Ceramic Production and Distribution in Late Iron Age Etruria: An Example from the Mugello Basin

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Archaeological Context

Etruscan studies often fall under the purview of classical archaeology. Furthermore, the scholarship is traditionally culture-historical and text-oriented. The research presented here takes a decidedly different approach, one that utilizes archaeological science as an alternative means of investigation. In particular, Etruscan pottery manufacture and its subsequent distribution are examined within the context of Late Iron Age Etruria. Although an enormous amount of archaeological material exists, most of it derives from mortuary contexts and therefore provides scholars with an incomplete picture of the past (Haynes 2000). In recent years, however, a growing number of settlements are being discovered and explored (for a review, see Barker & Rasmussen 1998, Haynes 2000). A recent excavation at the hilltop site of Poggio Colla (700 – 100 BC) is one of the more current discoveries providing archaeologists with much needed settlement data. Our research objective considers Etruscan economy in both political and domestic settings.

The site occupies an intermontane region, known as the Mugello, situated in northeastern Tuscany along the southwest ridge of the Apennine Mountains (Fig. 1). In addition, Poggio Colla occupies a strategic mountain top area approximately 400 meters above sea-level overlooking the confluence of the Sieve and Arno rivers. The area is not well documented archaeologically and investigations have largely favored culture history over culture process (for examples see Aranguren et al. 1994, Curri 1967, de Marinis & Nicosia 1992). The earliest archaeological research of Poggio Colla began in 1969 under the direction of Dott. Francesco Nicosia with the Soprintendenza Archeologica per la Toscana but ended prematurely in 1972 due to financial constraints. Pottery studies emphasized those artefacts of special stylistic significance possessing visible diagnostic attributes (Nicosia 1974).

Currently, some scholars assert this region, although little known, to be a frontier comprised of defensive outposts surrounding the urban center of Fiesole (Torelli 1984). Recent field research and new techniques, however, are providing greater information about the Mugello that might indicate otherwise (Warden et al. 1999).

Figure 1 Regional map of the Mugello Basin (after Warden et al. 1999).
Objectives
By assessing the provenance of archaeological ceramics, the present study aims to determine whether craft specialization is centralized and indicative of a possible intra-regional redistribution economy. Conversely, analyses may indicate moderate site-specific pottery manufacture probably sustained at the household level. In this case, materials science is utilized in the reconstruction of pottery distribution from its production context and the interpretation of these data as they relate to trade and exchange (Tite 1999). Thus, a series of complementary techniques are applied to form an integrated methodology: i) archaeological investigation of production areas, ii) regional raw-materials survey, iii) thin-section petrography, and iv) chemical characterization.

Production Areas
In 2001, excavations reexamined one known kiln located within the settlement’s defensive walls and located two additional kilns discovered on a lower plateau (Podere Funghi) a few hundred meters east of the central site area.

Poggio Colla Systematic re-investigation of the one known production context revealed little in terms of kiln by-products and other technological information. According to original excavation reports and local informants, this particular area suffered intense looting and vandalism after the 1970 field season. Despite the poor quality of the existing remains, samples of each fabric type, including a deposit of raw material in situ, were collected to form a standard reference. Plans of the original excavation provide information about the kiln’s probable construction. According to Cuomo di Caprio’s (1979) structural classification, it is likely an updraft kiln (Class Ia) containing the following features: circular in plan with an elongated flue (praefurnium), a central combustion chamber, and an oven floor constructed of perforated terracotta supported by three bricks arranged in a triangular plan. No evidence remains to indicate whether the dome was either permanent or temporary.

Podere Funghi Excavations in this area revealed two additional updraft kilns with similar attributes characteristic of the type described above. They appear to have been integrated with the remains of a small household or workshop. These kilns in particular display strong contextual and structural similarities with Kiln A and B discovered at Verucchio in the Marches (Gentili 1972). Field investigations remain incomplete, however, future study is planned to gather more technological data.

Methodologies
Both the production and raw-source locations are used for comparison with pottery sherds sampled from six excavation units representing separate areas of the overall site including Podere Funghi. Thin-section petrography performed on all types provides mineralogical data which are compared with the regional geology of the Mugello to indicate potential source locales. A total of 32 kiln “wasters”, 4 raw clay samples and 75 pottery sherds are being analyzed with a direct-current plasma-emission (DCPE) spectrometer to identify production locations, areas of source exploitation, and to indicate patterns of pottery circulation.

Raw Materials Survey Regional survey of argillaceous, fluvi-lacustrine deposits was systematically undertaken along a 10 km square region north of the Sieve River. Special emphasis was taken on hydrological zones and geologically documented clay beds. Approximately two kilograms of raw material was collected from 4 areas including Moriano, Ritorsoli, Boro Rio, and Vespignano (Fig. 2). While chemical fingerprinting often focuses upon ceramics from an archaeological context where production is known to have occurred, it is still useful to acquire combined provenance attributions for both contextual remains and raw material. In other words, this combined approach allows archaeologists to address questions regarding selective use of the natural ceramic environment (Neff et al. 1992).

Thin-section petrography Petrographic analysis identified six basic pottery types according to matrix and temper. The primary inclusions are coarse, angular, monomineralic grains consisting mostly of quartz, feldspar, and very few opaque minerals within a sandy clay matrix. To demonstrate whether each petrographic type was locally produced, the mineral inclusions were compared with the local geology. Since the Mugello is not a region with a distinctive igneous or metamorphic geology, similarly derived minerals would of course indicate a pattern of non-local production. After comparison, the thin-section data revealed “key” voeosclastic inclusions within the bucchero wares — a distinct Etruscan pottery type.

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It is therefore plausible to assert that bucchero from Poggio Colla was produced in the tuffaceous region of southern Etruria (see also Francaviglia et al. 1975). At this stage, the current data suggest that Etruscan potters were procuring raw materials from nearby sources to produce the more abundantly evident functional wares and perhaps importing specific types of fine-textured pottery from the volcanic region of southern Tuscany and northern Latium. Of course, the object of this study is not to rely exclusively on petrographic data, but rather a series of complementary techniques that also involve chemical analysis.

Chemical characterization. Trace-element analysis utilizing DCPE spectrometry was conducted upon a preliminary test group gathered from the excavation and raw-material survey. The analytical procedure is capable of identifying approximately 15 major and minor elements. Approximately 50 mg of powdered ceramic were dissolved in a solution of hydrofluoric and nitric acid, then analyzed for the following elements: Mn, Fe, Ti, Mg, Ca, Al, K, Na, Sr, Ba. The standards utilized for this preliminary test group included andesite, kaolinite, potassium feldspar, shale, and biotite mica. The data were then plotted utilizing multivariate discriminant function analysis.

Thus far, preliminary testing on a small number of samples reveals six compositionally similar groups (Fig. 3). While the elemental analysis is still in its early stages, it is probable that final results may indicate increased variation among both the pottery and raw material samples. At present, there is a significant association among basic coarse wares produced at Poggio Colla and the raw clay source identified as Ritorsoli, approximately 3 km north of the site area (see Fig. 2).

As mentioned previously, the results of this ongoing study are beginning to reveal a pattern of local resource exploitation. Increased examination of fine-textured wares, however, is necessary to corroborate the thin-section data described above.

Future Directions
Tobey et al. (1986: 116) state that “a greater survey of ceramics throughout Etruria will be needed to confirm the presence of imported pottery and to ascertain its origin.” The preliminary analyses reported here are a step in this direction, however, increased research is needed in order to build a comprehensive ceramic database of mineralogical and elemental data for future comparisons. Once analyses are complete, plans are underway to gather pottery samples from other sites throughout Etruria in order to identify possible patterns of regional trade and exchange. Stylistic analysis is already revealing evidence for imported Greek wares (Warden et al. 1999).
By increasing our knowledge of Etruscan socio-economic systems, researchers will be able to confirm or redress many of the typologically based discussions regarding modes of production, organization, and trade among politics in ancient Etruria. Accordingly, reconstructing pottery circulation in this area of Italy is critical for understanding whether socio-political development resulted from major urban centers to the south or if it occurred independently.

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