ISSUES IN THE STUDY OF RURAL CRAFT PRODUCTION IN ROMAN ITALY

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Abstract

This essay discusses selected issues concerning the study of rural craft production in Roman Italy. It begins by presenting definitions of craft production and several related key terms. It then defines rural craft production by positing the existence of five distinct modes of craft production based on the location of the production facility - town-based, town-adjacent, rural town-proximate, rural town-remote, and mobile. The essay next considers factors that promoted the emergence of craft production, full-time craft production, and specialized craft production in rural areas, and then reviews the three kinds of evidence for Roman craft production – textual, representational, and archaeological – considering their associated affordances and limitations. The next section considers the affordances and limitations associated with the evidence for pottery production, far and away the best-attested rural craft in Roman Italy. Towards this end it discusses four production facilities (Chiusi Marcianella, Scandicci Vingone, Scoppieto, La Mola di Monte Gelato) selected to demonstrate the various kinds of evidence and the ways in which these can be employed to elucidate aspects of pottery production as a craft. The essay's final section considers future directions for the investigation of rural craft production in Roman Italy.

Keywords:

Roman Italy, Roman economy, Roman rural life, Roman craft production, Roman pottery production, Roman ceramic production.

Introduction

The past two decades have seen the investigation of Roman craft products come into its own as a field of study, as evidenced by developments such as the establishment in 1995 of the *Instrumentum* working group, with its semi-annual *Bulletin Instrumentum* and monograph series

Monographies Instrumentum,[1] and the founding in 2007 of *FACTA – A Journal of Roman Material Culture Studies*, since reconstituted as *HEROM – Journal on Hellenistic and Roman Material Culture*.[2] Particularly important was the launching in 2001 of *CRAFTS – Structures, implantation, et rôle économique et position sociale de l'artisanat Antique en Italie et dans les Provinces occidentale de l'Empire Romain* – a four-year project supported by the European Commission under the *Culture 2000* initiative that involved regional studies of Roman craft production by research groups based in Germany, Austria, Belgium, Spain, France, Italy, Luxembourg, and Switzerland.[3] In Italy, specifically, Sara Santoro directed the *PAAR* (*Produzione Artigianale in Ambiente Rurale*) research initiative under the aegis of CRAFTS. This involved a comprehensive survey of the published evidence for craft production in *Gallia Cisalpina* (in effect, northern Italy) during the Roman period, producing, among other things, VOLCANUS, a searchable database for internal project use,[4] and a monograph of fundamental importance for the study of Roman-period craft production in Italy, *Artigianato e produzione nella Cisalpina: Parte I: Proposte di metodo e prime applicazioni*.[5]

Terminology and Definitions

I would like to begin my consideration of rural craft production in Roman Italy by visiting several points of terminology and formulating some basic definitions. In this essay I will employ the word 'craftsman' to refer to a person of either gender significantly engaged in craft production activity. Craftsmen who normally worked by themselves I will term 'solo craftsmen'. I will use the term 'production group' to refer to two or more craftsmen who regularly conducted their craft production activity together. Individuals who normally carried out what would have passed for a normal level of work activity exclusively in the craft sector I will term 'full-time craftsmen', while those who regularly worked substantially less than this as 'part-time craftsmen'. Those whose engagement in craft production tended to be limited to only particular portions of the year I will refer to as 'seasonal craftsmen'. Craftsmen who tended to manufacture only a limited range of products among the set of those normally associated with the craft sector in question I will refer to as 'specialized craftsmen'. I will refer to the place where a craftsman or

[1] http://www.instrumentum-europe.org/publications.html.
[2] http://upers.kuleuven.be/en/serie/herom_journal_hellenistic_and_roman_material.
[3] Polfer 2004.
[4] Santoro 2004a: 58-63.
[5] Santoro 2004a.

craftsmen conducted his/her or their productive activity as the 'locus of production', and, in cases in which this included fixed, production-dedicated structures as a 'production facility'. I thus avoid the use of the term 'workshop' and its Latin equivalent, '*officina*', to refer either to the production group or to the production facility so as to eliminate any possibility of confusion between these two important concepts. Finally, I will use the word 'middleman' to refer to a person of either gender who buys a product destined for the market from its producer and sells it either to the product's retail seller or to another individual in a chain that ultimately leads to the product's end user.

With this set of terms in place we may now attempt to define craft production. For this purpose it will prove useful to consider the definition put forward by Santoro:

> *L'artigianato è il processo di lavoro attraverso cui persone dotate di uno specifico saper fare e direttamente operanti sulle materie prime o su produtti semifiniti le trasformano in oggetti manufatturati secondo schemi e progetti predefiniti e condivisi dalla communità, destinati ad una diffusione verso l'esterno dell'ambito di produzione*.[6]

It should be noted that both *PAAR* and the broader CRAFTS initiative chose to exclude from the realm of craft production operations connected with the processing of foodstuffs – though not, for example, substances such as unguents and perfumes - on the grounds that these activities should be more properly regarded as aspects of agriculture.[7]

While I am generally content to employ this definition[8], without, for example, delving into the complex philosophical and cognitive question of intentionality on the part of the producer,[9] I would suggest that we might wish to make two modifications to it, the first fairly minor, the second of greater significance. First, I would suggest that we should admit to the realm of craft production operations concerned with the maintenance of craft products, such as the repair to a bronze vessel carried out by a tinker. It seems to me that persons practicing these

[6] Santoro 2004b: 24. "Craft production is the process of labour whereby persons possessing specific skills work directly upon raw materials or semi-finished objects, transforming these into manufacture objects according to preconceived templates and aims shared by the community, with these objects intended for distribution beyond the context of productions".
[7] Santoro 2004b: 24, 35.
[8] See Costin 2005: 1032-1034 for a definition of craft production articulated from the perspective of North American anthropological archaeology.
[9] See Modée 2007: 35-47 for the issue of intentionality in the manufacture of artifacts.

occupations have more in common with craftsmen than they do with other service providers, such as a tavern keeper or a veterinarian. Second, it seems to me questionable to exclude from craft production those operations connected with the construction, decoration, and maintenance of buildings. While it is not difficult to comprehend pragmatic reasons for excluding these operations from the realm of craft production, in that including them greatly expands and complicates any effort on the part of researchers to carry out a comprehensive study of craft production across a given region, it seems to me that they are an integral part of this kind of labour, differentiated from the realm recognized in Santoro's definition principally by the fact that the end product is fixed, requiring the labourers to travel to the location of use or consumption in order to produce the object in question, thereby effectively eliminating the element of distribution. In my view, while the various building trades do represent a distinct sector of craft production, they are, nonetheless, an integral part of it.

Defining Rural Craft Production: A Locational Approach

It is next necessary to define what we mean by 'rural' craft production. To do this I propose that locational considerations allow us to distinguish five distinct types of craft production, which I here term 'town-based', 'town-adjacent', 'rural town-proximate', 'rural town-distant," and 'mobile'. (Figure 1) Each of these would have been distinguished by the size of its local market, its access to elements of the regional transport system and raw material sources, and its freedom to situate and modify its locus of production or production facility.[10]

Town-based craft production involved craftsmen operating on a fixed basis at a locus of production situated inside the built-up area of a town of a certain size – let us say of a physical size and population large enough to have placed it within the range as the set of settlements accorded municipal status. Craftsmen operating in such a location would have enjoyed ready access to a sizable local market, simplifying the task of distributing some significant portion of their output. To the extent that the town was also a node in the regional transport system and, along with this, a regional network of some sort for the distribution of goods, they also would have enjoyed a favorable situation with regard to the extra-local distribution of their output. At

[10] See the contributions by de Haas and Witcher in this volume for these issues.

the same time, the fact that these craftsmen were situated in a place that was densely populated and intensively developed would have meant that, for those whose work involved a production facility, they often would have faced significant constraints in the placement and, along with this, the layout and sizing of this, and may well have been obliged to discard any production refuse that they generated at a substantial distance from the locus of production. Again, since towns would not in most cases have been sited with a view to the sources of the raw material required for one or another kind of craft production, town-based craftsmen involved in certain crafts would have faced high costs for or irregularities in the availability of the raw materials that they required.

Town-adjacent craft production refers to production at loci situated within the band of territory that we know or suspect lay immediately outside the built-up area of many Roman towns in which there was a concentration of craft activity, including the construction and operation of production facilities.[11] How wide should we imagine such zones to have been? I would suggest that they were narrow enough to have permitted craftsmen working in such an area to move conveniently back and forth between a residence located inside the town and the locus of production, while also permitting residents of the town to travel conveniently to the locus of production in order to obtain the items manufactured there or simply information about these. For this I would suggest a walk of perhaps no more than 10-15 minutes, a figure that we can translate into a distance of *circa* one kilometer along a road or track emanating from a town. This arrangement allowed for the literal marginalization of operations that were dangerous and/or noxious, such as the firing of kilns and furnaces and the tanning of hides. As with town-based craftsmen, craftsmen operating in these areas would have enjoyed convenient access to both a sizable local market and the regional transport network for the extra-local distribution of their products. In contrast with town-based craftsmen, they would have had greater opportunity to locate and modify their production facilities, to obtain certain vegetal (wood, rushes) and mineral (clay, sand, stone) raw materials by harvesting or extracting these directly, and to dispose of production refuse at or near the locus of production.

[11] I here employ the term "town-adjacent" rather than the more expected "suburban" on the assumption that the latter term should be reserved for reference to areas adjacent to high-order cities.

Rural town-remote craft production involved craftsmen operating on a fixed basis at a locus of production situated so far from any settlement of the order of magnitude assumed above that it would have been effectively impossible for them to transport their products there by themselves for marketing, either by retailing these in town or by depositing them with another party for eventual retail. For our present purposes we can assume that this limit equaled the distance that could be travelled in one-half day's journey – let us say *circa* four hours - by pack animal or cart, a figure that we can translate into a distance range of *circa* 10-20 km, depending upon the terrain and the nature of the road system.[12] For craftsmen of this kind, local demand would have been modest due to the low population density of the surrounding area and perhaps also to a somewhat lower standard of living and, along with this, a lower rate of per capita consumption of craft goods relative to towns. The marketing of output to large, dense, and somewhat distant bodies of consumers would have required costly, and perhaps complicated-to-arrange forms of distribution, and, perhaps in some cases (including Rome, specifically), the additional cost of municipal customs duties. In many cases these craftsmen's locus of production would have lain a great distance from any element of the regional transport network, rendering more costly and complicated the extra-local distribution of their products. On the positive side, the substantially lower population density and level of development would have meant – in theory, at least - that there was some flexibility in the situating of the locus of production or production facility, permitting this to be placed at or close to an important source of raw material and/or an element in the transport network. Again, this circumstance would have permitted craftsmen considerable latitude when it came to determining the layout of and modifying or expanding a production facility, in the conduct of certain noxious, dangerous, and/or potentially laborious operations, such as firing a kiln or furnace, and in the disposing of production refuse.

Rural town-proximate craft production would have involved craftsmen who operated on a fixed basis at a locus of production in the zone situated between the town-adjacent and rural town-remote zones, thus between a *circa* 10-15 minute walk and a *circa* four-hour journey by pack animal or cart, or *circa* 1 km and 10/20 km depending upon terrain and the road system. On account of their location craftsmen operating in these areas would have enjoyed many of the advantages associated with both town-adjacent craftsmen and town-remote craftsmen, while

[12] See Bintliff 2002: 216-217 for the significance of the one-half day journey limit in relation to the marketing of agricultural produce.

avoiding some of the disadvantages associated with these. Most importantly, their proximity to a town would have made it possible for them to transport their products there by themselves for marketing.

Mobile craft production would have involved craftsmen who operated at multiple loci of production, generally not provided with permanent production facilities, which might have been situated in any one or in two or more of the four zones defined above. This form of production would have been more common in association with crafts for which the product could not be moved, as would have been the case with the various crafts related to the construction and decoration of buildings, or forms for which the product could be moved only with substantial difficulty, particularly in cases where the requisite raw materials were widely distributed and/or were themselves difficult or costly to transport, such as the manufacture of bricks, tiles, and *dolia*. It also would have been more common with crafts for which there was a low level of demand, or that required little in the way of production facilities and equipment.

It is not difficult to see how this simplifying scheme might be modified in the interest of obtaining a model bearing closer resemblance to what might have been the Roman reality– for example, through the adjustment of the size threshold recognized for towns or the distance threshold posited for the boundary between the town-adjacent and rural town-proximate zones and/or the rural town-proximate and the rural town-remote zones, or by taking into account the possibility of distribution via some form of water-born transport – or elaborated, for example, by recognizing production in or adjacent to a lower-order center as a sixth type of craft production.[13]

The Dynamics of the Operation of Rural Craft Production

We can now focus our attention on the three types of rural craft production – namely that in the rural town-proximate and rural town-distant zones, and mobile craft production when it implicated either or both of these. We can imagine that in such areas the lower population density and the more limited development of commercial forms of economic activity led to lower demand density for craft goods and a significantly higher level of self-supply on the part of residential/economic units for many categories of essential material culture, the manufacture of which did not require highly developed skills, complex and/or costly tools and facilities, and/or

[13] See the contributions by de Haas and Santoro in the volume for the economic role of minor centers.

raw materials not available locally. We can thus imagine that the mastery of skills for basic construction operations, wood-working skills, skills for the production of textiles and, along with these, garments, as well as other fiber objects, such as baskets, mats, cord, and so forth, as well as basic leatherworking skills, would have been widely diffused among the residential/economic units.

The wide diffusion of manufacturing skills in these areas would have meant that many residential/economic units engaged in subsistence agriculture or agricultural production aimed in substantial measure at the market would have been positioned to engage to some lesser or greater degree in certain kinds of manufacturing activity also aimed at the market (hence craft production by the definition employed here). Activity of this kind would have been facilitated by the uneven seasonal labour demands of agriculture, as well as the presence of individuals within residential/economic units who could not fully participate in agricultural labour due to domestic responsibilities, youth, old age, or infirmity. The inclination for a residential/economic unit to engage in or to expand its involvement in this kind of activity might have been promoted by any one of several factors or some combination of these. These might include: decline in agricultural productivity due to the exhaustion of the land; the alienation of agricultural land; the loss through aging, infirmity, or death of some part of its agricultural labour force; the discovery, development, or acquisition of a new source of raw materials; the decline in prices or demand for agricultural products or the rise in prices or demand for craft goods; the raising of rents; the entry (through birth, marriage, inheritance, or purchase) into the unit or re-entry into it (e.g., following return from emigration to a town or the conclusion of military service) of one or more individuals with well-developed manufacturing skills or the talent and/or inclination to develop these; the suffering of some catastrophe, such as crop failure, the death of a draft animal, or the burning down of a house; the re-imposition of the land tax, as occurred in Italy during the late third century AD; the acquisition of a pack animal or a vehicle suitable for the transport of craft goods; the creation of a new or improvement of an extant element of transport infrastructure; or the institution or expansion within the region of a distribution network for craft goods.

Similar factors might have inspired one or more members of the residential/economic unit to shift over to full-time craft activity, or to split off from the unit and to operate as independent, full-time craftsmen. We would expect such instances to be accompanied by

ongoing and perhaps also intensified investments in the production and/or acquisition of craft tools, production facilities, and means for the distribution of products, resulting in some cases in the development of extensively-equipped production facilities. The existence of such facilities would have worked to promote the ongoing existence of full-time craft production at that location, as they would have served to render this kind of activity more secure and remunerative, promoting the renewal and continuation of the production group, as well as the development and stabilization of a local market for the kind of craft goods that it produced, or inspired the owner of the production facility to seek to rent or sell it to new craftsmen whenever a production group terminated its activities at that facility for whatever reason.

This represents a gradualist, organic scenario for the emergence of full-time craft production in rural areas. In contrast, we can also posit the existence of cases in which either an individual or two or more individuals collaborating as a *societas* (partnership), determined to construct a craft production facility at a particular location *ex novo* and to staff it with a production group for the purpose of production for the market. A facility of this kind might have been incorporated within, annexed to, or associated with some other sort of establishment, such as a villa, or it might have been a stand-alone craft production facility. It might have been operated by the owner/investor and staffed with members of his or her *familia*, perhaps including craftsman slaves and/or freedmen, as well as wage labourers, or rented to an individual or group of individuals who would have operated the facility, staffing it with members of their *familia* and/or wage labourers. This scenario presupposes a significant investment of capital for the acquisition of the land on which the production facility was to be situated and perhaps also for the land on which one or more raw material sources were located, in cases in which these were not already owned by the owner/investor, for the construction and equipping of the facility, and for the provision of the work force. It also presupposes the investing of substantial effort to establish the production facility and supervise the ongoing operation there of the production group either by this individual or by one or more of his or her family members, *amici*, slaves, freedmen, or clients. A scenario of this kind implies that the owner/investor believed on the strength of some basis or other that there existed a local or extra-local demand that could absorb products of the nature, quality, and cost that could be manufactured at the location in question in the quantity in which it was anticipated that they would be manufactured.

An effort of this kind would appear to presuppose the intention on the part of the owner/investor that the production group that operated at the facility would engage in production on a certain scale, implying intensive production, quite possibly aimed in significant measure at an extra-local market or markets. A production group aimed at supplying markets of this size (in terms of number of consumers) might in some cases have engaged in specialized production, that is, the production of just one kind of item or a limited suite of items. Specialized production, in turn, might well impose certain requirements (while, at the same time, removing or loosening others) with regard to type and amount of production equipment, size of work force, type, range and distribution across the work force of production skills, access to and supply of raw materials, and access to a distribution network.

It is not difficult to imagine how the disappearance or reversal of several of the factors indicated in the preceding paragraphs as working to promote the emergence of part-time, full-time, and specialized craft production in rural areas would serve to depress or lead to the demise of these activities in rural areas.

The Evidence for Rural Craft Production

The extent to which we can elucidate various questions regarding rural craft production is determined by the evidence at our disposal. This can be divided into three distinct categories: textual, representational, and archaeological. The category of textual evidence can be divided in turn into three subcategories: literary, documentary, and epigraphic. As Santoro's research team has emphasized in relation to its efforts to assemble and interpret the evidence for craft production in *Gallia Cisaplina*, literary evidence, while often highly informative with regard to some aspect or other of craft activity, generally speaking, is highly discontinuous, often difficult to date with precision or to place in relation to a specific locale, and appears to be biased, with, in the case of northern Italy, textile production receiving substantially more attention from authors than other kinds of craft production.[14] Documentary evidence - such as letters and rental contracts - is effectively absent from Roman Italy, as is generally the case for the whole of the Roman world outside of Egypt, greatly circumscribing the kinds of qualitative and, to some extent, quantitative insights that we can gain into economic life in general and craft production in

[14] Santoro 2004a: 81, 100-101, 125-126; Santoro 2004b: 36.

particular.[15] The epigraphic evidence at our disposal consists in the main of epitaphs indicating the occupation of the deceased, which tend to be rare from demonstrably rural contexts. The category of representational evidence consists of occasional depictions of craftsmen at work or craftsmen's tools that occur in various media.[16] Here too, the evidence is highly discontinuous, often difficult to date, and appears to pertain in the main to towns rather than to rural areas. In sum, while textual and representational evidence provide some qualitative insights into craft production, these are highly uneven, difficult to place chronologically or geographically, relate for the most part to towns, constitute what is effectively a closed set of materials, and they cannot be combined in any useful quantitative way with the large and more continuous body of archaeological evidence.

The category of archaeological evidence for craft production consists of six sub-categories:[17]

1. production facilities, which may include buildings and various kinds of fixtures, such as basins, drains, furnaces, kilns, prepared surfaces, and drains;

2. production tools and equipment;

3. raw materials (including, for some crafts, used items or items with production defects collected for recycling) or, in the case of the manufacture of certain items in stone, such as grain mills and sarcophagi, items partially finished at the quarry site before distribution to the final locus of production;

4. production waste, such as wood, bone, or leather off-cuts, slag, and ash from the firing of furnaces and kilns;

5. discards, that is craft items discarded either in the course of or at the conclusion of the manufacturing process on account of defects;

6. finished craft items.

[15] See Ruffing 2008 for a synthesis of the papyrological evidence for specialized craft production; Gallimore 2010 for the papyrological evidence for amphora production.
[16] See Zimmer 1982 for a collection of the representational evidence.
[17] See Santoro 2004a: 36-38 for a substantially similar representation of the archaeological evidence for Roman craft production.

These last are in some very rare instances recovered unused in contexts that relate to their distribution, such as a warehouse, the wreck of a merchant ship, or a retail shop. Most often, however, they come from contexts that relate to their use after their acquisition by the consumer, their discard following the end of their use life, or their disturbance and re-deposition following discard. Many categories of craft items - for example, various classes of pottery, glass vessels, and metal vessels - were more or less regularly provided with maker's marks consisting all or in part of a text as part of the manufacturing process. These can be highly informative, providing information about the identity, juridical status, and ethnicity of the owner and/or manager of the production facility or production group, and/or of the craftsman, and the scale and organization of operations within a production group and/or at a production facility.

Santoro and her *PAAR* research group have done the discipline a great service by elaborating and publishing tables that diagram the production cycle for craft goods manufactured in a wide array of materials, including ceramic, glass, bronze, bronze, lead, tin, silver, gold, iron, wood, bone/horn/ivory, textile, stone, and plaster.[18] In each case these indicate the steps involved in the manufacturing process and the various raw materials, facilities, tools, products, and waste materials associated, highlighting those items apt to be preserved in the archaeological record.

Archaeological evidence for craft production is reasonably abundant and widely distributed across time and through space, including at loci of production. It is not, however, without substantial limitations. First, much of the evidence is of fairly low quality, in that it exists in the form of surface remains identified and documented in the course of survey projects or remains recovered in excavations carried out prior to the introduction of rigorous excavation and recording methods in Italy during the last two decades of the twentieth century, sometimes under the direction of persons uninterested in and not particularly knowledgeable about craft production. As a result, this evidence is more fragmentary than might otherwise be the case, is often impossible to contextualize and/or date as rigorously as one might wish, and, in not a few cases, has gone unrecognized or been misinterpreted. Second, due to the inherently fragmentary nature of the evidence, it is often difficult to interpret. Classic examples of this problem include the uncertainty regarding the implication of the recovery in some particular location of a small number of loom weights or a few sherds of misfired pottery. Should these be taken as evidence

[18] Santoro 2004a: 38-50.

for textile or pottery production at that location or somewhere in the immediate vicinity, or are these simply sporadic materials? In many cases in which the evidence does permit a researcher to conclude with an adequate degree of certainty that items of one sort or another were manufactured in a particular location, some of the basic attributes of this activity – such as whether it was being carried out for purposes of self-supply or for the market, and thus craft production, as here defined – remain entirely unclear. Most disappointing in this regard is the extreme difficulty in most instances of drawing any secure inferences regarding the size and nature of the work force and the nature of its relation to the production facility.

Particularly problematic is the pronounced differential in the representation of the various crafts. Some crafts, such as woodworking, basket making, textile production, and leatherwork, have notably low archaeological profiles due to the fact that they required little in the way of dedicated structures or fixtures, while employing raw materials, generating production waste, and yielding finished items not normally susceptible to preservation. In contrast, the two main forms of ceramic production – pottery production and the manufacture of architectural ceramics - tended to generate relatively robust archaeological signatures across all six categories of evidence, and, it seems fair to say that by whatever measure employed these are very substantially over-represented in the archaeological record relative to every other craft. The ubiquity of evidence for pottery production, specifically, is illustrated by the fact that Gloria Olcese, in her recently published gazetteer of pottery production sites in operation during the period *circa* 350 BC to AD 50 for the regions of Toscana, Lazio, Campania and Sicilia, was able to document nearly 700 such facilities.[19] The two other pyrotechnological crafts – glass making and the suite of metal working crafts – enjoy something of an intermediate position, determined in large measure by the fact that both discards and finished items were regularly recycled. The remaining major crafts, stone working and the working of bone, horn, shell, and ivory, may also be assigned an intermediate position, the one because it was not widely practiced, the other because it required little in the way of dedicated structures or fixtures.

Pottery Production

[19] Olcese 2012-2013: vii.

In this section I turn my attention to pottery production as the craft for which we have by far the most complete picture. To do this I will offer brief descriptions of four representative cases of rural pottery production from Central Italy selected with a view to illustrating some of the principle modes of production attested, types of markets for which pottery was produced, and analytical possibilities and limitations associated with the evidence, considering these in chronological order. (Figure 2) All four cases are instances of rural-town proximate production, as rural town-remote and mobile production are very poorly attested in the archaeological record. I have limited my selection to instances of the production of domestic wares – that is, tablewares, cookwares, and utilitarian wares – passing over those involving more than the incidental production of amphoras so as to avoid cases with particularly strong linkages to agriculture.

While it remains essential to take advantage of the wealth of evidence, it is important to recognize several ways in which pottery production likely differed to some greater or lesser extent from the other crafts practiced in rural areas:

1. Pottery manufacture as it was undertaken in most of Italy by the time of the Roman unification of the peninsula involved a series of complex operations that necessitated substantial and complex fixtures, tools, and equipment, the use of which required highly developed skills. Further, the production of an item from start to finish generally required several days, many of the operations had to be carefully monitored and timed, and there was considerable risk that objects would be ruined if these requirements were not respected. For these reasons, pottery manufacture was presumably better undertaken by production groups composed of multiple persons and made up at least in part of full-time craftsmen rather than by a solo or part-time craftsman. These characteristics presumably served to distinguish pottery manufacture from several other crafts in Roman Italy, such as basketry, leatherworking, textile manufacture, bone working, and much wood working, which had low overhead requirements, lower or less variegated skill requirements, and more relaxed scheduling requirements, and could thus be conveniently undertaken by a solo craftsman and/or by craftsmen working on a part-time or seasonal basis.

2. The technical requirements of pottery manufacture meant that it was undertaken almost exclusively at production facilities that included buildings or otherwise roofed spaces, various special purpose fixtures, such as kilns and levigation tanks, and various items of tools and

equipment. On account of this circumstance pottery producers would have had impetus against shifting the locus of their activity, while the owner of a pottery production facility, if not a producer him- or herself, would have had strong motivation to derive some benefit from his or her property by arranging for its continuous use. These factors would have meant that, in comparison with many other crafts, there would have been a restricted number of loci of pottery production, that there would have been a high level of stability in the operation of production groups at these, and that these would have served as loci of pottery production for relatively long periods of time.

3. Many operations involved in pottery manufacture required differing degrees of strength, levels of skill, and amounts of labour, and could, in some cases, be scheduled somewhat flexibly. There was thus some logic to assigning these to different workers, and pottery production groups may have found it convenient to act on this circumstance by taking advantage of the pool of part-time and seasonal unskilled labour that would have been widely available in rural areas to carry out certain operations such as the procuring of clay and fuel, paste preparation, and the distribution of finished products.

4. There would have been strong linkages between pottery manufacture and agriculture. Pottery producers manufactured the most important kinds of containers employed for the short-term storage and packaging of olive oil and wine, two of the most important agricultural products. In addition, they may have made extensive use of agricultural by-products for fuel, including chaff, olive clippings, olive pressings, and perhaps also dung. There would thus have been strong advantages for agricultural producers to have one or more pottery producers located somewhere in their vicinity and for pottery producers to be located near agricultural producers.

5. The principal raw material for pottery manufacture – clay – is widely, though somewhat discontinuously available in most regions of Italy. The processing operations required for clay were relatively straightforward from a technological point of view, and our evidence indicates that these were undertaken at pottery production facilities rather than at specialized primary production facilities, as was the case with the raw materials for glass working, the manufacture of metal objects, and leather working. Clay is heavy, was used in large quantities, and is onerous to transport in comparison with the products of pottery manufacture. There would thus have been impetus for pottery production facilities to be established at or near clay sources. This

consideration would have favored the siting of production facilities in certain rural areas and against the siting of them at many towns, which either lay far from any clay source or where land use considerations rendered clay extraction impractical or impossible.

6. Pottery fulfilled a wide range of functions that required distinct performance properties (resistance to the elements, permeability/impermeability, lightness, robustness, resistance to thermal stress/shock, ability to accept and retain an attractive slip finish) that were in significant measure a function of the specific composition of the clay and, in cases in which this was employed, the tempering material utilized for the ceramic paste with which they were manufactured. There would thus have been in some cases an impetus for pottery producers operating at a particular production facility or in the vicinity of a particular clay source to engage in the manufacture of a functionally restricted range of items, for example, storage jars, cookwares, gloss-slipped tablewares, water jars, amphoras. This specific impetus towards specialized production would have been absent in many other crafts, namely those for which there was little significant variability in the quality of raw materials and those that employed non-local raw materials, such as glass making, the production of metal items, and leather working.

7. Pottery manufacture requires little in the way of raw materials that would not have been locally available in most parts of Italy – metals for the very rare instances in which production involved glazing, perhaps also pitch for the lining of amphoras – meaning that there was little impetus for pottery producers – in contrast with many other kinds of craftsmen - to take into account the supply of materials from beyond their immediate locale. This might have rendered irrelevant some of the advantage from locating production facilities in towns, which, generally speaking, would have been better placed than rural areas to enjoy access to a secure supply of non-local raw materials.

8. The products of pottery manufacture have a low value per unit and are for this reason best produced and distributed in volume. Pottery is relatively bulky, yet, at the same time, fragile in comparison with many other craft items, such as basketry, leatherwork, textiles, and small items in wood, metal, and stone. This would have meant that it was particularly desirable for pottery producers to be located close to sizable concentrations of demand such as could be found in towns and cities or, failing that, close to elements of the transport network that could be

employed to distribute their products to sizable concentrations of demand securely and at low cost.

Let us now turn to the four representative cases.

Case 1: Chiusi Marcianella

Excavations carried out under the direction of Giuseppe Pucci and Cynthia Mascione over a continuous area of *circa* 350 m^2 uncovered a substantial portion of a pottery production facility at Marcianella, 2.5 km southwest of Chiusi (Etruscan Clevsin, Roman Clusium).[20] (Figures 2, 3, 4) The full extent of the facility was not determined, and its context within some broader settlement landscape is unclear. It stands at the foot of a low hill made up the Pliocene marine sandy clay that outcrops widely in this area.[21]

Preservation was sufficient to allow the excavators to reconstruct in detail a sequence of occupation that saw the facility active from the end of the third century BC to the early first century BC, roughly the period from the end of the Second Punic War to the Social Wars.[22] This can be divided into two phases corresponding roughly to the first and second halves of the second century BC. The first phase saw the construction first of two kilns, the addition of a third, then the demolishing of all three along with construction of a fourth kiln, all apparently in the open. The second phase saw the destruction of the one remaining kiln, the construction of a modest building, inside of which were built two new kilns, and the construction of clay processing fixtures outdoors to the south. This was followed by the reconstruction of one of the two kilns, the construction of a third kiln to the southwest of the building, and finally the destruction of one of the kilns inside the building and its replacement by a larger kiln. The facility was then abandoned.

Through careful study of stratified groups of discard pottery recovered at the facility it was possible to determine the suite of wares and forms fired in each of the kilns and to reconstruct the output of the one, or perhaps two successive production groups that operated at the facility as this changed over *circa* one hundred years.[23] In the first phase this consisted of a

[20] Pucci and Mascione 2002; Olcese 2012-2013: 101-107 'Site T011'.
[21] *Carta geologica d'Italia*, *foglio* 121 Montepulciano, formation P_s^{2-1} (*Sabbie e sabbie argillose con molluschi*).
[22] Pucci and Mascione 2002: 17-72.
[23] Pucci and Mascione 2003: 75-270.

strikingly wide array of wares, including medium-quality Black-Gloss Ware, North Etrurian Red-Slip Ware, thin-walled ware, commonware, cookware, and loom weights. In the second it consisted of a low-quality Black-Gloss Ware in a different and more restricted repertoire of forms, thin-walled ware, commonware, and cookware, all again in a new repertoire of forms, and the limited manufacture of Dressel 1 amphoras. The presence of *prae-cocturam* Etruscan graffiti on a group of coin banks from this phase indicates that at least one of the workers was an Etruscan-speaker who was at least marginally literate.

A program of compositional analysis indicated that the Black-Gloss Ware, North Etruscan Red-Slip Ware, commonware, and amphoras were manufactured with Pliocene marine clay likely excavated at or near the facility.[24] The cookware and thin-walled ware, in contrast, were manufactured in a coarser, ferruginous paste containing minerals of volcanic origin, which increase resistance to thermal stress. This must have been obtained from a deposit of argillaceous sediment containing materials originating in either the Volsinian or the San Venanzo volcanic complex, the nearest occurrences of which can occur no closer than *circa* 20 km to the south in the vicinity of Fabro Scalo.[25]

It seems likely that the production group or groups that operated here supplied a market comprised in large measure of consumers of modest means living at Clevsin and in its environs, perhaps in substantial measure beneficiaries of the emancipation of the *lautni* (dependent agricultural labourers) that literary sources indicate occurred at Clevsin during the second century BC. Interestingly, the group's activity appears to have been characterized in the later second century by an effort to increase output through the standardization of forms, a lessening of concern for quality of form and finish, and perhaps also some streamlining of firing operations.

Case 2: Scandicci Vingone

In 1980 the then Soprintendenza Archeologica della Toscana carried out rescue excavations at a ceramic production facility on the south (left) bank of the Torrente Vingone, six km west-south-west of Florence (Roman Florentia).[26] (Figure 2) This intervention, under the direction of

[24] Pucci and Mascione 2002: 275-314.
[25] *Carta geologica d'Italia*, *foglio* 130 Orvieto, formation ts (*Tufi stratificati con lapilli, scorie ed inclusi lavici*).
[26] Shepherd et al. 2008; Olcese 2012-2013: 39-43 'Site T049'.

Giuliano de Marinis, involved the excavation of 12 test trenches dispersed across an area of *circa* 2400 m^2. (Figure 5) The full extent of the facility was not determined, and its context within the broader settlement landscape is not known. It is situated at the edge of the Firenze – Prato – Pistoia floodplain, at its juncture with the Colline della Romola, the heights to the south, and sits atop a deposit of quaternary alluvial sediment.[27]

Due to the damage done to the site by construction work prior to the intervention, the shortage of time and resources, and the dispersed arrangement of the trenches it was not possible to determine the layout of the various elements that made up the production facility.[28] Excavation did, however, uncover the remains of one kiln, traces of two additional possible kilns, and a possible clay pit. The facility's period of operation appears to have extended from *circa* 20 BC to AD 20. This would have corresponded to the second and third generations of the existence of the nearby *colonia* of Florentia, probably established between 59 and 41 BC.

The disturbed nature of the deposits and the presence of a substantial amount of ceramic material manufactured elsewhere complicated the effort to determine the range of items turned out at the production facility. There is reasonably secure evidence, however, for the manufacture of a broad range of both pottery and architectural ceramics, including thin-walled ware, commonware, cookware, amphoras – including the Dressel 2/4 and various small, flat-bottomed containers - loom weights, roof tiles, and bricks.[29] Of the 52 stamped tiles and 4 stamped bricks recovered, 22 bear the stamp of Sextus Avidius Maxsimus, 9 the stamp of an individual whose name is abbreviated *CAH*, and 8 the stamp of a certain Cassius, suggesting that one or more of these men owned and/or operated the facility or some part of it.

A program of compositional analysis identified six fabric groups among the items produced at the facility.[30] The thin-walled ware, commonware, and amphoras were manufactured in four related pastes probably produced using alluvial clay that was excavated on or near the site, while the architectural ceramics were manufactured in a paste that involved the addition of *chamotte* - pulverized ceramic - to this clay. The cookwares, in contrast, were manufactured in a coarse, ferruginous paste containing materials of ophiolitic origin. The nearest documented

[27] *Carta geologica d'Italia*, *foglio* 106 Firenze, formation q (*Depositi fluviali di ciottoli e argille sabbiose*).
[28] Shepherd et al. 2008: 15-57.
[29] Shepherd et al. 2008: 65-215.
[30] Shepherd et al. 2008: 241-250.

deposit of this kind occurs at Impruneta, 10 km to the southeast, where it has been intensively exploited by ceramic producers in the modern period.[31]

The organization of the production that took place at this location is entirely unclear. It may have involved either a single production group turning out a wide range of products at a single production facility, or multiple production groups that manufactured a narrower range of products at one or more separate production facilities. Whatever the case, it appears likely that this activity was primarily aimed at supplying the inhabitants of Florentia and the colonists living in its territory. Noteworthy is the fact that operations at this location did not involve the manufacture of any gloss-slipped tablewares, presumably due to the emergence during the third quarter of the first century BC of the Italian Terra Sigillata industry at Arretium, 80 km up the *Via Quinctia* from Florentia.

Case 3: Scoppieto

Excavations under the direction of Margherita Begamini have uncovered a substantial portion of a ceramic production facility near Scoppieto, 11 km southwest of Todi (Roman Tuder).[32] (Figure 2) While the area opened up as of 2006 came to 2300 m^2, the full extent of the facility has not yet been determined, and its context within the broader settlement landscape remains unclear. (Figures 6, 7) The facility stands near the crest of a hill 800 m to the south of the Tiber, at 460 m above sea level, or 320 m higher than the Tiber in this area. It sits atop an exposure of Pliocene marine clay that outcrops in a limited number of locations along the edges of the Tiber Valley.[33]

The facility, which operated for a period of *circa* one hundred years, extending from the BC/AD juncture through the early second century, represents an exceptionally important example of a large-scale pottery production facility.[34] The compound, which measures 30 m by 30 m, consists of two long, narrow North – South buildings that faced each other across a courtyard. The West Building contained a kiln at its south end and a pair of basins for clay

[31] *Carta geologica d'Italia*, *foglio* 106 Firenze, formation ε (*Gabbri*).
[32] Bergamini 2007; 2011; 2013.
[33] *Carta geologica d'Italia*, *foglio* 130 Orvieto, formation P_a^{3-2} (*Argille e argille sabbiose grigiastre od azzurrognole*).
[34] Bergamini 2007: 57-70. Neither Begamini 2011 nor Bergamini 2013 were available to the author for the preparation of this essay.

mixing and or slipping near its north end, with its entire west side taken up by a long narrow room that might have served as a drying area.

The west half of the East Building was given over to four sizable work rooms. This structure's entire east side consisted of a long, narrow potting room that contained a row of no fewer than 24 potter's work stations that measure from *circa* 1 x 1.2 m to *circa* 1.2 by 1.5 m. Each was equipped with a perforated travertine block set into the pavement, which must have served as the mount for a potter's wheel, and a small hearth.

From discards it is evident that the production group or production groups active there concentrated almost exclusively on the manufacture of Italian Terra Sigillata and lamps.[35] The large corpus of maker's stamps recovered provides important evidence regarding the organization of production, as well as variation in the intensity of operations.[36] While the marks of over 50 makers are attested, those of two men, Lucius Plotidius Porsilius and Lucius Plotidius Zosimus, perhaps brothers, are dominant, and Bergamini has inferred that they were likely responsible for the construction of the facility. The forming of vessels was probably carried out by separate production groups linked to the various makers, each of which stamped its products, while paste and slip preparation, drying and firing were undertaken communally. Precisely how operations were organized, however, remains unclear. Did each maker produce for his own account, or did they work under contract with another of the makers?

The stamp evidence suggests that output was at its height from the AD 40s to the AD 90s, after which it declined. Production of Italian Sigillata appears to have ended during the period AD 100-120. At this point the structures were converted to use as residences, with low-level production of cookwares and commonwares taking place in and around the complex into the third century AD.

Scoppieto constitutes a paradigmatic case of large-scale, specialized production aimed at extra-local markets, with Rome presumably chief among these, considering the facility's location just a stone's throw from the Tiber. The distribution of the various maker's stamps associated with the facility confirms this assumption.[37] That production was not just large-scale, but also

[35] Bergamini 2007: 60-61.
[36] Bergamini 2007: 61-64.
[37] Bergamini 2007: 64.

intensive is suggested by the hearth located at each potter's work station, as these presumably served to facilitate the continuation of operations through the winter months. The local, fine-grained, calcareous marine clay is ideal for the manufacture of gloss-slipped tablewares, as it is for lamps, and the choice of this specific location for the construction of the facility was doubtless determined by this consideration. Interestingly, the facility is situated atop the outcrop of this type of clay furthest upstream in the Tiber Valley, suggesting that its siting was determined not just by the advantages that the location offered for distributing pottery down the Tiber to Rome, but also up the Tiber to supply markets in Umbria. It is plausible to suggest that the bulk of the facility's products were distributed by first being taken downstream by boat or moved overland to Palianum, a major port at the confluence of the Fiume Paglia and the Tiber, 7.5 km southwest of Scoppieto. Here they could have been combined with a stream of similar wares brought down the *Via Cassia* from Arretium, and then shipped down the Tiber to Rome.

Case 4: La Mola di Monte Gelato

Excavations carried out from 1986 to 1990 by a team from the British School at Rome under the direction of Tim Potter uncovered a large portion of a richly appointed villa at La Mola di Monte Gelato, seven km south-south-east of Nepi (Roman Nepet), on the north (left) bank of the Fosso Treia.[38] (Figures 2 and 8) The villa, constructed during the late first century BC, was probably the country residence of a member of the economic and perhaps also social elite, who dwelled in Rome, perhaps, Caius Valerius Faustus, a *mercator bovarius*, whose epitaph was recovered in a late Roman lime kiln uncovered at the site.[39]

A refuse dump recovered in a fish pond probably deposited during the AD 120s or 130s contained several sherds of misfired pottery.[40] These included examples of colour-coat ware, cookware, and jars in a moderately coarse fabric, and it seems highly likely that a production group that manufactured all three kinds of pottery was active somewhere in the immediate vicinity. The colour-coat ware was presumably manufactured from Pliocene marine clay obtained from a small outcrop exposed in the floor of the Treia Valley, one of which has been

[38] Potter and King 1997.
[39] Potter and King 1997: 202-204, 421.
[40] Potter and King 1997: 30-32, 320-325.

documented 2 km to the northeast of the villa.[41] The cookware and perhaps also the jars may have been manufactured from a localized deposit of volcanic material that weathered into a coarse, ferruginous clay somewhere in the vicinity of the villa.[42] This appears to be an instance of a pottery production group operating at a villa as part of the suite of economic activities conducted on the estate attached to it, manufacturing a mixed array of tablewares, cookwares, and utilitarian wares, presumably for self-supply – not just of the villa, but also conceivably for the owner's residences in Rome and elsewhere - and for sale on the local and/or regional market.

Among the vessels from this deposit is the so-called Stork Vase.[43] This vessel, which probably dates to the early second century AD, is a tall, colour-coat ware beaker. Both the rim and wall display pronounced warping, there are large shrinkage cracks in both the wall and the base, and there can be little doubt that the vessel is a discard.

The vessel bears two *prae-cocturam* graffiti, one under the base, the other on the wall. The first of these reads:

Αβασκαντου και Επινικου

(of Abascantos and Epinikos). This is a signature, giving the names of two men involved in the vessel's manufacture. The other graffito, in the same hand, runs around the body in a single band. It reads:

Φιλοφιλος λεγομαι πιων νοησεις οτι ου ψευδομαι

(I am called a friend of friends – Drinking, you will understand that I do not deceive). At its end is the caricature of a stork depicted nesting on a rooftop. This text, which Oswin Murray, who published it, states "can loosely be characterized as rhythmic, if not metrical"[44], belongs to the family of toasting inscriptions that appear with some regularity on wine-drinking vessels in the Greco-Roman world. The word for stork in Greek – *pelargos* - is also attested as the name for a drinking vessel of some kind, and it may well be that, with the vessel filling the rôle of the text's speaker, the drawing of the stork constitutes a sort of play on words.

[41] *Carta geologica d'Italia*, *foglio* 143 Bracciano, formation P^3 (*Argille sabbiose con alternanza di sabbie argillose*).
[42] See Peña 1992: 115-119 for the use of clay deposits of this kind for the manufacture of cookwares in Central Italy.
[43] Potter and King 1997: 356-366.
[44] Potter and King 1997: 363.

The names of the two men in the first graffito are Greek, and it is evident that at least one was a more than marginally literate Greek-speaker, who, if he composed the text of the second graffito as well as incising it, was a culturally sophisticated person. While it cannot be excluded that his rôle in the manufacture of the vessel was limited to the executing and perhaps also the composing of the texts, it seems likely that he was involved in pottery production at the villa.

General Conclusions Regarding the Study of Pottery Production Facilities

On the basis of these four representative cases we can venture some general observations regarding what we can and cannot know about pottery production, this most richly attested of the rural crafts of Roman Italy:

Given the costs of excavation and the vicissitudes of access and preservation, it is virtually never the case that we can determine the extent of, let along excavate the whole of a pottery production facility. That said, we probably do enjoy somewhat better opportunities to uncover enough of a facility to gain a good idea of its layout in rural rather than town contexts, as the remains of facilities in the latter areas are often covered by a modern town.

Only somewhat less challenging is the task of determining the broader context of such facilities within the settlement landscape. Was the facility isolated? Adjacent to a modest dwelling? On the grounds of a villa?

Despite these problems, we can still in some cases assign a particular case to one or another mode of production: independent, villa, craftsmen's settlement, and so forth.

In instances in which we encounter good stratified deposits it is sometimes possible to achieve a fine-grained reconstruction of the suite of products manufactured at a particular production facility, and to trace diachronic stability and change in this, perhaps inferring the market or other forces that drove this. The chances of achieving this are probably better for rural rather than town contexts, as town-based potters must often have disposed of discards and production waste at a remote location.

Programs of compositional analysis can provide a firm understanding of the suite of raw materials employed at a production facility and how these were utilized by potters to endow their

products with particular performance properties. In some case results confirm our a priori locational assumptions, though they sometimes yield surprises.

The recovery at a production facility of a more or less extensive set of vessels with a maker's mark that were manufactured on the premises can provide detailed insights into some aspects of the organization of operations at the facility and facilitate the study of the distribution of the items manufactured there. In many cases, however, the specific nature of the relations between multiple individuals named in the corpus of maker's marks and the relationship between these individuals and the facility remain unclear.

Finally, *prae-cocturam* graffiti, when these occur, can provide rare insights into the persons of potters, allowing us to accomplish what in less politically sensitive times my North American pre-historian colleagues were wont to term 'getting at the Indian behind the artifact'.

In closing this section, it should be noted that the pottery production facilities for which we possess high-quality evidence are still too few and far between to allow us to demonstrate in any detailed and robust way geographical or chronological patterns in modes of rural pottery production.

Future Directions in the Study of Roman Craft Production

To conclude this essay I would like to consider briefly future directions for the study of craft production in Roman Italy.

The extension of the comprehensive and systematic approach employed by Santoro's research group to evaluate the published evidence for craft production in *Gallia Cisalpina* to other areas of the peninsula would yield results of considerable interest at relatively low cost, enlarging the overall set of data at our disposal, while producing detailed information and general overviews of both town-based and rural craft production for regions of Central and South Italy, each presumably distinguished by its particular array of resources, topography, settlement system, economic structures, regional history, and suite of local histories.

So far as fieldwork goes, the main question, or so it seems to me, is deciding how to allocate the scarce human and financial resources available to us for survey and excavation. My own preference would be in the direction of the extensive and intensive excavation of well-

preserved production facilities, so as to enlarge the number of establishments for which we possess high-quality data. In my view, the benefits to be had from research along these lines are abundantly clear, as with the publication of each additional project of this kind we gain important new insights into the particulars of rural craft production. Whether it is more useful to focus on pottery production facilities, production facilities for craft items other than pottery, or sites that offer the opportunity to investigate both pottery and other types of craft production, so as to position ourselves to understand better the linkages between different crafts and the rôle of craft production more generally in the economy of a particular locale, is an important question open to debate. The advancing of our knowledge of many of the crafts other than pottery production will depend in substantial measure on the conduct of excavations in those peculiar and quite rare depositional environments that offer extensive preservation of organics.

Another possible line of research involves the ongoing construction of quantitative datasets for artifacts - in the main pottery - recovered on the surface and in stratified deposits at consumption sites in rural areas, with the idea that this will enhance our understanding of the consumption of craft items and perhaps also elucidate the specific mechanisms that served for their distribution, an aspect of craft production in Roman Italy about which we know exceedingly little.[45] I am skeptical, however, that much progress will be possible on the latter count, given the complexity of ethnographically attested systems for the distribution of craft goods in analogous cases and the likelihood that arrangements of this kind were often fairly volatile, perhaps lasting for no more than the lifetime of a particular middleman, effectively placing them beyond archeological resolution. Work of this kind will be facilitated by newly emerging or recently emerged technologies, such as hand-held x-ray fluorescence (XRF),[46] digital microscopy,[47] and web publication, as these will permit the amassing of substantially larger compositional datasets and facilitate the circulation and sharing of results.

[45] See the contribution by Tol in this volume for the mechanisms for the distribution of craft goods in Roman Italy.
[46] See Shugar and Moss 2012 for applications of hand-held XRF.
[47] See Peña 2013: 512-514 for the application of digital microscopy to pottery fabric documentation and classification.

Figure 1. Schematic representation of five craft production zones posited in text.

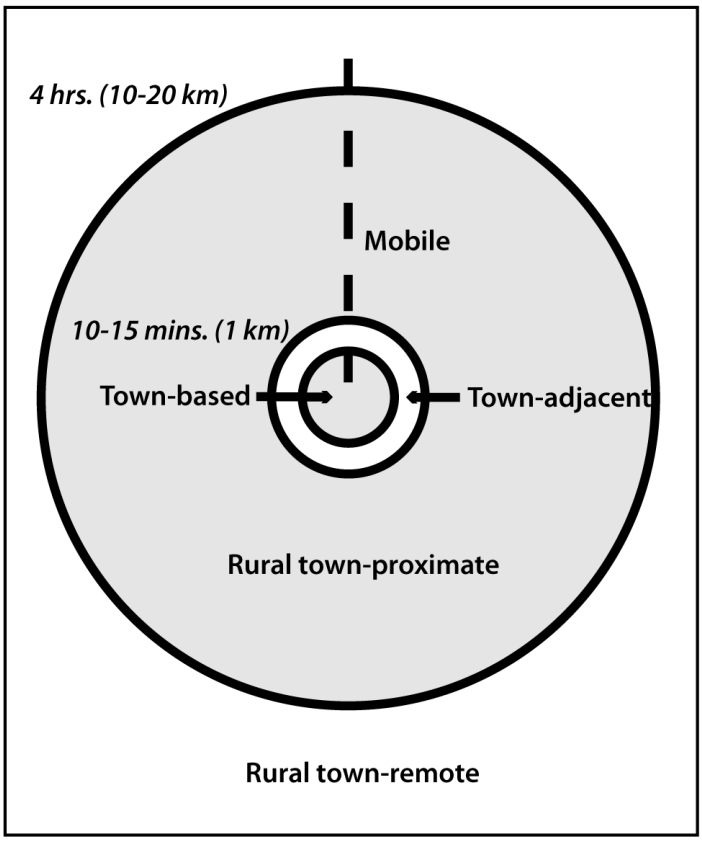


Figure 2. Map of Central Italy showing locations of four representative cases of pottery production discussed in text.

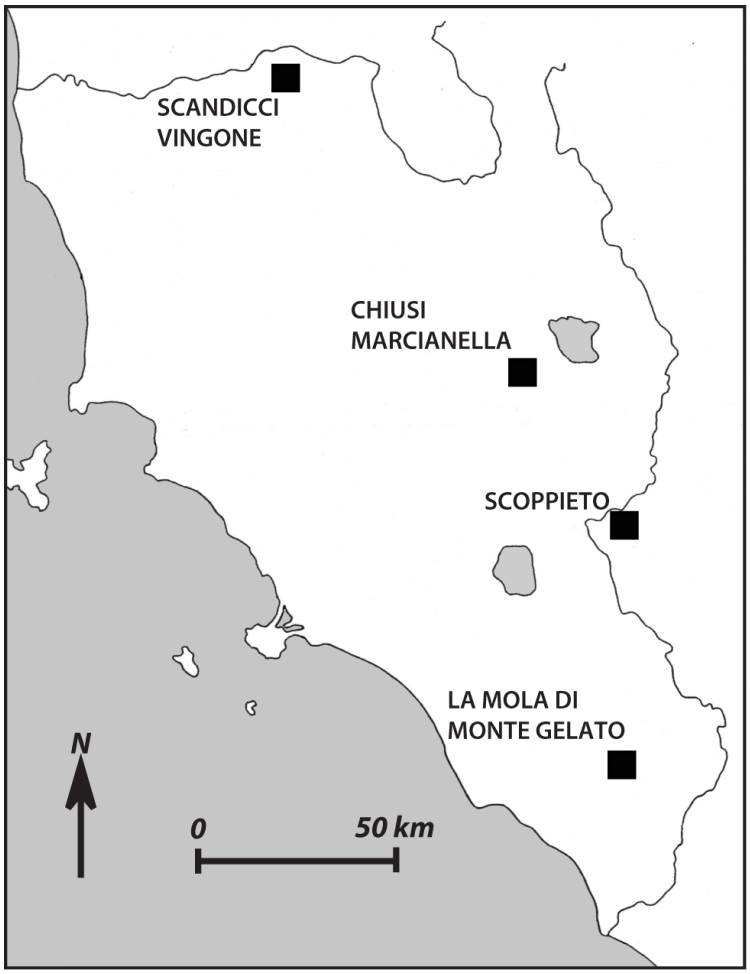


Figure 3. Plan of excavation of Chiusi Marcianella pottery production facility (after Pucci and Mascione 2002, fig. 36). A: Phase 1 kiln; B: Phase 2 structure; C: Phase 2 kiln; D: Phase 2 clay processing fixture.

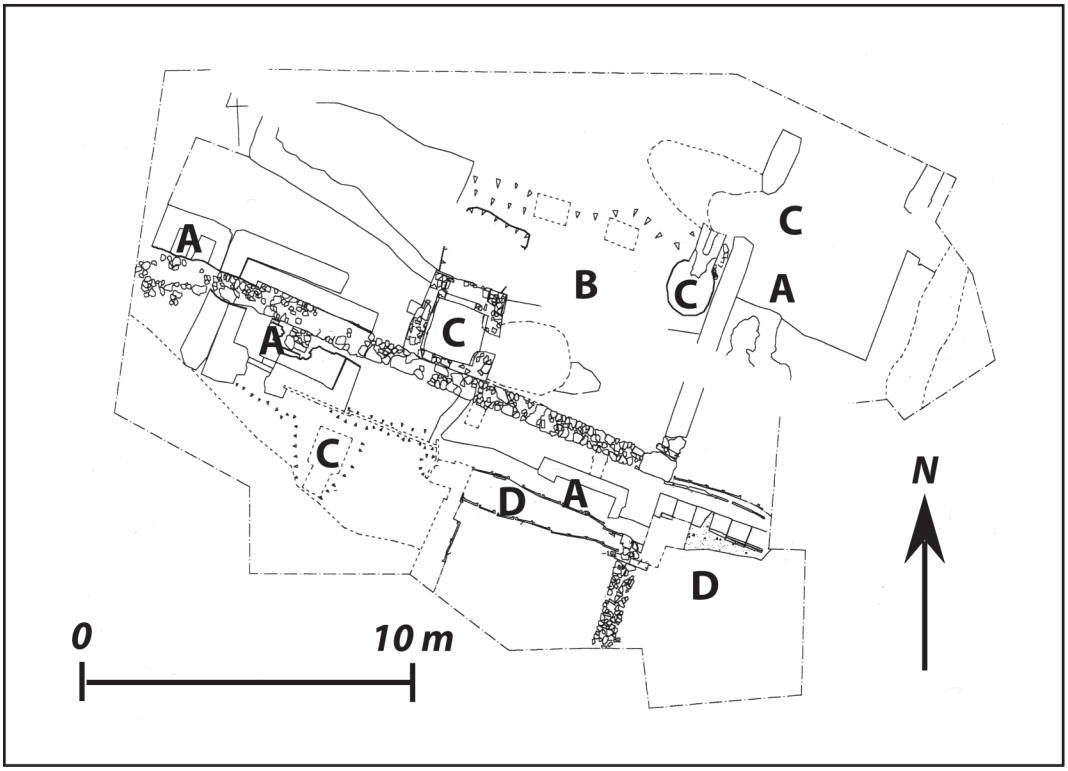


Figure 4. Cutaway reconstruction of Chiusi Marcianella pottery production facility from northwest (ca. 150-100 BC) (Pucci and Mascione 2002, fig. 37).

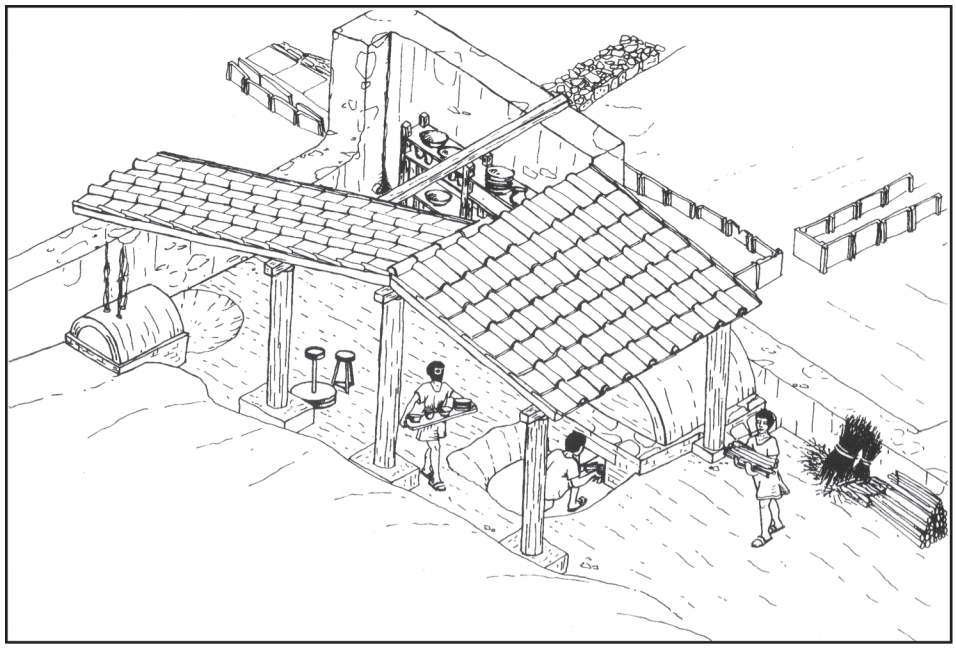


Figure 5. Plan of excavation of Scandicci Vingone pottery production facility (after Shepherd et al. 2008, fig. 13). A: kiln; B: possible kiln; C: possible clay pit.

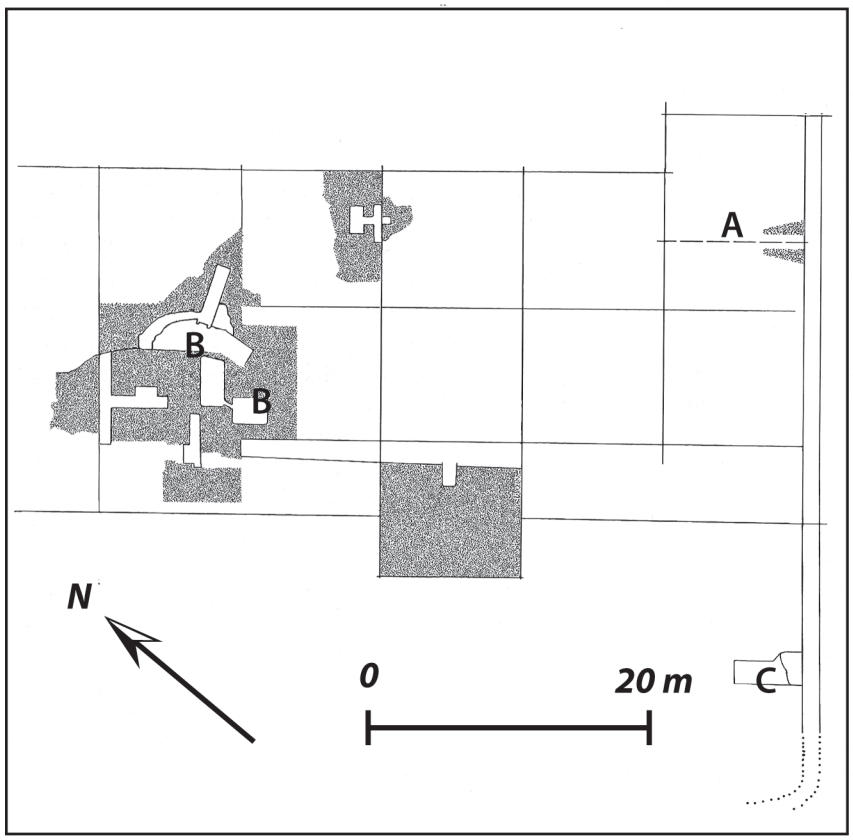


Figure 6. Plan of excavation of Scopietto pottery production facility (after Bergamini 2007, fig. 5). A: West Building; B. courtyard; C: East Building; D: kiln; E: basin; F: possible drying area; G: work room; H: potting room.

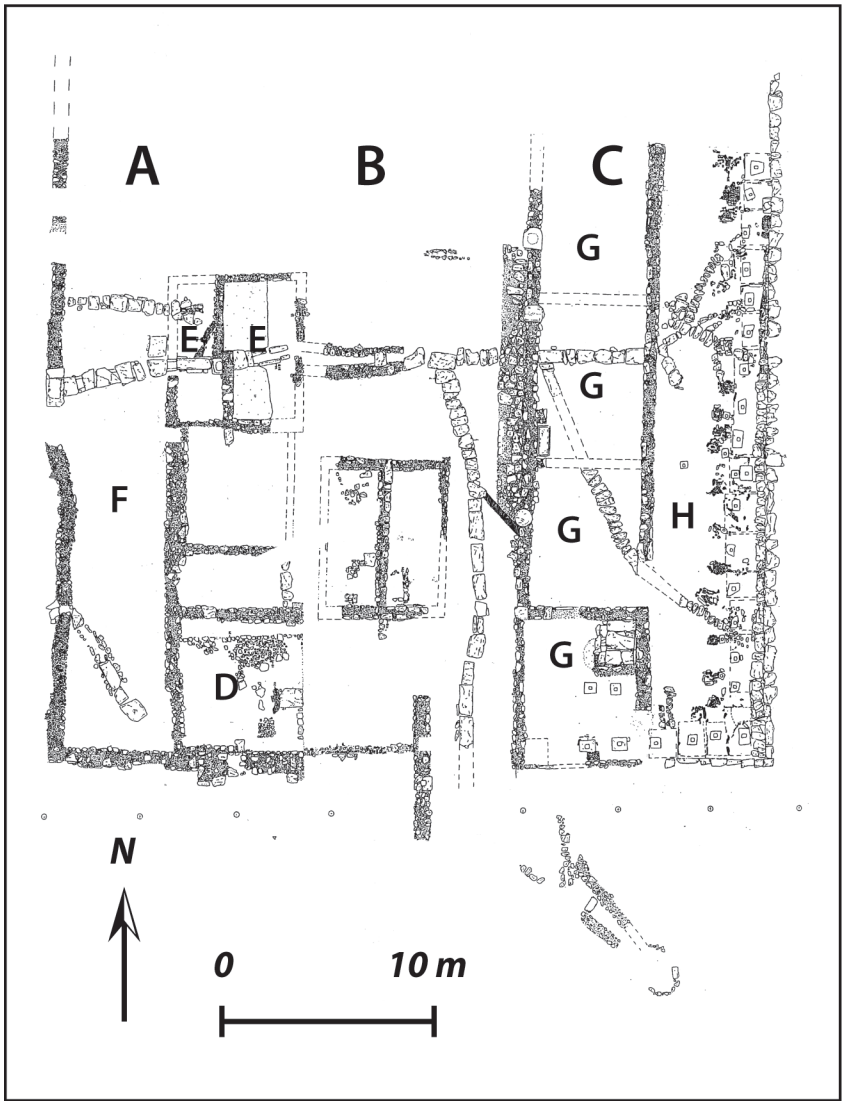


Figure 7. Cutaway reconstruction of Scoppieto pottery production facility from north (Bergamini 2007, fig. 6).

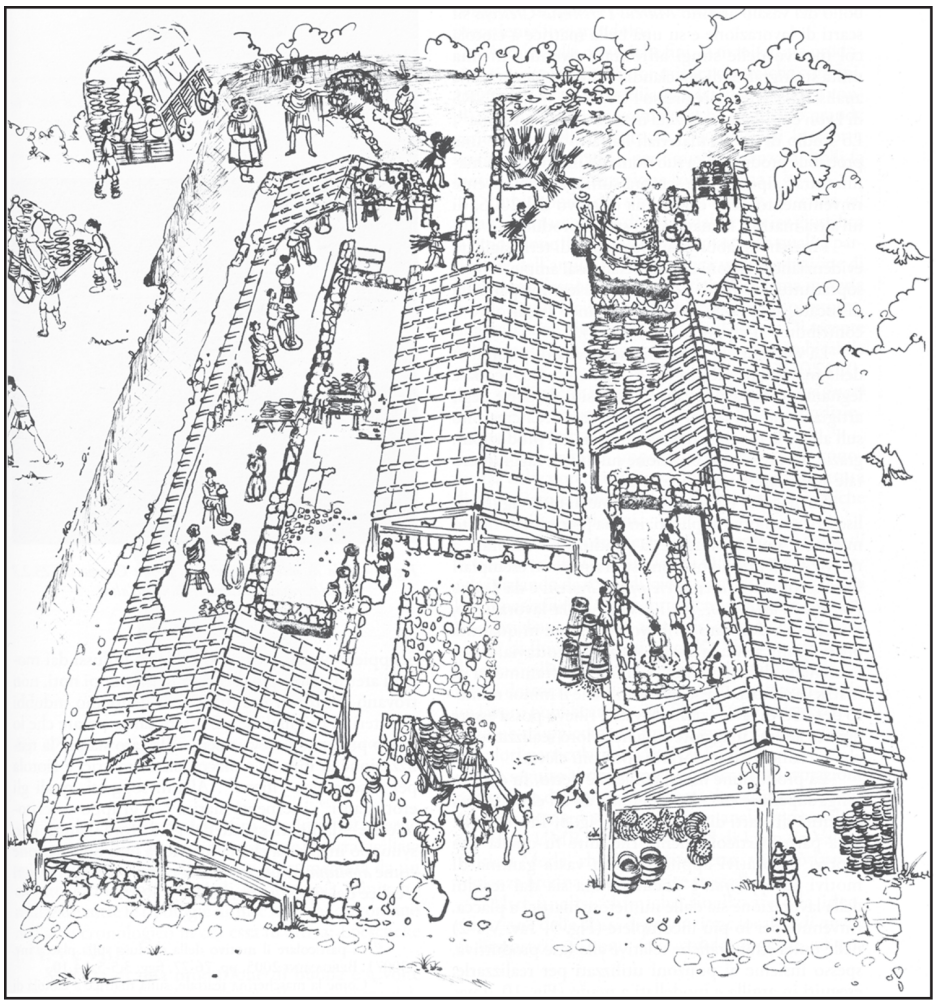
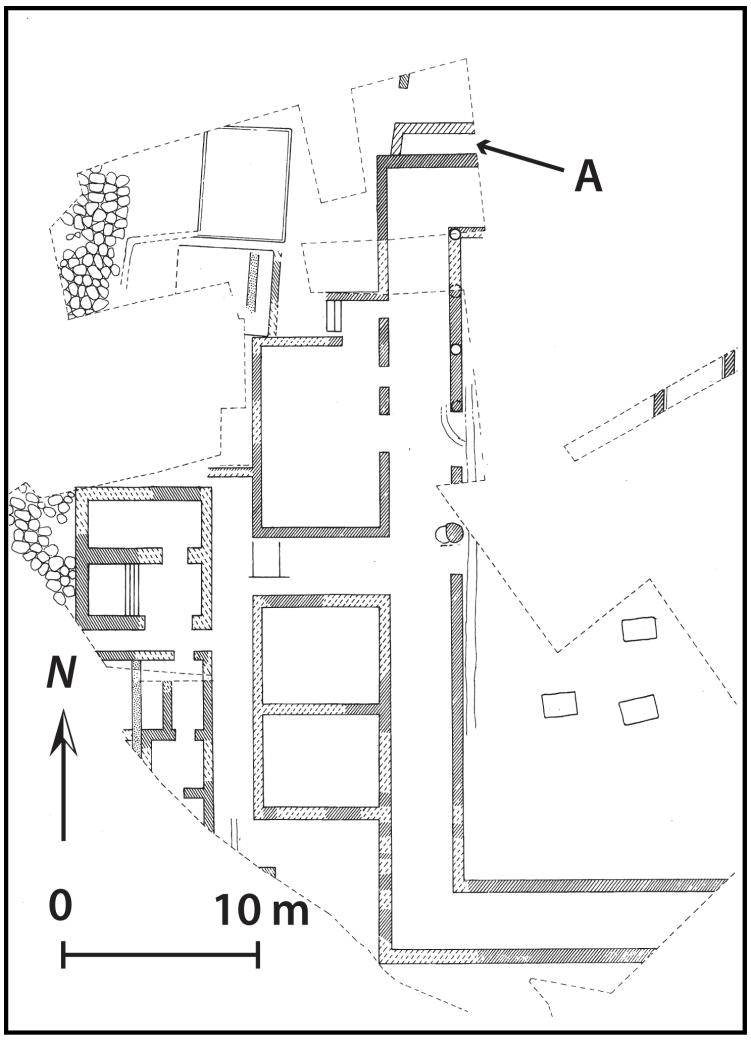


Figure 8. Plan of excavation of villa at La Mola di Monte Gelato. (after Potter and King. 1997, fig. 13). A: location of basin containing pottery with manufacturing defects.



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