# Characterisation of wheel-thrown Anglo-Saxon vessels from Coddenham and Hadleigh, Suffolk

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Amongst the grave-goods from the Coddenham and Hadleigh cemeteries excavated by Suffolk Archaeology Unit were two wheel-thrown pottery vessels.

A binocular microscope study of each vessel was carried out and samples taken for thin section and chemical analysis. The thin-sections were stained using Dickson's method in order to differentiate carbonate inclusions (which, as it happens, were not present in either section). The chemical analysis was carried out using Inductively Coupled Plasma Atomic Emission Spectroscopy (ICP-AES). A range of major elements were measured together with minor and trace elements. The results are given in Table 1.

## The Coddenham pot (CDD 050 0168).

The vessel is fragmentary but it is possible to see that the sherds come from a bottle with a globular body, tall neck (with a slight cordon about halfway down the neck) and a rolled-out rim. The vessel has a cable roulette pattern roller-stamped on the body, both above and below the girth. The vessel belongs to Evison's Group 1e and is particularly close to a vessel from St Peters (Evison 1979, Fig 6b).

The fabric is oxidized and a dark brown colour with dark grey surfaces and contains abundant well-sorted quartz of fine sand or silt grade together with moderate rounded inclusionless red clay pellets up to 2.0mm across.

In thin section (V1627) the main visible feature is a sand consisting of well-sorted quartzose grains, some angular, some sub-angular and a few rounded, ranging up to 0.3mm across. Some of these grains have a coating of haematite. Sparse red clay pellets, some of which were angular and some rounded, up to 2.0mm across, were present. Most of the grains are monocrystalline quartz but chert was also noted. Sparse muscovite laths up to 0.2mm occurred in an anisotropic groundmass of baked clay minerals.

## The Hadleigh pot. (HAD 059 0410).

This vessel is also fragmentary but can be reconstructed to reveal that it is a beaker or bowl with a biconical body and a corrugated upper half with a simple, rolled-out rounded rim. The vessel belongs to Evison's group 3e, and is similar to the two vessels from Prittlewell, Essex (Evison 1979 Fig 16 a and b).

The fabric and petrology are identical to that of the Coddenham vessel.

## Discussion

Both methods of study confirm the close similarity of the two vessels both in petrological and chemical composition and clearly demonstrate that the two vessels were the products of the same centre, if not the same kiln. The thin-section shows that no distinctive rocks or minerals are present but suggest that the sand used for tempering was loosely cemented with haematite, or an iron-rich clay. The red clay pellets might be from the same source although the absence of quartz inclusions within them suggests otherwise.

A survey of wheelthrown pottery vessels found in Anglo-Saxon graves was carried out in the 1970s by Prof V Evison (Evison 1974 and 1979). This survey concluded that the majority of these finds were from a single source and that this source lay in the Pas-de-Calais, on the basis of the distribution of vessels decorated with cable rouletting found in Merovingian graves. Evison pointed out that there were a small number of vessels from other sources included in her corpus and that the majority of the vessels in her Fabric I group were found in Kent. In order to confirm that these two Suffolk pieces were indeed from the same source as Evison Fabric I those vessels in the British Museum, a total of 26 vessels out of Evison's total of 131, were re-examined using a binocular microscope. In addition, a chemical analysis of most of the vessels in Evison's corpus was carried out by M Cowell of the Department of Scientific Research (Cowell 1979) using Atomic Adsorption Spectroscopy. This data was re-examined together with that from other early to mid Anglo-Saxon imports studied using ICPS by the author.

### Fabric

The fine quartz sand seen in the Coddenham and Hadleigh vessels is a feature of 16 of the vessels examined in the British Museum. In addition, two vessels have a very similar appearance but without the sand inclusions. This leaves six vessels with different fabric characteristics, one of which Evison thought was unlikely to be an Anglo-Saxon import. One vessel from Faversham dismissed by Evison as being Romano-British did, however, contain this same sand and may therefore be re-instated into the corpus. Of the 16 vessels with this fine sand temper, only four have red clay pellets of the type seen in the Coddenham and Hadleigh vessels (Table 1). In addition, two of the vessels without sand had similar red clay pellet inclusions.

**Table 1**

| EVISON FIG | EVISON TYPE | Sitecode | cname | Form |
|---|---|---|---|---|
| 10b | 1i2 | Wingham | EVISON FABRIC I | BOTTLE |
| 15e | 3c5 | Bishopbourne | ESAXIMP | BOWL |
| 2c | 1c2 | Strood | ESAXIMP | BOTTLE |

| EVISON FIG | EVISON TYPE | Sitecode | cname | Form |
|---|---|---|---|---|
| 2e | 1d2 | Faversham | EVISON FABRIC I | BOTTLE |
| 4a | 1e1 | Sittingbourne | EVISON FABRIC I | BOTTLE |
| 7e | 1g4 | Broadstairs | EVISON FABRIC I | BOTTLE |

It is also interesting to consider the temperature and kiln atmosphere in which these vessels were fired. The BM vessels show a range of colours which indicate both firing temperature and redox conditions (ranging from dark grey to a steel grey for reduced vessels and from dark brown to salmon pink for oxidized vessels). The recox and firing temperature of the 18 Fabric I vessels examined in the BM is shown in Table 2. Low firing is defined as that insufficient to remove all the carbon, giving a dark brown or black core. Moderate firing is defined as that giving a brown or grey core and high firing as giving a salmon pink or light grey core. The Coddenham and Hadleigh vessels would be classified as moderately fired, placing them in a small subgroup of the BM samples. These two vessels both have oxidized cores with reduced surfaces, the most common firing pattern in the BM samples shared by 6 out of the 16 samples. However, only one BM vessel (Evison Ig4) shared both the moderate firing and the firing pattern of the Suffolk finds whilst two others (Evison 4a1 and 4a2) have a lower firing temperature.

**Table 2**

| Redox | ? | high | low | moderate | Grand Total |
|---|---|---|---|---|---|
| Oxid | 1 | 3 | 1 | | 5 |
| oxid core;reduced surfaces | | 3 | 2 | 1 | 6 |
| Reduced | 1 | 3 | | | 4 |
| reduced with oxid surfaces | | | | 1 | 1 |
| Grand Total | 2 | 9 | 3 | 2 | 16 |

A statistical analysis of the chemical data was carried out in two stages. Firstly, the full range of measured elements could be compared with a small number of analyses of early and mid Anglo-Saxon vessels. These consist of possible Badorf ware vessels from Flixborough and Whitby, Grey burnished ware vessels from Flixborough and a single example of Evison Fabric I, a jug from the Castledyke south cemetery, Barton-upon-Humber (Whitwell 1990). A Principal Components Analysis of this

dataset indicates that the grey burnished wares have a chemically similar composition as do the Badorf wares. A sherd of a black-surfaced vessel with a light-coloured body and fine quartz sand temper from Flixborough falls within the Badorf group. The three Evison Fabric I samples plot mid-way between these two groups, with the two Suffolk pieces being more similar to each other than to the Barton-upon-Humber sample (Fig 00).

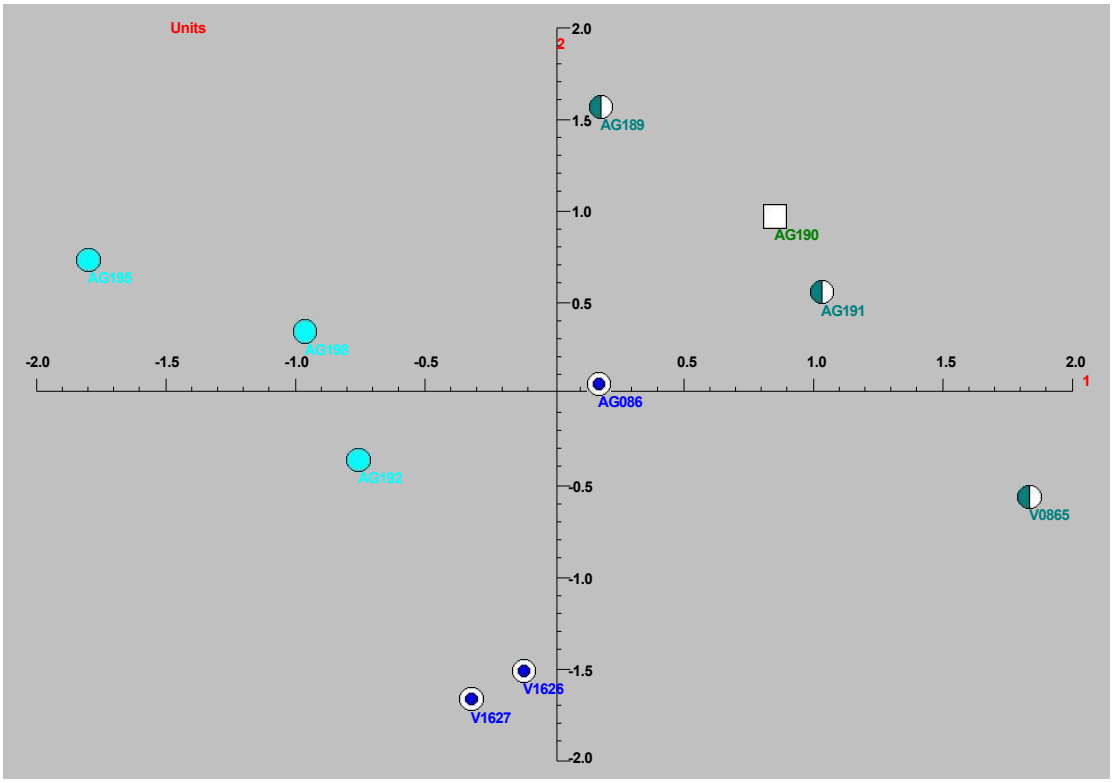


**Figure 1. Grey burnished wares = filled circles. Badorf wares = half-filled circles. Evison Fabric I vessels = dotted circles.**

Since only the major elements were examined by Cowell, a reduced dataset was analysed. This included Cowell's data for those vessels examined in the BM which had the standard fabric together with the Suffolk and Barton pieces and the Flixborough grey burnished samples.

The results of this analysis show that the Suffolk and Barton samples fall within a cluster of results from the BM vessels with one BM sample and the Flixborough standard grey burnished wares falling outside this cluster on one side and the Flixborough light-firing sample falling outside the main cluster but on the other side. The BM untempered vessel samples form a coherent group within the main cluster (Fig 2 Nos.78, 80, 113 and 114).

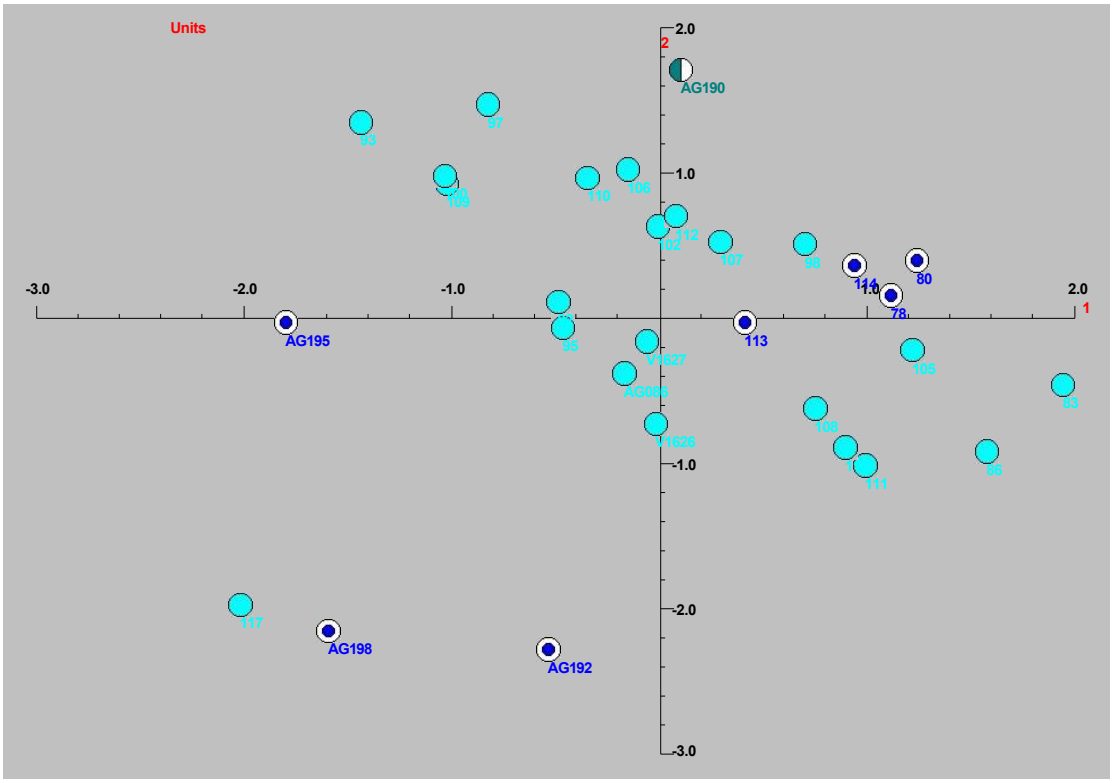


**Figure 2**

The results of this re-analysis suggest that the Suffolk and Barton vessels have the same chemical composition as those in Evison's Fabric I group but that whereas the untempered grey burnished wares from Dover are indistinguishable in composition from the sand-tempered ones those from Flixborough are chemically different. Given that the analysis includes material analysed using two different techniques, AAS and ICP-AES, the difference in composition between the grey burnished wares needs to be confirmed by re-analysis of the BM samples using ICP-AES. Nevertheless, it seems clear that the Suffolk and Barton samples are made with the same raw materials as those studied by Evison.

The BM vessels with red clay pellet inclusions include the outlier, (Fig 2 No.117), and three with compositions indistinguishable from the remainder (Fig 2 Nos. 95, 102 and 109).

To conclude, although the Suffolk vessels fall within ranges for fabric, firing temperature and firing conditions found in the standard Evison Fabric I group they fall into minor subgroups for each trait. Thus, although it might be chance that both the Suffolk vessels are moderately fired with oxidized cores and reduced surfaces and that both contain red clay pellets it does suggest that there is a stronger link between them than simply coming from the same centre. It may be that they actually formed part of the same cargo.

In her discussion of the distribution of these imports Evison suggests that whereas those from the remainder of Anglo-Saxon England occur in such small numbers and are of such disparate types that they may be casual imports resulting from generalised contact with Frankia those from Kent include a large proportion of bottles and occur in larger numbers in cemeteries. These, she suggests, may be the

result of a trade in the bottles' contents. Is this is true, then perhaps the Suffolk finds should be seen as part of the same process.

## Acknowledgements

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Appendix One.

**Major elements (percent oxide)**

| Sample No | SITECODE | AL2O3 | FE2O3 | MGO | CAO | NA2O | K2O | TIO2 | P2O5 | MNO |
|---|---|---|---|---|---|---|---|---|---|---|
| V1627 | cdd 050 | 15.99 | 5.69 | 1.88 | 0.96 | 0.23 | 2.29 | 0.74 | 0.12 | 0.01 |
| V1626 | had 059 | 15.86 | 5.68 | 1.97 | 0.97 | 0.21 | 2.47 | 0.75 | 0.22 | 0.02 |
| AG086 | CS89 | 17.75 | 5.34 | 1.34 | 1.31 | 0.17 | 2.00 | 0.91 | 0.17 | 0.03 |

**Minor and trace elements (parts per million)**

| Sample No | BA | CO | CR | CU | LI | NI | SC | SR | V | Y | ZN | ZR* | LA | CE | ND | SM | EU | DY | YB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V1627 | 406 | 12 | 120 | 40 | 57 | 54 | 17 | 71 | 167 | 21 | 130 | 87 | 36 | 56 | 37 | 7 | 1.20 | 3.50 | 2.10 |
| V1626 | 355 | 13 | 120 | 37 | 61 | 47 | 17 | 71 | 169 | 22 | 104 | 103 | 36 | 65 | 37 | 7.30 | 1.30 | 3.50 | 2.10 |
| AG086 | 333 | 12 | 119 | 35 | 112 | 53 | 16 | 147 | 136 | 21 | 88 | 65 | 49 | 92 | 39 | 6.90 | 1.20 | 3.10 | 1.60 |