Characterisation Studies of pottery from Howe Hill, Transco West Hull Pipeline, East Yorkshire (OSA02 EX05)

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Samples of two 'Native' ware vessels were selected for further study (Table 1). Their characteristics in thin section show that they belong to two distinct sub-fabrics. One of these is the Erratic-tempered fabric which is well-known throughout East Yorkshire (V2160). The second sample, V2159, has a fabric not previously recognised in these handmade late prehistoric/early Roman wares.

Table 1

TSNO	Context	GROUP	Cname	Form	Action
V2160	U/S	ERRA	NAT	JBL	TS;ICPS
V2159	1026	SANDY	NAT		TS;ICPS

ERRA (V2160)

The thin section reveals a fabric containing moderate ill-sorted rock inclusions, some of which are angular and some rounded. The angular inclusions are mainly a fine-grained basic igneous rock composed of interlocking plagioclase feldspar laths up to 0.3mm long with some magnetite of similar size. The largest fragment present was 1.5mm long. The remaining sand to gravel-sized inclusions consist of rounded fragments of similar basic igneous rock up to 0.5mm across, single fragments of Millstone Grit-type sandstone, 1.0mm across and a large rounded fragment of granite, 4.0mm across, composed of altered feldspar, quartz and hornblende. The groundmass consists of anisotropic baked clay minerals with sparse to moderate angular quartz and muscovite up to 0.2mm across.

An interpretation of this section could be that the fine-grained basic igneous rock was crushed and added to a boulder clay. This fabric is very similar to that of two thin-sectioned vessels from the Low Farm West site.

SANDY (V2159)

The thin section reveals sparse large angular and subangular inclusions ranging between 1.0mm and 3.0mm across in a groundmass containing abundant rounded and subangular quartz sand, up to 0.5mm across, and sparse muscovite up to 0.2mm long. Some of the larger quartz grains in the groundmass may be of lower Cretaceous origin. The inclusions consist of quartzite, quartz-arenite, an arkose containing rounded grains of quartz and plagioclase feldspar overgrown quartz grains (similar to those found in Millstone Grit), rhyolite, and a granite fragment composed of quartz and quartz/feldspar in graphic intergrowth. The groundmass is optically anisotropic.

The range of inclusions is similar to that found in boulder clays in northeast Lincolnshire and Yorkshire and the lack of a single predominant inclusion type and extreme angularity in the larger inclusions suggests that in this case they may have been naturally present in the clay as dug. However,

a larger section would be needed to confirm this. The extremely sandy groundmass is in fact paralleled in two clay samples from north-east Lincolnshire (Grimsby and Barton-upon-Humber). If some of the quartz grains are indeed of lower Cretaceous origin then at least we can state that the parent boulder clay comes from a point further south than the outcrop of the lower Cretaceous rocks at Filey which would at least confirm an East Yorkshire or northeast Lincolnshire source.

Fig 1 shows a plot of the two main factors in a factor analysis of a dataset which includes samples of boulder clay and beach sand (mainly or entirely derived from that clay) as well as Iron Age/Roman (NAT) and Anglo-Saxon erratic-tempered wares (ERRA). The two samples from Howe Hill can be seen to be chemically similar to each other, despite their differences in petrological composition.

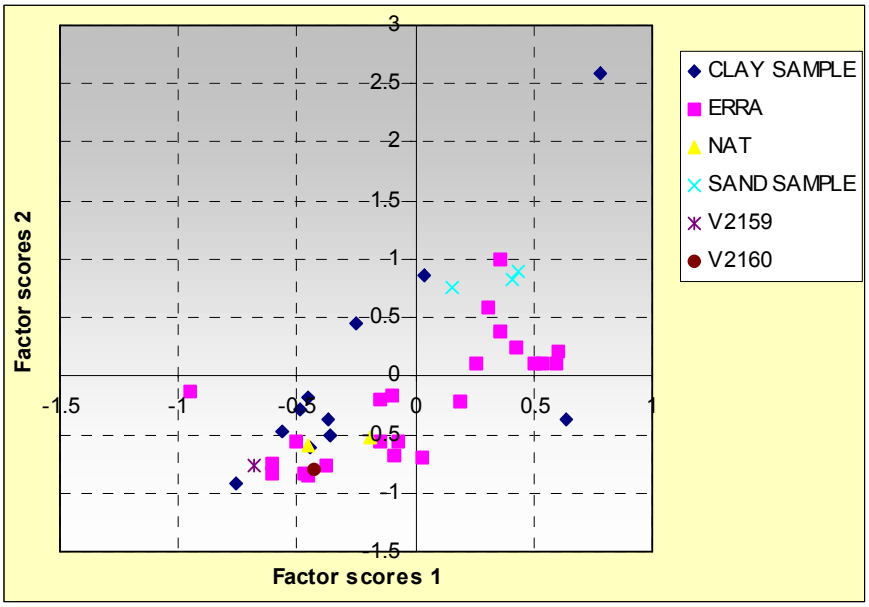

Figure 1

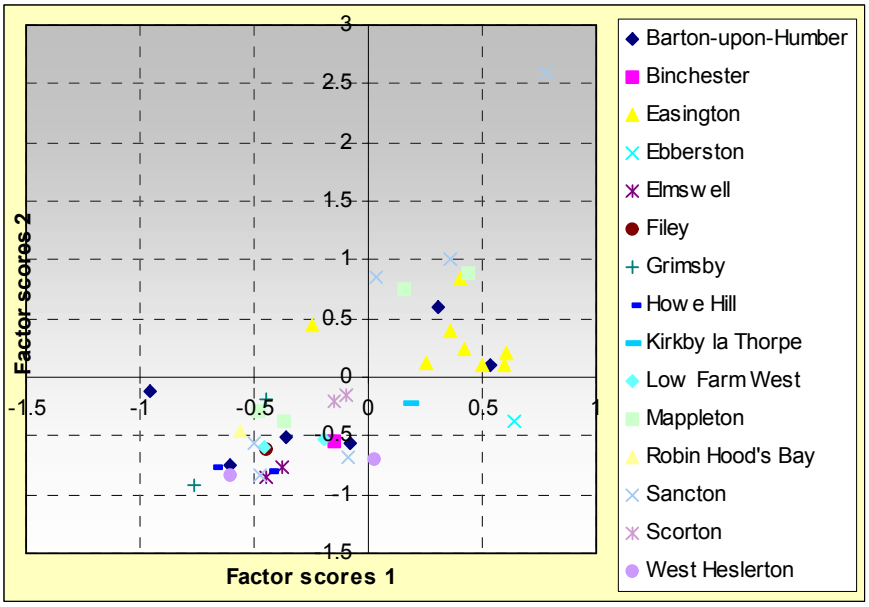

Figure 2

The main patterning within this dataset in fact consists of a trend for samples to either have high F1 and F2 scores or negative scores for both factors (like the two Howe Hill samples). Examination of the data suggests that the main contributing elements to the two scores are sodium, calcium and strontium (high F2) and the rare earth elements (high F1). By contrast, samples with negative F1 and F2 scores should have high amounts of zircon and titanium since detrital minerals containing these elements are likely to concentrate in the sand fraction. The clustering may therefore simply reflect sandy, non-calcareous versus clay-rich and calcareous samples. This cannot be the sole explanation, however, as the Easington pot samples are also in this high F1/F2 cluster whereas one of the two Grimsby samples is sandy (like V2159) and the other contains rounded chalk and little quartz sand and yet both cluster in the negative F1/F2 cluster. However, these results do not augur well for the possibility of eventually being able to use either thin sectioning or chemical analysis to pinpoint the source of these wares closer than to the east Yorkshire/Lincolnshire boulder clays.

In summary, the thin sections and chemical analysis of these two samples show that they were made from rather different raw materials but that both were probably made from boulder clays with a high erratic element in their sand and gravel-sized inclusions. In addition, one if not both of the samples could have been deliberately tempered with crushed erratic rock(s).