Characterisation of the Medieval Pottery from Follifoot, West Yorkshire

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As part of the post-excavation analysis of the medieval pottery from sites near Wetherby on the A1, West Yorkshire, being carried out by Jane Young, samples of medieval pottery and other ceramics from production sites in West Yorkshire were analysed.

The remains of a late medieval pottery kiln were excavated by Jean Le Patourel at Follifoot in 1964 (Wilson and Hurst 1965, 218). They were situated south of the village, on the bank of Horse Pond Beck. The kiln was multi-flued and constructed of gritstone. The products consisted mainly of glazed jugs, some with bungholes, which probably date to the later 14th to early 16th centuries.

Six samples of pottery waste were selected by Jane Young and submitted to the author for thin section and chemical analysis. The samples all come from jugs and all appear to have a similar fabric.

Description

The six samples have been assigned the sample numbers V2509 to V2514. In thin section, they were found to belong to a single, homogenous fabric group. The thin sections were produced by Steve Caldwell and stained using Dickson's method (Dickson 1965). The chemical analyses were undertaken at Royal Holloway College, London, under the supervision of Dr J N Walsh, Department of Geology, using Inductively-Coupled Plasma Spectroscopy (ICP-AES).

Petrological Analysis

Description

The following inclusion types were noted in thin section:

- Subangular quartz. Abundant fragments, some with evidence for overgrowth, up to 0.8mm across but mostly less than 0.5mm across.
- Coarse-grained sandstone. Sparse subangular fragments up to 0.5 across. The rock is composed of a mixture of quartz and feldspar grains, with evidence of the overgrowth of the quartz grains. Some fragments have an iron-rich cement.
- Opaque grains. Sparse subangular grains up to 0.3mm across. It is likely that most of these originated as sandstone cement.

- Rounded quartz. Sparse rounded grains, c.0.2 to 0.4mm across. Some are sufficiently spherical to qualify as “Millet-seed” grains.

- Rounded dark brown mudstone. Moderate fragments with clear bedding indicated by variations in iron content, up to 2.0mm across. Some have such a high iron content that they are almost opaque. In one case the fragment includes numerous subangular voids up to 0.1mm across and was possibly a marl.

- White-firing mudstone. Sparse fragments, some with thin dark beds, up to 1.0mm across.

- Plagioclase feldspar. Sparse subangular fragments up to 0.5mm across.

- Muscovite. Sparse sheaves of muscovite up to 0.2mm long.

- Perthite. Sparse subangular fragments up to 0.5mm long.

- Orthoclase feldspar. Sparse subangular fragments up to 0.5mm long, often filled with alteration products.

- Subangular chert? Sparse fragments up to 1.0mm across with an isotropic groundmass, rounded voids filled with chalcedony and straight-sided, zoned isotropic inclusions. Two possible interpretations come to mind: a) phosphate nodules with secondary silica infilling of fossil voids and phosphatic brachiopod spines or b) altered volcanic glass.

The groundmass of these samples is homogeneous and consists of optically anisotropic baked clay minerals, sparse angular quartz up to 0.05mm across, sparse muscovite up to 0.1mm long and moderate to abundant dark brown clay pellets, up to 0.1mm across.

Interpretation

The sand inclusions in these samples includes material of probable Carboniferous Millstone Grit origin, Permo-Triassic quartz sand and, possibly, marl, and mudstone fragments which, from their light colour are possibly of Coal Measures origin. This mixed suite, together with the fact that most of the sandstone fragments are disaggregated, suggests that the sand is of fluvio-glacial origin, and includes material derived from areas well to the north of Follifoot (since there are no nearby sources of white-firing mudstone immediately north of the site).

The groundmass is probably derived from the weathering of a dark brown mudstone, and most of the mudstone inclusions present in the fabric may be relicts of this rock. However, it is likely that its immediate source is a boulder clay.

Chemical Analysis

A range of major elements was measured as percent oxides (Appendix 1) and a range of minor and trace elements were measured as parts per million. Silica was not measured directly but was estimated by subtraction of the total measured oxides from 100%. The six samples all have similar silica contents, ranging from 67.3% to 71.8% (mean 69.5%, SD 1.7).

Factor analysis of the chemical data reveals no groupings and five significant factors. A plot of F1 against F2 shows that three samples have very similar compositions (V2510, V2512 andV2512) whilst one, V2509, has a strong negative F1 score (indicating low rare earth elements, high vanadium, phosphorus and lithium), one has high F1 and F2 scores (V2511) and one, V2513, has a high F1 score and strong negative F2 score. F2 scores indicate high weightings for titanium, copper, zirconium, scandium and zinc and/or high negative weightings for lithium, cobalt and lead. The lead content in this sample is 1.5 times that of the next highest sample, suggesting contamination, or the presence of a fragment of a lead ore.

Discussion and Conclusions

The thin section and chemical data indicate that the Follifoot potters were probably using a clay derived from weathered mudstone, but probably the immediate source was boulder clay. The sand temper is a moderately well-sorted detrital sand, probably of fluvioglacial origin rather than derived from the Horse Pool Beck, where one would expect a less mature sand (i.e. less well sorted and with more rock fragments). This use of an inclusionless, red-firing boulder clay tempered with a fine-textured quartzose sand is paralleled at both York and Holme upon Spalding Moor, both also of late medieval date and both in the Humberware tradition.

Appendices

Appendix 1

TSNO	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
V2509	17.82	6.05	1.04	0.27	0.32	1.89	0.67	0.08	0.015
V2510	18.36	5.96	1.11	0.27	0.34	1.92	0.67	0.08	0.024
V2511	18.57	6.69	1.43	0.34	0.26	2.54	0.73	0.07	0.014
V2512	20.22	6.51	1.22	0.27	0.41	2.27	0.7	0.08	0.019
V2513	19.32	6.45	1.25	0.29	0.48	2.24	0.66	0.08	0.019
V2514	20.11	6.4	1.97	0.27	0.72	2.37	0.72	0.08	0.021

Appendix 2

TSNO	Ba	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zr*	La	Ce	Nd	Sm	Eu	Dy	Yb	Pb	Zn	Co
V2509	459	87	33	118	34	14	82	90	12	44	38	70	38	4	1	2	2	847	56	11
V2510	427	91	35	132	34	15	78	108	13	44	45	77	45	5	1	3	2	861	53	12
V2511	544	108	42	66	36	17	105	74	18	52	51	99	51	7	1	3	2	518	75	8
V2512	581	100	36	136	36	16	95	119	14	46	48	87	47	5	1	2	2	1614	59	12
V2513	692	105	27	131	41	15	103	79	17	44	50	97	50	7	1	4	2	2379	52	16
V2514	525	114	30	130	33	16	92	115	13	49	45	84	45	5	1	3	2	1093	50	11

Bibliography

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