.000	136.000	16.000	70.000	36.000	66.000	27.980	5.934	1.300	3.100	1.700
V1622	393.000	108.000	26.000	42.000	32.000	15.000	80.000	149.000	16.000	81.000	34.000	66.000	34.000	4.800	0.800	2.600	1.600
V1715	319.300	104.030	22.660	21.630	27.810	11.330	115.360	99.910	14.420	47.380	26.780	49.440	27.497	4.493	0.866	2.472	1.751