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ARTIFACT DISTRIBUTION AND GEOARCHAEOLOGICAL INVESTIGATION OF THE PODERE FUNGHI

ANNA PENDLEY: Washington and Lee University
Research Advisors: Dr. Sara Bon-Harper, Dr. David Harbor, and Dr. Robert Sternberg

INTRODUCTION

Archaeological research in the Podere Funghi, a field outside Vicchio (FI), Italy, began after the site was recognized through a scatter of ceramics brought to the surface by agricultural plowing in the mid-1990s (Warden et al. 2005). Excavation of the area began in 1998, and uncovered middens containing charcoal-rich soil, animal bones, and Hellenistic ceramics (Warden et al. 2005). Downhill from this midden, four ceramic kilns were uncovered (Warden et al. 2005). This was quite a significant find, for it marked the Podere Funghi as a non-elite Etruscan site—something quite extraordinary, as the majority of Etruscan sites are either funerary or religious in nature.

Increased consideration of the Podere Funghi occurred in the summers of 2007 and 2008 with a project led by Dr. Sara Bon-Harper. As a team member of this project during the 2008 season, I took special interest in the distribution of artifacts in conjunction with any geomorphologic movement of the material culture within the field. Utilizing this spatial distribution of artifacts, as well as what is known of the geomorphology and previous plowing activity within the field, I would expect to find a structure located uphill from both the known kiln locations and the established trash midden. I expect this structure to be located in an area of high artifact concentration. In contrast, it is clear that soil erosion is moving material culture, and this may also account for artifact concentration and dispersion.

METHODS

In order to delve into the geological and anthropological histories of the field, my project recorded the stratum that lay at the base of plowzone for each STP on the D, K, 1080N and 1140N transects as well as considering the distribution of artifacts from the 5 m grid of STPs. Reasoning for these transect choices will be expounded upon below. The underlying sediment ranged widely, including many hues of gray and blue silty, sandy, and clay loams, anthropogenic layers, decomposing bedrock, and intact bedrock. Further investigation of areas of high concentration of material culture across the field, particularly along the transects of the D and K lines are also a subject of interest, as past surface observations have revealed the location of structures within the site where high concentrations have been found.

My project called for a closer look at the artifact data along two north-south transects, the D line and the K line, because both span the majority of the field, from the top of the hill to the colluvium-covered foot. I also looked at two east-west transects, the 1080N and the 1140N lines. The Podere Funghi slopes from south to north. The southern portion of the field is gently sloping, but a steeper gradient of slope is found in the central region of the field. The northernmost area of the field displays more flattened topography. The 1080N line is located in the region of gentle slope, and the 1140N line lies just beyond the extent of the greatest slope. This was done in order to survey the effects of downhill movement of artifacts. I looked more closely at the data concerning tile fragments from the STPs located along these lines. It should be noted that the southern portion of the field is topographically high, and also that each north-south transect begins at the higher, more southern end of the field. Therefore, when referring to the ‘upper K’ line, I am referring to the topographically higher, lower numbered STPs.
Tile recovered from shovel testing was sized into four categories: less than two cm, two to six cm, six to ten cm, and greater than ten cm in order to view spatial distribution of different sizes of tile pieces across the field. I chose tile because it is typically a thicker, more stable material and it also tends to be more easily differentiated from other artifact types. I recorded the total amount of tiles, in both count and weight, in each STP along these transects and then separated the tiles from each STP into size categories. These data will allow for me to look at finds in the shovel test pits and understand the implications of artifact locations in plowzone.

RESULTS

Mapping of the information gathered from the 286 total STPs was accomplished using ArcGIS. Using the inverse distance weighting tool, interpolated concentrations of artifacts were determined across the field. Elevation contours of the field were also interpolated across the field by employing GPS elevation measurements from the 193 STPs in the 2008 season. The contours of the field reveal a swale in the eastern portion of the field, most evident along the 322m contour.

When looking at the distribution of different artifact types, definite concentrations become apparent. For the purposes of this investigation, the most common artifact types will be investigated: namely fineware, coarseware, and tile. All three of these artifact types show heavy concentrations at the northern edge of the field that spans the entire east-west length of the field, particularly immediately downhill from the location of the known workshop (Location A, Fig. 1). Areas with very little to no material culture are the southwestern corner and across the mid-portion of the field with highest slope.

Fineware counts are seemingly sparse across the field, but a definite concentration is evident in the area of the mid C and D lines (Fig. 1). On the C line, C13 shows the highest count, with a total of 19 pieces. The adjacent STPs, of C14, D12, and D13, had a total of 11, 8, and 5 pieces, respectively.

Another area of higher concentration is apparent in the J and K lines, particularly K6, which had a total of 11 pieces, and STPs within proximity to this point on the southern and western sides. This concentration spans a wider area than does that seen on the C line. Low intensities of fineware are evident both in the southwest corner of the field and in the area of greatest slope in the central portion of the Podere Funghi.

Coarseware distributions reveal similar patterning within the Podere Funghi (Fig. 2). The highest concentration of coarseware is certainly in the northernmost portion of the field. However, areas
of high coarseware amounts are also seen in the same areas that fineware were found. The C13, D12, and D13 STPs display high coarseware amounts, with counts of 11, 12, and 7 pieces, respectively. The upper K line again shows artifact concentration, specifically K01-K09. Average coarseware amount in these nine STPs is approximately 9 pieces, and counts range from zero to 21 coarseware pieces, which is found in K01. The upper I and J lines also display higher concentrations than surrounding areas, although the abundance is lower than that of the K line.

Tile, the most abundant artifact type found within the field, is represented both by count and by weight (Fig. 3). Because the size of individual tile sherds varied considerably, weights were also taken in order to better understand tile distribution. In areas with high count and low weight, it is obvious that many smaller artifacts were found; conversely, if a low count and a high weight were found, individual pieces were obviously much larger artifacts. Both count and weight show similar distributions, and they mirror those seen in both coarseware and fineware counts. Both the count and the weight of tile appear heavy in the C13, D12, and D13 STPs, as well as in the upper J and K lines. Test pit C13 has a count of 129 pieces with a total weight of 275.6 grams, D12 has 65 pieces and a total weight of 94.6 grams of tile, and D13 has a mere 39 pieces, but which totaled to an impressive 336.8 grams. Test pits K03-K07 and adjacent J06-J09, also show very high counts and weights, ranging from 48 to 173 pieces of tile, and with weights as low as 55.2 grams to a notable 691.5 grams.

Figure 2: The distribution of coarseware artifacts found within STPs, and concentrations interpolated by inverse distance weighting across the Podere Funghi.

Figure 3: The concentrations of both the count of tile (top) and the tile weight (bottom) of tile found within each STP, as well as concentrations interpolated by inverse distance weighting.
Because it would be difficult to measure the size of each and every artifact found within the field I chose to measure the size of tile, the best-represented artifact, along specific transects. The size distribution along the D and K north-south transects displays similar patterning to coarse- and fine ware counts already put forth (Fig. 4). Artifacts of less than 2 cm and between 2 and 6 cm exhibit high concentrations on the upper K line as seen before, and a steady count of tile is evident along the entirety of the K line. An average of 32 pieces of 0-2 cm tile was found in each STP of the K line, with a range from 0 to 128 pieces. The highest concentration was found in the K07 STP. The average tile weight found along the entirety of the K line was 67 grams. Artifacts of class sizes 6 to 10 cm and greater than 10 cm are very sparse along the transects. Pit K01 contains 2 pieces of 6-10 cm, and only 1 piece of greater than 10 cm. Pit K09 contains a single piece of greater than 10 cm in size.

The upper D line, particularly the area of D11-D13 also shows abundant amounts of small tile pieces. Test pit D11 contained 29 of the smallest-sized pieces, D12 contained 50, and D13 contained 33. Total tile weights in these pits ranged from 73.6 grams in D11 to 336.8 grams in D13. The northernmost points of the D line contain many small tile pieces as well. The concentrations of the tile pieces along the D line correlate with high concentrations along the neighboring C line as seen in artifact distribution maps (Figs. 1-3). The east-west transects do not show heavy concentrations of any kind. The highest concentrations of 6 to 10 cm artifacts are on the northernmost D line. A small concentration also exists in the D12 STP, which contains 2 pieces. For the largest classification, a single piece was found in D30.

**DISCUSSION**

Are artifacts being redistributed in the Podere Funghi? If so, should we expect to find a structure beneath areas of the highest artifact concentration? There are geomorphological processes acting upon the Podere Funghi, including creep due to plowing and water erosion. Although many processes may disrupt the isomorphism between surface and subsurface datasets, it has been long-assumed that a relationship exists between the two datasets. Within this field, which has been plowed for centuries, plowing is thought to be the main agent of lateral displacement, but it is difficult to evaluate the actual displacement amount (Roper 1976).

Erosion and deposition of soil is likely within the Podere Funghi given the changes in soil thickness and the distribution of artifacts. The wooded, gradual slope south of the field gradually ends abruptly at a 1.5-2 m-high bank. Coring at the top of the bank revealed terra cotta and charcoal pieces, which indicate anthropogenic activity. The bank suggests a great depth of erosion in the field, which is flanked to the east and west by erosional swales or gullies. Moreover, an artificial trench seems to redirect water from the Podere Funghi toward a stream in the woods east of the field. Because
of research in northern Italy, Marchetti (2002) suspects deforestation and channel redirection cause soil erosion. The area of steepest slope (between A and 1140N, Fig. 1) has the lowest artifact concentration—except for the area directly downslope from the known kiln location—and the shallowest plowzone depths (Fig. 5). Erosion by creep and wash should be greater on steeper slopes. Deposition of sediment eroded from the field is indicated by colluvium at the northeast footslope and possibly the abundance of artifacts, particularly tile, in the swale near the upper ends of lines K and L. Creep or wash of sediment into this feature and water movement through it would remove sediment from convex areas and deposit it in areas of concave shape. Artifact concentration is lower in the mid-K and L lines, where the line moves toward the margin of the eroding swale. The slope in a given area greatly affects the quantity of material culture material found within the field. The 1140N is on a steep slope and has bedrock in shallow STPs, whereas the 1080N transect is less steeply sloped and has deeper STPs, which suggests greater erosion due to plowing and/or natural processes on steeper slopes. Both the D and K lines contain sandy clay loam soils within the plowzone along the entirety of the lines. Each STP along these transects ends on either decomposing or intact bedrock, and many include clay mottles throughout, which is indicative of soil wetting and, and also of plowing. The K line lies just west of the swale. It is possible that downhill water flow may have been an agent for movement of material culture in the eastern portion of the field, which could account for the high concentrations of artifacts found at the foot of the K and L lines.

Artifact size and its correlation with displacement must also be taken into account. Cowan and Odell (1990) uphold that size and displacement do not correspond, therefore breakage of a given artifact through plowing does not affect the length of travel, simply the number of artifacts found in a given area. Cowan and Odell also state that the plow zone constitutes an artificial, man-made layer derived from surface materials, and that there is not necessarily a correlation between the plowzone and underlying strata (1990). But, it is upheld that, with limited experimentation to date, it cannot be stated whether or not tillage has a major affect upon artifact displacement within a field (Cowan and Odell 1990). Within the Podere Funghi, amount of artifact displacement, if it in fact has occurred, does not seem dependent upon size.

Plowing disrupts soil horizonation and reorganizes its internal composition, but actual estimations of disturbance due to plowing is not something that can be calculated precisely (Navazo and Diez 2008). Although these factors do redistribute artifacts, it must be recognized that “archaeologists working in areas of intensive agricultural activity should be able to use surface scatter as a reliable indicator of subsurface distributions” (Roper 1976). Previous investigations within the Podere Funghi...
linked heavy concentrations of surficial artifacts to subsurface features. Therefore I would expect the same to be true with this investigation: heavy concentrations of artifacts found within plowzone should reveal some subsurface feature. However, it is equally evident that movement of material into the swale in the eastern portion of the field is likely occurring, setting up a competing hypothesis for the concentration of artifacts in the upper K and L lines.

Does an uphill structure exist in the Podere Funghi? Based on artifact concentrations on the C line, particularly in the C11-C13 STP location, and even more widespread concentrations of coarseware, fine ware, and tile on the upper K line and surrounding areas, an uphill kiln is a definite possibility. The amount of larger artifacts along transects are also indicative of concentrations in these areas of the field. It can be seen that concentrations of tile count and weight exist in similar areas of the field (Fig. 3). With such high artifact concentrations in an area several meters higher in elevation than the known workshop location it is difficult to attribute such ceramics to the known kilns. Therefore, the data seems to support the hypothesis of the existence of an uphill kiln (location B, Fig.1).

With the given information of artifact distribution, I would recommend placing at least one trench on the uppermost K line in an effort to locate a possible kiln. The concentrations on the upper C line are also significant, but exist within a 10-meter radius. Such a small region may indeed represent a structure, but I would expect to find more significant sub-plowzone data in an area of more widespread concentration, as in the upper K line.

**CONCLUSION**

Original archaeological attention to the Podere Funghi was a result of pedestrian investigation that revealed surficial concentrations of material culture in several areas of the field. These non-invasive investigations led to the excavation of an area of the field noted to display high concentrations of artifacts on the surface. The excavation revealed the existence of an Etruscan period ceramic workshop and four kilns. With such solid evidence tying the surface data to subsurface archaeological features, it is difficult to simply ignore the heavy artifact concentrations seen elsewhere in the field, particularly when other evidence, namely an uphill trash midden, suggest that another ceramic-producing structure may exist in the southern portion of the Podere Funghi. Due to high concentrations of coarseware, fine ware, and tile count and weight, it seems logical that any uphill structure would lie beneath such a concentration. It should also be noted that heavy artifact counts exist all along the K and L lines, which may be accounted for by the existing gulley that suggests water transport of artifacts in the past. Such high concentrations of artifacts would not likely exist because of a downhill kiln; rather, these concentrations point to the existence of an uphill ceramic-producing structure.

In future seasons of the Poggio Colla field school I would highly recommend placing trenches in the southern portion of the Podere Funghi, particularly along the upper K line. Another trench could be placed along the C line in the regions of the 11-13 STPs, but I would place focus on the K line.

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