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PXRF and Ceramic Analysis at Poggio Civitate (Murlo)

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PXRF and Ceramic Analysis at Poggio Civitate (Murlo)

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In an effort to add another dimension to our understanding of ceramic manufacturing at Poggio Civitate, over 400 different types of ceramic objects recovered at the site were tested with a portable X-ray fluorescence spectrometer (PXRF), which records the X-rays emitted from the sample. The overall spectra produced based on the elements present in the sample as each element produces a defined spectra. Following principal component analysis (PCA), the elemental data can then be used to determine ceramic groupings among the architectural terracotta and other forms of ceramic recovered at the site.

Local Clay Sources

In addition to sampling archaeological specimens, researchers also collected and sampled soil from several clay sources found both on Poggio Civitate as well as off-site in the immediate vicinity of the hill. The elemental signature of soils from these various sources corresponded closely with that of specimens of architectural terracotta, coarsewares, and bucchero recovered at the site. This finding compliments other forms of evidence for local production of ceramics recovered from the vicinity of O/CWorkshop and confirms that the population of Poggio Civitate was adept at exploiting the abundant local clay sources of the immediate area.

Local Ceramic and Terracotta Industry at Poggio Civitate

Archaeological evidence at Poggio Civitate for the large-scale conversion of local clay sources into a range of architectural and ceramic products is considerable. Recovered from the floor of the hill’s 7th century BCE manufacturing structure (O/CWorkshop) were examples of unfired roofing tiles, unfired revetment tiles, a matrix for a form of decorative anthesi, as well as dozens of examples of amorphous lamps of clay, many preserving indications of fingerprints from the hands of artisans processing them into finished objects. Additionally, the hundreds of examples of intact and fragmentary types of ceramic wares recovered at Poggio Civitate represent forms unattested at any other site in the region suggesting that such materials were also locally manufactured.

Further Projects: Elemental Database of Ceramics from Poggio Civitate

The elemental composition of ceramic objects at Poggio Civitate is one of a number of different ways to describe and classify materials produced from this local source. As the cost of instrumentation to determine such data declines and the availability of software to represent data collected expands, excavators at Poggio Civitate hope to add another dimension of information collected from the site and incorporate comparable elemental signatures to all ceramic materials from the Poggio Civitate database. Such a data set may allow not only immediate comparison between different clay sources of material collected, but also provide a resource for better understanding the role of manufacuring and material exchange at Poggio Civitate as well as similar Etruscan communities prior to the development of large-scale trade in the region.

References:

1. Bauer, J. 2010. “From the Production of Metal at the Murlo Cuvee!” in From the Production of Metal at the Murlo Cuvee! 121-131.