

Shell-tempered wares from Townwall Street, Dover (TWD96)

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The origin of the shell-tempered pottery found on sites in south-east England has been the subject of some interest in the past decade, mainly as a result of John Cotter's work for the Canterbury Archaeology Trust and Mark Gardiner and Lyn Blackmore's study of the mid Saxon pottery from the trading settlements at *Sandtun* (Hythe) and *Lundenwic* (London). Subsequently, as part of a study of medieval settlement in the Romney Marshes, Luke Barber submitted samples of shell-tempered ware from a site at Lydd Quarry and sherds from the production site of Potter's Corner, Ashford. Both of the latter groups contain sparse *hydrobia* shell alongside moderate to abundant unidentified bivalve shell.

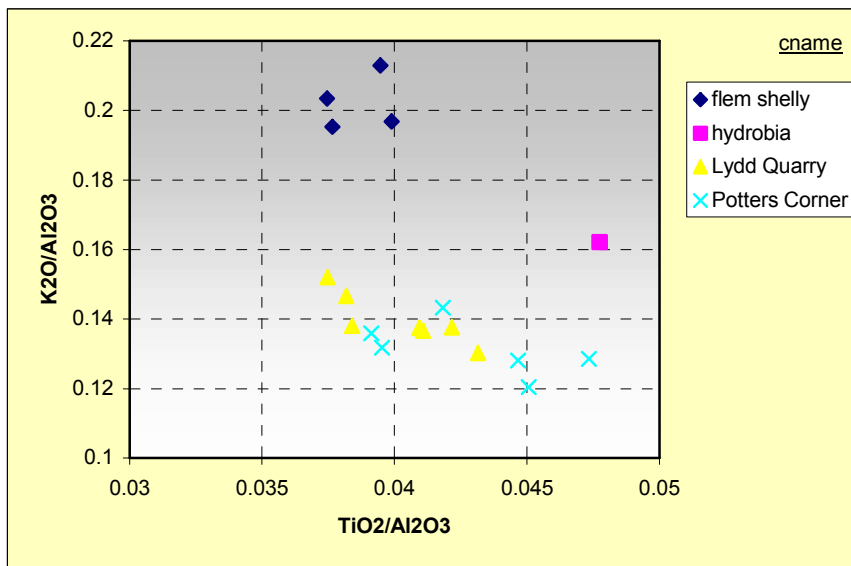


Figure 1

As a result of these various projects, there is now data on the chemical composition of 19 samples: four samples of Flemish shelly ware, from Townwall Street, Dover, a type which has a limited distribution in the St Omer region; one sample containing the gastropod, *hydrobia* also from Townwall Street; six samples from Lydd Quarry and six samples from Potter's Corner.

Chemical analysis

All the samples were analysed at Royal Holloway College, London, under the supervision of Dr J N Walsh. Data for the main elements were presented as percent oxides whilst those for a range of minor and trace elements were measured in parts per million.

Because the shell inclusions have a tendency to be leached, and the voids filled with various concretions, notably calcium phosphate, the values for CaO and P₂O₅ were not used in

analysis. The remaining data were normalised by dividing each measurement by that of Al₂O₃, which is mainly present in the clay fraction. This procedure discounts some of the variation introduced by the tempering of the sherds with shell or quartz sand.

Factor analysis was then undertaken of the remaining major elements. A single significant factor was found which could account for 42 percent of the variation in the sample compositions. Table 1 shows the calculated weightings for the measured elements and indicates that TiO₂, MgO and K₂O have the strongest effect on the factor analysis. A plot of TiO₂ against K₂O indicates that the samples fall into three groups: the Flemish shelly wares; the Townwall Street *Hydrobia* sherd and the Ashford and Lydd Quarry sherds. The differences between the Dover *Hydrobia* sample and the Ashford and Lydd Quarry samples are not extreme, and the sample could well be an atypical product of the same industry.

Table 1

Element	Factor 1
TiO ₂	-0.325677688
MnO	0.296171738
Fe ₂ O ₃	0.577181412
Na ₂ O	0.725008311
MgO	0.849389458
K ₂ O	0.873035866

However, a second factor analysis of the minor and trace elements was carried out. This indicated three significant factors (accounting for 39.50%, 20.50% and 12.27% of the variation in the dataset). A plot of F1 against F2 (Fig 2) again confirmed the difference between the Flemish shelly ware and the Ashford/Lydd Quarry samples whilst the *Hydrobia* sample is clearly separated by its F1 scores. These are due, in the main, to high weightings for the rare earth elements (mainly adsorbed by clay minerals and hydrocarbons) and for negative weightings for Lithium and Zirconium (prevalent in biotite and zircon respectively). These elements are unlikely to be affected by post-burial alterations.

Taken in conjunction with the difference in major element composition, the trace element composition indicates that the Dover *hydrobia* sample is probably from a different source from the Ashford/Lydd samples. Visually, however, it is at present impossible to distinguish the fabrics and therefore chemical analysis offers a potential method for characterising these common but intractable wares.

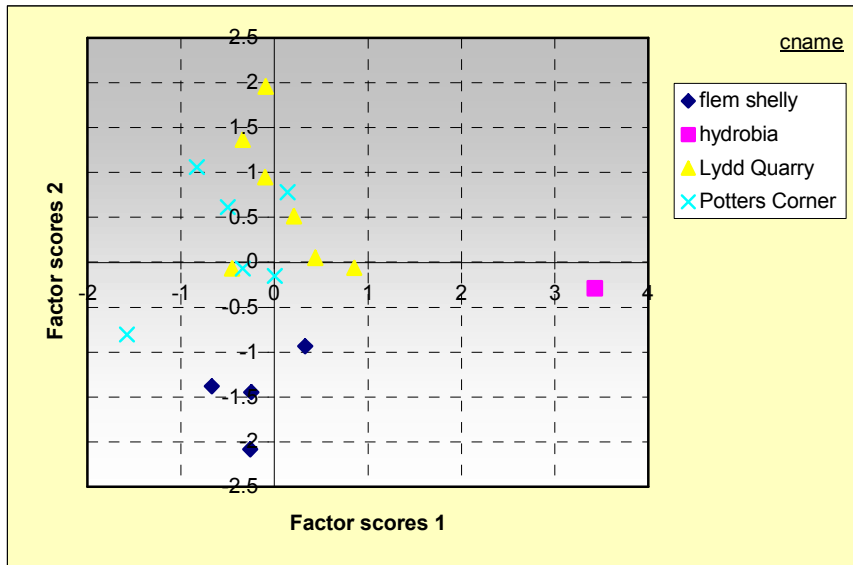


Figure 2

Appendix One: List of sampled included in Factor Analysis

TSNO	Sitecode	Context	cname	Form	Action	locality	county
AG475	twd96	2867	flem shelly		TS;ICPS	Dover	Kent
AG476	twd96	1052	flem shelly		TS;ICPS	Dover	Kent
AG477	twd96	133	Hydrobia		TS;ICPS	Dover	Kent
AG478	twd96	3255	flem shelly		TS;ICPS	Dover	Kent
AG479	twd96	1	flem shelly		TS;ICPS	Dover	Kent
V1966	potters corner	US	Potters Corner	JAR	TS;ICPS	Ashford	Kent
V1967	potters corner	US	Potters Corner	JAR	ICPS	Ashford	Kent
V1968	potters corner	US	Potters Corner	JAR	ICPS	Ashford	Kent
V1969	potters corner	US	Potters Corner	JAR	ICPS	Ashford	Kent
V1970	potters corner	US	Potters Corner	JAR	ICPS	Ashford	Kent
V1971	potters corner	US	Potters Corner	JAR	ICPS	Ashford	Kent
V1972	lq91d	400	Lydd Quarry	JAR	TS;ICPS	Lydd	Sussex
V1973	lq91d	151	Lydd Quarry	JAR	TS;ICPS	Lydd	Sussex
V1974	lq91d	400	Lydd Quarry	JAR	ICPS	Lydd	Sussex
V1975	lq91d	152	Lydd Quarry	JAR	TS;ICPS	Lydd	Sussex
V1976	lq91d	400	Lydd Quarry	JAR	ICPS	Lydd	Sussex
V1977	lq91d	151	Lydd Quarry	JAR	ICPS	Lydd	Sussex
V1978	lq91d	151	Lydd Quarry	JAR	ICPS	Lydd	Sussex