

SHAPING CULTURAL LANDSCAPES



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SHAPING CULTURAL LANDSCAPES

*Connecting Agriculture, Crafts, Construction,
Transport, and Resilience Strategies*

ANN BRYLSBAERT, IRENE VIKATOU & JARI PAKKANEN (EDS)

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Published by Sidestone Press, Leiden
www.sidestone.com

Lay-out & cover design: Sidestone Press

Photograph back cover: A. Brysbaert (View of the ancient vertical quarry face at Pendeli, Attica, Greece)

Photograph frontcover: Stock photo by Karsten Wentink (Northwest view of Tiryns citadel, Argolid, Greece)

ISBN 978-94-6426-095-3 (softcover)

ISBN 978-94-6426-096-0 (hardcover)

ISBN 978-94-6426-097-7 (PDF e-book)

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Classical and Hellenistic pottery kilns from Greek rural areas in their natural and human landscape

Francesca Tomei

1. Introduction

This contribution, which is inspired by my ongoing PhD research, aims to investigate how pottery production and the cultural landscape were connected in ancient Greek rural areas. It aims also to show the cross-craft interactions (Brysaert 2007) between pottery production and agricultural practices and how they influenced the locational choices of ceramics workshops in Classical-Hellenistic rural regions. The analysis will focus on two regions of the Greek world, the *chora* of Metaponto in Basilicata, southern Italy, and the Berbati Valley in the Argolid, between the Classical and Hellenistic periods. Both regions are strongly marked by an agricultural economy still nowadays, and pastoralism and transhumance of flocks between lowlands and uplands were practised until recent times. In particular, I will analyse two sites, Sant'Angelo Vecchio and Pyrgouthi, that share some characteristics: evidence of pottery production (kilns, wasters) and agro-pastoral activities on-site or off-site in the immediate surroundings. The study aims to understand how the landscape of activities influenced the locational choice of the pottery workshops and what was the role of the roads and pathways in connecting the production sites with households or worship places in the Greek and Southern Italian countryside.

From a methodological point, the palaeoenvironmental studies (archaeobotany and zooarchaeology) provide information on the botanical landscape, crops and livestock breeding (Costantini and Pica 2016; Florenzano 2016; Mylona 2005; Sarpaki 2005), and ethnoarchaeology (Forbes 2007; Forbes 1996) helps to reconstruct how these economic activities crossed with pottery production. Furthermore, QGIS spatial analysis tools, specifically buffer- and least-cost path analysis, enable me to model the land use in connection with agriculture and pottery production, and postulate better pathways connecting the workshops with other settlements and the raw material sources. The Least Cost Path is a spatial analysis technique that allows the calculation of the most cost-effective route between two points and GIS software generates it evaluating the smallest sum of raster cell values between the two points (ESRI 2013). It is based on a cost surface raster whose values are defined by the user and it can be, for example, the terrain slope, the time and the land use, etc. Thus, it reflects the patterns of movement through the landscape (Seaman and Thomas 2020: 554). The QGIS Least Cost Path Plug-in used to calculate the least-cost path in this contribution uses the terrain slope to calculate the effort to travel and generate the least cost trajectories.

Furthermore, I apply the cross-craft interactions concept to pottery production and agriculture in two Greek rural contexts. The cross-craft interactions methodology explores how technical knowledge and technologies move and interact in societies and shows how

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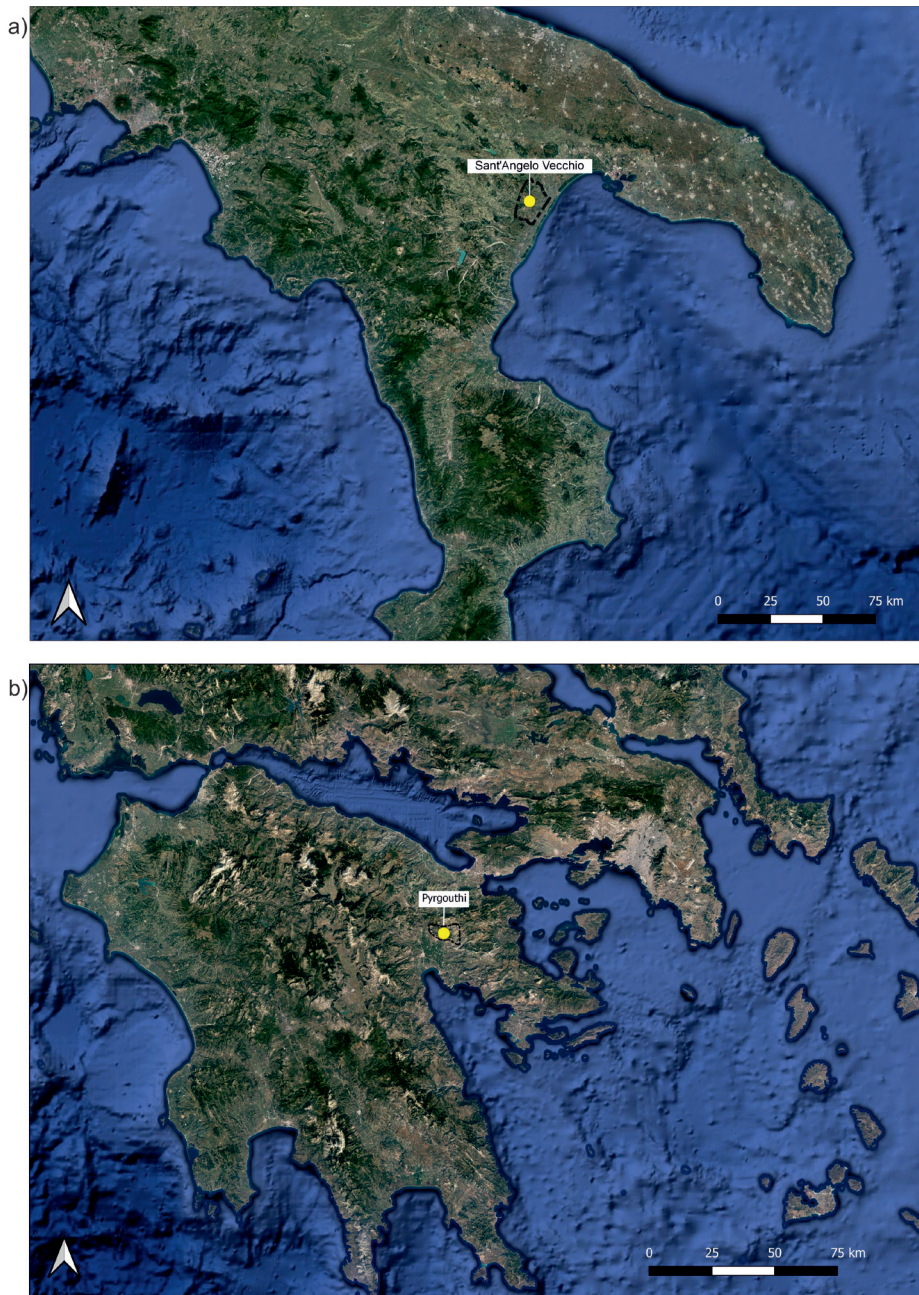


Figure 1. Maps showing the location of the sites analysed: a) Sant'Angelo Vecchio in the *chora* of Metaponto, Basilicata, Southern Italy; b) Pyrgouthi in the Berbati Valley, Argolid, Greece.

materials, objects and technologies are interconnected with a social meaning (Rebay-Salisbury et al. 2014: 2). Technology enables people to interact with other people and with the environment, therefore it is embedded with the socio-economic context (Rebay-Salisbury et al. 2014: 2). Cross-craft interactions, then, happen when artisans work in proximity and they can exchange tools, space and knowledge, or when craftspeople travel through long- or short- distance networks of trade and exchange (Brysaert 2007: 333-334). Agriculture is a craft itself because it involves working raw materials to make new products and the employment of specific artificial tools, techniques

and knowledge (McGovern 1989: 2; Brysaert 2020: 61). In a rural context, agriculture is the primary source of subsistence, but people were also engaged with other crafts to produce commodities, such as pottery. The cross-craft interactions, then, allow me to demonstrate that pottery production and agriculture influenced each other and that the proximity of farmsteads affected the choice of location of pottery workshops in the land.

In the following sections, the rural pottery workshops from the *chora* of Metaponto (Sant'Angelo Vecchio) and the Berbati Valley (Pyrgouthi) will be analysed as case studies (Figure 1).

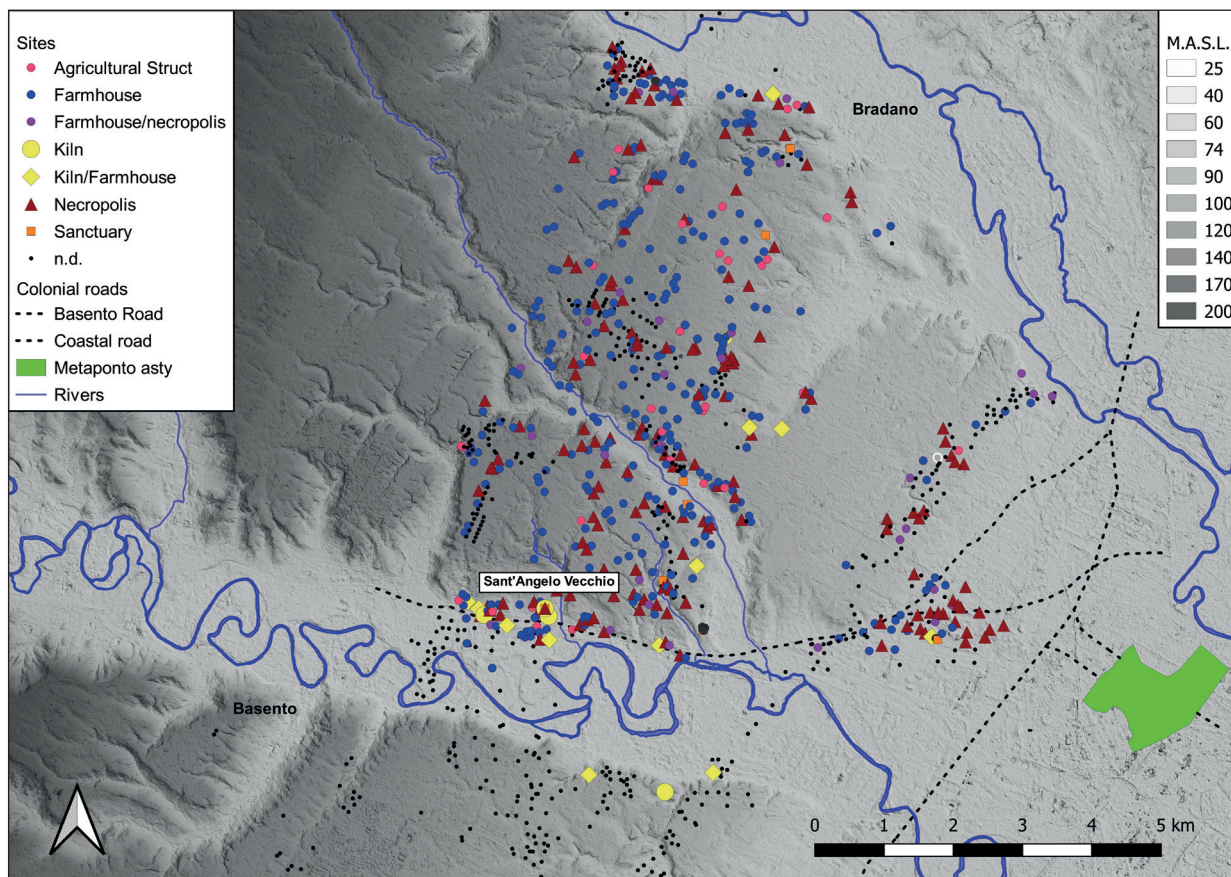


Figure 2. Map of the section of the *chora* of Metaponto between the rivers Bradano and Basento, showing the distribution of Archaic to Hellenistic kiln sites (yellow symbols) in relation with the other sites.

2. The *Chora* of Metaponto

The territory of Metaponto, an Achaean colony founded around the mid or late 7th century BCE, stretched for 25 km from the coastal plain (SE), where the city is located, up to the lower Lucanian mountains (NW) and it is crossed by three main rivers: Bradano, Basento and Cavone. Bradano in the north and Cavone in the south were also the natural boundaries of the *chora*¹ (Carter 2006: 118).

In 1974, the Institute of Classical Archaeology of the University of Texas at Austin, led by Joseph Coleman Carter, started systematic and intensive surface surveys (Carter 2008: 18) together with the excavation of Greek rural sites, such as Fattoria Fabrizio (Lanza Catti and Swift 2014), Sant'Angelo Vecchio (Silvestrelli and Edlund-Berry 2016), and Pantanello (Carter and Swift 2018). First, they investigated the 'Bradano-Basento Transect' which was

later extended up to the Cavone stream, surveying a total area of 80 km². The survey campaigns allowed to identify around 600 sites from the prehistoric to the modern eras, although the majority of them belong to the Greek period (Archaic-Hellenistic; Carter 2008: 22). In the Bradano-Basento transect, investigated in 1980-1982 (Carter and Prieto 2011), 15 kiln sites of Archaic to Late Hellenistic period have been identified, but only a few of them have been fully excavated. Based on the map of site distribution, it is clear that kilns are located preferentially close to farmsteads or rural households, tombs, and main roads or pathways (Figure 2). To understand how these kiln sites were connected with the other sites, especially farmsteads or farmhouses and roads, I analyse in detail the site of Sant'Angelo Vecchio (Silvestrelli and Edlund-Berry 2016).

2.1. Sant'Angelo Vecchio: a multiphase and multipurpose site

The archaeological site of Sant'Angelo Vecchio has been investigated from 1974 to 1981. It is located 8.2 km west of the *asty* of Metaponto, in the central part of the *chora*, on a marine terrace overlooking the Basento river

1 In the Greek world, the *polis* or state was composed of the *asty* or the city (e.g., Athens, Metaponto, etc.) and the *chora*, which was the city's territory. The *asty* always had a strong connection with its countryside, where the majority of the population lived in villages and farmsteads and dedicated to agriculture (Fachard 2021: 21).

Pottery production at Sant'Angelo Vecchio- Early Hellenistic phase	
Kiln supports	Wedge-shaped (Types 1 and 2) Pyramidal (Type 3) Parallelepiped bar (Type 5)
Loom weights	Oscilla
Figurine moulds	Seated female votive plaque; Eros loom weight; palmette antefix; Artemis Bendis antefix; male head antefix; Medusa rosette; standing female votive plaque
Plain and coarse wares	21 overfired non- diagnostic pieces

Table 1. Wasters and kiln supports from the deposits associated with the Early Hellenistic workshop. The presence of terracotta figure moulds and over-fired pieces of plain and coarse wares suggests that the figurines and household wares were fired in the kilns (from Silvestrelli 2016d: 566-573; Edlund-Berry 2016: 448).

Pottery production at Sant'Angelo Vecchio- Late Hellenistic/Early Roman phase	
Kiln supports	Parallelepiped bar (Type 5)
Loom weights	Pyramidal
Cooking wares	Pan (over fired) <i>Klibanos</i> (over fired)
Grey Ware	Non-diagnostic overfired piece

Table 2. Wasters and kiln supports from the deposits associated with the Late Hellenistic/Early Roman workshop. The overfired pieces and the typology of kiln supports indicate that Grey Ware and cooking wares were produced at the workshop (from Silvestrelli 2016d: 575-578).

(Silvestrelli 2016a: 3). The site is characterized by short and discontinuous occupation phases (Foxhall 2020: 8). The hill was first occupied by a domestic settlement or farmhouse, called 'House on the Hill', which dates to the second half of the 6th century BCE until the mid-5th century BCE, according to the pottery evidence (Silvestrelli et al. 2016: 63-65). Contemporary to the farmhouse, a sacred area at the foothill was connected with a natural spring, and it is marked by a boundary stone bearing an inscription in the Late Archaic alphabet. A few kiln wasters, including terracotta figurine moulds, have been found suggesting the presence of a workshop probably connected with the sanctuary (Silvestrelli et al. 2016: 67; Foxhall 2020: 6). After a period of abandonment, from the 5th to late 4th century BCE, when the area was used as a rural necropolis without evidence of dwelling (Becker et al. 2016: 85-87; Foxhall 2020: 7), a pottery workshop was built on the southern slope next to the spring. The workshop consists of remains of wall foundations, identified as a potter's shed, and a firing area located 20 m southeast of the shed, with two poorly preserved kilns (Silvestrelli et al. 2016: 71-73).

The kiln wasters and the deposits associated with the firing area suggest that the kilns mainly fired terracotta plaques, as they are present in big quantities, together

with plain and cooking wares (Edlund-Berry 2016: 453; Silvestrelli 2016b: 132). The mould typology of the terracotta plaques, the tiles used for the shed's roof and the pottery from kilns levels indicate that the workshop was active between the late 4th and 3rd centuries BCE (Edlund-Berry 2016: 448; Silvestrelli 2016c: 34). Besides pottery and votive terracottas, a good quantity of disc-shaped loom weights (*oscilla*) has been found in the shed and firing areas, so it is possible that they, too, were manufactured at Sant'Angelo Vecchio. However, some pieces from the kilns' deposits are heavily overfired and, therefore, it cannot be excluded that some of them were re-used also as kiln spacers (Foxhall and Quercia 2016: 455).

From the mid-3rd until the late 2nd century BCE, there is no evidence of production or occupation of the site. In the late 2nd century BCE, however, a new workshop was built right above the previous one, with a new shed and three kilns (Silvestrelli 2016b: 133). The firing area, named the 'Kiln Complex', consists of three well-preserved kilns of 2.5 m in diameter, surrounded by four walls that form an enclosed space of 92 m² (Silvestrelli et al. 2016: 80).

Although the second phase workshop is better preserved than the first one, no specific discard area has been documented on-site. Therefore, the identification of the ceramics produced there can be based on the scattered misfired sherds from the 'Kiln Complex' assemblages. It seems, thus, that mainly Grey Ware and cooking wares were manufactured and fired, possibly to supply the closest farmhouses with vessels for everyday use (Quercia 2016: 533; Silvestrelli 2016b: 133). The workshop was active until the end of 1st century BCE, when the site was abandoned again without any evidence of further activity.

2.2. Agricultural activities at Sant'Angelo Vecchio and their relation with pottery production

The archaeobotanical analysis on pollen samples (Figure 3) from stratigraphic sequences (6th to 1st century BCE) from the workshop area allowed the reconstruction of the botanical landscape surrounding the site as well as the agricultural practices of the region (Florenzano 2016: 159-162). The landscape was dominated by herbaceous plants (49%) typical of pasture, such as *Cichoriae* (herbaceous perennial plants or shrubs) and flax-leaved daphne, and by Mediterranean shrubs (42%) such as holm, juniper, and myrtle. Amongst the cultivated wooden plants, there is evidence of olive tree (*Olea europaea*, 2.1%), walnut (*Juglans*, 0.3%) and grapes (*Vitis*, 0.8%), whose low percentages probably indicate that they were not grown immediately close to the Sant'Angelo Vecchio site (Florenzano 2016: 164). Cereals are also represented in the pollen samples, especially oat/wheat (*Avena/Triticum*), but its low rate, 0.7%, means that they were cultivated at a distance from the site and not processed on-site, but used

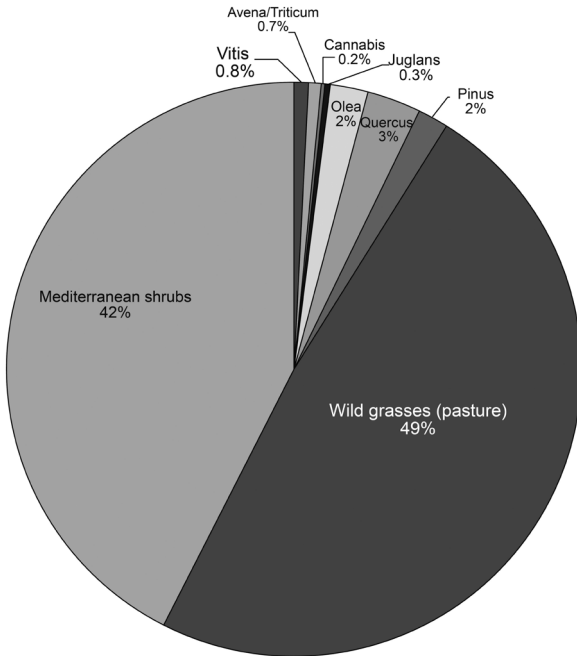


Figure 3. Pie chart showing the percentages of pollen from Sant'Angelo Vecchio.

in some ways locally (Foxhall 2020: 8). In fact, during the 1979 archaeological campaign, the recovered fired clay fragments from the 'Kiln Complex' carried impressions of cereal straws and chaff. In particular, it was possible to identify emmer wheat (*Triticum dicoccum*), wheat (*Triticum durum*), barley (*Hordeum distichum/vulgare*), chickpea (*Cicer arietinum*), pea (*Pisum sativum*) and bitter vetch (*Vicia ervilia*). There is no evidence of structures for cereal processing in Sant'Angelo Vecchio in the Hellenistic and Early Roman periods, so the charred-fired clay fragments indicate that chaff and straws were used as temper for kilns' mudbricks (Costantini and Pica 2016: 173-175; Foxhall 2020: 8). In addition, chaff and straws could be a source of fodder for animals, such as sheep, goats and mules or donkeys, and bitter vetch is still used nowadays to feed ruminants (Forbes 2012: 166; Costantini and Pica 2016: 180; Foxhall 2020: 9).

Pastoral/breeding activities on-site are indicated by several factors: the abundance of weeds typical of pastures, such as the flax-leaved daphne, and the presence of coprophilous fungi, such as *Sordaria* and *Sporormiella*, and the parasite eggs of *Dicrocoelium* as Non-Pollen Palynomorphs (NPPs) in soil samples. These records are evidence of dung of animals, in particular ruminants, grazing at Sant'Angelo Vecchio (Florenzano 2016: 162; Foxhall 2020: 8). The faunal remains do not help in the identification of the animals that grazed on-site as the sample consisted of only very few bone fragments. Although it has been possible to distinguish cattle, pigs,

dogs, horse/donkey/mule and ovine bones, the material is so fragmented and composite that they were more likely in secondary deposition (Billier 2016: 195-196). However, we may assume that donkeys or mules might have been present at the workshop because they can be heavily loaded with pottery and/or wood, as documented amongst traditional potters in Greece until recent times (Matson 1972: 220).

Cereals' by-products and waste were not only used as fodder for animals but could also be added to the fire in the kiln during the firing process. For example, Plutarch (*Mor.* 658d) reported that the goldsmiths used chaff because it develops heat rapidly. The agricultural residues, indeed, are commonly used as an affordable and easy-to-get fuel source for potters, especially for those who live and work in rural communities (Arnold 1985: 35). In the Mediterranean area, the olive tree branches and vine pruning are the most popular because both plants are widely grown: olive was considered the best fuel for its 'oily texture' (Theophr. *Hist. pl.* 9.4.6), and vine sticks are preferred as they burn well without making too much charcoal in the combustion chamber (Theophr. *Hist. pl.* 9.4.6; Matson 1972: 219; Foxhall 1998: 37). Besides the account of ancient authors and the ethnoarchaeological evidence, there are also some (rare) archaeological samples of burnt olive stones found in deposits associated with kilns or inside the stoking pit, as in the case of Pyrgouthi (see below) and the Hellenistic amphora workshop at Kounophia on Thasos island (Brunet 1986: 809).

Finally, another agricultural by-product, frequently used for pottery firing and employed in the pre-industrial but contemporary workshops of Thrapsano in Crete, is the olive oil pressing waste, or pomace. It is particularly appreciated because it burns at high and constant temperatures for up to 10 hours, and it is easy to obtain in regions where oil is regularly produced (Rowan 2015: 467). The use of crushed olive stones as fuel in the pottery industry is documented in archaeology in considerable quantities of burnt stones, and there is such evidence in pre-Roman and Roman sites throughout the Mediterranean (Rowan 2015: 468-469). Olive trees and vineyards were present in the Sant'Angelo Vecchio area and I can reasonably argue that the waste from the seasonal trimming of those plants, as well as olive oil pomace, could have been used by the potters to feed their kilns during firing. Moreover, the land was covered by Mediterranean wild shrubs and trees that needed to be pruned regularly to allow pasture, so that branches and sticks could be added to the fire in the kiln (Matson 1972: 219; Forbes 1996: 73).

The agricultural and pastoral works in the proximities of Sant'Angelo Vecchio created favourable conditions for the development of local-scale pottery production,

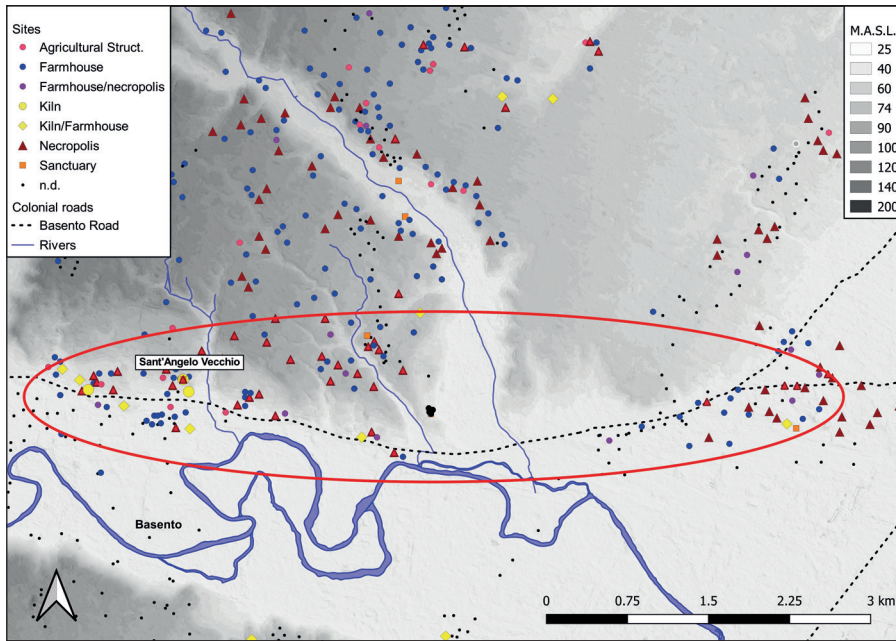


Figure 4. The distribution of Archaic to Roman kiln sites along the Basento road connecting Metaponto with the lower Lucanian mountains.

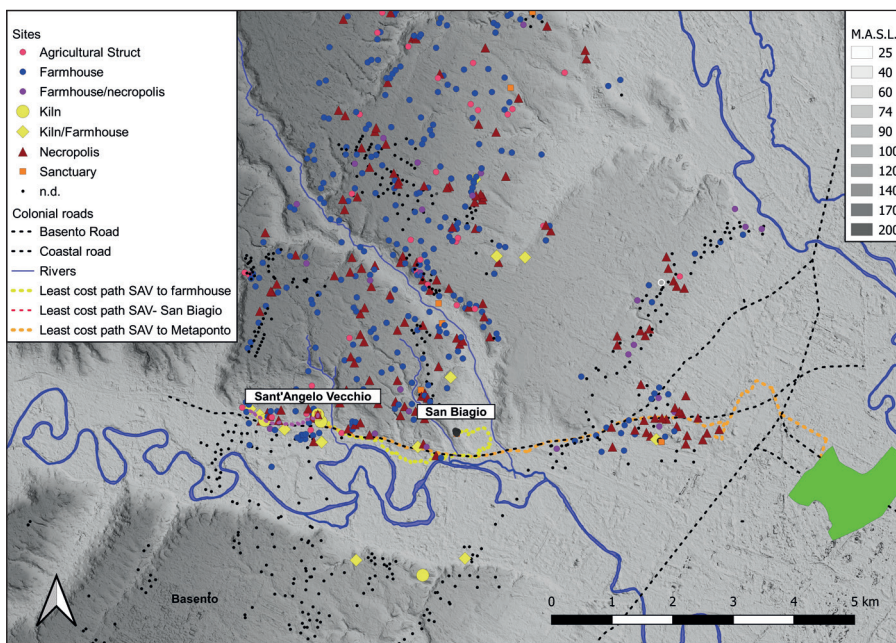


Figure 5. Map showing the least-cost path elaborations confirming the feasibility of the Basento road from Sant'Angelo Vecchio (SAV) to reach other settlements. Green path: from SAV to a Hellenistic farmhouse; yellow path: from SAV to San Biagio Sanctuary; orange path: from SAV to the *asty*.

both in the late 4th and in the 2nd centuries BCE, since potters could take advantage of scraps as a fuel source to fire their pots. In addition, a perennial spring – still used also nowadays – provided water for clay processing, pot shaping, and to prevent the risk of accidental fires. A possible clay pit has been identified at the foot of the hill, 60 m northwest of the workshop (Montanari et al. 2016: 158). Sant'Angelo Vecchio workshop was in an advantageous position also to the Basento road, an important route leading from the *asty* to the Lucanian mountains: the site, indeed, was located only 188 m

far from this road. As shown in Figure 4, most of the Classical-Hellenistic kilns in the *chora* are placed along the road, meaning that it was the most feasible route for the movement of raw materials, people and ceramic products, and it was possibly accessible with carts. The least-cost path tool on QGIS (Figure 5) confirms that the Basento road allowed the movement to the nearby contemporary farmhouses, to the *asty*, and to the sanctuary of San Biagio, where terracotta plaques made from the same moulds found at Sant'Angelo Vecchio have been recognised (Tempesta 2016: 434).



Figure 6. View of Pyrgouthi with the remains of the Hellenistic tower and the surrounding landscape (photo by F. Tomei 2020).

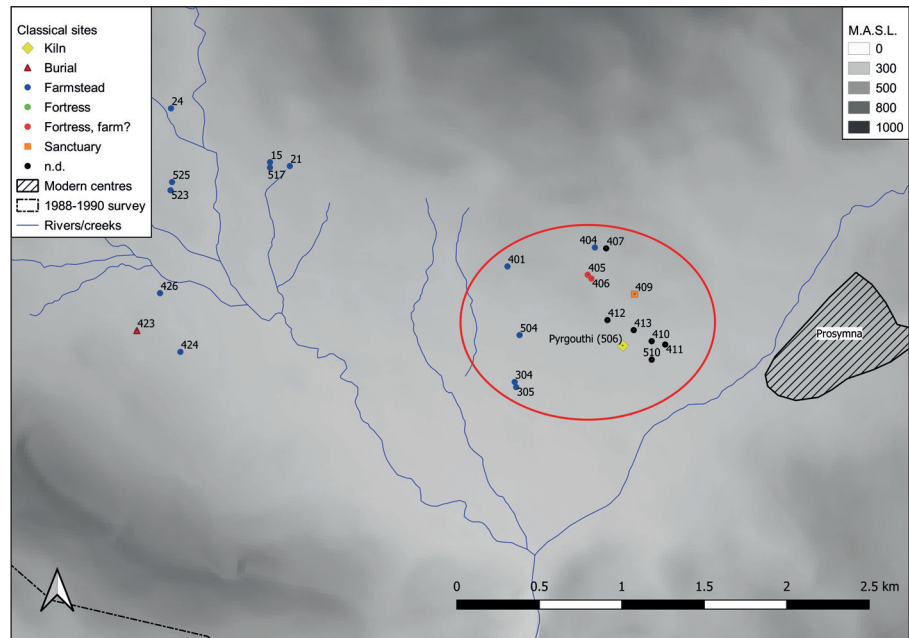


Figure 7. Map of the Classical sites identified with the 1988-1990 survey by the Swedish Institute at Athens in the Berbati Valley. In the red circle, Pyrgouthi and the nearby farmsteads and agricultural sites.

3. The Berbati Valley in Argolid (Greece)

The Berbati Valley is located within the mountains of the northeastern Argolid on the border with Corinthia (Figure 1b). It is separated from the Argive plain by the Euboia range, and northwest of Berbati there are Mycenae and the upland region. The valley is crossed by several torrents which have seasonally been full of water until recent times (Penttinen 2005: 96-97). The Berbati Valley and the Limnes uplands were intensively surveyed from 1988 to 1990 by the Swedish Institute at Athens (Wells and Runnels 1996; Wells, Runnels and Zangger 1996). Their main objective was to investigate the agrarian economy

of the valley during the Neolithic, the Mycenaean and the Classical-Hellenistic periods (Wells 1996: 15; Wells 2005: 7). In 1999, a further survey on Mastos Hill led to the identification of a total of 600 sites from the Neolithic to the modern periods (Lindblom and Wells 2011).

3.1. Pyrgouthi: a Classical pottery workshop

The site of Pyrgouthi, whose toponym means ‘tower’ since the Hellenistic tower has always been a striking feature of the landscape, was excavated in 1995 and 1997 by a team of the Swedish Institute at Athens (Figure 6). The multiphase and multipurpose site lies on an outcrop of the bedrock

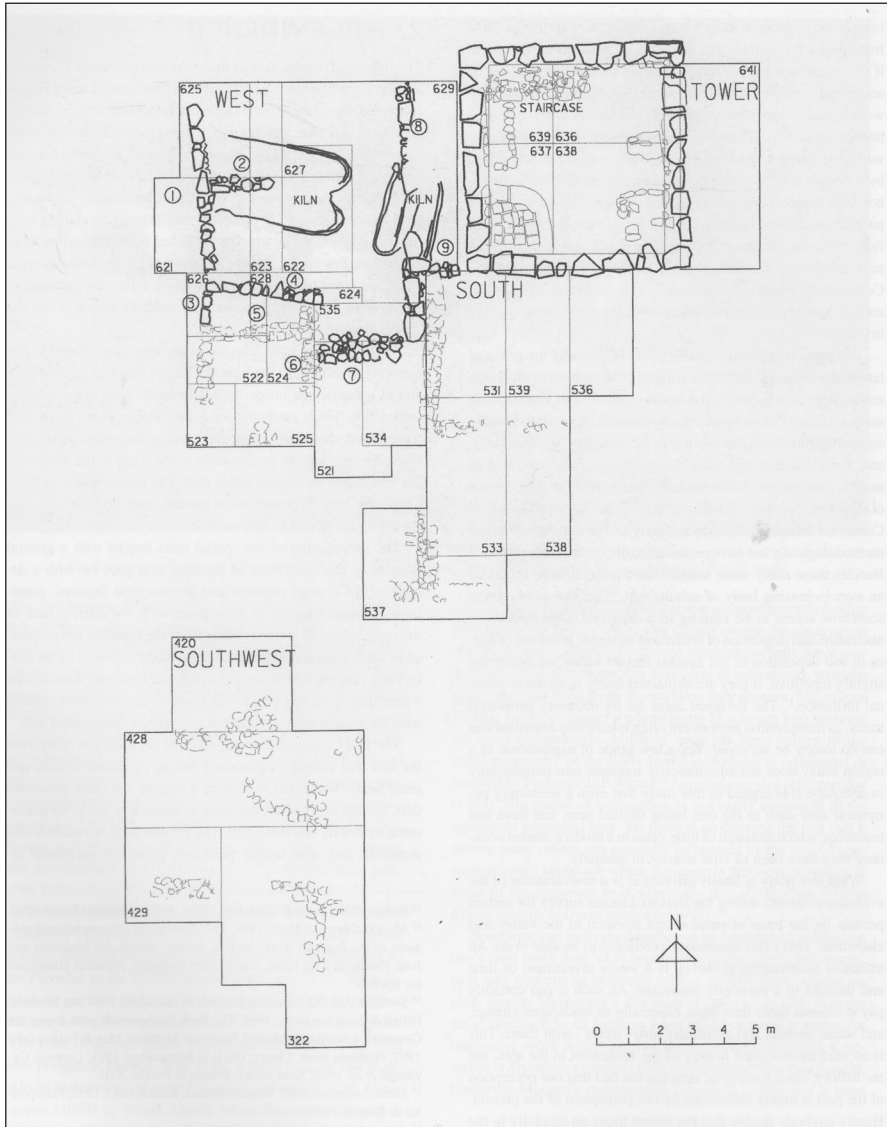


Figure 8. Plan of Pyrgouthi with the Hellenistic tower and the Classical kilns in the western trench. The westernmost is Kiln 1, which is better preserved and bigger than Kiln 2, partially cut by the Hellenistic tower's wall. They are both double shaft kilns (Penttinen 2005: 16, fig. 3). Courtesy of the Swedish Institute at Athens.

and it is surrounded by other farmsteads and agricultural sites of the Classical and Hellenistic period (Figure 7) (Foxhall 2020: 4). Before the excavation, an intensive survey around the site was carried out identifying its agricultural use during the Hellenistic period, but also in Late Antiquity (Wells 2005: 8-9).

The excavation campaigns confirm that the site was occupied for short and discontinuous phases of different activities and site uses (Foxhall 2020: 5). The first evidence of occupation at Pyrgouthi dates to the Early Iron Age. Although the ceramic material is sporadic, this small assemblage, which lacks large storage vessels, has been interpreted as evidence of the use of Pyrgouthi as a seasonal settlement by mobile pastoralists (Penttinen 2005: 91).

In 5th century BCE a pottery workshop with two kilns (Figure 8) marks the main activity at the site. It occupies

the western area and part of it has been covered by the Hellenistic tower. Evidence of clay processing and a pot forming area has not been found nearby, although the second kiln was possibly abandoned at some point and used as a clay basin because there is plenty of unburned clay in the intentional filling of the combustion chamber (Penttinen 2005: 21). Kiln 1 is the best-preserved one with a length of 4.1 m and an interior width of 2.5 m. The combustion chamber and the double shafts are excavated in the bedrock and their interior is lined with pale yellowish or greyish plaster. Kiln 2 is partly cut by the late tower's wall and it is slightly smaller than the other one, with a preserved length of 2.75 m and internal width of 1.5 m. Like Kiln 1, it has two shafts excavated in the bedrock lined with plaster (Penttinen 2005: 21-22).

The ceramic material in the kilns' fillings (Classical phase: Strata 3, 3b and 4) provides information on the

Pottery production at Pyrgouthi- Classical phase	
Roof tiles	Corinthian pan tiles
Kiln supports	Wedge-shaped
Cooking wares	<i>Lekane; chytra; louterion; lopas</i>
Plain wares	<i>Hydria; basin; mortar; table amphora; bowl</i>
Fine wares	<i>Kotyle</i>

Table 3. The kiln supports and the overfired pieces from the kilns deposits indicate that Corinthian pan tiles were the main production of the Classical workshop at Pyrgouthi, but also a cooking, plain and fine wares were fired (from Penttinen 2005: 29-35).

workshop's production: the large quantity of discarded misfired Corinthian tiles and the presence of wedge-shaped kiln supports indicate that the kilns mainly fired tiles. The rectangular shape of the combustion chambers and their large dimensions also confirm this assumption (Hasaki 2002: 166), although also utilitarian coarse wares were fired, such as *lekanai*, *hydriai*, mortars, small *pithoi* and beehives. All the ceramics finds belong to 5th century BCE (Penttinen 2005: 29-30, 35, 92). Moreover, in the area of the kilns, some miniature vessels have been found and described as part of the apotropaic gesture by the potters to prevent accidents during firing (Hasaki 2002: 33; Penttinen 2005: 92). However, it cannot be excluded that they were made for the nearby site 409 (Figure 7) which was an active sanctuary in the Classical-Hellenistic period (Penttinen 1996: 254-256).

3.2. Agriculture and pastoralism

The archaeobotanical analyses on seeds from the Classical phase samples enable the reconstruction of the land use and the agricultural practices around Pyrgouthi (Figure 9). The main cultivated plants were the olive trees (41%), although a small number of almond seeds (*Prunus amygdalus*) may indicate the presence of this cultivar nearby. Overall, weeds and wild grasses were common (28%), suggesting that the land was mostly uncultivated (Sarpaki 2005: 318, 336, table 4). Grape is completely absent from the Classical levels, reflecting either the absence of cultivation in the area or a problem of preservation. There is also evidence of cereals (wheat and barley: 12%) and legume crops (15%; Sarpaki 2005: 318-319). The over-representation of olive stones may reveal that the olive branches or, more likely, the olive oil pomace was used as fuel, as I assumed for Sant'Angelo Vecchio, since the exposition to fire charred them and enhanced their preservation in the soil (Sarpaki 2005: 319). Almond tree branches could also have been collected for firing after the seasonal pruning. According to Hesiod's account (Hes. *Op.* 384, 414-617), pruning of fruit trees usually took place between October and November (cf. Fitzjohn 2013: 628, table 1; Foxhall 2007: 127, fig. 5.4).

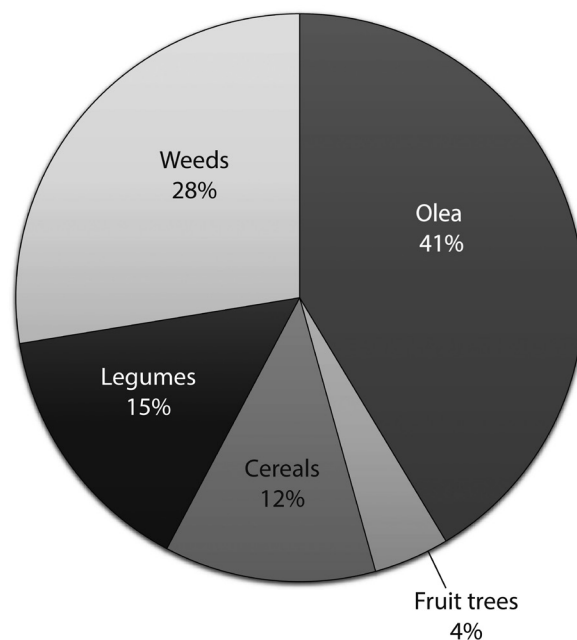


Figure 9. Pie chart showing the percentages of pollen from Pyrgouthi.

The uncultivated land was an important resource at Pyrgouthi and the Berbati Valley because branches from wild vegetation could be used as firewood (Forbes 1996: 87), roots and herbs could be gathered for food, and leaves and grasses as fodder for animals (Penttinen 2005: 97). Animal husbandry for manure, wool and milk mixed with agriculture as a form of subsistence is still practised in some parts of rural Greece and it was certainly more common in the 20th century. This type of pastoralism involves a form of transhumance, with the movement of flocks to upland pastures in the summer and to the lowlands in winter. Some pastoralist structures, such as animal folds, have been found on the western slopes of the Euboea mountain range. Although they are very difficult to date for the lack of ceramic materials, they are signs of pastoralism in the mountainous areas of the Berbati Valley in the past (Penttinen 2005: 99-100). Moreover, the scattered Classical and Hellenistic small farmsteads, located 200-500 m apart from each other, may have been suitable for subsistence cultivation and for breeding small flocks (Forbes 1995: 334-336; Penttinen 1996: 279; Penttinen 2005: 111). At 5th century BCE Pyrgouthi, there are bones of sheep/goats, pigs, and cattle that may belong to the site itself or the closest contemporary sites (Mylona 2005: 301, table 1). In any case, animals contributed to the maintenance of the uncultivated land, and at the same time, they provided manure for crops.

The workshop at Pyrgouthi was located in a favourable position for the proximity to farms, agricultural sites and water and clay sources. Indeed, the Classical pottery and

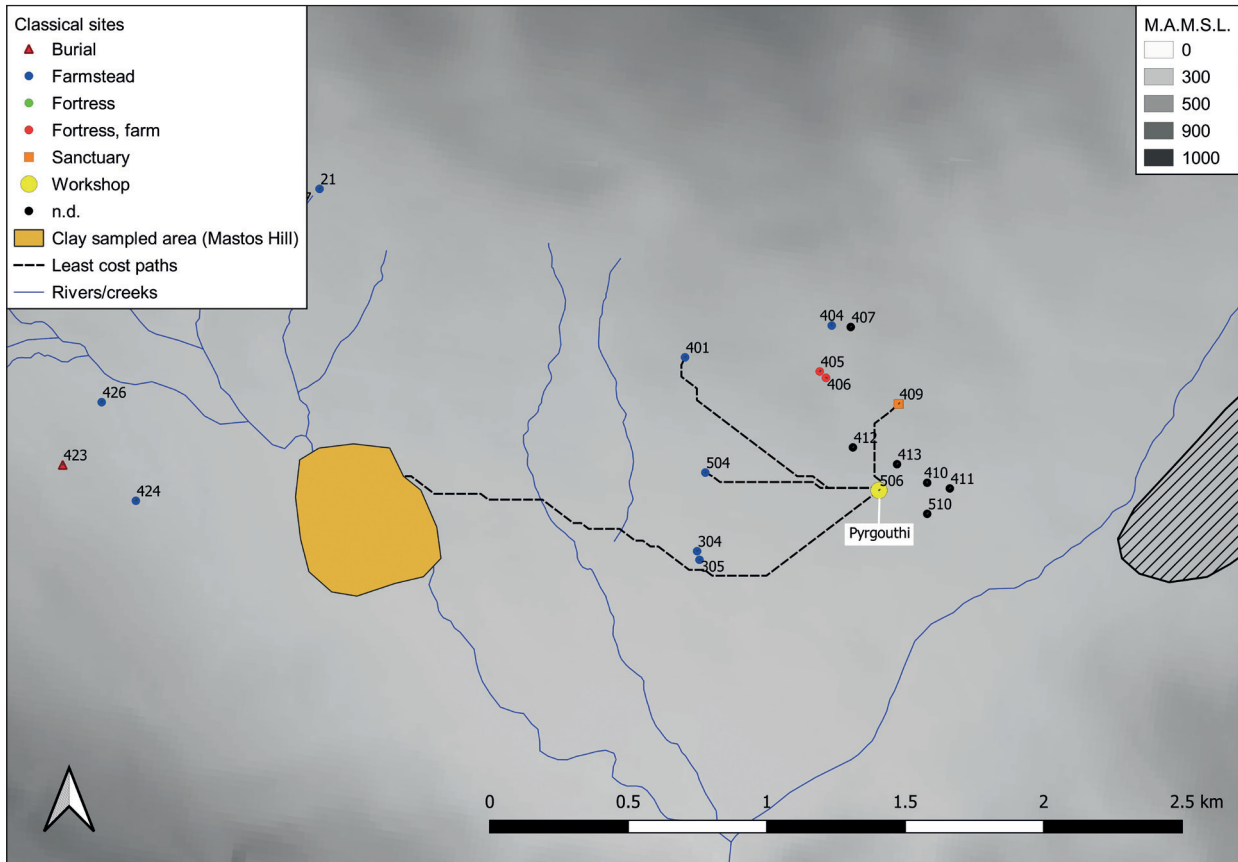


Figure 10. Map showing the least-cost path calculated in GIS, connecting Pyrgouthi with nearby farmsteads, clay deposit, and sanctuary at site 409.

the Corinthian tiles produced on-site are all made with the same yellow refired fabric sampled in local clay deposits in the area of the Mastos Hill (Whitbread et al. 2007: 179, 185). Although there is no archaeological evidence of roads passing nearby Pyrgouthi, I calculated with QGIS Least Cost Path plug-in the possible pathways connecting it with other closer farmsteads, the clay deposit and the sanctuary (site 409). The sites located north of Pyrgouthi lay on steeper slopes, which may have been accessible only by pack animals loaded with ceramic products; however, the land where site 409 and the source of clay are located is flatter, so that routes may have been accessible also with carts (Figure 10).

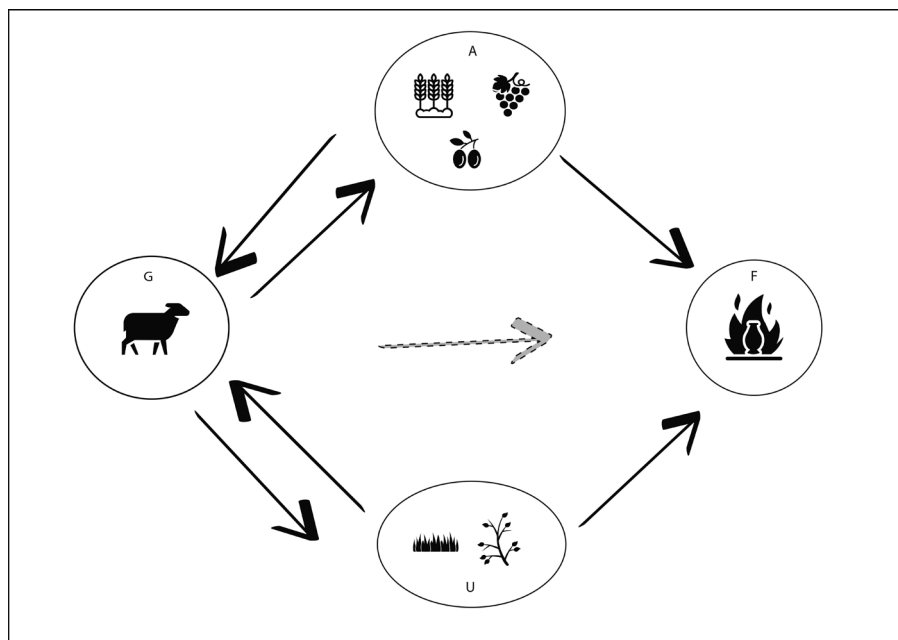
4. Conclusions

The study of Sant'Angelo Vecchio and Pyrgouthi demonstrates the cross-craft interaction between pottery production and agriculture in the ancient Greek countryside. The proximity of farmsteads and pottery workshops allowed the interactions between the two crafts with the exchange of raw materials, in particular the agricultural waste and by-products, that had an important value for pottery production. The olive tree branches and

vine pruning, indeed, were the most appreciated and common fuel sources, as confirmed by archaeological remains, literary sources and ethnoarchaeology, and they were grown almost everywhere in the Mediterranean area. Fruit tree pruning and cereal chaff and straws were also used, especially to set fire, but also as temper for bricks, as we have seen in Sant'Angelo Vecchio. At the same time, the agricultural waste, particularly from cereals and legumes, chaff and fruit tree leaves, was also used as fodder for animals, especially sheep and goats, whose presence has been recorded on both sites. The uncultivated land occupying the majority of the land both in the Metapontine *chora* and the Berbati Valley had many resources both for grazing animals, in the form of herbs and small bushes, and for kiln firing in the form of branches and sticks from Mediterranean brushes. Figure 11 illustrates the cross-craft interactions between agriculture, grazing and pottery production in rural workshops.

As shown in Figure 11, grazing, therefore, contributes indirectly to pottery production. The cross-craft interactions between agriculture and pottery production also influenced the locational choice of the workshops. The proximity to farms was convenient for potters since they could take advantage

Figure 11. Agricultural residues (A) grants fuel for kilns (F) and fodder for animals (G). Husbandry (G), at the same time, provides manure for crops and keeps the uncultivated land (U) clean which is used as pasture. Wild vegetation (U) is also a source of fuel for kilns with branches and pruning.



of agricultural waste as fuel and as temper for bricks. At the same time, people living in the close farmhouses could get the plain and cooking wares for everyday life or tiles for building or renovating their houses. Therefore, placing pottery kilns near farmsteads/farmhouses was economically convenient for people working and living in the countryside. Roads and pathways played an important role too in the interaction between agriculture and pottery production and in the locational choice of pottery workshops, as they allowed the movement of raw material and products through the territory. Sant'Angelo Vecchio and many other kiln sites in the *chora* are placed along the main Basento road, certainly accessible by wheeled carts. At Pyrgouthi, QGIS can be used to reconstruct a net of paths that connected the workshop with farmsteads and raw material source places. In the Greek and Southern Italian countryside, where people lived, worked the land, grazed their livestock, made and fired ceramic products and produced metal objects, cross-craft interactions were everywhere.

5. Acknowledgements

I warmly thank Prof. Joseph Coleman Carter and the University of Texas at Austin Institute of Classical Archaeology team for kindly providing the GIS materials that allowed me to perform my landscape research on the *chora* of Metaponto. Moreover, I thank the Swedish Institute at Athens for providing useful information on Pyrgouthi's excavation. Lastly, I thank my PhD supervisors, Prof. Lin Foxhall, Dr Matthew Fitzjohn from the University of Liverpool and Dr Ina Berg from the University of Manchester for strongly supporting me and my research. I also thank the AHRC-NWCDTP for funding my PhD research at the University of Liverpool.

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