

CONTINUITY OR DISCONTINUITY IN CENTRAL ITALIAN GLAZED POTTERY  
MANUFACTURE: NEW EVIDENCE FROM THE PALATINE HILL IN ROME

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Over the past 15 years excavations in several parts of Rome have yielded a small but persistent trickle of glazed pottery in contexts dating to the 4th and 5th centuries A.C. This pottery, which has a hard, gritty, dark reddish brown to gray body and thick, pitted glaze shading in color from olive green to brown, presents something of an archaeological puzzle. While vessels of this description occur with some frequency in 4th to 5th century contexts in parts of northern Italy and throughout the northern Balkans, it is exceedingly rare in central Italy. The general appearance of the glaze and the use of applied scale decoration on some of the pieces recovered in Rome have suggested to some scholars a possible connection with the variety of glazed pottery manufactured in the Rome area during the Early Medieval period, so-called ceramica a vetrina pesante - that is, "thick-" or "heavy-glazed ware" - or as it is still sometimes known, "Forum Ware." This has called into question our understanding of the origins of the Medieval glazed pottery tradition in central Italy, with some scholars arguing for continuity from the Late Roman to the Early Medieval periods against the previously held belief that glazed pottery manufacture was re-introduced into the region during the 8th or 9th century. Besides being a question of considerable interest with regard to the history of ceramic technology, this is an issue of no small importance from the standpoint of archaeological chronology, for if it can be proved that there was a hiatus in the manufacture of glazed pottery, then the successful dating of the reintroduction of the glazing technique will provide a useful chronological marker for the dating of Early Medieval contexts. In recent years efforts to resolve this question have centered on the careful excavation and dating of stratigraphic sequences stretching back ever earlier into the Early Medieval period, as at the Crypta Balbi, where the earliest layers containing ceramica a vetrina pesante have been dated to the middle portion of the 8th century.

The authors here report the preliminary results of a program of analysis intended to shed light on this issue through the application of techniques for the characterization of ceramic composition and microstructure. The heart of the program involves the analysis of a collection of Late Imperial glazed sherds recovered during the course of the Soprintendenza Archeologica di Roma/American

Academy in Rome excavations of a Late Roman building complex on the eastern slope of the Palatine Hill. Analysis is being carried out for a group of 25 specimens of this pottery recovered during the 1989 and 1990 excavation seasons. Most of these were found in fills dating to the period ca. 320 to 450 A.C., although a few of the sherds examined were residual materials from deposits of post-Medieval date. Among the forms represented are globular beakers with applied scale decoration, molded lamps, bowls with everted rims, a flanged bowl similar to the Hayes 91, and a variety of closed forms with strap and round handles, probably flagons and juglets.

The immediate aims of the project, which is being conducted at the Smithsonian Institution's Conservation Analytical Laboratory, are 1) to determine the provenience of this pottery through the analysis of ceramic body composition, and 2) to characterize the glazing technique employed in its manufacture. This work was undertaken on the assumption that the ability to demonstrate a non-central Italian origin for this material and/or demonstrating the existence of significant differences in the glaze technologies employed for the manufacture of the Late Imperial pottery from the Palatine and Early Medieval ceramica a vetrina pesante would argue against continuity in the production of glazed pottery in the Rome area. The illustration of either point would naturally require not only the analysis of the Late Imperial glazed pottery itself, but also a certain amount of comparative material, including both Late Imperial glazed pottery manufactured outside the region and ceramica a vetrina pesante. In this interest, analysis was also performed for seven sherds of Mid-Late Imperial green/brown glazed pottery from four sites in Yugoslavia kindly made available by Prof. Michael Werner. Also analyzed were four sherds of a distinctive class of Early-Mid Imperial glazed pottery recovered as residuals in 4th century contexts in the Palatine excavations. This ware has a fine buff-colored body and an unstable, iridescent light green to bluish green glaze. Desbat has used x-ray fluorescence or XRF analysis to show that this class of pottery was probably produced somewhere in the Latium/Campania area. Since it is apparently of regional origin and presents distinct points of contrast with the 4th-5th century glazed material from the Palatine, it was

thought useful to characterize both this ware's ceramic body composition and glaze technology for comparative purposes. Examples of ceramica a vetrina pesante were recovered in secure Early Medieval contexts in the Palatine East excavations only during the recently concluded 1991 field season, and the authors intend to expand their analysis to include some of this material in the coming year. Until the results of this work are available, however, useful comparisons can be made using analytical data already in print. This includes Bonifay, Paroli and Picon's XRF study of the ceramic body composition of 15 sherds of ceramica a vetrina pesante and Williams and Ovendun's study of six specimens of this class of pottery, involving the petrographic analysis of the ceramic bodies and the atomic absorption spectrometry analysis of the glazes.

The program of analysis involves the following operations. For the characterization of ceramic body composition, which is being carried out by Peña, all 36 sherds were first examined under a stereomicroscope in order to obtain a general idea of their mineralogy/texture and establish a preliminary fabric classification. The trace element chemistry of each specimen was then determined by neutron activation analysis, or NAA. Data were obtained for 30 elements and the sherds assigned to compositional groups by means of cluster analysis. In the final stage of ceramic body characterization, the results of which are not yet complete, a selection of 10 sherds is being subjected to petrographic analysis in order to flesh out the fabric classification drawn up on the basis of the stereomicroscopic examination and to determine the mineralogical basis for the compositional groups established by NAA. In the study of the glazes, which is being undertaken by Vandiver, cross sections of 18 selected sherds were first analyzed by backscattered scanning electron microscopy or SEM with simultaneous energy dispersive x-ray analysis in order to evaluate the microstructure of the glazes and glaze/body interfaces and to identify elements from sodium and above. XRF was then employed to identify elements from phosphorus and above and electron microprobe analysis used to determine the concentrations of 9 of the major and minor elemental constituents of the glazes.

The stereomicroscopic examination of the 36 sherds provided a useful first classification, demonstrating considerable variability in the bodies of the materials. The four Early-Mid Imperial sherds had a body with abundant fine quartz grains and rare small fragments of mica. Three of the Yugoslavian sherds had a somewhat similar body, with abundant very fine quartz grains. One of the Late Roman sherds from the Palatine contained what appeared to be medium-grained volcanic sand, including what were probably sanidine and biotite. Twenty-one sherds, including 17 from the Palatine and four from Yugoslavia, had non-plastic components dominated by abundant medium-sized grains of rounded to subangular quartz. Some showed occasional grains of plagioclase feldspar, a dark mineral, fragments of sandstone, bits of calcareous material, and/or nodules of iron oxide, but these inclusions were too infrequent to permit any reliable subdivision of this group. The remaining eight sherds, all from the Palatine, had pastes too obscured by incompletely oxidized organic matter to permit useful characterization.

The results of the program of NAA can best be summarized with reference to the dendrogram representing the results of the cluster analysis of the trace element data. The 36 sherds can be divided into six small clusters, with two residual singlets. These groupings can be related to the results of the stereomicroscopic examination in a fairly straightforward manner. Clusters A, B and C consist entirely of sherds from the Palatine that either contain medium-sized quartz grains or were too dark to characterize. Between Clusters B and C is the Palatine sherd containing volcanic sand. Cluster D contains three of the four Early-Mid Imperial sherds. Cluster E contains the remainder of the Palatine materials, including the fourth specimen of Early-Mid Imperial pottery. Cluster F contains six of the seven Yugoslavian sherds. The seventh Yugoslavian sherd, which has an unusual iron-poor fabric, lies between Clusters E and F.

While the interpretation of some parts of the dendrogram is fairly clear, other portions remain problematic. Fairly close compositional matches between, on the one hand, the three examples of Early-Mid Imperial glazed pottery in Cluster C and the somewhat different example in Cluster D and,

on the other hand, Roman-period workshop materials and clay specimens from the central Tiber Valley/South Etruria area support Desbat's inference that this class of pottery was produced somewhere in the Latium/Campania area. The remaining specimens in Cluster E may also be central Italian, although they appear to be a mixed bag of materials and may not constitute an archaeologically meaningful group. The two specimens in the branch including the example of Early-Mid Imperial pottery - a body sherd and a flat base - show close compositional affinities with the ceramica a vetrina pesante sherds analyzed by Bonifay et al. One is from a post-Medieval context and the other perhaps a contaminant, and it appears that both probably belong to this class of pottery. The singlet between Clusters B and C is also likely to be from central Italy, presumably originating somewhere within or close to the Central Italian Volcanic Province. This is a small rim fragment from a flanged bowl with transparent glaze, which may belong to a group of glazed mortaria with volcanic sand gritting reported from Late Imperial contexts at several sites in northern Italy.

The materials in Clusters A and B show strong areas of compositional similarity, and the use of alternate agglomeration procedures in the cluster analysis in some instances results in the reassigning of a few specimens from one group to the other. The difference between these two groups would thus appear not to be very pronounced, and they may represent compositional variants originating in the same general source area. Cluster C, on the other hand, is compositionally distinct from these two groups and was certainly produced using different raw materials. The origin of these three groups can at present only be a subject for conjecture. Their compositional divergence from pottery of central Italian origin suggests that they are probably not from the area around Rome. Similarly, the fact that they are so dissimilar from the Yugoslavian materials suggests that they are probably not of Balkan origin, although this possibility cannot be entirely excluded on the basis of such a limited sampling of materials. Morphological and decorative parallels suggests that they most likely originated somewhere in northern Italy, perhaps along the Adriatic coast, where 4th-5th century workshops producing glazed pottery have been excavated at Classe and Carlino, the latter

locale situated 15 km to the west of Aquileia. Both excavations have been the subject of only brief preliminary reports and there is no compositional data available regarding the products of these establishments, save for a very small amount of petrographic data for the Carlino workshop. There is a clear resemblance between a series of fusiform juglets with carinated necks manufactured at the Carlino workshop and a carinated neck sherd in Cluster A, and between small globular beakers decorated with applied scale decoration from the Classe workshop and fragments of similar vessels assigned to both Clusters A and B. Also worth noting is the parallel between a body sherd from an unknown form decorated with incised circles lying in Cluster C and a pair of cups decorated using a similar technique from 4th-5th century contexts in the province of Varese. Both more extensive evidence regarding the forms produced in the northern Italian workshops and more extensive compositional data will be required if the relationship between the materials in Clusters A, B and C and Late Imperial glazed pottery from northern Italy is to be determined.

The analysis of the glazes revealed that all 18 specimens examined were covered with a lead glaze, with the concentration of lead varying between approximately 50 and 66 percent of total glaze composition. The most significant compositional distinction that could be discerned within the group was the presence of substantially lower concentrations of aluminum and iron in the glazes of the three specimens of Early-Mid Imperial pottery analyzed. Whereas these stood in the 4 to 7 percent and 1.8 to 2.8 percent ranges respectively in the Late Imperial sherds from both the Palatine and Yugoslavia, in the Early-Mid Imperial materials these both fell in the 1 percent range, suggesting the use of different glaze recipes or raw materials. It is also worth noting that Williams and Ovendun report substantially lower lead values for ceramica a vetrina pesante and other classes of Early Medieval glazed pottery from Rome, with figures ranging from 11 to 38 percent of total glaze composition. Here again, this suggests the use of a glaze formulation different from that employed for the glazes on the Late Imperial materials from the Palatine.

Not surprisingly, the study of the microstructure of the glazes and glaze/body interfaces by SEM revealed a sharp contrast between the glazes on the Early-Mid Imperial and the Late Imperial specimens. The poor preservation and iridescent sheen of the glaze on the former translated into thick weathering layers both on the surface and along the margins of well developed cracks penetrating through the entire glaze layer. This lesser resistance to weathering is apparently related to the lower concentration of aluminum and silica and the higher concentration of fluxes in these glazes. The Late Imperial materials, in contrast, showed virtually no glaze degradation. Several specimens of the Late Imperial pottery showed inclusions within the glaze, indicating that it was not fritted before being applied to the vessel. In a few other examples, the formation of crystals along the glaze/body interface indicates a firing of rather long duration. We have not determined whether these vessels were produced using a single or double firing regimen, nor what was the range of the firing temperature.

The program of analysis thus permits the following conclusions: The trace element chemistry of the major groups, Clusters A-C, which include 20 of the 25 sherds analyzed, suggests that these materials originated in two or three locales outside central Italy. Further, the glaze composition suggests that they were manufactured using a recipe distinct both from that used for the Early-Mid Imperial glazed pottery manufactured in central Italy and from that used for ceramica a vetrina pesante. Morphological and decorative parallels suggest that these materials were probably manufactured in northern Italy, perhaps along the Adriatic coast. Another two of the specimens analyzed appear to be sherds of ceramica a vetrina pesante that were initially misidentified as examples of Late Imperial glazed pottery. Of the remaining three sherds, one, the possible mortarium rim containing volcanic sand and with colorless glaze, is almost certain to be of central Italian origin, while the other two specimens must be viewed as being of possible central Italian manufacture. The program of analysis thus suggests that nearly all, if not, in fact, all of the green/brown-glazed pottery being used in Rome during the 4th and 5th centuries A.C., including



those forms most closely resembling ceramica a vetrina pesante, was manufactured outside the region. The resemblance between this pottery and ceramica a vetrina pesante would thus appear to be superficial and fortuitous, and the former should not be viewed as a direct antecedent of the latter in an unbroken tradition of central Italian glazed pottery manufacture.

**LIST OF SLIDES:**

1. view of Palatine excavations
2. general assortment of glazed sherds
3. sherd with scale decoration
4. molded lamp
5. flanged bowl similar to Hayes 91
6. handle
7. sherd from Yugoslavia
8. sherd of Early-/Mid-Imperial pottery
9. dendrogram of cluster analysis of NAA data
10. map of Italy showing Rome, Classe and Carlino
11. sherd with applied scale decoration
12. sherd from carinated neck
13. sherd with impressed circle decoration
14. SEM photograph of Early-Mid Imperial glaze
15. SEM photograph of Late Imperial glaze
16. SEM photograph showing inclusions in glaze