Characterisation studies of Medieval Glazed Ware from Flemingate House, Beverley (OSA05 EV09)

Excavations at Flemingate House, Beverley, produced a large stratified collection of medieval pottery which included eight sherds, from six different vessels, which came from a distinctive type of jug. This type, coded by Watkins as Beverley "X" ware, has a fine-textured fabric, usually reduced with oxidized outer surfaces. The vessels are thinly-potted jugs with a plain external glaze. One sherd came from a vessel with an external white slip.

Similar vessels are known from Lincoln but could not be closely provenanced using thin section analysis, which indicated the presence of a rounded quartz sand similar in character to that found in the local Trent and Witham valley terraces (Young and Vince 2006, EMX Fabric C, 117, Fig 103 Nos.762-767).

Samples of the Beverley vessels were taken for thin section and chemical analysis and samples of the Lincoln vessels were taken for chemical analysis. These samples were then compared data from various Beverley wares and Low Countries wares (since the high quality of potting suggested that the vessels might be imported).

Thin Section Analysis

The six thin sections all have similar characteristics in thin section and a group description is given here. The following inclusion types were noted:

- Rounded quartz. Moderate fragments up to 0.4mm across.
- Subangular quartz. Moderate fragments up to 0.4mm across. Some have one or more straight edges indicating that they come from a sandstone containing overgrown grains.
- Red sandstone. Sparse rounded fragments up to 0.4mm across of a medium-grained sandstone with dark brown cement.
- Opaques. Sparse rounded grains up to 1.0mm across.
- Calcareous inclusions. Sparse rounded voids up to 1.0mm across, partially filled with altered limestone.
- Chert. Sparse subangular fragments of a chert containing sponge spicules.
- Perthite. Rare angular fragments up to 0.4mm across.
- Siltstone. Sparse rounded grains up to 0.4mm long.
- Organic mudstone. Sparse rounded grains up to 0.4mm long.

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A copy of this report is archived online at
http://www.avac.uklinux.net/potcat/pdfs/avac2006112.pdf

- Basic igneous rock. Sparse angular fragments of rock with a groundmass consisting of interlocking laths of feldspar up to 0.1mm long and opaque euhedral grains, c.0.05mm across.

The groundmass consists of optically isotropic baked clay minerals, abundant angular quartz up to 0.1mm across, sparse muscovite and biotite laths up to 0.1mm long.

Both the mixed quartzose/calcareous sand and the silty, micaceous groundmass of these samples is similar to that of Beverley glazed wares. The sand, in particular, is a feature of Beverley 1 ware and is often absent or sparse in Beverley 2. The various inclusion types can all be interpreted as being types present in the Holderness Quaternary gravels and boulder clays. The rounded quartz could be of Permian or Triassic origin. The subangular quartz and the chert are probably of Middle Jurassic origin. The calcareous inclusions could be Chalk and the basic igneous rock is probably an erratic from northeastern England. The groundmass is also typical of Holocene estuarine silt from the Humber estuary. In particular, the presence of biotite laths is distinctive. However, it is also a feature of Holocene estuarine silts in the Lincolnshire fens.

Chemical Analysis

The samples were prepared by Peter Hill and submitted to Royal Holloway College, London, where they were analysed using inductively-coupled plasma spectroscopy under the supervision of Dr J N Walsh.

The resultant data consisted of the frequency, of a range of major elements, measured as percent oxides (App 1), and of a range of minor elements measured as parts per million (App 2).

Several of the samples have clearly been contaminated with lead glaze. There is a slight correlation between lead and nickel and cobalt, which may therefore include a very slight contamination from lead glaze, and a negative correlation with scandium.

The frequency of silica was estimated by subtraction of the measured oxides from 100% and the data were then normalised to aluminium and compared with the other datasets.

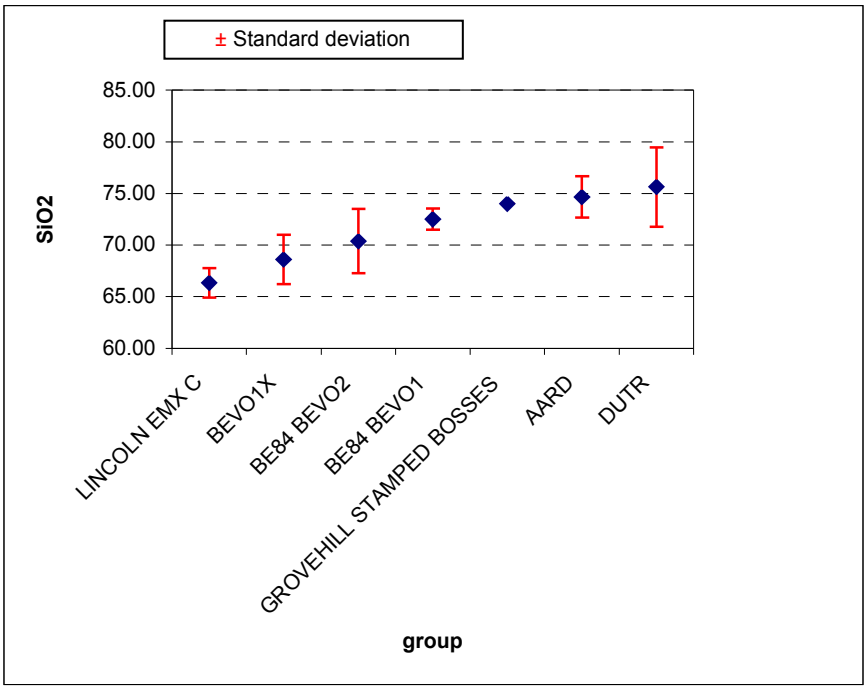

Figure 1

The estimated silica content of the Beverley X samples has a lower mean than other Beverley wares and samples of Low Countries origin, and a slightly higher mean than the Lincoln EMX C samples (Fig 1).

The data were first compared with samples of Beverley products of various types:

BE84 BEVO1 – samples of Beverley 1 glazed ware from Eastgate, Beverley (a consumer site)

BE84 BEVO2 – Samples of Beverley 2 glazed ware from Eastgate, Beverley (a consumer site)

BGR84 BEVO1 – Samples of Beverley 1 glazed ware from Grovehill Road (a production site)

FLAT – Samples of flat roof tiles from Beck View Road (a production site).

GROVEHILL STAMPED BOSSES – a sample of a Beverley 2 jug with stamped bosses, an early 14th-century type from Grovehill Road (a production site).

Factor analysis of this data revealed six significant factors. A plot of the factor scores for the first two factors indicates that the flat roof tiles have higher F1 scores than the remaining samples except for two of the Eastgate samples, one of BEVO1 and one of BEVO2. The Fabric X samples have similar F1 and F2 scores to the remaining Beverley ware samples.

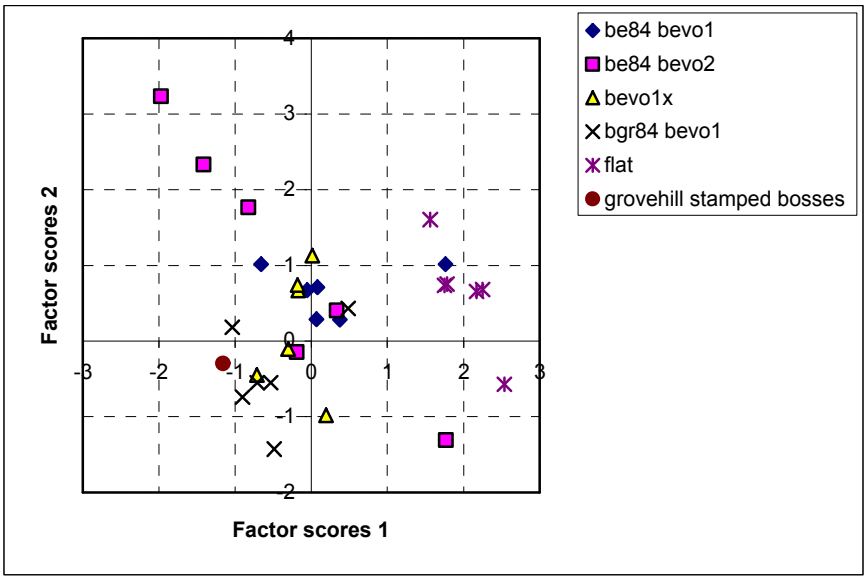

Figure 2

A plot of the third against the fourth factor (Fig 3) revealed no internal patterning at all and here too the Fabric X samples plot with the Beverley glazed ware samples.

Despite this similarity, visual examination of the data revealed that the Fabric X samples have higher Chromium and Cobalt values than other Beverley wares (Fig 3).

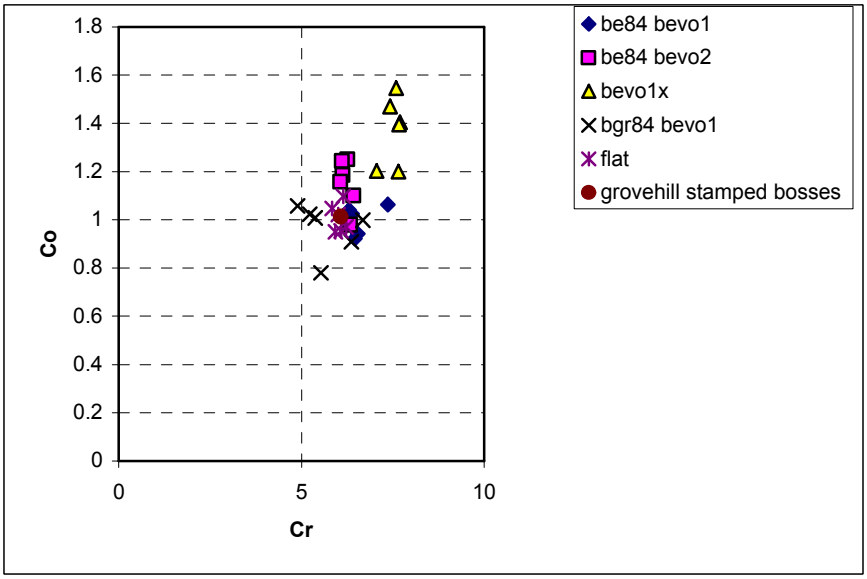

Figure 3

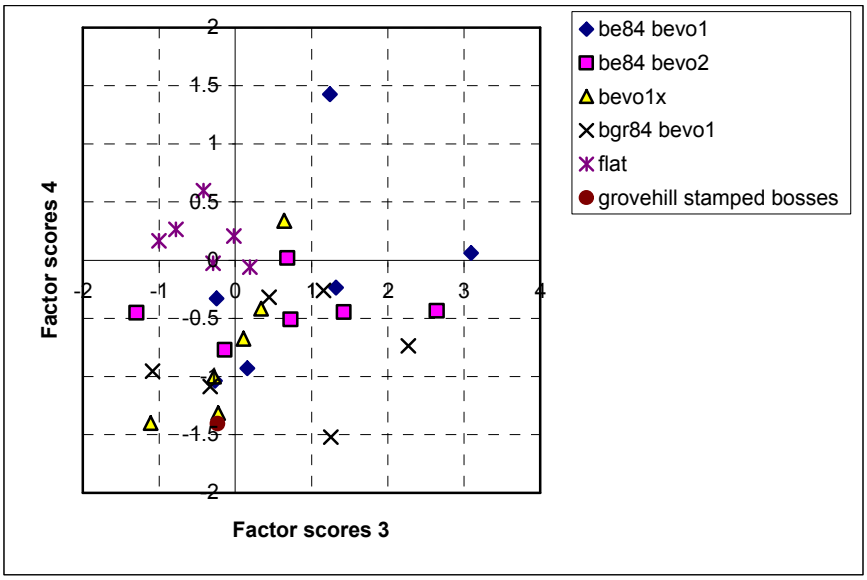

Figure 4

The Beverley data were then compared with a series of Low Countries red earthenwares and the Lincoln samples:

AARD – A series of medieval glazed wares, from a kiln site at Bruges and from consumer sites at Aardenburg, and Ieper(Ypres).

DUTR – Samples of late medieval Dutch Red Earthenware.

DUTRT – Samples of post-medieval glazed red earthenware from sites in the Tyne valley which appear to be from a different source from the medieval Dutch Red Earthenware, but which are still probably Low Countries imports.

LINCOLN EMX C – the Lincoln EMX Fabric C samples

WAWNE REDC – Samples of Beverley Reduced Chalky ware from the consumer site of Wawne, immediately south of Beverley

WAWNE STAXT – Samples of Beverley Staxton-type ware from Wawne.

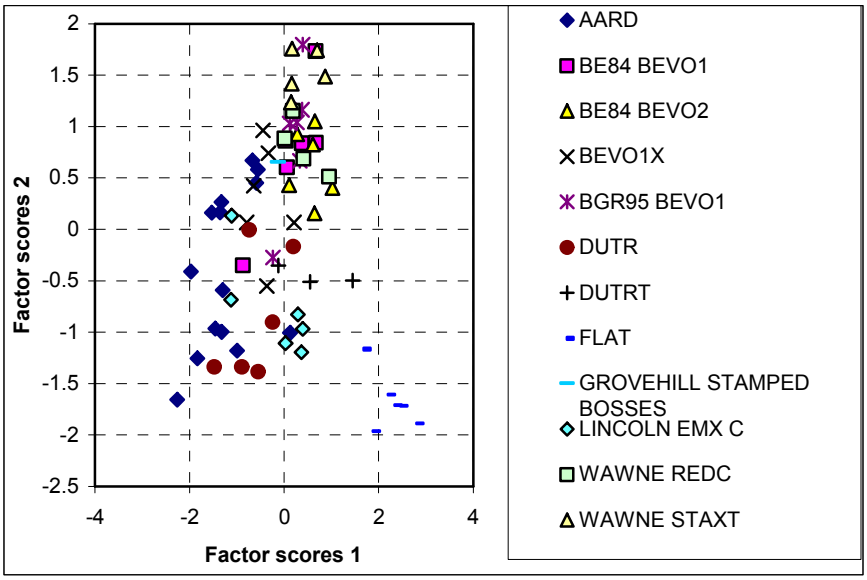

Figure 5

Factor analysis was carried out on this data and a plot of F1 against F2 (Fig 4) shows that the Beverley tiles are distinguished from the other samples but that the Beverley and Low countries ware form a large cluster, with Low Countries samples at one end (low F2 scores) and Beverley samples at the other. The Wawne samples plot with the other Beverley wares, being particularly similar to the BEVO1 samples from Grovehill Road. There is no clear separation between the Fabric X samples, the remaining Beverley samples, the remaining Low Countries wares and the Lincoln EMX ware. The data for these wares was therefore analysed on its own. Factor analysis for this data revealed clear differences between the Low Countries wares (AARD and DUTR), the Lincoln EMX C samples and the remaining samples. In this analysis, the Fabric X samples plot with the other Beverley samples, being more similar to the BEVO1 samples from Eastgate than to the other Beverley samples. There is an exception. One of the Lincoln samples plots with the Fabric X samples.

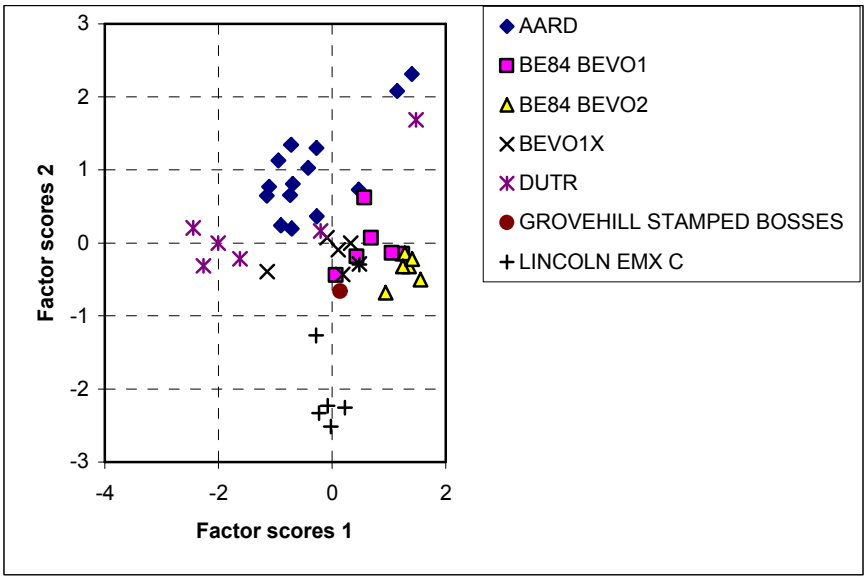

Figure 6

Conclusions

Petrological and chemical analysis of samples of Beverley 1 Fabric X indicate that the ware is probably a Beverley product and that chemical analysis indicates a similar composition to samples of Beverley 1 from Eastgate and that the ware is distinguishable from samples from the 12th-century production site at Grovehill Road and from samples of Beverley 2 ware from Eastgate.

Comparison with samples of Lincoln EMX Fabric C and Low Countries wares indicates that the Beverley wares and Low Countries wares are often similar in composition but that in favourable circumstances they can be distinguished. A single sample of Lincoln EMX C may be a Beverley product whilst the two which were thin-sectioned were petrologically similar to other definite Lincoln area products. It is likely, therefore, that the five remaining Lincoln EMX C samples are of Lincoln or Lincoln area origin.

The similarity between the Beverley and Lincoln wares is therefore not due to their sharing the same source but must reflect the fact that they were produced using similar techniques (thin potting, a high firing temperature and a firing in which oxygen was omitted from the kiln until late in the firing). This suggests that there may have been an interchange of potters between the Beverley and Lincoln industries, or between both of these places and a third, unknown industry.

Bibliography

Young, Jane and Vince, Alan (2006) *A Corpus of Anglo-Saxon and Medieval Pottery from Lincoln*. Lincoln Archaeological Reports Oxford, Oxbow

Appendix 1

TSNO	Al2O3	Fe2O3	MgO	CaO	Na2O	K2O	TiO2	P2O5	MnO
V3751	20.8	7.08	1.5	1.61	0.64	3.14	0.88	0.47	0.051
V3752	17.47	6.32	1.24	1.18	0.61	2.32	0.79	0.13	0.037
V3753	16.38	5.81	1.29	2.36	0.6	2.25	0.75	0.76	0.072
V3754	18.37	5.53	1.3	1.54	0.67	2.45	0.85	0.6	0.044
V3755	19.18	4.81	1.19	1.15	0.52	1.94	0.76	0.32	0.021
V3756	18.63	5.51	1.29	0.85	0.59	2.5	0.95	0.18	0.04

Appendix 2

TSNO	Ba	Cr	Cu	Li	Ni	Sc	Sr	V	Y	Zr*	La	Ce	Nd	Sm	Eu	Dy	Yb	Pb	Zn	Co
V3751	571	147	24	86	42	18	173	176	23	81	47	89	47	9	1	4	2	183	100	25
V3752	466	133	24	71	53	15	120	117	22	71	46	79	46	8	1	4	2	17,399	78	27
V3753	532	126	24	72	43	15	144	106	27	74	44	84	46	8	1	4	2	751	85	23
V3754	705	137	28	75	56	15	146	119	27	82	49	89	50	9	1	4	2	28,786	100	27
V3755	519	147	21	78	44	18	121	137	25	78	50	100	51	9	2	4	2	3,081	110	23
V3756	525	143	30	73	50	16	120	127	26	86	52	91	52	9	2	4	2	1,575	87	26