M. JAMES BLACKMAN AND SCOTT REDFORD

GLAZED CALCAREOUS CLAY CERAMICS FROM GRITILLE, TURKEY

The twelfth and thirteenth centuries constitute a high point in the history of Islamic ceramics, with finely potted and decorated fritwares produced in both Syria and Iran. The widespread production of fine-bodied fritwares (also known as artificial paste or stonepaste-bodied ceramics) and techniques either new (underglaze painting, ajouré, and mina') or refined to new heights (luster and molded wares) have focused deserved attention on these two areas. Here we will examine the production of glazed ceramics in Syria and the Jazira in the twelfth and thirteenth centuries by examining part of a sample of glazed ceramics found during excavations at the southeastern Turkish site of Gritille. Until its recent flooding by the waters of the Atatürk Dam, Gritille was a small mound on the right bank of the Euphrates River soon after it came down from the Anatolian highlands. It was located some five miles upstream from Samsat, the principal site in the region, which served to guard the major river crossing on the route from Syria to the eastern Anatolian plateau, and dominated a small valley surrounding it. The Samsat region was peripheral to both Anatolia and Syria, although it had participated more in the history of north Syria and the Jazira. Gritille itself was peripheral to Samsat, in that it guarded a minor river crossing at the upper end of the valley that was Samsat’s hinterland.

Gritille was first fortified in the medieval period in the mid eleventh century and soon abandoned, only to be refortified about a century later near the end of the Crusader county of Edessa. Thereafter, from the mid twelfth century through the early to mid thirteenth century, Gritille served as a rural agricultural settlement with largely domestic architecture.

To examine the production of glazed ceramics, a subset of 168 sherds from medieval levels at Gritille were sampled and chemically analyzed using instrumental neutron activation analysis (INAA). This study correlates visual categories of Islamic glazed fritwares (derived mainly from decorative technique) with categories of chemical composition to answer questions relating to glazed ceramic production in Syria and the Jazira in the twelfth and thirteenth centuries. The project is still in progress, but it has already yielded an unexpected result that we will present in this paper. Of the 168 glazed ceramics sampled, 37 were found not to be fritwares at all, but instead had calcareous clay bodies as determined by chemical analysis. Figure 1 contains drawings of indicator sherds (rims and bases) in the calcareous clay ceramic sample. The sherds constituting this sample were of small open form vessels. The one exception to this is a vessel (ID # GT143) whose shape and glaze indicated that it belonged to a closed form vessel. The indicator sherd drawings show these open form vessels to be small bowls with rim diameters of approximately ten centimeters. The sample contains two distinct rim shapes, a flared everted rim and a squared bead rim. Those sherds large enough to show more body shape point to carination a few centimeters below the rim. There are also two bases, one of which belongs to an oil lamp. Most of the sherds are of turquoise or blue-green glaze, with three manganese purple glazed sherds and two with turquoise glaze on the exterior and manganese on the interior.

Chemical analysis. The sherds were sampled for chemical analysis by drilling with tungsten carbide drill bits. Approximately 200 milligrams were extracted, dried, and 100 milligram subsamples taken for analysis. Analysis was conducted by INAA at the Smithsonian Institution Conservation Analytical Laboratory’s INAA facility using the National Institute of Standards and Technology’s 20 megawatt research reactor. The analytical protocol was similar to that described in Blackman 1984. For the calcareous clay bodied ceramics 28 elements were quantifiable.

The chemical data from the 37 calcareous clay sherds were first processed with the hierarchical aggregative clustering program AGCLUS using a nearest neighbor clustering algorithm on a squared mean Euclidean distance matrix based on the elements listed in figure 2. Clustering analysis divided the sample into five groups with one outlier displayed in figure 2. Chemical groups 1 through 4 all contained calcium in excess of 10 percent.
All body colors ranged from pale yellow through white. Chemical group 5, containing only two samples, averaged about 7.5 percent calcium and the bodies displayed a brown color. Group 5, distinctive in both chemistry and body color, and probably better classified as an earthenware, was excluded from further statistical analysis.

Principal components analysis was carried out on the remaining four groups using the elements Na, Cr, Fe, Rb, and La. Figure 3 is a plot of the second and third principal components for the four groups, with the ellipses around the samples in each group representing the 95 percent confidence intervals. This figure readily shows the four groups distinguishable from one another in terms of their chemical composition at better than the 95 percent confidence level. The implications of the statistical analysis of the chemical data are that the calcareous glazed ceramics were produced using four different clay sources. Although it is not possible conclusively to prove multiple production sites without an extensive geological clay sample collection from the region, it seems reasonable to presume that four chemically distinctive clay sources would not have been accessible to or