

**Craft, exchange, and subsistence strategies of the inner Apennines
in Archaic times**

The archaeology of Casentino and Valtiberina from 600 to 400 BC

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In memory of Elisabetta Fortuna.

Abstract

In this thesis I investigated the kinds of economy at play in the countryside of central Italy in Archaic and Late Archaic times (600-400 BC), so to gain new insights on the society that developed the many forms of urbanisms that we can record in this period. The case studies for this assessment were two valleys in the inner Apennines—Casentino and Valtiberina—sited at the border between modern day Tuscany and Emilia Romagna. In the first part of the thesis, I identified the archaeological correlates of what could be a semi-monetary economy. By combining a landscape archaeology approach on the assessment of archaeological evidence, with a technical assessment of all the pottery from all the Archaic and Late Archaic sites within the two valleys, using a *chaîne opératoire* approach to reconstruct the techniques of production, I discovered two differential types of spread of pottery goods among the settlements of the two valleys, roughly according to their function—kitchenware had a very local spread, banqueting ware had a general spread. I then made use of a perspective on trade and exchange informed by anthropological theories of value arguing that the locals traded according to ‘spheres of exchange’, a system also known in anthropology as ‘multi-centric economy’.

In the second part of this thesis, I investigated the environmental traces of Archaic urbanisms of central Italy by producing a paleo-environmental reconstruction of land cover and land use, based on a comparative indicator taxa analysis of pollen from cores taken in ancient lakes of central Italy. The picture drafted through this reconstruction, that includes the whole of central Italy, is that of an agriculture with a rather low impact on the surrounding environment, with no clear traces of systemic land reclamation on a large scale. I then argued that such an agriculture was not geared up towards the production of surplus for supplying densely inhabited cities. I then proceeded to investigate the possible subsistence strategies of Casentino and Valtiberina, in relation to their settlement patterns, arguing that there could be traces of state structures and also of a society with intriguing heterarchical aspects. Finally, considering all these clues I argued that we should rethink the mainstream models of Archaic urbanisms, still centred on surplus making and redistribution, in favour of more grounded ones, more prominently based on interconnectivity, adaptive agricultural activities, and shared socio-cultural values.

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Chapter 1 Introduction

The problem of the conceptualisation of northern Etruria

Casentino and Valtiberina are two valleys sited in what is normally considered as a part of northern Etruria. As marginal as they seem, archaeologically speaking, with no major city and two important yet often forgotten archaeological case-studies such as the Lake of Idols and the temple of Pieve a Socana, they are sited at the intersection of a series of meaningful, if unnoticed, scholarly boundaries. This is due to their specific position within the inner Apennines, secluded away from renowned urban centres, yet also at the ridge dividing the peninsula between Adriatic and Tyrrhenian sides. The archaeological disciplines that are concerned with the study of central Italy from the Iron Age to the Late Archaic period—the archaeology of pre-Roman Italy (known also as the archaeology of the Italic peoples), proto-historic archaeology, and Etruscology—find a common blurry area in this very part of the peninsula, at the springs of two of the most prominent rivers of classical Italy, the Arno and the Tiber. These disciplines have different histories, methodologies, and ongoing debates. Even though they deal with very similar, often overlapping subjects, they have often developed their discourses in parallel, seldom contributing to one another. This aspect may have been instrumental in the general lack of scholarship on these territories.

Historically speaking, however, the discipline that we find most involved in this part of Italy is Etruscology. The lack of academic interest on these two valleys can be considered a by-product of the divide in the academic debate between ‘Etruria proper’ and northern Etruria. This latter is not to be mistaken for the so called ‘Etruria Padana’, which is differentiated from northern Etruria mainly because of the presence of illustrious cases of urbanism such as *Felsina* (Bologna), *Kainua* (Marzabotto), and Spina. Rather, northern Etruria is actually that part of Tuscany comprising the valley of the Arno in its entirety, and the foothills of the Apennines, on the Tyrrhenian side, from Monte Falterona to Pisa—the three most renowned cities of this area that had an Archaic phase are *Arretium* (Arezzo), *Faesulae* (Fiesole), and Pisa. Chiusi, Volterra, Murlo, and the area of Siena are not usually considered within northern Etruria. The marginality of Casentino and Valtiberina in academic discussion may therefore be better explained within the more general traditional marginality of northern Etruria in Etruscan studies. Etruscologists have found the archaeology of northern Etruria particularly impervious, perceiving it a less interesting part of central Italy, quite detached from ongoing debates on topics such as elites, power, economy, and especially urbanism processes.

Recent important, well recorded case-studies, such as those of Monte Giovi,¹ Poggio Colla,² and Gonfienti,³ or the extensive work of scholars such as Raffaella Da Vela,⁴ have not been

¹ Cappuccini 2017.

² Nocentini, Gregory Warden 2018; Gregory Warden, Maggiani 2020.

³ Zecchini 2011; Poggesi, Millemaci 2017.

⁴ Da Vela 2022a, b, c; Da Vela, Krämer 2022.

enough to spark a more methodical integration of this area of Italy within these wider debates, that instead keep on focusing on the wealthy and more famous urban polities of southern Etruria. Arguably this is a bias rather than a lack of compelling case-studies, that has been well ingrained in the discipline, and that has never been fully acknowledged. This bias may even have an origin during the fascist *ventennio* of Italy, a moment in which heritage studies were subjected to a series of profound reforms and a restructuring that was never reversed and that lasts in many forms to this day.⁵ It is during the first 10 years of the *ventennio*, in fact, that the fascist cultural ideological program, masterminded by the philosopher Giovanni Gentile, defined two themes that were to help political propaganda in modelling Italian identity: regionalism and Rome-centrism.⁶ Cultural programmes involving Italian cities had the role of cementing in them certain areas of cultural competence, each one its own (e.g., Florence *was* the cradle of the Renaissance, Rome *was* the cradle of the Roman empire and the Papal seat, Arezzo *was* a medieval city and Siena too, etc.). Their universities were corralled accordingly, developing schools that had to implement precise cultural views while neglecting other themes, so as not to overlap with each other, and minimise the risk of sparking discordant voices.

In 1942, Massimo Pallottino published his book, *Etruscologia*, a publication which has often been seen as the founding act of the entire discipline. He embraced the cultural Rome-centrism of the fascist era,⁷ making it a staple, practically theorizing the concept of *Etruria propria*, ‘Etruria proper’, as an area directly involved in the rise of Rome. This area, generally comprising the land between the river Arno and the river Tiber, is centred in the south of Tuscany, the western part of Umbria, and northern Lazio, where the wealthy Etruscan cities of Tarquinia, *Caere*, Veii, Vulci, Orvieto, and Perugia are located.⁸ Since the beginning, Pallottino’s main research interest revolved around the characters of wealth and grandiosity of these Etruscan cities. The union of this aspect with his explicit conceptualisation of an ‘Etruria proper’ left a lasting conceptual heritage in the discipline as undertaken in Italy and influenced also the reception of Etruscan and pre-Roman archaeology even outside Italy.⁹

Pallottino considered certain case-studies as culturally marginal to ‘Etruria proper’; in a way, *less* Etruscan,¹⁰ these were also the less wealthy case-studies and areas. The conceptualisation of an ‘Etruria proper’ had a detrimental effect on curiosity regarding the archaeological material and sites outside this area. The updated editions of *Etruscologia*, published in 1959 and 1975, written when Pallottino was already excavating at Pyrgi, did nothing but strengthen the divide.¹¹ His approach was passed on to the next generation of Etruscologists, academics such as Giovanni Colonna, Giovannangelo Camporeale, and Adriano Maggiani, whose point of view

⁵ Barbanera 2015, pp. 151-154.

⁶ Barbanera 2015, p. 153.

⁷ Manacorda 1982, pp. 17-18. It is worth noting that the Etruscans were originally depicted by Pallottino as a sort of ‘pre-Romans’, given their ‘expansion’ from Etruria proper and their supposed dominion over most of Italy. According to the scholar, they were the people who initiated what the Romans brought to completion - a continental empire based in Italy (see for instance Pallottino 1942, pp. 114-117). The *fascio* itself was identified as a symbol of Etruscan origin (e.g. the Vetulonia *fascies*, see Brennan 2022, pp. 8-14.)

⁸ Pallottino 1942, pp. 102-105; 112-114.

⁹ In the volume *A companion to the Etruscans* (Carpino, Bell 2016), not a single word is spent on the archaeology of northern Etruria, even when including some of its most renowned sites, such as the Lake of Idols or the temple of Pieve a Socana (see Gregory Warden 2016).

¹⁰ See for instance Pallottino 1975, pp. 193-205.

¹¹ Pallottino 1975, pp. 141-143; 172-205.

is still influential.¹² The traditional *Latium*-centrism of the discipline, coupled with the ingrained disinterest for classical Archaeology of the University of Florence, brought about a conspicuous gap in the archaeological investigation of pre-Roman peoples, and Etruscans in particular, in a good portion of northern Etruria.

Pallottino defined the discrepancy between the archaeology of ‘Etruria proper’, and that of northern Etruria essentially as a difference in the reception of foreign goods, and thus he implied, of foreign cultural influences, including the drive towards the acquisition of an urban settlement system (a process that will come to be known as ‘urbanisation’).¹³ While such differentiation in grave goods is recorded, Pallottino was particularly creative in defining its social implications. In his times, even the most famous cities of northern Etruria, *Arretium* and *Faesulae*, did not seem to provide traces of urban structures earlier than the Archaic period, between 600 and 400 BC; traces datable to the so-called Orientalising period appeared few and far between, and were not as rich as those in the most renowned areas of ‘Etruria proper’, or of Etruria Padana. However, a wealth of archaeological case-studies has been piling up in the past century and includes finds from the territories around *Faesulae* and *Arretium*; some were known already when Pallottino was writing,¹⁴ but were ignored for some reason.

In a very influential article published in 1939, Pallottino came up with three ideas that were destined to be internalised by the scholarship, especially but not exclusively in Italy, and in any case never to be put into discussion: 1) Etruscan cultural innovation, including the drive towards ‘urbanisation’, was connected to the wealth of ‘Etruria proper’ a wealth that allowed trade with the Greeks, thus learning civilisation from them; 2) poorer areas, within and without Etruria, were therefore culturally behind and could not benefit from the social boons of contact with the Greeks, or of ‘urbanisation’; 3) the society of northern Etruria may have been segmented (meaning tribal), less nuanced than the one of the more cosmopolitan ‘Etruria proper’ that was developing ‘urbanisation’. He therefore coupled the notion of ‘Etruria proper’ to that of *innovazione*, and that of northern Etruria (but in fact also of all the other Italic peoples, coeval with the Etruscans) to *attardamento culturale* (cultural lag), since they could not afford, literally, to come into touch with the civilisers (the Greeks).¹⁵

Let us unpack this. Pallottino inherited the idea of the socio-political primacy of the ancient Greeks over the Italic peoples from his mentor Ranuccio Bianchi Bandinelli. He, however, formulated, probably for the first time, the idea connecting the administration of wealth with the possibility of acquiring socio-political *nuance*, or as he would call it ‘civilisation’, effectively associating both ‘civilisation’ and redistribution of wealth with increasing social complexity and thus with the possibility of enacting the urbanisation process.¹⁶ This connection

¹² See for instance Colonna 1985, pp. 443-444; 1990, p. 7; Maggiani 1990, pp. 23-25; Camporeale 2002 whose entire structure follows that of *Etruscologia*.

¹³ This term is still widely used, meaning the drive towards forming bigger, well-structured and organised settlements, but often retains the character of ‘acquisition of civilisation from a foreign agent’. I adopt here the more general, neutral, and especially inclusive term of ‘urbanism’ (see Potts, Smith 2022, pp. 601-608), with a meaning respectful of the different ways urban settlements may come about, along with the many often different features they may display from case to case.

¹⁴ Such as the Lake of Idols and the Fonte Veneziana.

¹⁵ Pallottino 1939, pp. 87-88, 112-114.

¹⁶ “[Le evidenze archeologiche] rivelano una vita di carattere superiore, raffinata, accentrata in grandi città, con diuturni contatti commerciali con le colonie greche d’occidente e con l’oriente in genere, con imponenti opere architettoniche, con varietà e nobiltà di tecniche artistiche, con percepibili stratificazioni sociali, con il patrimonio

between wealth, socio-political ‘innovation’, and urbanisation is far from straight-forward. To an extent, the investigation of this connection is actually beyond the scope of this research, but its problematisation is not, as we shall see shortly. Firstly, the archaeological data collected in the last century speaks of a social complexity within and without Archaic central Italy, that goes well beyond this specific ‘Pallottinian’ exemplification of ‘Etruria proper’. Secondly Pallottino’s concurrent idea of ‘*attardamento culturale*’ is most pernicious, practically connecting the lack of wealth with lack of ‘civilisation’, a blatantly fascist enunciation.

From the onset, the idea of ‘cultural lag’ was critical for the principles of dating of material culture, effectively proposing the adoption of two separate dates for the objects used for dating: an invention date and an acquisition date.¹⁷ This statement had the merit of problematising the capacity of finds to offer chronological data but was based on dating systems that have been revised many times over. The idea is therefore unnecessary, since field archaeologists do normally consider factors of uncertainty in finds dating: not all finds are good for providing dates, and those that are, usually do not provide levels of precision more accurate than 50 year spans. It is rather surprising to find therefore that the cultural lag has been used by some Italian field archaeologists to this day as a mean to post-date finds from sites of northern Etruria, on top of the usual dating uncertainty—ultimately for no real reason. For instance, the archaeological investigations in the Casentino during the 90s and the 2000s, published on official reports and articles,¹⁸ suffer of the systematic adoption of the concept of ‘*attardamento culturale*’ for dating the archaeological material from Casentino roughly to 50 years later (a totally random number) than the same kind of material as found in ‘Etruria proper’.¹⁹

Further discoveries and considerations were eventually interpreted in the theoretical light of this ‘cultural lag’, especially by Giovannangelo Camporeale, who being professor of Etruscology at the University of Florence, specialised in the archaeology of northern Etruria. He noted the fundamental differences of this area in the lasting adoption of certain styles in coroplastic productions (the so called ‘Late Archaic’ style instead than Classic style seen elsewhere), in the lack of extensive *necropoleis* dated to the iron Age, in the lack of tombs with rich grave goods indicating foreign influences, in the rather long-lasting preference for *tumulus* graves, and in the presence of graves even within settlements, a fact that he deemed as a sign of tribalism, lasting even well into the Archaic period.²⁰ In short, we may say, the settlements of northern Etruria did not seem to follow the synoecism as reconstructed for the rest of the region. It should be noted then that the phenomenon of the presence of graves within settlements along and next to the houses of the living, is not confined to northern Etruria, nor just connected to ‘poorer’ areas or settlements, as it has been often recorded even in rich settlements of other parts of central Italy.²¹ Truth be told, this phenomenon still needs to be properly investigated.

della scrittura. Un nuovo orientamento spirituale è attestato dalla generalizzazione quasi esclusiva del rito funebre del seppellimento”: Pallottino 1939, pp. 109-110.

¹⁷ Pallottino 1939, p. 88.

¹⁸ Fedeli 1991; 1996; 2003; 2007; 2013; Fedeli, Trenti 2010.

¹⁹ See for instance Fedeli 1996, p. 327; Fedeli 2013, p. 35.

²⁰ See Camporeale 2017, pp. 77-79; Giuntoli 2018, p. 44.

²¹ See Giuntoli 2018.

'Urbanisation' as a path seldom travelled by the multitude

The origins of urbanism in central Italy are usually referred to as a phenomenon of synoecism, whereby cities formed from the coalescing of many smaller settlements into bigger ones, within a period between the end of the bronze Age and the beginning of the Archaic period (12th to 7th centuries BC), depending on the area.²² Yet scholarly discourse on 'urbanisation' often includes the assessment of the adoption of newly-regularised structuration of settlements (the orthogonality of cities), that seems to have happened only within the Archaic period (600-400 BC).²³ Often these two scholarly discourses somewhat overlap, and one of the intentions behind Massimo Pallottino's 1939 article may have been to make sense of these two phenomena of city formation. He wanted to redirect an evident multitude and diversity of archaeological evidence in central Italy, into an orderly narrative of hierarchy, progress, and civilisation, noting poignantly in doing so some interesting differences in the archaeological data of central Italy, including aspects in the distribution of goods coming from outside Italy.

Therefore, while his conceptualisation of 'Etruria proper' may be more ideological than we dare assume, the differences in the archaeological evidence should be considered as a genuine feature, even if more complex than his formulation allows. In a nutshell, what Pallottino was observing in his article could be interpreted as the fact that there was no single process of city formation to which all tended, but many concurrent ones, with different and comparable declensions from place to place. Therefore, we may even think 'Etruria proper' to be rather similar to its neighbours from a social standpoint, save a level of wealth that may have made apparent certain social phenomena while masking certain underlying others, especially to the archaeologists studying it. While scholarship beyond Italy, especially the British and the American traditions, have long surpassed certain limiting '*Pallottinian*' conceptualisations regarding processes of city formation, it has, however, retained uncritically parts of his well woven narrative, including the divide between 'Etruria proper' and northern Etruria.

Pallottino's enunciation of 'Etruria proper' has been in fact internalised to the point that when discussing about urbanism in pre-Roman Italy, scholars refer just to the cities of 'Etruria proper', even when more critical stances on such processes are considered.²⁴ If anything, the earliest signs of the adoption of orthogonality in the general design of settlements may have appeared in the Adriatic side of Italy, not in 'Etruria proper', and were not limited to Etruria Padana.²⁵ More importantly still, while Pallottino's overtly fascist overtones on civilisation have been obviously dropped, his predilection for the mortuary archaeology of the elites remained a scholarly standard. We have ended up often reconstructing general trends in settlement strategies and social phenomena by assessing variations in the shape and typology of the graves of the elites, and in the distribution of certain grave-goods. The obsession with the concept of wealth in relation to the processes leading to city formation is hardly Pallottino's

²² Potts, Smith 2022, pp. 605-607.

²³ Camporeale 2017, pp. 71-72.

²⁴ See Potts, Smith 2022, pp. 605-607.

²⁵ I am referring especially to the Picene area. They certainly had cosmopolitan elites (see for instance Bonomi Ponzi 1999; Chiaramonte Treré *et al.* 2010; Baldoni, Finocchi 2019; Merola 2019 for some compelling examples from *necropoleis*—see Demma *et al.* 2018; Mei, Cariddi 2022 for examples from sanctuaries) and a very early and interesting set of phenomena of urbanism (see Biocco, Silvestrini 2008; Bonomi Ponzi 2014).

fault, however, and it is based on Vere Gordon Childe's view of the primacy of economic principles in the formation of the city—the former seen as the true motors of the latter.²⁶

It is usually assumed that the need for organising redistribution of wealth (in the form of surplus of foodstuff) was the driving force of synoecism. In his most famous, final iteration, Gordon Childe's 'urban revolution' originated from nothing but the need for increasing social control of surplus-making and redistribution, effectively considering the genesis of the city as a staple requirement in making this surplus possible, and therefore in providing better chances of survival to people.²⁷ From surplus making and redistribution stemmed the first monopolies, connected on one side to religion—viewed as the perfect means for making the imposition of one's rule palatable to the masses, while disguising it—and on the other to the birth of the elites, and thus of inequality. With inequalities, ethnic identities also came to the fore.²⁸ I cannot stress enough how reductivist this whole idea is, yet it is still widely accepted and seldom problematised.

The influence of Gordon Childe's economic view and of his 'Marxist approach' on the archaeology of pre-Roman Italy has been total, from Pallottino until today, and not just in Italy, even in spite of the more recent post-processual turn. The idea of ethnogenesis is still often tightly connected to the city formation processes as defined by Gordon Childe.²⁹ Despite the critique of interpretative attitudes that use material culture to define ethnicity, this ideological connection with urbanism has not yet been problematised, because doing so means questioning the surplus model. Yet what kind of evidence do we have that such a model applied in Archaic central Italy? This model bears a suspiciously close resemblance to the one that underpins the study of medieval cities,³⁰ similar to our cities and thus more familiar to us. Are we sure that Archaic cities were similar to ours? I argue that we simply do not have the evidence to prove that Archaic cities were 'surplus' cities as envisioned by Gordon Childe. Are other kinds of city possible? Human societies have an array of complexity that goes well beyond what we, as westerners, consider familiar, and if this complexity is true at the present, equally we should expect it when studying the past.

Last but not least, the 'Marxist' approach is hardly socialist, as it privileges a top-down attitude that revolves essentially on two main ontological choices regarding data selection and interpretation: the obsession with the elites, their graves and grave goods; and hypercriticism. Current processualist scholarship has often been critical of considering archaeology as a 'hard science', yet it had nothing against using 'hard sciences' for providing models for archaeological investigation and data analysis. In this way archaeology can sometimes become a *de facto* 'hard science' of sort, at least in attitude, as epitomised in the hypercritical stance over data collection and analysis—only data that can fuel mathematical systems is deemed valid for generating interpretative models (e.g. areas, volumes, quantities); mathematical interpretative models are better than other kinds of models. If anything, archaeology has much more in common with historical sciences such as geology, palaeontology, and natural history, and does not necessarily require 'hard-sciences' to develop a proper scientific method of

²⁶ Yoffee, Terrenato 2015, pp. 3-4.

²⁷ Gordon Childe 1950, pp. 6-9.

²⁸ Potts, Smith 2022, p. 608.

²⁹ See on this very topic Potts, Smith 2022, p. 607.

³⁰ In Horden, Purcell 2000 for instance the Archaic city becomes effectively the Medieval city.

investigation or to acquire veracity.³¹ The combination of hypercriticism and elite obsession has implied, practically, that there are archaeological data popularly considered intrinsically better suited than others for the study of the social processes of city formation, and coincidentally these data always concern elites.

Cultural relativism

The aim of this research is to shed new light on the Archaic society of central Italy, contributing to the understanding of the societal processes that lead to what we usually call ‘urbanisation’, or better, to the different, many, Italic, forms of urbanism. Therefore, this research will move away from the current staples of the mainstream scholarship, concerning ‘surplus’ economy, the elites, and hypercritic stances on data quality, since these are rather stiff starting points, may not necessarily conform to what data suggest, and are ultimately based on a research attitude that often seems to want to impose familiar concepts on antiquity, simply because these sound right and reasonable to our sensibilities. It will embrace instead cultural relativism as employed in anthropology,³² so as to be open to a multiplicity of discoveries and possibilities of interpretation, fitting the research approach to the research question and the data at hand, rather than looking for data to fit into a predetermined model. The approach of this research is therefore holistic and bottom-up, so as to interpret what data can tell us of the economic systems used in Archaic Italy, and then investigating the viable kinds of settlement strategies that could be enacted when sustained by such an economy.

This study will be based on the following assumptions: 1) Archaic society was a society of interactions; there must have been therefore a common cultural ground that facilitated such interactions, independently of ethnic differences. The investigation of this societal background is therefore independent of that of ethnic identity, which will not be considered within this research. 2) The same society that produced the first urban centres was at play even in the countryside, and it is therefore at the basis of other sorts of settlement strategies beyond that of the city. Studying the settlement of the countryside could then provide new insights into the development of the forms of urbanism recorded in Archaic central Italy. 3) Comparable cultural values extended from the Adriatic to the Tyrrhenian side of Italy. It could be particularly helpful to assess cases that are connected to both sides. As we shall see, such assumptions work surprisingly well.

The reasons behind the choice of the valleys of Casentino and Valtiberina as case-studies for this archaeological research follow from these assumptions. As said, these two valleys are sited at the Apennine ridge dividing this part of Italy between Adriatic and Tyrrhenian sides. They are exactly in the middle of the Apennines, in a place of mandatory passage when needing to traverse the peninsula from east to west, yet they are marginal to the cities of ‘Etruria proper’, at the antipodes of the Etruscan world as we are accustomed to considering it. They still wait for proper academic evaluation. Moreover, and quite importantly, they are of little to no interest to other scholars, and especially to Etruscologists, inside or outside Italy, and they do not pertain to any scholarly ‘fiefdom’; therefore, it is possible and even easy to access all the archaeological data, from the totality of the finds to that of the excavation reports. Finally, the

³¹ I find hypercriticism in archaeology often as a form of affected scientificity.

³² See on the topic Viglietti 2011, pp. 56-58.

amount of data is enough to be handled by a sole researcher and to provide the possibility of answering the research questions. These are as follows:

- 1) Were Casentino and Valtiberina hinterland to any Archaic city?
- 2) Who made the objects found in the sites of Casentino and Valtiberina? In other words, which items were imported, and which may have been locally produced?
- 3) What kind of economy sustained the settlements of these two valleys?
- 4) What kind of human impact could the local economy have had on the natural environment?
- 5) What can the archaeological data say about the relationship between settlers and land? What is the relationship, if any, between subsistence strategies and settlement strategies in these valleys?

As said, the purpose of this research is to investigate the local settlement strategies in their social and economic implications, to shed new light on the society that developed some of the forms of urbanism of this part of central Italy. In the first part of this thesis, great emphasis is therefore placed on the study of production and exchange, as these are economic activities best assessed by archaeologists. They are also social phenomena whose relevance as such is yet to be properly explored by the scholarship. The second part of the thesis focuses on the investigation of the relation between settlers and local environment, seen as an element that presented challenges and provided possibilities that settlers could exploit, both specific to this area. Through the assessment of paleo-environmental traces of agricultural activities combined with that of the local geo-morphological context, this thesis will investigate the variety of concerted efforts connected directly to the subsistence of settlements that could have been undertaken in Casentino and Valtiberina as part of Archaic central Italy. The final output of this combination of heterogeneous analyses is a contextualised study of some of the most important aspects of the local society and economy, forming a ‘system’ that was interconnected with its premises and with the rest of central Italy.

Each research question will be answered in a dedicated chapter, assessing different data sets, using different research methods, according to what fits each research question and associated dataset. Each chapter will therefore have its methodological introduction, within a general framework that privileges topographic method for data analysis and anthropological theory for their interpretation. In a nutshell, the topographic method allows the contextualisation of neighbouring, coeval archaeological sites, achieved through the assessment of synchronic and diachronic spatial patterns in archaeological evidence that may be singled out within the area where the sites are located, utilising the concept of *effective scale*, both spatial and temporal.³³ Its prime purpose is drafting an archaeological history of the settlement of the area at hand.³⁴ I employed this method in the most classical of ways in Chapter 2, to answer the first research question. There I assessed phasing and salient features of the totality of sites of Casentino and Valtiberina that presented phases dated from the 600 to the 400 BC, relating them to wider socio-economic phenomena as recorded by the current scholarship for this part of central Italy.

The topographic method is however at the basis of all the other chapters, where more nuanced patterns are presented and assessed making use of different strands of anthropological theory

³³ Defined as ‘*the scale at which pattern is recognised and meaning inferred, to chart temporal, spatial, and cognitive differences and to critique our own and others’ work*’, see Crumley 1995, p. 2.

³⁴ See Liverani 2020.

for their interpretation, according to data at hand. The second and third questions are answered by studying the totality of finds from each site. Coincidentally these finds are pottery sherds, I therefore used both the *chaîne opératoire* approach (in Chapter 3), perfect for highlighting the social implications of crafting,³⁵ and typological studies (in Chapter 4), to trace the parallel diffusion of objects and of their techniques of production, using theories of economic anthropology to interpret the resulting patterns. Finally, I answered the fourth and fifth sets of questions through a paleo-environmental reconstruction of the archaic trace of agricultural activities in central Italy based on pollen data (Chapter 5), furtherly contextualised in our locale through a pedological study of the valleys—discussed in Chapter 6—employing GIS to produce viewshed analyses when helpful. In the conclusive remarks of Chapter 7, I made use of recent theories about urbanism to contextualise the findings within the wider frame of central Italy, to provide new alleys of interpretation of the vast amount of data that we have for this time and place. I believe to have succeeded in achieving this purpose.

³⁵ See Roux 2019, pp. 1-14.

Chapter 2

Terrae nullius

The quality of Archaic data

As we have seen in the introduction, very few scholars, Italian or foreign, had the curiosity to engage with the archaeology of the Casentino and Valtiberina. One of them is Simon Stoddart, who conducted two surface-survey campaigns in Casentino in the early 1980s. His intent was to find brand-new compelling evidence of Archaic settlement that might shed light on the urbanising processes at play in northern Etruria, especially in view of the presence of two famous sanctuaries—the Lake of Idols and the temple of Pieve a Socana. He did not find anything. How is it that a verdant valley, with plenty of space apparently suitable for agriculture, two relevant sanctuaries, and equidistant from two centres such as *Faesulae* and *Arretium*, was so devoid of evidence of settlement? As we shall see in this chapter, in the last 40 years evidence of settlement has been found indeed, thanks to archaeological excavations run by the Sovrintendenza, local archaeological groups, and by universities; other investigations, including two more surface-survey campaigns were run by me in 2013 and in 2020. However, even after these new discoveries, the distribution of finds and sites among the two valleys is still substantially uneven, with wide areas that appear unoccupied.

Stoddart's main output after his studies on the area was an article discussing the importance of the 'negative evidence',³⁶ meaning that the apparent lack of archaeological finds implied a hiatus in settlement during certain periods, especially in relation to the increased activity that could be recorded for the same periods in other areas not far away from Casentino—Mugello, the valley of Gonfienti, but also Chiusi (*Clusium*), and the Chianti, just to give some examples. Behind Stoddart's curiosity on the settlement of the countryside, we may find a few meaningful research questions, that are, in fact, fundamental to the present work. What relevance may extra-urban areas have had in the development of urbanism in pre-Roman Italy? Did ancient cities have a hinterland? What was their relation to the countryside? Finally, is the distribution of sites connected in any meaningful way to specific social behaviours and interaction among settlements, and to wider historic events that may have impacted on the local economy? These questions are indirectly related to the problem of interpreting archaeological evidence—what we actually find in archaeological excavations and investigations, versus what we do not find.

The evidence that this work will consider comes from archaeological excavation and surface-survey, which pose interpretative issues related mainly to their inevitable incompleteness, both temporal and spatial, especially in the case of surface scatters. These issues are mitigated by the fact that all evidence comes from a discrete geographical context (the two valleys) and thus pertains to settlements that were coeval and coexisting, and possibly relating to each other. The evidence from surface scatters is taken face-value, with its date range and probable functionality deduced from comparisons with other dated contexts from elsewhere, preferably

³⁶ Stoddart 1982.

from the valleys, or from other well recorded sites in their vicinities. The date ranges are not precise to the quarter of century—quite the opposite. The functional assessment of the objects is approximate, since a more correct functional assessment can normally be made as part of the contextualisation only possible after archaeological excavation, an action that could not be made in the case of artefacts from surface-surveys. Yet again, the approximation is mitigated by relating similar classes of objects from neighbouring sites and finds spots.

Moreover, as this chapter will show, we may have indeed some form of ‘negative evidence’, hiatuses in the settlement of this part of the Apennines, yet these are of two different kinds, temporal and spatial. Are these hiatuses somewhat representative of gaps in settlement, or rather intrinsic to the problems of archaeological recording? What can all archaeological evidence, and the occasional lack thereof, tell us about the settlement of Casentino and Valtiberina? As Stoddart pointed out in a paper from 2017 “*in the urban landscape one generation tends to replace another, remodelling the preceding structures in a way that makes interpretation difficult except for the final layer of abandonment*”.³⁷ This statement has been proven true for both Casentino and Valtiberina, since the evidence of Archaic settlement has been found on some occasions under the medieval and post-medieval fabric of towns such as Poppi, Pieve a Socana, and Sansepolcro.

Eventually we may not be able to claim that the concept of ‘hinterland’, or even of *khora* as we understand it, had the same defined meaning in pre-Roman antiquity as we give it today. There are potentially uninhabited areas, and in this chapter we shall investigate whether these should be considered *terrae nullius*, sort of ‘nowheres’ or buffer zones between different urban polities.³⁸ Many of these areas that still appear uninhabited may actually have been places of passage for exchange routes. Still Casentino and Valtiberina are somewhat *terra incognita* for scholarly debate: the Archaic and Late Archaic settlement of this area was never previously object of a focused study. Here I will introduce the sites that are the case-studies for the different assessments of this thesis—all the archaeological sites with phases datable between 600 and 400 BC that have been recorded to date. Rather than confining the sites in a gazetteer at the appendix of this work, it may be relevant to present them properly, so as to do justice to an area that has been overlooked, one of the many in the panorama of coeval rural central Italy.³⁹

Casentino and Valtiberina

Two of the most famous rivers of Etruria, the Arno and Tiber, spring in the Casentino and Valtiberina respectively. In the Pleistocene, these two valleys were lakes, along with Mugello, Valdarno, the Conca Eugubina, the Val Gualdese, and the Metelica valley, parallel to one another as the wrinkles of a tectonic rift. Their geological origin may be at the basis of some of their salient environmental characteristics, such as the fluctuations in local climatic conditions, presence or absence of natural resources, and variations in soil quality. Their lacustrine origin caused for instance a rather clayish composition of the soils of their lower hills and floodplains. This is a tight succession of enclosed valleys, one next to the other, separated

³⁷ Stoddart 2017, p. 189.

³⁸ Not to be mistaken for the ‘*terra nullius*’ model, see De Angelis 2010, pp. 28-30; McInerney, Sluiter 2016, p. 4.

³⁹ Stoddart 2017.

by low mountains that are nevertheless high enough to influence, and in fact diversify, the climate and rainfall of each one.

Casentino and Valtiberina both have colder winters than the surrounding valleys and are generally wetter.⁴⁰ However, they also differ rather drastically from each other. Casentino is narrower, more mountainous, higher in altitude even on the plain, and possibly the colder of the two. The alluvial plain of the Casentino has been systematically used for agriculture only in the past 50 years, since the levels of clay in the soil made it rather difficult to farm, before the introduction of modern machinery, and the soil itself is not very fertile. Casentino has been a poor area of Tuscany in certain moments of its history, experiencing better economic circumstances during the Middle Ages through the exploitation of the forests and pastoralism. The northern portion of the Valtiberina is characterised by hills that slope down towards the valley, which opens into a verdant ‘immense natural amphitheatre’, in the words of Pliny the Younger, who owned his favourite villa in this area. The hills of the Valtiberina also have clayish soil, rather difficult to plough and subject to localised flooding, but on the whole are more fertile than those of the Casentino.

The words of Pliny writing about his villa to his friend Domitius Apollinaris, as idealised as they are in depicting quite an idyllic picture, are rather apt at describing both the beauty of the valley, and the difficult soil:

“The contour of the district is most beautiful. Picture to yourself an immense amphitheatre, such as only Nature can create, with a wide-spreading plain ringed with hills, and the summits of the hills themselves covered with tall and ancient forests...”

...Then you reach the meadows and the fields - fields which only the most powerful oxen and the stoutest ploughs can turn. The soil is so tough and composed of such thick clods that when it is first broken up it has to be furrowed nine times before it is subdued. The meadows are jewelled with flowers, and produce trefoil and other herbs, always tender and soft, and looking as though they were always fresh. For all parts are well nourished by never-failing streams, and even where there is most water there are no swamps, for the slope of the land drains off into the Tiber all the moisture that it receives and cannot itself absorb.

*The Tiber runs through the middle of the plain; it is navigable for ships, and all the grain is carried downstream to the city, at least in winter and spring.”*⁴¹

Valtiberina presents very fertile spots (possibly the meadows described by Pliny) especially around the silty confluences of the local rivers with the Tiber. Archaeological investigation provided consistent traces of swine herding since the beginning of the 6th century BC, a kind of farming that couples very well with the mixed oakwood forest which covers the sandier spots of the hills. Swine herding is still a fundamental local economic component, as it is in the Casentino. These topics will be further discussed in Chapters 5 and 6. Suffice to say here that some of the features of the soil and of the land itself, in connection with the difficulty of draining the rainwater, may have impacted on settlement positioning.

⁴⁰ As it could be ascertained on the dedicated website of the official weather forecast of the *Regione Toscana*, (see <https://www.cfr.toscana.it/index.php?IDS=42&IDSS=277>).

⁴¹ Pliny the Younger (Gaius Plinius Caecilius Secundus), *Epistulae*, Book 5, epistle 6 (To Domitius Apollinaris), 7-13, translated by J.B. Firth.

The archaeological map

As can be seen from the archaeological map of sites, finds scatters, and artefacts dated between 600 and 400 B.C. (*plate 1*), we can single out five different settlement areas distributed between the two valleys. From north-west to south-east, we have: 1) the area of the Apennine ridge between Secchieta and Falterona; 2) the Poppi plain; 3) the transversal area centred on Pieve a Socana, formed by the valleys of Salutio, Raggiolo and Chitignano, and by the Apennine ridge of the Monti Rognosi and the Fumaiolo—an area that basically forms a junction between the Valdarno, the Arretine plain, the Casentino, the Valtiberina, the Valmarecchia, and the Valsavio; 4) the valley of the river Singerna, that from Compito flows down towards the Tiber; 5) the Afra valley with Molini (Sansepolcro), and Trebbio (*plate 2*), to which we may add the area of Catiglianello and of the valleys of the rivers Sovara and Cerfone, that connect Valtiberina with the Arretine plain.⁴² It is quite relevant to say that most find-spots—and some of the most remarkable settlements (such as the temple of Socana and the mountain top fort of Castelsavino)—have been recorded along a route that still exists as an assemblage of local roads, not always commonly used, and that conjoins so many areas, and culminates in Compito—derived from the Latin *compitum*, “crossroad”—where it is joined by the route following the Singerna river, leading down to Valtiberina.

The particular distribution of sites, as seen on *plates 1* and *2*, could be partially due to the extent of the archaeological investigation to date, but it is more likely that it is the genuine expression of local settlement patterns. The bulk of data from surface surveys was collected, for both valleys, by local archaeological groups, under the supervision of the Sovrintendenza that imparted them the methodology to employ, which is therefore homogeneous. These investigations took place especially in the decade between the 1980s and the 1990s. The data collection has been however an ongoing process up to the present and, even though its quality may differ from time to time and between valleys, it has the benefit of gathering data from different sources, from direct survey and emergency survey undertaken on construction sites, to word of mouth (which is quite fundamental on a local basis) and archival research. All this survey work lead to a series of publications.⁴³ Compared to the situation when Stoddart wrote his article in the early 1980s, the record should be at this point considered trustworthy, especially after the intensive survey campaigns promoted by the Sovrintendenza in the late 80s and early 90s and considering that the continuous development of the 2000s in fact promoted a steady flow of data, still ongoing.⁴⁴ It should be noted that survey data for all archaeological periods indeed covers all the territory, as apparent if we take a look at maps displaying finds of later date,⁴⁵ and that the assessment presented in this thesis relies mainly on the Archaic and

⁴² It should be noted that the Valtiberina south of Trebbio (Valtiberina *umbra*) has not been included in this study, that only considered the Valtiberina *toscana*. The southern narrow portion of the Casentino Valley from Socana to Arezzo was also not assessed.

⁴³ For Valtiberina see Laurenzi, Moroni, Scarpellini Testi 1992. For Casentino, see Stoddart 1981; Albertoni, Ducci 1985; Albertoni, Ducci, Paggetti 1989; Albertoni, Buratti, Ducci 1999; Dominici 2009; 2014. The Arno valley between Poppi and Bibbiena becomes more generally settled from the 2nd century BC onwards (see Dominici 2014). As a part of the assessment undertaken prior and during my direct investigation of Casentino I also undertook archival research at the Archivio Gamurrini at the Archaeological Museum of Arezzo, and at the Soprintendenza archive. Gian Francesco Gamurrini was an Arretine archaeologist of the 19th century, one of the fathers of Italian archaeology. He undertook often direct surveys while collecting news of finds, often from word of mouth, in both Casentino and Valtiberina, writing them on small notes now held in his archive.

⁴⁴ See for instance Sfameni, Busato 2016.

⁴⁵ See Dominici 2014.

Late Archaic phases of sites and finds-scatters that also contain evidence of a diachronic succession that spans more recent periods.

The Secchieta/Falterona ridge

This area includes seven settlements and a sanctuary, the Lake of Idols. Their archaeological investigation is rather uneven and certainly not ideal. From the current record it seems feasible to divide the settlements in two groups that are rather different from one another, in terms of positioning, building technique, general design, and phasing. The settlements seem to relate to at least three possible local routes. Poggio Bombari, Santi Pagani, and Poggio Alto are all along the mountain ridge that joins Pratomagno to Falterona, passing through the area of the post-Medieval mountain-pass of Consuma. Poggio Alto, Pratariccia, and Serelli are possibly along the route that leads to the Caspiano pass, the natural breach of the ridge that connects Casentino and Valdisieve, in use until the mountain passes of Croce ai Mori and Consuma were opened. Finally, Ommorto and Poggio Alto are both on the ridge that descends towards the plain of Poppi.

The settlements on the ridge

The first group consists of four settlements (Poggio Bombari, Poggio Santi Pagani, Poggio Alto, and Ommorto) located on top of the mountain ridge that joins Pratomagno with Secchieta, leading to the Consuma pass, above 1000 m OD. They were investigated mostly by the archaeological group of Casentino, with the occasional direct supervision of the Sovrintendenza inspector Luca Fedeli. Most of the investigations were limited in time and space, with the sole exception of Poggio Bombari, that was discovered and partially destroyed during the groundworks for a gas pipe in 1986,⁴⁶ and then fully excavated by Soprintendenza archaeologists under the supervision of Fedeli when a second pipeline was put in place in 1996.⁴⁷ After the discovery made at Poggio Bombari, the archaeological group uncovered and investigated the other settlements of the ridge with small sondages.⁴⁸

Poggio Bombari consisted of a single oval building, found at the top of the mountain ridge at 1044 m OD, overlooking a rather large prairie of the Pratomagno (more about this in Chapter 6). The structure consisted of two concentric walls with the same aligned opening (*plate 4, fig. 1*), with a maximum external diameter of 20 m, and an internal one of about 17 m. A thick collapse feature, with many fragments of burned mudbrick, covered a layer rich in charcoal—a fire may have destroyed the building. Under these features the excavators found two occupation layers, both dated to the 6th century BC,⁴⁹ one on top of the other, and the stone

⁴⁶ Albertoni, Ducci, Fedeli 1996.

⁴⁷ Fedeli 2013, p. 35.

⁴⁸ All the records of these sites, even those made and published by the archaeologists of the Soprintendenza, lack a matrix sequence, and are quite shabby. The total absence of the mention, let alone recording, of any construction cut with their backfill should be considered quite suspicious (albeit in Albertoni *et al.* 2000 on Ommorto, there is a description that may be interpreted as such), possibly implying systematic mistakes in the excavation of the archaeological features, and most of all, in their sequencing. All the reconstructions proposed here are deduced from the published material, when available, and from the original excavation reports and records.

⁴⁹ Parenti 1996.

footings.⁵⁰ The structure should be reconstructed as an oval hut, possibly with pisé walls, or more likely wattle and daub,⁵¹ a thatched roof, and a stone footing (it is unclear whether postholes were recorded in association with it), 70 cm thick, surrounded by an outer wall, with a smaller footing. These footings were put in place with care and made of two lines of square boulders of local sandstone, roughly dressed, put in place as a single course, with a core of smaller fragments of *alberese* (a local solid mudstone rich in lime) and *pietra serena* sandstone. The finds from the occupation layers are exclusively pottery sherds, mostly pertaining to kitchen ware (*plate 4, figs 2-3*), with the exception of three sherds from banqueting vessels in bucchero, namely a *kantharos*, a plate, and a small wine amphora.⁵²

Before excavation, some of the sites on the ridge between Secchieta and Consuma, displayed a number (from 1 to 9) of rounded ‘*macie*’ (plural of ‘*macia*’, a dialectic word that means ‘pile of rocks’), with dimensions between 6 and 20 m in diameter. If investigated, each *macia* usually revealed what was left of a ruined building, similar to the one of Bombari, and reconstructed thus. Santi Pagani (1037 m OD), like Bombari, only had one structure, another double-walled hut of 14 m of diameter (*plates 5-6*), probably with wattle and daub walls, whose remains were mixed with charcoal, interpreted again as residue of a destructive fire.⁵³ The occupation layer provided very few finds, exclusively fragments of kitchen ware. A chunk of burned clay may have belonged to the dome of a small single-use furnace. The technique of construction of the footing on the other hand differed substantially from that of Bombari. The footings, 50 cm thick, were made of a single line of slabs of dressed *alberese* and sandstone put in place in multiple uneven courses (*plate 5, fig. 1*), up to 1 metre in height—thus possibly over-excavated by the volunteers of the archaeological group—they may have been nonetheless partially above the ground-level of the hut.

The *macie* at Ommorto were in two separated groups of 1 and 8. The sondages were made on the larger isolated one (20 m outer diameter, 14 m inner), uncovering yet another double-walled hut. From the records, it seems that what was left of wattle and daub walls was found on top of an occupation (or maybe abandonment?) layer. The technique of construction of the footings seems comparable with that of Bombari, if more uneven, still with a single course of two lines of sandstone boulders and *alberese* slabs, compacting a loose core (*plate 7, fig. 1*); moreover, postholes were recorded in proximity to the wall footing. The finds from the occupation layer pertain almost exclusively to kitchen ware, of an overall more careful workmanship than those found in the other mountain-top sites, with few sherds of finer pots, including the beak of a “Ligurian” pitcher dated to 6th century BC, a small amphora similar to those common in the area of Faenza,⁵⁴ and two fragments of a thick bucchero plate and a cup (from an abandonment layer). Remarkably, a circular firepit was also recorded, although it is unclear whether inside or outside the building.⁵⁵

The group of 8 *macie* of Ommorto was located downhill from the large hut. These *macie* were between 10 and 6 m in diameter. A small trench was dug into one of them, revealing only what has been interpreted as a linear footing about 2 meters long. A tiny fragment of a bronze fibula

⁵⁰ Fedeli 1996, p. 328.

⁵¹ See on the topic Miller 2017, pp. 156-158.

⁵² Fedeli 2013, pp. 37-38.

⁵³ Albertoni, Ducci, Fedeli 1997.

⁵⁴ Mattioli 2013, p. 264 n. I, 1, a.

⁵⁵ Albertoni *et al.* 2000.

was collected, however, from a shallow layer adjacent to the footing. It is possible that all the smaller *macie* of Ommorto may be what is left of robber activities, probably made in more recent times to quarry the ancient structures for building materials. Ommorto is located at 1000 m OD, right next to the modern road leading to the Consuma pass. The stones from this site may have been used to build the nearby Podere Omomorto. The alleged height of the wall footings (reduced to a single course) of the large hut may also be a result of this spoliation. The fragment of bronze brooch is comparable with those found in Tizzano in Valtiberina,⁵⁶ and could be dated to the end of the 7th century BC.

The site of Poggio Alto is located almost directly on the Caspiano pass, roughly 2.30 km north of the town of Consuma, as the crow flies, on the same mountain ridge, at about 1052 m OD. It was found through surface survey. It is a very interesting site, despite the fact that the exegesis of the excavation records is particularly complex in this case. It appears that instead of the usual oval huts with double-walls, a series of firepits (possibly 5) was found and partially excavated. One of these was adjacent to (or maybe stratigraphically below) a linear wall, while another wall was recorded in another trench. All firepits seem to have been covered by a collapse feature, and all appear to have been used in the same period. The interpretation of these features as firepits may be dubious since a layer rich in charcoal has been interpreted as what was left of destruction by fire. However, in the case of Ommorto, a very considerable amount of pottery sherds was collected from the layers in associations with the firepits, both above and below, exclusively coarse and kitchen ware, dated to the 6th century BC. This site may have been a production area, either itself part of a settlement, or servicing more than a single neighbouring settlement, since it is at the conjunction of three relevant routes.

Given their positioning along the same Apennine ridge, we may think of these four sites as an interconnected community of settlements. Quite remarkably, the viewsheds of Poggio Bombari and of Santi Pagani are limited to their immediate environs (see for instance *plate 7.2*). Their positioning should be considered functional, possibly connected to the use of the perennial meadows of the Pratomagno (see further Chapter 6), while Poggio Alto and Ommorto may have been places of meeting and exchange, and even production, making the most of their vicinity to local routes and of their visibility. Traces that could be interpreted of workstations for pottery production were found also at Santi Pagani.⁵⁷ The sites are generally interpreted as seasonal dwellings connected to herding activities, with small herds housed in the enclosure around each hut.⁵⁸ Given the proximity to grassland the second interpretation seems plausible.

With some caution we could consider the study made by Kent Flannery on huts and villages of antiquity,⁵⁹ which offers an estimate of the number of people who might usually dwell in a single hut. He states that most circular huts tend to have the same diameter (about 3 m), and housed generally a single person, rarely two, or a person and some animals.⁶⁰ The huts of Casentino are therefore possibly communal, housing a group of individuals, either a working gang or a family. The presence of small quantities of fine ware implements can be considered a clue to the importance of banqueting for the dwellers. The connection of the inhabitants to

⁵⁶ Alberti 1998, p. 91, n.1.

⁵⁷ Fedeli 1996, p. 337; Albertoni, Ducci, Fedeli 1997; 2001.

⁵⁸ Fedeli 2013, p. 35.

⁵⁹ Flannery 1972.

⁶⁰ Flannery 1972, pp. 10-13. He also connects the use of circular huts to nomadic and semi-nomadic peoples. However, he himself retracted some of these conclusions in a subsequent paper, see Flannery 2002.

pastoralism and farming activities is, however, very likely. As argued by Cristiano Viglietti, shepherds in the Archaic period may have been considered as people quite literally living at the margins of society.⁶¹ These settlements may have been therefore at the outskirts of a bigger centre (Poppi?), and possibly depending on it, and or servicing it. This positioning is therefore not an ethnic marker,⁶² as much as a situational one, and we shall see more settlements that present the same features (small groups of houses, proximity to pathways, crossroads, or fords, proximity to areas that could be exploited in some way) but in different parts of the land.

The settlements on the slopes

The site of Pratariccia is at about 820 m OD on the slopes of Monte Cucco, on a route that from Molin di Bucchio, a ford on the upper reaches of the river Arno, leads to the Caspriano pass. It was found in 2009 after forestry works exposed archaeological features. The path of the Caspriano pass descends then to Valdisieve. In modern times this path has been used until the opening of the nearby pass of Croce ai Mori. During medieval times two bridges were built, big enough to let Florentine militia pass through during the years of the civil war of the 13th century. The bridges are now ruined, but still visible within the forest. This road, now lost to the woods, was for centuries the only one directly connecting Casentino and Valdisieve.

The archaeological investigation of Pratariccia was limited to a sondage of about 14 m² in size and unearthed an abandonment layer on top of a series of occupation layers pertaining to a house.⁶³ While no walls were found on that specific spot, the layers were rich in pottery finds. The earliest occupation layer was interpreted as a floor made of beaten earth, on top of which a floor of stone slabs was laid in a subsequent phase.⁶⁴ The pottery assemblage from the earthen floor consisted of sherds of fine and coarse ware. Fragments of thick bucchero, and notably a few chunks of coarse ware with “*fasce*” decoration (parallel grooves that roughly mimic a rope impression, see *plate 8.1*) characteristic of amphorae common to northern Tuscany and to the whole Arno basin down to Pisa, allowed the dating of this floor to the 6th century BC.⁶⁵ The pot-sherds found in the abandonment layer and within the preparation layer of the slab floor of the second phase, can be dated between the second half of the 4th century and the 3rd century BC.⁶⁶ Pratariccia thus manifests a hiatus in occupation during the 5th century BC.

The site of Serelli (*plate 8.2*; *plate 9*) is right in front of Pratariccia on the mountain slopes opposite the ford on the Arno at Molin di Bucchio. This site could be interpreted as a new settlement of the 4th century BC. The old medieval farm of Serelli, also known as Casa di Gaino, a few hundred meters west of Vallucciole, was partially destroyed by a landslide in 1992. During the subsequent groundworks for making the area safe, the ruins of an ancient house came to light on the hilltop at about 860 m OD. The excavations, undertaken between 2003 and 2008 unearthed portions of a big building, or possibly a group of buildings, with

⁶¹ Viglietti 2011, pp. 81-88.

⁶² As argued in Fedeli 2013 for instance—but also in the past by me, see Dominici 2022.

⁶³ Fedeli, Trenti 2009.

⁶⁴ Fedeli, Trenti 2009, p. 291.

⁶⁵ Fedeli, Trenti 2009, p. 292.

⁶⁶ Trenti 2009, p. 291.

continuity from the 4th century BC to the 7th AD. Apparently the site was abandoned only after an ancient landslide, and possibly resettled on the site of Casa di Gaino.⁶⁷

Serelli's finds assemblage of the 4th and 3rd centuries BC is rich in fine banqueting ware and in kitchen ware (*plate 9.2*), but even the kitchen ware appears to be of a finer quality than in many other coeval sites. There are many functional objects in coarse ware that may have been used in farming production. Among these, a ceramic colander and one of the most interesting pieces, the so-called "churn" (see *plate 14.2*), whose real functionality is still unknown (something for producing a substance via the use of fire, as the thick black residue at their bottoms suggests), a piece that is typical of Casentino and has never been found elsewhere. Of particular interest are also the fragments of mill stones, since they are of volcanic tufa, a material that is definitely not local, and may very well have been traded along the same routes as the volcanic tufa millstones found at Monte Bibele, imported there from the area of Orvieto.⁶⁸ Loom weights and spindles were also found, and many bronze objects.⁶⁹ The building technique is that of a house with stone footings, made as two lines of small but regular stone courses and a rubble core, and pisé or mudbrick walls, with smaller partitions. Apparently it had a tiled roof.⁷⁰ Serelli may have been indeed a place of reasonable wealth, where many productive activities were undertaken, from farming production to weaving.

The same building technique is also found employed on the third settlement of this area, Ama (*plate 10*), that has a comparable finds assemblage, and a deeper archaeological sequence, with phases dated to the 9th century BC or earlier, making it the most ancient settlement found in Casentino. Ama is on the southern slopes of the Falterona, at 620 m OD, between the towns of Stia and Pratovecchio, not too far from the medieval church of San Biagio. The place is also known as Masseto, which has the same meaning as *macía*, and indicates the fact that the site was robbed for building materials possibly for the construction of the church, at least from the Renaissance period, when one of its structures was used as a lime kiln. The stone foundations of four different rectangular buildings were in any case uncovered and recorded (and named structures A, B, C and D, see *plates 10-13*).

The archaeological excavation was carried out by Soprintendenza archaeologists in numerous yet short and fast spells between 1985 and 2001, resulting sometimes in an unclear account of a complex sequence, not helped by the many modern robber cuts and interpolations that impacted especially structures C and D.⁷¹ A series of occupation layers was excavated within and between structures. The pottery assemblage from these layers includes many fragments of ceramics that could be dated to the 6th century BC, such as bowls in thick bucchero, and *ollae* and *pithoi* in coarse ceramic, but also many sherds of fine black gloss banqueting ware of the Volterrana types, datable to the 3rd century BC, and many fragments of ceramic tiles. While often these materials are mixed within the same layers, some precise phasing could be done on buildings A and B, whose construction cuts were dated to the Archaic period, with the latest internal occupation layers dating to the 3rd century BC.⁷² The finds assemblage of Ama is rich in kitchen and coarse functional ware from both phases of settlement, including big chunks of

⁶⁷ Incammisa 2013, pp. 70-71.

⁶⁸ Renzulli *et al.* 2002, pp. 181-182.

⁶⁹ Incammisa 2013, pp. 80-84.

⁷⁰ Incammisa 2013, p. 71.

⁷¹ Giuntoli 2013, p. 59-60.

⁷² Giuntoli 2013, p. 61.

the “churn”; fine ware is scarcer than at Serelli, but is present through all phases. Of particular interest are the loom weights and spindles, and a piece of bronze *aes rude* coming from the Archaic features.⁷³

The archaeological sequence of structure A was apparently untouched by modern robbing activities and displayed the collapse of a tiled roof still in place, over an abandonment layer dated to the 2nd century BC, and earlier occupation layers of the 3rd. Under the Archaic foundations of structure A, a succession of earthen layers with no finds overlay the traces of fire and collapse of an earlier structure, possibly with a thatched roof, whose materials were left *in situ* (and covered by earthen layers). The finds from the occupation layers of this structure were dated very generally to the Iron Age (possibly 10th - 9th century BC).⁷⁴ Next to structure C, the corner of another structure, almost totally robbed out, displayed still what was left of a stone slab floor, similar to that of Pratariccia, and a circular pedestal of uncertain function (base for a wooden pylon for supporting a mezzanine?). The stone footings of structures A and B (*plate 11.2; plate 12.1*) have a similar construction technique, made up of a single line of big dressed *alberese* boulders, put in place for two or three courses. Structure C and possibly later additions or restorations to structure B, display smaller if more regular stone footing with the same technique as the footings found at Serelli. We may imagine for these buildings a pisé wall and a tiled roof at least for the phase of the 3rd century BC.

Structure D (*plate 12.2; plate 13*) is an *aedicula* tomb that was reused as lime kiln in the Renaissance. Its structure was still intact in 1985, but its roof was broken and removed by robbers sparking the need to excavate the site.⁷⁵ The tomb has a North-South axis; it is partially dug in the bedrock and has a small descending access corridor (*dromos*) leading into a single small chamber with a low ledge at the base of the walls, interpreted as deposition platform. The walls were not investigated, and they appear to be built in uneven courses (12 in total) of dressed *alberese* boulders of different dimensions. It was covered with a double pitched roof made of *alberese* slabs, now lost. It is not unusual to find graves next to small rural settlements on Etruscan sites in other parts of Northern and central Etruria (Accesa is the most exemplary case),⁷⁶ yet the meaning and diffusion of this custom still need further investigation. It is quite unusual however to find what appears to be an *aedicula* tomb in Casentino, since this typology dated to the 6th and 5th centuries BC is typical of Populonia,⁷⁷ although its full diffusion is not well studied yet (moreover structure D seems to be a mixture between an *aedicula* and a chamber tomb).

We may date structure D to the Archaic period; thus, we see how at Ama we may have at least two hiatuses in the settlement of the site, one between the Iron Age and the Archaic period and the other between the end of the 6th and the 3rd centuries BC. On the other hand, the archaeological hiatus between the 6th and the 4th centuries BC is a feature common to many sites in northern Tuscany. It has been interpreted as the sign of an economic crisis affecting

⁷³ Giuntoli 2013, pp. 65-66.

⁷⁴ Giuntoli 2013, p. 58.

⁷⁵ This information was given to me by a local source who desires to remain anonymous. The imprint of the pitch of the roof remained on the roots of the chestnut tree that grew on it and is still in place.

⁷⁶ Camporeale, Giuntoli 2000; Giuntoli 2018, pp. 47-54. I have participated in the excavation of an Archaic settlement in Chianti, at Poggio la Croce, in 2007, that displayed a round Archaic tumulus and an Orientalising chamber grave surrounded by houses where people lived and worked. This site has not yet been published.

⁷⁷ Stoddart 2009, p. 5.

certain urban polities of this part of central Italy in the late 5th century BC,⁷⁸ followed by an overall wealthier period as recorded in the territories of Pisa, *Faesulae*, and Volterra in the 4th and 3rd centuries BC, which is interestingly the period of the wars between some Etruscan cities and Rome.⁷⁹ It is unclear what kind of economic crisis could practically affect settlement as to cause apparent hiatuses in the occupation of sites. The 4th and 3rd centuries BC, for instance, were not exactly peaceful in central Italy, yet we can record a conspicuous increase in small settlements from the 4th century BC onwards in many parts of Tuscany,⁸⁰ and in both Casentino and Valtiberina, as we shall see.

Considering such hiatus in archaeological dating as a trace of economic crisis may in fact imply the temporary relocation of people elsewhere, and subsequent resettlement on the same spots. This is a possibility, and it would indicate that many places of settlement were re-chosen, either because of their specific topographic importance, and/or because their environmental and even structural conditions remained desirable. This circumstance seems apparent at Ama (structure A) and especially at Pratariccia, for which we also have a possible abandonment layer between the phases of settlement. Pre-Roman Pratariccia is right next to a medieval house, and many other sites, such as Poppi, have a continuity until the present. On the other hand, this hiatus in finds dated to certain periods may not always imply a relocation, but rather a break in the supply to specific sites of those finds we use as dating markers (namely fine banqueting ware and storage amphorae). A more practical problem in finds dating may also be at the basis of such issue. Perhaps it is no coincidence that the same area of central Italy for which we have this alleged crisis is also the one for which the ‘*attardamento culturale*’ is often brought up—both boil down to problems of finds dating.

The Lake of Idols

The river Arno has its source at the top of Monte Falterona, not from a single spring but from many. Next to what was identified in 1950 as one source of the river, a small lake sited at 1380 m OD (*plate 15.2*) has held a treasure trove of votive offerings of Etruscan and Roman times for over 2000 years. A small statue of *Hercle* was found by a young shepherdess in 1838 (*plate 16*), while watering her flock of goats at the lake. Once the news scatter in the local parish of Stia, excavations were promptly prepared at the lake by its landlords, under the supervision of the director of the Uffizi Museum and of local scholars, uncovering a deposit of 650 bronze statuettes, and thousands of metal objects (from bronze *aes rude*, to coins, to iron weapons). A small amount of miniaturistic pottery was also found but discarded. Eventually these first excavations collected over 4000 finds: the most bountiful votive deposit of this kind ever found in Italy. Galvanised by this sensational discovery, the diggers drained the pond only to uncover a pile of decayed wood – spruce and beech trees – naturally deposited on the bottom. Subsequently they undertook an extensive survey of the surrounding forest, in search of the remains of a shrine or temple, reporting no success (*plate 15.1*).⁸¹

The bronze statuettes of the votive deposit depicted mainly youth, both male and female (*plates 16-17; 19-20*), but also warriors and deities, and a few animals and anatomical parts (heads,

⁷⁸ On this general topic see Maggiani 1990.

⁷⁹ Cappuccini 2012, pp. 325-326.

⁸⁰ See for instance Acconcia et al. 2001, pp. 292-297.

⁸¹ Fortuna, Giovannoni 1989, pp. 11-15.

arms, legs, hands, eyes, and breasts). The pieces of iron weapons were over 2000 and consisted only of arrow, spear, and javelin heads (*plate 18.2*), found along with several pieces of *aes rude*, and Etruscan and Roman coins of a later date (apparently around 1000 pieces). The finds were dated by Migliarini and Micali between the 6th and the 2nd century BC.⁸² All the statuettes were identified as Etruscan productions, attributed to the workshops of Chiusi, Vulci, and especially Orvieto, save a small amount identified as Umbrian productions. Their quality varied. The most beautiful were acquired by renowned institutions such as the British Museum and the Louvre, the National Library of Paris, and the Hermitage Museum of St. Petersburg, where they are now displayed. The rest of them were dispersed in private collections with no notes of their origin (one ended up at the Walters Art Gallery of Baltimore).⁸³

New and final excavations were undertaken at the lake between 2003 and 2006 by the Soprintendenza, along with geological and paleo-environmental analyses.⁸⁴ The geological origins of the lake were thus discovered, from a landslide roughly 15000 years BP, that partially buried many tree trunks, and exposed a waterproof clay surface where the waters from a small intermittent underground spring could collect.⁸⁵ The archaeological investigation ascertained the thoroughness of the 19th century trenching, that left no archaeological features in place, except in the forest, where two new idols were found *in situ*, ritually buried.⁸⁶ The spoil from the 19th century trenching was sifted through and many more finds were recovered, usually those left behind because deemed ugly, or those that were not seen. In this way thousands of pieces of *aes rude* and especially fragments of iron arrowheads and javelins were recovered, along with hundreds of bronze statuettes—a whole collection of the so called Umbrian votives, and many more anatomical pieces—a few fragments of miniaturistic pottery vessels, two glass beads, and two small gold foils with impressed decorations of bull heads (*plate 18.1*). Most of the statuettes can be dated between the 6th and the 3rd centuries BC, with many, and in fact some of the most beautiful, datable precisely to the 5th and 4th.⁸⁷

19th century scholarly debate focused on the object of cult related to the lake. Emil Braun, secretary of the Istituto di Corrispondenza Archeologica, where the statuettes were sold in batches during an auction in 1842, formulated the hypothesis that the lake itself was to be considered the object of cult, for its alleged healing properties. He pointed out the possible presence of creosote dissolved in the stagnant waters of the pond from the timber of the beech trees at its bottom.⁸⁸ Such a substance was supposedly used in antiquity for alleviating the pain of skin ulcers and superficial wounds, but also for curing lung infections. This hypothesis is intriguing but quite unpractical. The lake may have been connected simply to the cult of the river Arno.⁸⁹ The lake itself may have been found in the first place precisely by those wanting to reach the springs of the river for paying them homage. It may have been considered simply

⁸² Migliarini 1838, p.69; Micali 1844, p. 90, he also drew some of the most beautiful pieces, see Micali 1844, pl. XI-XVI, figg. 1-10.

⁸³ Fortuna, Giovannoni 1989, pp. 16-21.

⁸⁴ Borchì 2007. The lake was remade anew after this investigation.

⁸⁵ Palecchi et al. 2007.

⁸⁶ Fedeli 2007, pp. 43,45.

⁸⁷ Settesoldi 2007, pp. 57-58.

⁸⁸ Braun 1842, pp. 180-181.

⁸⁹ On the importance of place and springs in the cults of rivers see Giontella 2012, p. 13, and Pacciarelli 1997, for further compelling examples of natural sanctuaries of central Italy.

a sacred place, a manifestation of the divine and its power,⁹⁰ where it was possible to make sacrifices, requests, and give thanks.

Poppi and the plain

Hence the Arno springs from the Falterona and flows downward, a young river, until the valley opens up at the town of Stia. In the middle of this valley, the Casentino itself, right in front of an easy ford of the Arno, a tall sandstone plateau crops up, visible from anywhere, overlooking the plain. Poppi is sited on this plateau and at its centre stands the bell tower of its medieval castle, pointing up like a finger (*plate 21*). On the hilltop (420 m OD), emergency archaeological investigations were carried out between 2003 and 2008 in front of the castle, following maintenance works. Two trenches were archaeologically investigated, on the peripheral part of the medieval “piazza d’arme” (now Piazza della Repubblica), one on each side of the Castle, and more precisely on the south-eastern and north-western portion of the so called Pratello (the green in front of the castle, see *plate 22.1*).⁹¹ The medieval buttresses found on either side were directly resting on an archaeological sequence that spanned from the Bronze Age to the Augustan period, with hiatuses in the recorded building phases, but continuity in the finds that were collected.⁹²

The limited and narrow size of both trenches meant that the stratigraphic sequence was rather complex, and the material may have been mixed up in some cases. Given the topographic position of the trenches at the outskirts of the hilltop and next to its slopes, many recorded features were dump and levelling layers, that are never easy to excavate or interpret. Nonetheless some very intriguing discoveries were made. Three channels of a sewage system and portions of two buildings displayed as clear a signs as one can get from two narrow but long trenches of the orthogonal nature of the settlement planning, to be dated to the 4th century BC, and with an East-West building alignment.⁹³ The sewer-channels were wide and well built, all with their covering slabs collapsed *in situ* (*plate 22.2*), and were covered, although not uniformly, by an ashen layer in both trenches.⁹⁴ They contained a wealth of pottery finds datable from the 7th to the 2nd century BC, including an astonishing quantity of sherds of black gloss ware of the 4th to 2nd century BC,⁹⁵ and thousands of pieces of coarse kitchen ware.⁹⁶

The sewer system was set on levelling layers dated to the 4th century BC. Many Archaic potsherds were collected from these layers, of all kinds of ceramic class, from bucchero to *pithoi*.⁹⁷ Portions of few Archaic features were also recorded in the northern trench, under the later levelling layers, including a fireplace,⁹⁸ while Bronze age layers were excavated at the bottom of the southern trench.⁹⁹ One of these Archaic features may have been an abandonment layer of sort (destruction after fire?)—it appeared rich in charcoal and provided a discrete

⁹⁰ Gregory Warden 2016, p. 164.

⁹¹ The north-western trench was 1x3 m long; the south-eastern was 1x5.2 m long. See Fedeli 2008; Magno 2013.

⁹² Magno 2013, pp. 41-42; cfr. Da Vela 2013, pp. 44-45.

⁹³ Magno 2013, p. 43.

⁹⁴ Fedeli 2008, p. 202.

⁹⁵ Da Vela 2013, p. 44.

⁹⁶ I myself went through the assessment of 100% of the Poppi finds for the analysis presented here in Chapter 3.

⁹⁷ Da Vela 2013, p. 45.

⁹⁸ Fedeli 2008, p. 203.

⁹⁹ Magno 2013, p. 41.

collection of 12 weights possibly belonging to the same loom.¹⁰⁰ The stone structures were not removed by the excavators, as is custom of Italian Soprintendenza archaeologists, when dealing with substantial building remains. Even if the building phases are thus limited to the 4th century BC, the succession of layers forming the bulk of the slopes of the hill may fill the chronological gaps. Moreover, the material displays a continuity from the 7th to the 2nd century BC.¹⁰¹ Among the most interesting ceramic classes that we may date to the 5th and 4th centuries BC, we have many examples of cups in *ceramica grigia*—grey ware—a fine banqueting ceramic class produced in a reducing atmosphere yet with different techniques from those used for bucchero, and possibly in furnaces that were easier to control. This kind of ceramic is typical of the northern part of central Italy,¹⁰² but can be found in good quantities in Orvieto as well.

The geographic centrality of Poppi in the plain, its defensive advantage, and its proximity to a fording point of the Arno, make it the best location for establishing a settlement in this part of Casentino, so there is no surprise in finding continuity until today. Poppi may have been particularly wealthy, at least from the 4th century BC. It is the only settlement in these two valleys, in fact, for which an area of dispersed necropoleis is recorded, located around the paths connecting Poppi to the small hamlet of Lierna and on the nearby hillsides. These tombs appear to be arranged along the paths converging towards Poppi from the area of Stia and from the Fangacci pass on the Catenaia ridge, which leads towards Valsavio, on the Adriatic side of the Apennines. The only graves that were actually recorded were excavated in 1953 and 1984 at Selva, on the hill of Avena. These were small shaft tombs using an incineration rite, with grave goods (fine pottery: both red-figure and black gloss ware, iron weapons, possibly a bronze razor, see *plate 23.1*).¹⁰³ Materials from a grave robbed at Bucena, west of Lierna, were gifted back to the Soprintendenza in 1932.¹⁰⁴ These graves can be dated between the 4th and the 3rd centuries BC.

From the collections of notes on local finds assembled by Gian Francesco Gamurrini, one of the fathers of Italian archaeology, during the 19th century, we know that a *tumulus* was found and robbed in 1846 at Certomondo, at the bottom of the hill of Avena and Lierna. He even provides the measurements of this *tumulus* (5,24 m tall, with a diameter of 35 m). It seems to have contained more than a single grave, maybe up to four.¹⁰⁵ The material found in one of these graves consisted of fragments of bronze vases, unspecified fine painted pottery,¹⁰⁶ a coarse *olla* with two handles, fragments of bronze weapons and a knife. From a second grave came another metal vase, configured as a sphinx, with small lion-paw supports; a vessel made of an unspecified material, probably metal, defined as “flat” and bearing 8 handles around the rim, two of which, opposed to one another, with rings (a *phiale*? A candleholder? a *lebes*?); fragments of *terra nera*, as Gamurrini sometimes calls the bucchero; and a bone die. Gamurrini states that most of the material was promptly sold, while a small amount given to the Museum

¹⁰⁰ Da Vela 2013, p. 50.

¹⁰¹ Da Vela 2013.

¹⁰² For a quick overview of the class see Zamboni 2013.

¹⁰³ Fedeli 1989, p. 261; Ducci 1999, p. 44.

¹⁰⁴ Diringer 1932b, p. 440. These were bronze objects (two strigils, a pitcher, and a colander), and three iron spear heads.

¹⁰⁵ Gamurrini 1904b.

¹⁰⁶ Described as pottery with “arabesque”.

of Siena.¹⁰⁷ The graves may have been of different dates, possibly from the 6th to the 3rd centuries BC.

Finally, just north of Certomondo, on the hill of Porrena, a note by Gamurrini says very laconically that “another” Etruscan grave was found containing a stone sphynx and a number of vases painted with figures.¹⁰⁸ Not much can be said about this specific find, as we do not know where the material ended up after the discovery. Armando Cherici, a local scholar, interpreted the stone sphynx as a 5th century BC Faesulan stele on the basis of possible comparisons.¹⁰⁹ It is worth mentioning also a small find from the same area, a bronze statuette of a warrior, possibly a dancer in panoply (*plate 23.3*),¹¹⁰ whose typology finds comparisons with similar items from Vulci, and is dated to the 5th century BC.¹¹¹

The Socana transect

During the 3rd and 2nd centuries BC the valley between Stia and Poppi, and between Poppi and Bibbiena, was populated with new settlements.¹¹² No further evidence dated to the period between the 6th and the 4th centuries BC, beyond what has been written here, has been found yet for these parts of Casentino. No evidence of settlement has been found either for the valley of the river Archiano and for the town of Bibbiena—the earliest finds from these areas date to the 2nd century BC. The valleys of the rivers Salutio and Rassina on the other hand are dotted with signs of settlement at least since the late 6th century BC, including some of the most interesting sites of Casentino. Given the peculiar absence of comparable signs of settlement in the neighbouring areas of Casentino, the existence of a series of settlements in this area, which I have named the Socana transect, seems particularly meaningful, and may mark a route connecting Valdarno to the Adriatic side of the Apennines. It may not be coincidental that at the middle of this transect joining Valdarno, Casentino (and river Arno), Valtiberina, Valmarecchia, and Valsavio we have a sanctuary, the temple of Pieve a Socana.

Talla and the Salutio valley

It is not easy to pass from the Casentino to the Valdarno because the slopes of the Pratomagno are steep and subject to landslips. In post-Medieval times the Crocina pass was opened, when the medieval pass of Anciolina was ruined by a landslip. In pre-Roman times, however, the pass may have been through Monte Lori, leading down towards Loro Ciuffenna, as suggested by small finds on both sides of the mountain, at Loro and Talla, dated to the Archaic and late Archaic periods.¹¹³ At Talla further finds are noted by Gamurrini, namely a grave, a statuette (*plate 26, fig. 1*), and a bronze bracelet. Both bracelet and statuette are now held at the Museo

¹⁰⁷ Gamurrini 1904b. Gamurrini's cites his sources as a written account held at “R.R. Gallerie di Firenze Archivio, File E, year 1846 n. 33”.

¹⁰⁸ Cherici 1996, p. 40. I was not able to find this note when I researched through the Archivio Gamurrini, but Cherici in his article shows readable pictures of the original.

¹⁰⁹ Cherici 1996, p. 41.

¹¹⁰ Zaccagnino 2006.

¹¹¹ Found in 1868, mentioned and sketched by Gamurrini on one of his notes. Zaccagnino 2006, pp. 303-304.

¹¹² See Dominici 2014.

¹¹³ This pass was in use at least from the early medieval period, as hinted by the construction of the abbey of Santa Trinita in Alpe in AD 900.

Archeologico di Arezzo. The grave also is worth mentioning, since bucchero vessels and some unspecified objects made of volcanic tufa (and Gamurrini notes how this was not a local stone) were found therein.¹¹⁴ As we shall see, while we have found volcanic tufa at Serelli and Ama (the stone mills), this material is also present at the temple of Pieve a Socana. The statuette may be dated to a period between the 6th and the 5th centuries BC, as could the bucchero vessels.

From Talla descends the river Salutio. Its small valley has gentle hills that are rather wealthy in finds. During my most recent surface-survey expedition in 2019, I was able to locate and inspect a finds scatter previously unrecorded near the town of Salutio, not too far away from the river (*plate 26, fig. 2*). Among the datable objects I found sherds of grey ware datable to the 4th and 3rd centuries BC, and a small foot of a black gloss jar, identified by me as a Lamboglia 58,¹¹⁵ a Volterranean production dated to the 3rd century BC. More importantly however, I collected conspicuous finds pertaining to a furnace where pottery was produced (a chunk of its dome, a separator, that is a ceramic object used for separating items in the furnace, several pieces of tiles that were exposed to high temperatures, see *plate 27*). From Salutio a meandering road leads to the hilltop and the small village of Ornina, and from there down to the town of Pieve a Socana. At Ornina in 1963 a “well” was found and excavated by an archaeologist of the Soprintendenza,¹¹⁶ recovering several pot sherds both coarse and fine, including bucchero, black gloss ware, and kitchen ware. The settlement of this area may thus be dated as far back as the 6th century BC with an increase in activity in the 4th.

Pieve a Socana

The medieval church of Sant’Antonino a Socana (*plate 26*) was built directly on top of an ancient temple (*plate 27.1*). The first recorded finds date back to 1929 when, during agricultural works, two pieces of antefix were dug out.¹¹⁷ These objects were viewed by the first ever Soprintendente of Florence and Tuscany, Edoardo Riesch, who identified the antefix representing Minerva wearing her helmet (*plate 36*), as a male head. David Diringer, the first inspector for the Casentino collected also a few pieces of black gloss ware (a cup of the “*petite estampilles*”), to be dated to the 4th-3rd centuries BC, noting also what he called a local tradition, according to which a temple to Minerva was to be found under the Christian church of Sant’Antonino.¹¹⁸ The news of these finds was forgotten until restoration works were undertaken in 1958. On that occasion an Archaic altar was found in the field in front of the apse, and excavations were deemed necessary. These were done in the area behind the apse of the church (about 400 m²) and took place between 1958 and 1973, eventually under the supervision of Mario Toti, assistant of the inspector of Soprintendenza Piera Bocci Pacini.¹¹⁹ They were apparently carried out by the restorers, who weren’t professional archaeologists, and produced almost no record.

¹¹⁴ Rittatore 1940, p. 10, n. 5. Rittatore explicitly transcribes Gamurrini’s notes. I was not able to find the original, however.

¹¹⁵ See Montagna Pasquinucci 1972, p. 484, type 154, and fig. 16, n. 334.

¹¹⁶ Bocci 1963.

¹¹⁷ Riesch 1930, p. 348.

¹¹⁸ Diringer 1932a.

¹¹⁹ Maetzke 1958.

The archaeological remains (*plate 27.1; plate 30; plate 32.1-2*) consist of two series of wall footings, the latest (walls from D to G), pertaining to medieval houses, the earliest (walls A, B, C) to an enclosure surrounding an altar, built in front of the staircase of access to the *cella*, on which the apse of the medieval church was built (*plate 33*). The surviving temple structures were not dated but the walls A, B, C (*plate 32.1-2*), were interpreted as a *temenos* of a later phase than the altar, since apparently some stones originally belonging to it were reused in walls A and B.¹²⁰ The temple has an East-West orientation, with an eastern entrance. The staircase has 12 steps, walls B and C flank it on both sides, leaving gaps of equal size that could have respected the width of the podium of the temple, which is not visible as the church was built on it, but appears to have a width of roughly 18.40 m.¹²¹ Bocci Pacini notes how this width is a number that reoccurs in measurements of other temples, and more specifically the length of the temple of *Faesulae* (3rd century BC), the width of temple C of Marzabotto (5th century BC), the width of the “*Tuscan Temple*” of Portonaccio at Veii (late 6th century BC).¹²² The East-West orientation is apparently unusual in Etruscan temples and only found at *Rosellae* (in the “*Casa con recinto*”, 7th century BC), at Veii (again at the “*Tuscan Temple*”), at Tarquinii (at both the “*Ara della Regina*” and the Temple β , 7th century BC),¹²³ and at *Faesuale* (4th century BC).¹²⁴

The similarities between the “*Tuscan Temple*” at Veii and the temple of *Pieve a Socana* may not end here.¹²⁵ While we do not have all the dimensions of the *podium* of the temple of *Pieve a Socana*, I would like to foster the hypothesis that the present dimensions of the church may actually precisely coincide with that of the podium of the temple. After an earthquake happened on the 4 of November 1504,¹²⁶ more than half of the church came down and was never fully rebuilt—the current façade standing on the 6th intercolumn of the 10 of the original structure (*plate 27.2*).¹²⁷ Arguably, the rest of the church may have survived the destruction because it was built on the more solid ground, provided by the *podium* of the temple (*plate 28.2*). If we measure the length from the first step of the temple to the church’s façade we have a perfect square with sides of 18.40 m, of which the staircase occupies precisely a third of the sides. Thus, the temple of *Pieve a Socana* may have had a rectangular podium with a long side of 18.4 m and two short sides of roughly 12.7 m, connected to the staircase, that was about 5.7 m long. The total dimensions of the structure (podium + staircase) would be comparable to those of the “*Tuscan Temple*” of Veii, as it is its orientation. It is possible therefore that the temple of *Pieve a Socana* was actually Tuscan, with Vitruvian proportions. Even accepting these hypotheses, we still do not know whether it had a single *cella*, one flanked by *alae*, or more than a single *cella*.

It appears that the excavators dug the full depth of the archaeological stratigraphy only in two small sondages, one in front of the stairway and the other in front of the altar. The rest was only

¹²⁰ Bocci Pacini, Zamarchi Grassi 1985, pp. 165-166.

¹²¹ Bocci Pacini, Zamarchi Grassi 1985, p. 165. It is unclear from the paper whether this measurement is that of the width of the podium or of the staircase, however from the site plan made in 1968 (*plate 28.1*) we see that the two measures may coincide.

¹²² Bocci Pacini noted Lake 1935 as her source of information, these measures come from Lake 1935, chart at p. 136.

¹²³ Pernigotti 2019, pp.9-10, chart. 1.2.

¹²⁴ Maetzke 1956.

¹²⁵ See Carlucci, Michetti 2014, for comparison.

¹²⁶ Arrighetti *et al.* 2022, p. 2192.

¹²⁷ Agostini 1995, pp. 103-104.

partially dug, enough to expose the ruins. In a small area adjacent to the staircase, to their immediate South, under the old rectory of the church, four round stone votive objects were found, two of which with inscriptions (*plate 29*). From the descriptions,¹²⁸ the excavators seem to have found a demolition feature, rich in charcoal and fragments of tiles and other ceramic building material, including several parts of painted decorations of the roof of the temple, on top of the staircase and especially at the south of it,¹²⁹ in the area under the rectory. Under the rectory, this feature was sitting on an earthen layer with sandstone fragments,¹³⁰ under which the round stone objects were uncovered, along with many sherds of grey ware and the foot of an attic *kylix*, dated to the 5th century BC.¹³¹ It is unclear whether the bucchero *oinochoe* datable to the 6th century was found here as well (*plate 32.3*). The four round stone objects were found flat on the ground, one was shattered to pieces (*29.2*), two seem to have actually been reused as a surface for putting in place the medieval footing of the wall of the rectory (*29.1*). It is thereof very likely that the demolition layers that were excavated are of a late antique/early medieval date, and that the stone objects were not in their original place.

The material, however, may help us to reconstruct two, maybe three building (and/or restoration) phases. The latest should be dated to the 2nd century BC, to this may pertain the Minerva antefixes.¹³² The material from the demolition of this roof may actually pertain to two distinct phases—one datable to the beginning of the 5th, to which up to four antefixes may belong (*plates 34-35*), two with precise comparanda from Cannicella, Orvieto (*plate 35.1*),¹³³ and a further phase of the 4th century BC, to which another antefix, in the so called severe style, may belong (*35.2*). The other fragments of clay roof decorations are pieces of painted mouldings (including impressed double meanders, black triangles—the so called “denti di lupo”—then blue, red, and white zigzags and parallel bands decoration), some of which are comparable with decorations found at Temple C in Marzabotto,¹³⁴ and at the “Tuscan Temple” at Veii.¹³⁵ Pottery finds can be variably dated, with bucchero sherds, the bucchero *oinochoe*, and the foot of the Attic *kylix* datable to the end of the 6th century BC, grey ware from the 5th, and several sherds of black gloss ware from the 4th onwards. Two bronze *fibulae* were also recovered, apparently on the stairs, and could be dated to the 3rd century BC.¹³⁶

One of the round stone objects has a diameter of roughly 87 cm, and a thickness of 13 cm, the other three have diameters of roughly 112 cm and a thickness of 17. They were interpreted by Giovanni Colonna as round votives and, since they are round, he likes them connected to the cult of the sun.¹³⁷ The two measures of the diameters (112 cm and 87 cm) are measures that reoccur in other Etruscan sacred architectural contexts,¹³⁸ and these round stones could also

¹²⁸ Bocci Pacini 1973.

¹²⁹ It is unclear whether this feature sat on top of the staircase. No date to this feature is provided by Bocci Pacini. While its description seem to suggest an early date, the fact that it is directly under the medieval building would make opting for a much later date a better choice.

¹³⁰ From the description and from the pictures (*plate 29.1*), this feature reminds me of the kind of made up ground I found when excavating at Westminster Abbey in London, between 2016 and 2019, a layer made of beaten earth compacted with the many sherds left from stone masonry works.

¹³¹ Bocci Pacini 1973; cfr. with Bocci Pacini, Zamarchi Grassi 1985, pp. 165-166.

¹³² Bocci Pacini compares them to those of Talamone, Bocci Pacini, Zamarchi Grassi 1985, p. 167.

¹³³ Stopponi 1985, pp. 116-117, and fig. 6.1 A 1.

¹³⁴ Bocci Pacini, Zamarchi Grassi 1985, p. 167.

¹³⁵ See Carlucci, Michetti 2014, fig. 36 p. 529.

¹³⁶ Bocci Pacini, Zamarchi Grassi 1985, p. 167.

¹³⁷ Colonna 1985a, p. 168.

¹³⁸ Vitali 1985, p. 91.

be what is left of architectural elements, such as altars. In any case, one of them had two inscriptions, that Colonna reads as *arut kreinie*, and *[mi] arunθia / merpasniia*, dating them to the 5th century BC. Another disc had one inscription, *kreinasi*, in slightly different characters from the other ones, and dated by Colonna to the 4th century BC.¹³⁹ He also connects these inscriptions to an elite family of the *Kreinie*, previously unrecorded. Trusting Colonna's assessment, the datum that a single family was connected to the same sanctuary by two votives gifted roughly a century apart from one another, may be considered relevant. However, one of the most interesting features of these discs has never been problematised—they are made of *pietra fetida*, a kind of limestone that can only be found around Chiusi.

This is not the only non-local material found at Socana. The staircase is clad in travertine (*plate 32, fig. 1*), and travertine is employed also in walls A, B, and C (*plate 31*), while the facing of the altar is made of local *pietra serena* sandstone but has an inner layer of volcanic tufa blocks (*plate 30, fig. 2*);¹⁴⁰ both travertine and tufa are non-local materials. More precisely, walls A, B, and C are made of single or double lines of roughly dressed boulders of travertine, of which one, two, or three courses are left. They may have been actually visible, since they appear to be laid on top of slightly wider stone footings (only partially exposed), consisting of two lines of smaller alberese boulders, compacting a looser core of mixed rubble. They were certainly partially robbed in ancient times, something that must have made their correct stratigraphical excavation even more complex. These walls were interpreted as part of a *temenos*, or of a small terrace in front of the temple—a portion of which was also found next to the votive discs in *pietra fetida* (see *plate 28.1*). They are slightly offset if compared to the staircase, and so is the altar. We see similar offset distributions of the architectonic elements of temples and altars in many other examples in central Italy (e.g., the temple of the Belvedere of Orvieto, or the “*Capitolium*” of Cosa).¹⁴¹

Bocci Pacini suggested that some of these boulders may have been reused parts of the upper portion of the altar (a statement that she does not explain further), which in fact lacks its upper cladding. An inner layer of tufa slabs is thus visible, resting on a core of made up earth, partially covered by tiles, under which a shallow ashen layer may be what was left of a burnt foundation-offering (*plate 31.2*).¹⁴² The outer sandstone cladding is made of boulders joined with lead dovetail clamps. The shape of the foot of the moulding is common and comparable with those of Marzabotto.¹⁴³ The overall shape of the moulding however is uniquely preserved, also considering that this is probably the best-preserved altar of its kind to date.¹⁴⁴

The meaning of the selection of foreign materials for both temple structure (travertine, possibly *pietra fetida*) and altar (volcanic tufa) is still elusive, yet the choice appears meaningful. Travertine and *pietra fetida* are aesthetically pleasing and used for visible elements; tufa was imported from afar to be used for an invisible part of the altar.¹⁴⁵ A ritual meaning for its choice should not be excluded, either connected to the value of the material, to its physical and/or symbolic properties, and possibly to its provenance. While the *pietra fetida* comes from Chiusi,

¹³⁹ Colonna 1985a, p. 168.

¹⁴⁰ Bocci Pacini already noted it, see Bocci Pacini, Zamarchi Grassi 1985, p. 166.

¹⁴¹ Colonna 1985b, p. 82; Colonna 2006, p. 163.

¹⁴² Bocci Pacini, Zamarchi Grassi 1985, p. 167.

¹⁴³ Vitali 1985, p. 91.

¹⁴⁴ Gregory Warden 2016, p. 166; cfr. Menichelli 2009, pp.108-109.

¹⁴⁵ Recalling somewhat the *lapis niger* of the famous Archaic altar in the Roman forum.

the nearest sources of a travertine viable for building can be found at Rapolano, in the “*Crete Senesi*”, and between Perugia and Orvieto,¹⁴⁶ and Orvieto is also the closest source of volcanic tufa.¹⁴⁷ Further assessments are required to better understand the origin of these materials.

It is noteworthy that at Marzabotto travertine is employed both in cladding of cultic structures, such as the podium D of the acropolis,¹⁴⁸ and chamber graves, all datable at the beginning of the 4th century BC. This travertine was imported from the Lavante quarries and shipped to the city through the river Reno.¹⁴⁹ Locally quarried travertine (unfit for producing larger building elements) was also employed, mostly for the keystones at the corners of wall footings, which are otherwise made in the more abundant, much easier to get,¹⁵⁰ and more structurally viable local sandstone. A symbolic meaning of travertine should therefore not be ruled out either, maybe connected at least at Socana to its beauty as a material, and its association with freshwater springs, thermal springs, and also with spectacular rock formations and fissures.¹⁵¹ Travertine, in fact, can form rather easily and fast in connection with springs coming out of limestone strata, and as such is present in many parts of the Tuscan and Aemilian Apennines, if in very scant deposits, not suitable for quarrying building material.¹⁵² We are in fact talking of very ‘young’ and shallow layers, forming in the immediate vicinities of springs and waterfalls that would shift or dry over time.

More permanent and geologically older deposits can be found possibly around Arezzo,¹⁵³ but these may have not been good enough as sources of building material - their use should be investigated further. The best sources of travertine, used since antiquity, are around the many thermal springs of central Tuscany, with its tectonic ridges, and the quarries of Rapolano between Siena and Arezzo are the closest to Pieve a Socana and are claimed to have been in use since the Etruscan period.¹⁵⁴ This area may have been the source of the travertine for our temple. The most likely route for getting these heavy materials to Pieve a Socana was to use the river Arno, and their most likely centre of redistribution may have been *Arretium*. This has very interesting implications, both for the definition of the trading connections of this city and of the people of Pieve a Socana, and also for presenting a more grounded, implicit argument in favour of the existence of relations between Pieve a Socana and *Arretium*.

To conclude, the temple of Pieve a Socana may have been a proper Tuscan temple built at the beginning of the 5th century BC, according to fashionable design schemes upheld in many other renowned Etruscan areas in that period, combining the same meaningful materials. Far from being a marginal case, it compounds a heterogeneous and previously unrecorded collection of influences in its architectural design, choice of expensive materials, and decorative apparatus—from Marzabotto, to Chiusi, Orvieto, and Veii. I would hypothesise a consistent refurbishment at the beginning of the 4th century B.C., in which the *temenos* walls and the staircase were made, remade, or re-cladded, considering that the travertine blocks of the

¹⁴⁶ Petrelli *et al.* 2004, pp. 165-166.

¹⁴⁷ Renzulli *et al.* 2002, pp. 181-182.

¹⁴⁸ Vitali 2001, pp. 43-52.

¹⁴⁹ Bozzo *et al.* 1992, pp. 107-108.

¹⁵⁰ Bozzo *et al.* 1992, pp. 107-108, 111; cfr. Cantonati *et al.* 2016, pp. 632-635.

¹⁵¹ Capezzuoli *et al.* 2014, pp. 6-12.

¹⁵² Cantonati *et al.* 2016, pp. 632-635; Capezzuoli *et al.* 2014; Bozzo *et al.* 1992, p. 111.

¹⁵³ Arrigo *et al.* 2016, p. 27.

¹⁵⁴ Capezzuoli *et al.* 2009, pp. 147-148; A travertine altar was also found at Poggio Civitate (see Tuck 2017, p. 269).

temenos walls, that appear now very worn, must have been originally visible as for the case of the structures at the acropolis of Marzabotto. Moreover, they rest on a footing whose technique of construction becomes more prominently in use, at least locally (see Ama, Serelli, and Poppi), from the beginning of the 4th century BC onwards.

Building interventions to be dated to its 2nd century BC phase, beyond the restoration of the roof, are still uncertain, especially in relation to the apparent defunctionalisation of the altar. In any case, Pieve a Socana is undoubtedly a place of importance for the peoples of this part of the Apennines. The temple was built right in front of a fordable and stable spot on the river Arno and at the intersection of its riverine route with the paths following the valley, and those climbing the surrounding hills and mountains. The best recorded of these routes ascends the narrow valley of the river Rassina, towards the mountain pass of Compito, through the second half of the Socana transect.

The valley of the river Rassina, the Compito pass, and Monte Castelsavino

The river Rassina springs near the small village of Chiusi della Verna. It then descends towards its confluence with the Arno, forming a narrow valley with a succession of small plateaux overlooking both Casentino and the valley of Arezzo; on these plateaux we find the villages of Chitignano, Ròsina, and Taena. Several surface finds scatters have been recorded at Taena and Ròsina, and among the dating material we may count numerous sherds of black gloss ware from the 4th century BC onwards.¹⁵⁵ This valley is also a place of many freshwater springs, and one of these, the ‘Aquaforte’ at Chitignano, is sulphuric. Gamurrini said that a bronze statuette of Heracle was collected at the sulphuric spring at the end of the 19th century,¹⁵⁶ and another one of Tinia was found in 1907, along with a bronze fibula, on the field in front of it (*plate 37*).¹⁵⁷ It should be noted that the names of Rassina and Ròsina remarkably resemble the Etruscan word *rasna*, found in several inscriptions connected to political institutions of urban polities,¹⁵⁸ and especially for instance on a boundary stone at Cortona in the inscribed form of ‘*tular rasnal*’, interpreted sometimes as ‘the people’s boundary’ and datable to the 4th century BC,¹⁵⁹ thus likely a marker of a town’s boundary, or more specifically of its *ager*, or lands.¹⁶⁰

An interesting series of four large surface scatters were found on top of La Melosa mountain, overlooking the village of Chiusi della Verna, with plenty of sherds of coarse ware and kitchen ware, comparable with those found in other sites such as Poggio Alto and Poppi, and thus datable between the 6th and the 4th centuries BC. La Melosa is directly underneath the top of Monte Penna, a steep peak at the intersection of a series of mountain ridges, here easily accessible from the top of the Spino pass that leads towards Valtiberina. This area is known as Compito, and the best way to interpret it a crossroad, as the name would imply, is to consider the possibility that the mountain ridges were actually used as pathways. More specifically, the Compito area could be described as a small plateau at around 900 m OD, between Chiusi and Montalone, that includes the Spino pass (1020 m OD) and the springs of the river Singerna.

¹⁵⁵ Albertoni *et al.* 1989, p. 122.

¹⁵⁶ Gamurrini 1910, p. 27.

¹⁵⁷ Pasqui 1907, p. 112. All these objects are now at the Museo Archeologico di Arezzo.

¹⁵⁸ Becker 2013, p. 362.

¹⁵⁹ Becker 2017, p. 1217.

¹⁶⁰ Becker 2013, p. 362.

This whole area provided many interesting traces of settlement, mostly in the form of surface scatters and small finds, centred evenly on both sides of the pass and especially in the areas known as Pian Linare and Fosso Singerna. These scatters are very rich in finds.

At Pian Linare, between Chiusi and Spino, there are five surface scatters, which provided good quantities of kitchen ware, but also sherds of bucchero and of grey ware, suggesting a possible dating of the occupation of this area to a period between the 6th and 4th centuries BC. Late Bronze Age pottery was also collected from one of the scatters. At Fosso Singerna, a small plateau overlooking the springs of the river Singerna next to the town of Montalone, the finds were all collected from a very large scatter and were many and varied. Here finer pottery was more abundant, with a few sherds of bucchero ware, datable between the end of the 7th and the 6th centuries BC,¹⁶¹ many sherds of grey ware datable from the 6th to the 3rd centuries BC,¹⁶² and sherds of black gloss ware, datable between the 4th and 3rd centuries BC. Overall, the scatter of Fosso Singerna is extremely promising for further investigation and may be considered the site of a rather wealthy settlement, if compared to the other sites in its neighbourhood. It should be noted that many small finds, some of which probably pertain to rich graves datable to the 4th century BC,¹⁶³ were collected between Fosso Singerna and Compito by Gamurrini at the beginning of the 20th century,¹⁶⁴ by the Sovrintendenza inspector Antonio Minto a few years later, and by the Gruppo Archeologico Casentino in the late 80s. More specifically, in 1893 Gamurrini was gifted a bronze mirror and a strigil both datable to the 4th century BC, allegedly found while ground works were made to even the road leading from Casentino to Valtiberina (*plate 38.1*),¹⁶⁵ and in 1905, during a direct survey, he found ‘pieces of statuettes’ (votives?) that he dated to the 6th century BC.¹⁶⁶ Finally, in 1915 he inspected a ‘bronze votive axe’ found by a local farmer, dating it to the 7th century BC.¹⁶⁷

If we follow to the north-east the Apennine ridge ending with the Mount Penna we soon reach the peak of Monte Castelsavino (1242 m OD), located precisely at the south-eastern end of the Catenaia ridge, just above the Pretelle mountain pass. Here the ruins of a mountain-top fort are discernible from bird’s view as a geographical anomaly (*plate 38.2*) and were in fact discovered through two small excavation trenches undertaken by the Sovrintendenza and the Gruppo Archeologico Casentino, in 2002 (*plate 40*).¹⁶⁸ The view from Monte Castelsavino is very good, somewhat uneven yet meaningful, and it should be considered as one of the main features in determining the location of the site. Monte Penna blocks the view towards a good part of the Casentino, and a small portion of Valtiberina, namely the Singerna valley. The view totally encompasses Mount Fumaiolo (where the river Tiber springs), visible in its entirety, and

¹⁶¹ Among the fragments there is a single piece of rim, possibly of a *kantharos* or chalice, comparable with PC 7501 of Poggio Civitella (see Cappuccini 2014a, p. 90, and fig. 58, p. 93), generally datable to the Archaic period.

¹⁶² Among the datable finds were sherds of grey ware *piattelli* comparable with the *tipo* 1, 2, and 3 found at Poggio Civitella (see Cappuccini 2014b, pp. 100-101, and fig. 63, p. 105).

¹⁶³ Found at different moments between the end of the 19th century and the beginning of the 20th, and in more recent surface surveys undertaken by the Gruppo Archeologico Casentino (see Minto 1927; Albertoni *et al.* 1989, p. 111).

¹⁶⁴ Gamurrini 1904a.

¹⁶⁵ Gamurrini 1904. The strigil has been identified as one belonging to a grave found near Orvieto in 1877 (see Diringer 1929, p. 6, n.1), and thus even the provenance of the bronze mirror could be debated.

¹⁶⁶ Gamurrini 1904a.

¹⁶⁷ Gamurrini 1904a.

¹⁶⁸ Albertoni *et al.* 2002.

especially the two mountain passes at its sides, leading to the Valsavio and the Valmarecchia. The peak of the Falterona, at the north-western end of the Catenaia ridge, is also visible.

A *castrum* datable to the Archaic period was here found: its outer fortification ring surrounding the top of the mountain is clearly visible from the air, and discernible from direct survey. Two archaeological trenches were done rather quickly in June 2002, the one on this outer ring uncovered the traces of a ramp and ditch wall (*plate 40.1-2*), almost directly under the humus, while the one dug on the top of the plateau uncovered occupation layers within or just outside a building, the materials from these features datable between 600 and 400 BC. According to site records made by the Gruppo Archeologico Casentinese, it seems that there are at least two different phases of settlement recorded in the trench on the top of the plateau.¹⁶⁹ What could be interpreted as the later phase has fewer materials than the earlier, and among them a rim of a grey ware *piattello*, datable between the 5th and the 4th BC.¹⁷⁰ The earlier occupational features were richer in finds, with many sherds of kitchen ware and storage coarse ware, along with sherds of fine banqueting ware. Noteworthy are the many sherds of *hydriai* and possibly of *amphorae*,¹⁷¹ sherds of bucchero and grey ware, mostly cups,¹⁷² and two minimal sherds of what could be Attic pottery. A piece of *aes rude* was also recovered, showing the impression of an ox (*plate 41.1*). The same association of ceramic materials was also recorded in good quantities in the coeval fortified site of Poggio Civitella, in central Tuscany, located roughly midway between Murlo and *Clusium* (Chiusi).

In May 2022 I undertook a drone scan of the mountain top, highlighting the outer oval ramp and ditch wall, and an inner rectangular enclosure encircling a building (*plate 39*). Two more buildings may be discernible along the outer ring, one on the immediate south-east of the inner ring, and possibly another at the south-west apex of the oval. Both Monte Castelsavino e Poggio Civitella show at least two series of concentric fortifications, the outer being built as walls with ditch and ramp; then both have a main building within the inner enclosure, and annexes adjacent to the outer fortification. At Poggio Civitella the fortifications rings are three, the inner enclosure is round, and the small buildings adjacent to the main fortification were dismantled during the last phase of settlement, dated to the 4th century BC.¹⁷³ At Monte Castelsavino there are only two rings, the inner enclosure is rectangular, and further investigations are required to prove the presence of the annexes, and the precise phasing of the entire site. Both sites however share many features with the so-called *motte*, early medieval fortifications that are found in many areas of central and southern Tuscany.¹⁷⁴

The finds assemblage from Poggio Civitella and Monte Castelsavino, and especially the presence of *amphorae*, should be considered a hint of their relevance as centres of exchange among the local surrounding communities. Poggio Civitella has been interpreted by the

¹⁶⁹ Albertoni *et al.* 2002.

¹⁷⁰ Comparable with the *tipo* 2a of Poggio Civitella (see Cappuccini 2014b, fig. 62, p. 104, and p. 99).

¹⁷¹ Some sherds are comparable with the *olla* tipo 5 of Poggio Civitella, probably a *hydria* datable between the 6th and 5th century BC (see Cappuccini *et al.* 2014, p. 63 and fig. 48, p. 74).

¹⁷² A bucchero cup comparable to the *tipo* 2 of Poggio Civitella and one comparable to *tipo* 4 (see Cappuccini 2014a, fig. 59, p. 94, and pp. 90-91) datable to the late 6th century BC; a grey ware cup comparable to the *tipo* 1 of Poggio Civitella and one comparable to *tipo* 4 (Cappuccini 2014b, fig. 62, p. 104, and p. 99), both datable to the second half of the 6th century BC; a small sherd of what could be the rim of a *piattello*, comparable with bucchero forms such as the *tipo* 3 of Poggio Civitella (Cappuccini 2014a, fig. 59, p. 94, and p. 91), datable to the beginning of the 5th century BC.

¹⁷³ Cappuccini 2014c, p. 21.

¹⁷⁴ See for instance Campana 2013, pp. 47-49.

excavators as a fortified settlement on the outskirts of the territory of *Clusium*, possibly even defining its boundaries. It was certainly a productive centre of some sort, since an interesting and somewhat puzzling productive station was recorded there. This structure, dated to the 5th century BC, has been interpreted as a pit furnace for smelting iron, connected to a long channel leading to a basin, interpreted as a facility for charcoal production.¹⁷⁵ Such a facility bears intriguing resemblances with allothermic installations used for tar production from birch bark,¹⁷⁶ more specifically with the Peypin type.¹⁷⁷ The Peypin type is the sole method of tar production recorded thus far in central Italy,¹⁷⁸ and birch and oak barks the material used. The presence of several iron slags from the furnace area of the facility, and of charcoal should be considered hints as to the multipurpose character of the output of this facility, producing at once iron ingots, tar, and charcoal.¹⁷⁹ The synergy between tar production and iron ingot production is in fact recorded with compelling evidence in similar facilities in Roman Spain.¹⁸⁰

The fact that such a facility was found within a fortified settlement may be connected with its relevance in the production and exchange of important materials, such as iron ingots and tar. The fortifications imply most probably the need to defend whatever activities were taking place inside, while indicating the site's centrality to its surroundings. Going back to Monte Castelsavino, it should be noted that this site is immediately to the north of the Monti Rognosi, the portion of the Alpe di Poti dividing Casentino and Valtiberina, where native copper can be found and was probably exploited in antiquity.¹⁸¹ Monte Castelsavino is one of the few sites between these two valleys in which a piece of *aes rude* was collected *in situ*, and the presence of a productive facility involving metal (possibly for making *aes*?) within this settlement can be conjectured. Further investigations are therefore paramount in order to ascertain its role at the junction of Casentino, Valtiberina, Valmarecchia, and Valsavio. A similar fortification may have been present at Castelvecchio, in Monte Castelsavino's immediate vicinities (just 4 km to its south-east as the crow flies—*plate 41.2*), yet no archaeological finds have ever been collected in the area. The view from Castelvecchio is limited to the area of Compito and Montalone, that is otherwise invisible from Monte Castelsavino (see *plate 42*). Systems of pairs of fortified sites that appear to control a route or intersection of several routes are well recorded among archaeological cases from the Archaic period on the Adriatic side of central Italy.¹⁸²

The Singerna valley

The river Singerna flows down to Valtiberina from Monte Calvano, a peak between Monte Castelsavino and Monte Penna, and joins the Tiber at the Montedoglio lake, a reservoir built in the 1980s for supplying agriculture. Its narrow yet gentle valley is dotted with archaeological finds, along the route that from Compito reaches the Tiber valley, centred specifically in the area of the small church and hamlet of San Cassiano, and in the submerged valley at the bottom

¹⁷⁵ Cappuccini 2014c, pp. 39-41.

¹⁷⁶ Rageot *et al.* 2018, pp. 279-280.

¹⁷⁷ Ninich *et al.* 2022, p. 5.

¹⁷⁸ Rageot, Sacchetti forthcoming.

¹⁷⁹ Rageot *et al.* 2018, p. 280.

¹⁸⁰ Orengo *et al.* 2013, p. 807, 813.

¹⁸¹ Camporeale 1985, p. 28.

¹⁸² See Bonomi Ponzi 2014, pp. 198-207. Systems of couples of fortifications with complementary viewsheds may have been more common than we thought.

of the Montedoglio lake. The local archaeological group undertook several surface surveys in the area that would become the water reservoir (*plate 44*), under the direction of the inspectors of the Soprintendenza and then of the prof. Adriana Moroni of the University of Siena. The area of the basin of the Montedoglio lake was found to have been densely inhabited, with three different settlement units (see *plate 45.2*)—Mutale and Tizzano, each on top of a hill at the opposite sides of the Singerna right at its the junction with the Tiber, and at Madonnuccia (also known as Consuma), on the opposite side of the Tiber. These areas were only recorded through surface survey, while two excavations were rushed at Tizzano and at Madonnuccia, that are now irremediably underwater.

The scatters at San Cassiano provided among the richest materials found between the two valleys, with several sherds of fine red-figures vases (*plate 43*), and bronze objects such as rings, *fibulae*, pins, and a bracelet. Coarse kitchen ware was also recovered. Among the dating material from San Cassiano, we may find fragments of *kylikes* and of *kelebai* that may be identified as Volterranean productions. A first group of sherds bears resemblances to productions such as that of the *atelier* of the Fould painter, datable to the mid 4th century BC.¹⁸³ Another group, with fewer sherds, instead bears close similarities to the production of the *atelier* of the ‘Pittore della Monaca’,¹⁸⁴ datable to the beginning of the 3rd century BC. Both productions have been found commonly in this part of central Italy, and almost solely as part of grave goods. A sherd of *piattello* foot in grey ware may be datable to the 5th-4th centuries BC,¹⁸⁵ while a cup rim may be dated to the end of the 6th century BC.¹⁸⁶ These materials were collected specifically from three adjoining finds scatters located on the hilltop of the hamlet, possibly what is left of a *necropolis* datable between the 5th and 3rd centuries BC. Two more scatters located directly along the main road leading to Valtiberina, provided only sherds of coarse ware and kitchen ware, but their dating is difficult and could be Roman.

The Madonnuccia area is sited at the bottom of the alluvial plain at the junction of Tiber and Singerna. The local archaeological group recorded here a series of scatters of materials of different kinds. The collection and record of these scatters were done frantically whilst the machines were making groundworks for building the dam. This area seems to have been intensely settled and the material that was collected could be dated from the 6th century BC to Roman times. The bulk of the material is sherds of coarse ware, especially centred in a single bigger scatter (*plate 44*), where big fragments of separators of different sizes (*plate 45.1*) and of burnt tiles are undisputable hints of the presence of a furnace belonging to a productive area where pottery was made. Given the size of the separators, the furnace may have been producing storage and kitchen ware. From this area several sherds of bucchero and grey ware cups were also collected, datable to the 6th and 5th centuries BC.

Around this rather central spot irradiated other scatters, including an area where graves were excavated, unearthing a total of 15 inhumations.¹⁸⁷ The majority of these graves had an east-west orientation and material datable to the Augustan period. Under these however, two earlier inhumations were recorded, with a north-south orientation, and covered in pebbles, causing the

¹⁸³ See Cristofani 1993, p. 97, and tt. XXXV-XXXVI, possible comparisons in the rendering of the so called “palmette leaves” and of the meander motifs (see *plate 43.1*).

¹⁸⁴ See Mangani 1993, pp. 141-142, possible comparison in the rendering of the faces (see *plate 43.2*).

¹⁸⁵ See Cappuccini 2014b, p. 106, f. 64, tipo 2.

¹⁸⁶ Comparable with the type II, 1, c, as recorded in Mattioli 2013, p. 410.

¹⁸⁷ Laurenzi, Moroni, Scarpellini Testi, 1992, p. 44, n. 28.

breaking of the grave goods. These comprised sherds of black gloss ware, including the foot of a small jar, possibly another Lamboglia 58, datable to the 3rd century BC, comparable with that found by me at Salutio, in Casentino. The finds scatters of this area seemed to pertain also to different contexts, as suggested by the many sherds of kitchen and fine ware including a sherd of a bucchero chalice or cup, datable to the end of the 6th century BC.¹⁸⁸

Tizzano and Mutale

As said, other scatters of finds were recorded on the opposite side of the river Tiber, and more precisely at the top of the hills that once overlooked the junction between Singerna and Tiber. On the hill of Tizzano, at 363 m OD, groundworks done in 1989 unearthed portions of a building, and a rather rushed emergency excavation was undertaken under the direction of the Soprintendenza. The stone footings of at least four rectangular rooms were found (*plate 46.1*), of what could have been a bigger building, with materials datable to the Augustan period.¹⁸⁹ One of these included a *dolium*, that appeared to have been put underground and was used possibly to collect water. Earlier phases were also unearthed, but not well recorded,¹⁹⁰ in fact grouped within two macro-archaeological features.¹⁹¹ Nonetheless, it seems that earlier wall footings were also found, and we may reconstruct at least two “rooms” as being present in an earlier phase. In one a vast area of burned clay material was recorded, while the other was covered by an unspecified quantity of tile fragments, which could possibly be interpreted as a collapsed roof.¹⁹²

The finds assemblage from the features under the possible collapse was, however, rich and interesting, including several sherds of coarse and kitchen ware, storage ware, and many sherds of fine pottery, especially bucchero and grey ware. Noteworthy are the sherds of thick ceramic *mortaria* for grinding cereals, and two different kinds of *pithoi* that may have been local productions. Among the dating materials we find the rim of what could be a bucchero chalice, datable to the mid 6th century BC,¹⁹³ and two sherds of bucchero cups datable to the end of the 6th or to the 5th century BC, that bear some odd features in shape, fabric, and firing. Many sherds of grey ware cups and *piattelli*, and of the so called *impasto chiaro* cups, provided dates spanning from the 6th to the second half of the 4th centuries BC.¹⁹⁴ Finally a single sherd of an Attic wine cup could be dated to the second half of the 5th century BC.¹⁹⁵

The agricultural productive vocation of Tizzano is hinted especially for the Archaic and post Archaic phases, by the presence of storage ware, such as *pithoi*, and of ceramic *mortaria*. A chunk of thick daub slab that was collected from the Archaic features could be interpreted either as a burned mudbrick, as portion of a cooking surface, or even as a piece of grid of a furnace

¹⁸⁸ Comparable to the type I, 1, a, as recorded in Mattioli 2013, p. 71.

¹⁸⁹ Alberti 1998, p. 82.

¹⁹⁰ Alberti 1998, pp. 88.

¹⁹¹ As I was able to ascertain when studying the materials.

¹⁹² Migliorati 2003, p. 50, cfr. with Alberti 1998, pp. 88-92.

¹⁹³ Cappuccini 2014a, p. 93, fig. 58, n. 18.

¹⁹⁴ A sherd of another chalice comparable to type I, 1, a, as recorded in Mattioli 2013, p. 71; a sherd of *piattello*, comparable to type I, 4, a, as recorded in Mattioli 2013, p. 440, both datable to the 6th century BC; an *olla* datable to 450-350 BC, comparable to Cappuccini 2014b, p.79, fig.52, type 5 PC 4177; an *olla* comparable to Mattioli 2013, p. 320, 22A, V, 6, h, datable 400-300 BC.

¹⁹⁵ Alberti 1998, pp. 86-88.

of some kind and a separator for stacking vessels in a furnace was also found (*plate 46.2*). The possible coeval presence of pottery furnaces at Tizzano and at the nearby site of Madonnuccia is noteworthy. The pottery production at Tizzano may have directly supplied the agricultural activities as hinted by the fact that the typologies of *pithoi* may be unique to this site. The presence of the two unusual pieces of bucchero cups should also be noted. These can be compared to cups produced in the area of *Clusium*, and commonly found in most of central Tuscany,¹⁹⁶ however the pieces of Tizzano appear with a rougher and somewhat unique shape with rather prominent rims, their ceramic paste is coarser than the imported pieces, the surface is not polished, and the technique employed in producing the reductive atmosphere necessary for making bucchero seems cheap and sketchy. It is possible that at Tizzano or in its premises, artisans were locally producing fine ware imitating items of fashion. Nonetheless, a level of wealth possibly above the average could be imagined, as suggested by the many pieces of fine ware of import.

Mutale appears quite similar to Tizzano, yet perched on the hill opposite, at 383 m OD.¹⁹⁷ As at Tizzano the ground works uncovered the portion of a building, and more specifically of a room with *dolia*, in fact rich in ceramic finds of different kinds, including *terra sigillata italica*, black gloss ware, but also sherds of ceramic *mortaria*. This room looked abandoned, with the roof collapsed on top of the *dolia*, sealing the phase of occupation datable to the Augustan period. At least an earlier phase was also recorded under a thick layer of clean clay without finds. This phase appeared also particularly rich in *pithoi* sherds, olle, and fine ware, mostly grey ware cups and *piattelli*, bucchero, and even pieces of Etruscan painted fine ware of the kind known as “ceramica a bande”.¹⁹⁸ This specific ceramic class is often considered the *trait d’union* between the Greek fine ware imports and the Etruscan productions that first imitated them and then became encompassed within the black gloss ware category, and can be found mostly in central Tuscany, between 6th and 4th centuries BC, and especially in the 5th.¹⁹⁹ Among the dating finds we have some examples of what can be considered the most common shape of grey ware cup in the area of *Clusium* in the 6th century BC,²⁰⁰ and three grey *piattelli*,²⁰¹ that find comparisons with pieces from Spina, dated to the end of the 6th and especially to the 5th century BC.²⁰²

The Afra valley

To date, the archaeological survey of the Tuscan part of the Valtiberina has provided material datable between 600 and 300 BC only in certain areas, namely the Singerna valley, as we have seen, the area of Monterchi, and then the area of Sansepolcro with the neighbouring valley of the river Afra, yet another tributary of the Tiber. This small valley ascends gently towards the Apenninic ridge of Montagna and the Vacche pass, leading over Monte Tre Termini (its summit marks the tripartite boundary between Tuscany, Marche, and Umbria), and from there to the Adriatic side of the Apennines. The archaeological record pertaining this valley goes as far

¹⁹⁶ Martelli 2009, p. 126, especially the type 220.X.80.

¹⁹⁷ Laurenzi, Moroni, Scarpellini Testi 1992, p. 44, n. 32.

¹⁹⁸ Laurenzi 1979.

¹⁹⁹ Cappuccini, Sofia 2014, p. 111.

²⁰⁰ Cappuccini 2014b, p. 104, fig. 62, Type 1.

²⁰¹ Laurenzi 1979.

²⁰² See Mattioli 2013, p. 436, type IX, 2, at Mutale the piece has a pedestal; p. 440, type I, 4, b; p. 441, XIII, 2, a.

back as the Late Bronze Age, and it may be considered as a preferential spot to cross over the Apennines towards the Adriatic Sea from this part of the Valtiberina. While materials datable to the Archaic period were only collected from two find-scatters along this valley, materials from the 4th century BC onwards were collected in 4 more finds scatters in this small valley, and also at the hamlet of Montagna, not far away from the mountain pass.

The most interesting finds-scatter to be recorded is on the prominent hilltop of Collevocchio (416 m OD), precisely at the mouth of this valley into the Valtiberina. Here we may have yet another situation with a series of structures datable to the Augustan period, covering pre-existing contexts,²⁰³ and assemblages of storage ware (including *dolia* and *pithoi*), coarse ware, and fine banqueting ware.²⁰⁴ Extraordinarily, the ceramic material from Collevocchio seems to suggest an uninterrupted occupation of the site from the 6th century BC to the Augustan period. Aside from pottery, particularly noteworthy are two bronze statuettes, a schematic one, and the part of a draped female figure, that could both be dated to the 4th-3rd centuries BC, and part of a terracotta architectonic decoration, possibly datable to the 3rd century BC—one might not entirely rule out a sanctuary context.

Molini

The Archaic settlement of the area of the town of Sansepolcro is still largely unknown, however in 2011 thanks to groundwork undertaken for the construction of a car park in front of the post-medieval fortress, in Via dei Molini, interesting new evidence emerged. The Sovrintendenza archaeologists uncovered three series of intercutting orthogonal ditches, with similar general alignment (one east-west and the other north-south—*plate 47*). The latest one was dated to the Medieval period, the second one to the Roman period, and the earliest was found filled with Archaic material.²⁰⁵ Alas, none of the original ground levels was recorded, truncated by modern ground lowering, and the dating of the ditches was done mostly according to the ceramic finds. The ‘Roman’ ditches were actually devoid of dating materials and were presumed of unspecified Roman date because of their stratigraphical position and overall orderly outlook.²⁰⁶ One of them featured a cover in square stone slabs forming a structure comparable with those recorded at Poppi, dated to the 3rd century BC.

On the other hand, the Archaic ditches were filled with material (*plate 48.1*). The north-south ditch was roughly 1 meter deep, and about 2.5 meters wide. A portion of it was found backfilled with what looked like demolition debris that may show signs of fire,²⁰⁷ as hinted by the presence of chunks of charcoal and of burned pieces of wattle and daub. Within this demolition feature were also many pottery sherds, essentially from kitchen and storage ware; four vessels

²⁰³ Laurenzi 1988.

²⁰⁴ Among the datable finds we have a few fragments of bucchero, with two *olla* rims that can be dated to the second half of the 6th century BC (see Mattioli 2013, p. 323, type XVII, 3, a, from Marzabotto), and several cups of grey ware that could be dated between the second half of the 6th (see Mattioli 2013, p. 441, type XIV, 4, d, from Spina; p. 422, type I, 9, f, from Faenza) and the 5th centuries BC (see Cappuccini 2014b, p. 104, fig. 62, type 4). Many sherds of black gloss ware were also collected and could be dated between the 4th and the 2nd century BC (pieces comparable with Morel 1281a 1, dated to 200-120 BC; 1441a, dated to 200-100 BC; 1534b 1, dated to 400-350 BC).

²⁰⁵ Salvini *et al.* 2013, p. 371.

²⁰⁶ Salvini *et al.* 2013, p. 372.

²⁰⁷ Salvini *et al.* 2013, pp. 369-371.

were found whole but fragmented (*plate 48.2*). Only a few sherds of grey ware were collected from the infill, and its dating relies on comparisons with kitchen items from other sites and can be dated generally to the 6th century BC.²⁰⁸ We can suppose that the debris of a nearby fire involving at least a house, could have been quickly disposed of in the waters of a running stream channelled in this ditch. It is however intriguing how these diachronic ditches all seem to form a grid, and the alignment of this grid seems to remain essentially unchanged from the Archaic period to Medieval times. It may be not ruled out that this grid could have pertained to land divisions for agricultural allotments. Their drainage purpose is however evident and they seem designed to meet the problems presented by a clayish soil prone to waterlogging.

Trebbio

The best recorded site of Tuscan Valtiberina with phases dated to the Archaic period is the site of Trebbio, on a slightly elevated portion of the floodplain (at 300 m OD), directly at the junction between Afra and Tiber. After the intense survey activity of the local archaeological group, in the 1980s and 1990s, many scatters of pottery finds were recorded, clustered in an area of about 22 hectares (see *plate 49.3*), yet grouped especially in the areas known as Spinellina and Casa Bardinelli. The finds collected during survey could be dated between the 8th and the 6th centuries BC.²⁰⁹ In 1992 emergency excavations were required at Casa Bardinelli, where a huge pit backfilled with pottery sherds was quickly dug without producing records. It was nonetheless interpreted as the dump of a pottery kiln.²¹⁰ With the exception of a few chunks of furnace grid, the finds were essentially pottery sherds, in fact thousands of sherds of kitchen and storage coarse ware and few hundred sherds of fine ware (all pottery fired in an oxidising atmosphere, save 3 small sherds of bucchero). They were studied by the archaeologists of the Soprintendenza and dated to the 6th century BC.²¹¹ On the other hand, regular excavations at Spinellina begun in 2000, under the direction of prof. Moroni of the University of Siena and the Soprintendenza, followed between 2007 and 2011 by further trial trenches undertaken under the direction of prof. Marco Pacciarelli of the University of Naples Federico II, and then of prof. Cristiano Iaia, of the university of Turin. Finally, in 2023 I myself undertook geophysical investigations in an area South and West of the excavation site.

During the excavations at Spinellina two furnaces came to light (*plate 49.1-2*), one next to the other, both next to a big rectangular pit, and a line of four smaller pits.²¹² The furnaces appeared to be partially dug in the ground. The phasing of the site starts with the earliest feature being the rectangular pit, its backfill, then a furnace, used for a period and then used as a rubbish pit, then the other, used again eventually as a rubbish pit.²¹³ These contexts are dated between the 8th and the 6th century BC, consistent with what has been found all around the Trebbio area

²⁰⁸ The rim of what could be compared to an *amphora* recorded at Poggio Civitella (see Cappuccini *et al.* 2014, p.74, fig.48, PC 4204) may be dated between the 6th and the 3rd centuries BC; two *olla* rims may be dated to the 6th century BC and are comparable to pieces from Spina (see Mattioli 2013, p.317, III, 3, h); a third one can be dated to the first half of the 6th century BC, since it is comparable to pieces from *Clusium* (see Gastaldi 1998, p.181, fig.83, n. 13).

²⁰⁹ Alberti *et al.* 2009, p. 13.

²¹⁰ Alberti *et al.* 2009, p. 13.

²¹¹ Catucci 1993, pp. 245-246.

²¹² Alberti *et al.* 2009, pp. 14-20.

²¹³ Alberti *et al.* 2009, pp. 16-21.

during surface survey.²¹⁴ The materials collected from the backfills are mostly sherds of coarse storage and kitchen ware, and fewer examples of fine ware. Metal slugs have also been collected. The rectangular pit had an infill with ceramic materials datable between the end of the 8th and the end of the 7th century BC,²¹⁵ the first furnace (A) was backfilled with materials datable to the 7th century BC, the second furnace (B) with material datable to the 6th century BC.²¹⁶

Both furnaces consisted of a circular pit, 0.40 m deep and 1 m in diameter, and a *prae-furnium* (the furnace's antechamber, or pre-furnace), both dug into the natural soil. Chunks of a thick clay furnace grid were found in furnace B and within its backfill, we can thus reconstruct these structures as double-chamber vertical furnaces with antechamber.²¹⁷ The separation between the pre-furnace and the combustion chamber is marked by a vertically juxtaposed large *pithos* rim. This is a distinguishing feature of Trebbio's furnaces for solving structural issues usually connected to one of the most delicate spots of this kind of structure.²¹⁸ The dome was made of clay and was probably destroyed at the end of each firing cycle. Some fragments of fired clay, found in the infill of the rectangular pit, have in fact been interpreted as part of it. According to archeometric analysis made on these and other dome fragments, the furnaces could reach temperatures between 750° and 950°.²¹⁹ The 4 smaller pits, located to the west side of furnace B have been generally interpreted as post-holes, possibly pertaining to a cover or a rack, yet their dating and phasing remain uncertain, given the truncation of their stratigraphic relationships by later agricultural activities. Since timber structures were risky if in proximity to a functioning furnace (B), their phasing with furnace A seems more likely.

These late Iron Age/Archaic features appeared generally to be heavily truncated already by ancient agricultural activities, since they were covered by a rather homogeneous thick layer with scant Roman material, recorded mostly directly under the 80 cm of the modern agricultural soil, if with the interpolation of a single early medieval double inhumation.²²⁰ Some of the contexts investigated next to the furnaces between 2007 and 2011 still need to be fully published. These investigations focused on the area adjacent to Spinellina to its south. A trench, excavated by machine, uncovered a ditch more than 3 meters deep and 12 meters wide, next to the furnaces, and possibly coeval. Ceramic materials collected from its backfill were dated to the 7th century BC.²²¹ This landscaping feature was interpreted by the archaeologists as a defensive ditch, made in a moment of crisis prior to the abandonment of the site, but it could also be interpreted as one of the paleo-beds of the river Afra.²²² A channel backfilled with pebbles, stone sherds, and ceramic material, 7 meters long, with perfect east-west alignment, was also recorded, and interpreted by the archaeologists as a wall footing connected with the Archaic settlement (*plate 50.2-3*).²²³ The precise location and stratigraphic position of this

²¹⁴ Alberti, Iaia 2009, pp. 34-43.

²¹⁵ Alberti, Iaia 2009, pp. 42-44.

²¹⁶ Alberti, Iaia 2009, pp. 45-52.

²¹⁷ Acconcia *et al.* 2009, pp. 345-347, cfr. with Iaia 2009, p. 74.

²¹⁸ Acconcia *et al.* 2009, p. 347.

²¹⁹ Maritan *et al.* 2009 pp. 80-81.

²²⁰ Acconcia *et al.* 2009, pp. 349-351.

²²¹ Iaia, Pacciarelli 2021, pp. 13-14.

²²² Iaia, Pacciarelli 2021, pp. 13-14, 21-23; cfr. with Benvenuti *et al.* 2009, pp. 2-3—the paleo-bed in this article was found located directly between Spinellina and Casa Bardinelli, and is not the ditch feature of Iaia, Pacciarelli 2021.

²²³ Iaia, Pacciarelli 2021, pp. 14-15.

feature are unclear, as it is its date, however it closely resembles other drainage features in this part of Valtiberina, of uncertain date.²²⁴

The stylistic connection between the fine ceramic material from Trebbio (e.g. *plate 50.1*) and that from sites along the Tiber valley (such as Fabreccce, Trestina, and Riosecco), and also in the Adriatic side of the Apennines (such as Novilara, Metelica, and Gubbio), has often been highlighted.²²⁵ Since Trebbio was a centre of pottery production, it is still unclear whether these materials were imported or locally produced, or both. Iaia and Pacciarelli have hypothesised that the settlement of Trebbio may have responded to the expansion of Etruscan polities towards the Tiber valley and the Adriatic, first with a defensive ditch and then with the abandonment of the settlement at the end of the 6th century BC, apparently coeval with that of the nearby Fabreccce, Trestina, and Riosecco.²²⁶ As said, the extensive survey of the whole area of Trebbio has yielded copious pottery finds, located in several scatters but all consistent in typologies and date. From the excavations, and apparently from most finds-spreads, no tiles at all were collected, and very scant bucchero sherds. The absence of tiles has puzzled the archaeologists (me included) and has been interpreted by Iaia and Pacciarelli (and in the past by me as well) as a further cultural marker, differentiating the building techniques widely employed in coeval Etruscan settlements such as Cortona and *Clusium* from those employed by Trebbio locals.²²⁷

Despite the clear productive vocation of the sites at Casa Bardinelli and Spinellina, the overall character of Trebbio is actually yet to be fully ascertained—whether these furnaces were located within or adjacent to a settlement or located in an advantageous spot and used by other surrounding settlements, or in fact possibly both. To better understand this predicament, since no clear archaeological signs of other structures were ever excavated, I undertook a geophysical investigation (using magnetometry) of the area immediately to the south and west of the spot where the ditch was found (*plate 51*).²²⁸ Aside from modern land divisions (the red and orange linear features on *plate 52.1*), four different groups of evidence were recorded: two paleo-river beds (one in yellow the other in orange), one of which (yellow) could be interpreted as a ditch and is to be related to the continuation to the south of the ditch recorded between 2007 and 2011; long linear features of about 30 m each (in light blue), possibly backfilled with stone materials, mostly parallel to one another and with east-west orientation, maybe similar to the linear feature backfilled with pebbles recorded between 2007 and 2011; 2 or 3 big rectangular enclosures (also in light blue), possibly stone footings of buildings, with north-south orientation; finally, two groups of small areas with traces of fire (dark blue). The two paleo-river beds/ditches are very different from one another. The big one to the west (the orange one) should be identified with a paleo-river bed of the Afra or, more likely, of the Tiber. The smaller north-south anomaly (the yellow one), to be identified with the previously recorded

²²⁴ I myself excavated such a drainage feature in Summer 2021, on a site between Sansepolcro and Anghiari, when working along the building site of the SNAM gas pipeline connecting Rimini to Sansepolcro; this one was later than the 3rd century BC.

²²⁵ Catucci 1993, pp. 283-284; Acconcia *et al.* 2009, p. 349; Iaia, Pacciarelli 2021, pp. 19-22.

²²⁶ Iaia, Pacciarelli 2021, p. 23. It should be noted that the archaeological contexts of Fabreccce, Trestina, and especially Riosecco are not well recorded, or fully published, cfr. Bonomi Ponzi 2014, pp. 202-203.

²²⁷ Iaia, Pacciarelli 2021, p. 14, 21 (a similar position already in Migliorati 2003, and I also was of a similar opinion once, see Dominici 2022), again cfr. Bonomi Ponzi 2014, pp. 203-205.

²²⁸ The geophysical investigation was carried out by Dr. Francesco Pericci of ATS Enterprise and was sponsored by the kind patronage of the Wolfson Ancient World Research Cluster.

ditch, appears to be partially obliterated by the paleo-bed of the Tiber and should be therefore stratigraphically earlier.

A paleo-bed of the Afra has been identified in the area between Spinellina and Casa Bardinelli,²²⁹ in an area completely devoid of finds-spreads (see *plate 49.3* and *plate 52.2*). It is likely therefore that this specific paleo-bed is later than the Trebbio settlement. Since the material found in the north-south ditch was dated to the 7th century BC, this ditch may be interpreted either as a defensive, man-made feature, or as yet another Afra paleo-bed coeval with the earlier phases of the Trebbio settlement. The linear features and the rectangular enclosures seem to be related to one another: they appear perpendicular to each other, and they may be in phase. Both groups of features seem to be stratigraphically *above* the north-south ditch, in fact covering an area that divides the portion of the ditch excavated between 2007 and 2011, and the portion uncovered in my geophysical analyses. The construction of linear features and rectangular enclosures should be considered later than the 7th century BC. It should be noted that from this area numerous sherds of bucchero, grey ware, and tile fragments were apparently collected and recorded during the surface survey of the 1980s.²³⁰ It is therefore possible that the abandonment of the furnaces may have not coincided with that of the settlement. Direct archaeological investigations are required to assess to what kind of evidence the rectangular features may pertain, and to which period.

Catiglianello

Another interesting archaeological site, partially investigated, was found in 2008 on the hilltop of Catiglianello at the northern slopes of the Alpe di Poti at 350 m OD, overlooking the modern road that connects Arezzo to Sansepolcro (SS 73), between the hamlets of Catigliano and Citerna, and in between the valley of the river Sovara—springing from the nearby Monti Rognosi—and that of the river Cerfone, both tributaries of the Tiber. The archaeological investigation partially uncovered the remains of a building that may have 2 phases of occupation, spanning one or two centuries at the most, between the 6th and the 5th century BC, prior to its abandonment.²³¹ In the earlier phase, dated to the 6th century BC, the surface of this hilltop was levelled with an infill, limited by a small ditch with a palisade, forming a plateau that was then covered by a surface of beaten soil and pebbles, interpreted by the excavator as a road. On this surface at the end of the 6th century BC, a building was constructed. The remaining structures are linear wall footings similar to those of Tizzano. Above these footings a series of layers of beaten earth have been recorded, rich in ceramic materials, both fine and coarse. Some of these layers have been interpreted as abandonment layers.

The finds assemblage is mostly pottery, and is characteristic of a rather well-off dwelling, as hinted also by the presence of a bronze colander, a tool normally used in banqueting ceremonies. Among the datable materials we find sherds of fine pottery fired in an oxidising atmosphere, of bucchero, and of grey ware, datable to the 6th century BC, mostly cups

²²⁹ Benvenuti *et al.* 2009, pp. 2-3.

²³⁰ Laurenzi, Moroni, Scarpellini Testi 1992, p. 70, n. 19. Apparently along the ceramic finds a portion of human skull was also recovered, probably to be related with the late Roman/Early medieval graves found at Spinellina (see Acconcia *et al.* 2009, p. 349). I was not able directly to assess the material evidence recovered from this specific spot.

²³¹ Bozzi 2009, pp. 8-12.

comparable with typologies from the areas of Imola and Spina.²³² Sherds of a black gloss chalice, possibly an Attic import, datable to the end of the 5th century BC,²³³ were collected from one of the abandonment layers. The ceramic assemblage included also a few sherds of *pithoi*, and many of kitchen ware and storage ware. Chunks of a furnace grid, and of over-fired tiles, were also found (although it is unclear were exactly), and point to the presence of a furnace of unspecified purpose. It should be noted that a furnace of Roman date was also excavated in 2009 a few meters to the north of this site. The presence of a palisade, and thus of a defensive system, has been related to the short life of the site. The window for the settlement of Catiglianello is indeed rather too spatially limited to allow conclusions, especially considering the presence of a Roman furnace next to the Archaic site (itself the site of a furnace). Nonetheless, the position of Catiglianello is significant, at the intersection of the valleys of the Sovara and of the Cerfone, on the route connecting to the area of *Arretium*.

Patterns in the settlement of the inner Apennines

As evident from the table at *plate 3*, aside from a few cases of earlier date, the settlement of this part of central Italy seems to have properly started only in the 6th century BC, with a second wave in the 4th century BC. The distribution of settlements among the two valleys is uneven, or better, in clusters that cover only certain areas, while wide portions of the countryside appear unoccupied. As argued already at the beginning of the chapter, this is not caused by gaps in the record. New data is still to come, however the clustering of sites in the Archaic and Late Archaic period may be considered already a genuine settlement pattern, corroborated by the synchronicity in phasing among the clusters of sites, and especially by the fact the survey data for all archaeological periods indeed covers all the territory, as apparent if we take a look at maps displaying finds of later date (e.g. *plate 53*).²³⁴ As a working hypothesis we may interpret this pattern as a marker of intra-Apennine routes, along which new dwellings were placed by groups of settlers, spontaneously and/or as a part of a wider enterprise, planned by other nearby communities to protect their interests, provide shelters to wayfarers, and generate or control resources. The fact that only certain parts of the countryside were settled suggests that settlement and even land reclamation may have been difficult endeavours, made only when and where necessary, and requiring organisation.

The topographic groups have all slightly different phasing, and this aspect may be considered a hint of the dependency of each cluster of sites on specific wider trading routes, connected to other clusters of settlements in nearby valleys, and probably to bigger nearby centres or more densely-inhabited areas. A fundamental feature of these trading routes is their respective separation, which is suggested by their different phasing and by the fact that the same classes of material, namely the fine ware, and especially bucchero and grey ware, have generally different sets of *comparanda* from cluster to cluster. Different clusters of settlements may have supplied their needs for fine-ware by privileging different trading routes. The kitchen ware and coarse ware for instance do not seem to follow the same patterns, as its typologies are all generally comparable between settlements. There is a further issue, one that will be investigated in this thesis, one that has never been properly assessed for Archaic central Italy: pottery

²³² Bozzi 2009, pp. 13-15.

²³³ Faralli 2009, p. 18.

²³⁴ See Dominici 2014.

production facilities were very common and can be found even in neighbouring and co-existing sites (e.g. Tizzano, Mutale, and Madonnuccia). What kinds of goods were made in these facilities? What was imported on site? In other words, who made the pottery we find in Casentino and Valtiberina? These specific issues concerning pottery finds will be problematised and assessed properly in Chapters 3 and 4.

However, as highlighted by studies on pottery goods from other places and periods,²³⁵ we may assume for now that fine ware is indeed a good indicator for the diachronic variability of trading routes. We may therefore find a slightly more marked difference between the sites on the Falterona and Secchieta ridges—those in the northern Casentino—and roughly all the rest. The sites on the Falterona and Secchieta ridges, with the exclusion of the Lake of Idols, founded or re-founded in the 6th century BC, may have been abandoned in the 5th. This hiatus could also be due to a disruption of the trading route supplying fine ware, possibly among other goods. The fine ware from these sites finds comparison more specifically with that from Mugello and from all the Valdarno down to Pisa. On the other hand, the sites within the Socana transect and of the Singerna valley were all founded in the late 6th century BC, and especially at the beginning of the 5th. Their fine ware has direct comparisons with many productions from the area of *Clusium*.

These patterns seem to be relatable to the phenomena suggested by Adriano Maggiani, of different economic trajectories among the urban polities of central Italy and especially of northern Etruria in the 5th century BC, connected to different responses to trading crises. He made this argument not just on the basis of fine ware but especially assessing the diachronic differences in diffusion of other classes of luxury items.²³⁶ The trading routes involving the different clusters of Valtiberina and Casentino may therefore be connected directly to the activity of nearby competing urban polities. This is not the only pattern that connects Casentino and Valtiberina to other parts of central Italy. Laura Bonomi Ponzi has highlighted how during the 6th century BC there is a shift in settlement strategies in some valleys on the inner Apennines—from Terni, to Plestia, to the area of Assisi, to the valley of Gualdo Tadino.²³⁷ In these areas we see the founding during the 6th century BC, of mountain top forts, that acted as centres of aggregation and of defence for the surrounding countryside. This seem to have been probably part of a general re-organisation of the countryside itself, and it is coeval and possibly connected also with the abandonment of some sites in the plains.²³⁸ The same phenomenon may have been behind the abandonment of Trebbio (if a settlement was indeed abandoned), the coeval foundation of the Singerna sites, and the construction of Monte Castelsavino, and possibly of its twin at Castelvecchio.

Bonomi Ponzi interprets this pattern almost as an ethnic marker—as one of the Umbrian styles of urbanism. Fortified hilltop settlements of the Archaic period are not exclusive to the inmost Apennines, nor to the Adriatic side of Italy, and Poggio Civitella between *Clusium* and the area of Siena, is one of the best recorded examples. The abandonment of certain sites on the plain, the foundation of new sites on the plain, and of hilltop and mountaintop forts, rather than being an ethnic marker, may have been the answer to specific needs connected to the establishment (or re-establishment), of defence, and control of inland trading routes, and to ways of building

²³⁵ Namely for instance the *Ager Tarraconensis* in Imperial times, see Millet 1991, pp. 18-20.

²³⁶ Maggiani 1990.

²³⁷ Bonomi Ponzi 2014.

²³⁸ Bonomi Ponzi 2014, p. 203.

places responding to different social interactions, that were shared more generally by the people that lived in the Apennines. At the end of the spectrum of these social interactions we may indeed find conflict, but this may have not been the main agent of definition or change in settlement strategies. Control of exchange routes, on the other hand, may have become a defining need in times of economic uncertainty, and these fortified settlements may have been made precisely to exert this kind of control. In times of peace, they may have acted as relays for goods, facilities for trade, centres of production, some even as sanctuaries, and most of all gathering points. Further research on this topic is paramount since a reassessment of similar case-studies is still needed.

Where is the city?

“*The focal feature of the political transformation of the Etruscan landscape [from the Orientalising to the Archaic period] was the move from a dispersed village life to a nucleated, potentially urban, life*”.²³⁹ This is not true for Casentino and Valtiberina. If we consider diachronically the number of settlements recorded by archaeologists, from the 7th century BC to the Augustan period,²⁴⁰ we see that the number of small settlements (the dispersed villages of the quote) steadily increases, while to date we have no clear archaeological sign of a big, aggregative centre within them, and especially in their premises. Where is the city? If we think of the traces of orthogonal north-south partitions of both land and settlement blocks as signs of urbanism, arguably, for the period between 600 and 400 BC, we have clearer signs of what could be considered hints of urban development at Poppi and Sansepolcro than at *Faesulae* and *Arretium*. Arguably, the same socio-economic processes, with comparable settlement strategies, that were at play within and around more renowned urban polities of central Italy, were at play here.

We may not be able to know with certainty whether these valleys were a hinterland to bigger cities, or if they were *terrae nullius*; I would like however to advance a hypothesis. The variations in diachronic phasing among sites, and the differences in provenance of fine ware between the clusters of settlement could be considered the closest indication of what might be related to ‘hinterland’ phenomena, at least until the 4th century BC, as obtainable from the kind of archaeological and topographical evaluation presented in this chapter. *Arretium* and *Faesulae* appear as the two most likely urban polities that may have influenced the provision of imports, at least for a time, with the northern Casentinese cluster connected to *Faesuale*, and the southern part of Casentino from the Socana Transect and Valtiberina, to *Arretium*. Poppi may have acted as a sort of relay between the two townships, with the uninhabited areas between Stia and Poppi, and of the Archiano Valley, as buffer zones—*terrae nullius*. It is unclear whether local centres of Casentino and Valtiberina required a link to a bigger city in order to sustain themselves. They certainly benefited from the wellbeing of inland exchange networks for the provision of certain kinds of items. The connections of these two valleys to the rest of central Italy, on both sides of the Apennines, is indubitable—a clear sign that inland routes across the Apennines were well frequented and possibly fundamental for the overall economy of pre-Roman central Italy.

²³⁹ Stoddart 2016, p. 306.

²⁴⁰ Dominici 2009; 2014; 2022.

Chapter 3

Craft and exchange

Checking the technique

Who made the pottery assemblage in Casentino and Valtiberina? Far from wanting to raise an issue of identity, this question intends to problematise instead the often hidden interplay between the activities of crafting and the activities of exchanging of functional pottery goods, used in the tasks of everyday life and found through excavation in the ancient settlements of Casentino and Valtiberina. Crafting and exchanging pottery objects were in these peripheral valleys as mundane an activity as exchanging goods, or as cooking and storing food or liquid—especially considering the strongly functional character that the pottery assemblage from these two valleys presents. The purpose of this chapter is, therefore, to assess whether this pottery assemblage was locally crafted or if it arrived on site as the fruit of exchange. In other words, to what extent the makers of ceramic objects in the Casentino and Valtiberina were professionals (people who lived on their crafting trade), semi-professionals (people who possessed unique skills that were used at least seasonally), or occasional potters (those who possessed skills that were common, or uncommon at the most, and used them when needed).

A craft is a productive occupation that requires particular skills and a knowledge of skilled work to be undertaken. As we shall see, the diffusion of a crafting technique informs us of the reach of the network to which the crafter belonged. Crafting techniques have in fact different ranges of diffusion, as much as exchanges of products have. The diffusion of a crafting technique is an aspect that may be grasped only by studying the products, their diffusion, and the positioning of known productive centres, if we are lucky enough to have discovered any. For some ceramic classes, a specific crafting technique may be the only clue the pottery piece provides to the extent of a trading exchange. As we shall see, crafting and exchange may have parallel ranges on a local scale. Likewise, long-distance trade may impart an influence on local crafting techniques by introducing fashions in designs and decorations. Casentino and Valtiberina provide good case-studies for uncovering possible interplays between the diffusion of crafting techniques and that of pottery goods, because several pottery kilns have been recorded among the archaeological sites of the two valleys.

Assessing patterns in the diffusion of crafting techniques and pottery goods in this part of pre-Roman Central Italy is, however, instrumental in shedding light on certain aspects of the local economy that are still obscure or overlooked. As we are considering a rural society that was possibly part of a pre-monetary economy,²⁴¹ exchanging goods may have been a significant event in itself, involving not just tangible objects but also favours, agreements, transactions.²⁴² Among other non-tangible assets, the knowledge of pottery making may have been part of this semi-monetary exchange economy. Tracing the spread of different crafting techniques will

²⁴¹ D'Ercole 2017, p. 158.

²⁴² See Graber 2014, pp.43-49.

therefore help in discovering the relations between the many, small, and sparse communities that dotted this peripheral part of Central Italy during the age of the city-states.

What is crafting?

We may think of crafting as a complex series of actions, involving the manipulation of materials for producing new objects. It necessitates honed skill in performing such actions, and specific knowledge of the materials, and of the processes needed to manipulate their chemical and physical properties. Most of these actions, therefore, cannot be improvised and must be learned and practiced in order to be undertaken effectively. They represent a core of knowledge perfected under multi-generational improvement, often benefiting from (and eventually embedding) technical innovations. Yet there are actions for which there is space for adaptation, for improvisation, for intuitive performance, for creativity, and finally for mastery (the ultimate freedom of the crafter). Pottery making provides quite the exemplary study-case of these heterogenous groups of actions, all undertaken with the final goal of making a single object.

These actions did not happen in a vacuum. The potters crafted in a precise place—this may have been a workshop, fitted accordingly with facilities such as basins for cleaning the clay, racks for drying the vessels prior to firing, and kilns or similar implements to finalise the production; or a space within the potter’s own residence, or even the patch of street in front of it, making use of more ephemeral facilities to similar ends. Potters supplied a demand, and this demand had its range—possibly its set of ranges—spanning from the need of the potter’s family to that of the potter’s settlement, to that of nearby settlements, to being part of even wider trading networks. Potters made objects, and many of these objects were tools themselves—most of them were containers, and thus ended up following some other product’s exchange trail.

Objects made by potters with specific sets of actions may thus display a characteristic diffusion range. This range, or set of ranges, depended on the network a potter was part of in his or her everyday life, and on the activities undertaken in the area in which these networks took place. Since potsherds pertaining to pottery objects with similar functions are often undistinguishable from one another the only way to trace back their real diffusion is to understand the unique sets of actions used to produce them by a potter in his or her workspace. The diffusion of the set of actions, or technique of production, or crafting technique, is therefore descriptive of a network of activities in which a potter and his or her workshop were involved, and this network informs us about the societal behaviours connected with the activities the pottery was used for.

In any case, identifying the different crafting techniques is the first step in the understanding of their possible diffusion. The *chaîne opératoire* approach was deemed the most promising one to discover the crafting techniques used in Casentino and Valtiberina. The focus of the *chaîne opératoire* approach is in fact technology, as a process and in its social and cultural implications. More specifically, the *chaîne opératoire* approach first seeks to identify and understand the salient actions of a production chain, then it proceeds to problematise these actions from an anthropological point of view.²⁴³ It has been concisely defined, in fact, “*as a*

²⁴³ See for instance Dietler, Herbich 1998, pp. 244-248; Gosselain 2000, p. 190 with references; Delage 2017, pp. 158-159; Roux 2017, p. 103, 109-110; Roux 2019, p. 2; Spataro, Furholt 2020, p. 11.

methodology to study social factors in technological choices”.²⁴⁴ It was firstly developed by prehistoric archaeologists between the 1970s and ‘80s,²⁴⁵ and then systematically used since the early ‘90s by ethnoarchaeologists (especially of the French school) to study the techniques of pottery production, both from direct ethnographic evidence on modern handicraft,²⁴⁶ and by comparing direct modern ethnographic evidence with archaeological potsherds.²⁴⁷ The recent book by Valentine Roux, *Ceramics and society*,²⁴⁸ is the outcome of the past three decades of developments in the field of studying archaeological ceramic assemblages using this technological perspective,²⁴⁹ and it provides the methodological framework for this research.

Production chains are divided into phases, in which the makers used certain groups of actions to manipulate materials according to specific technical intentions. Different phases are necessary to transform raw materials into objects, and this aspect is particularly evident for pottery making. These transformations must occur and in their proper succession (otherwise a lump of clay will remain such). Therefore, the main phases of pottery production are always the same whenever and wherever ceramic is made—clay sorting, vessel shaping (or forming) and vessel firing.²⁵⁰ The sets of actions performed in each phase may differ from one archaeological case to a comparable other.

As we have different sets of actions, we also have different kinds of *knowledge* involved in each phase of pottery making. For example, for producing the clay, potters may need practical knowledge of the geology of the landscape surrounding their area of activity, so as to find new clay quarries when necessary.²⁵¹ They also need an extensive understanding of some relevant chemical and physical properties of the materials (not just of the clay but also of the substances used as tempers).²⁵² Shaping the vessel requires a different sort of knowledge, both sensor and motor, connected to the movements and the tools needed for making vessels using processed clay. A potter acquires this knowledge in time and with practice, when interacting with the posture, the movements and the tools necessary for pottery shaping, developing the so called ‘customary muscular patterns’ that come from repeated working positions.²⁵³ It is also relevant to point out that this kind of postural knowledge also depends on the ceramist’s own physical conformation, contributing to the unicity of each ceramist’s pottery production—a unicity that is perceivable only to a much finer scale than that of this assessment.

Finally, firing requires a whole different set of practical knowledges—about the tools (the surfaces, pits, kilns, and furnaces where the firing may take place), about materials (fuel), and

²⁴⁴ Duistermaat 2017, p. 120.

²⁴⁵ For a concise history of the method see Delage 2017; cfr. Shott 2003.

²⁴⁶ See for instance Huysecom 1994; Gosselain 1998; Gosselain, Livingstone Smith 2005.

²⁴⁷ See for instance Roux, Corbetta 1990; Gelbert 1994, Pierret 1994, and Roux 1994 from the staple publication *Terre Cuite et Société* (Audouze, Binder 1994); Roux, Courty 1998; Knappett 1999; Gosselain 2000; Jeffra, Karr 2013; Roux 2017; Arnold 2020.

²⁴⁸ Roux 2019.

²⁴⁹ Gosselain, Livingstone Smith 2005, p. 34.

²⁵⁰ Thér 2020, p. 171.

²⁵¹ As the work by Olivier Gosselain and Alexandre Livingstone Smith showed, among the people of Sub Saharan Africa “*artisans do not consider that extraction may be done « just anywhere », but rather in specific locations: riverbeds, swamps, alluvial plains, hillsides, etc.*” (Gosselain, Livingstone Smith 2005, p. 39). New clay quarrying sources may be sought whenever the need arises and then discovered following certain criteria that may vary from potter to potter, while nonetheless embedding some elemental levels of geological knowledge of very specific landscapes.

²⁵² Gosselain, Livingstone Smith 2005, pp. 37-38.

²⁵³ Arnold 2020, p. 26.

especially about their handling.²⁵⁴ Different tools imply different firing techniques.²⁵⁵ A potter may be familiar with many of them and use them according to necessity.²⁵⁶ Knowing the right temperature, how to reach it, and how to maintain it for the right amount of time is only one part of the process,²⁵⁷ the other being controlling the firing atmosphere.²⁵⁸ Since the atmosphere affects the colour and quality of the vessel surface, skilled potters may learn to control it so proficiently that they can achieve specific outcomes.²⁵⁹

From tradition to transmission

Pottery making is thus a complex endeavour undertaken in different locations over many days, involving deep knowledge of the properties of materials of different kind and of the tools used to work with them. Every set of actions belonging to each phase can potentially accommodate a profusion of cultural meanings.²⁶⁰ These sets are generally defined, in fact, as technical traditions, often implying a marked cultural element to their distinction.²⁶¹ The word *tradition* may be adopted indeed, but in a slightly different way, dropping much of the cultural overtone of the French school while borrowing more strictly from its origin, the Latin verb *trado* (to hand-on; to transmit). The handing-on process is in fact fundamental for the correct use and further development of crafting techniques.²⁶² This transmission is a communal endeavour;²⁶³ it is core to the introduction and spread of innovations;²⁶⁴ finally, ethnographic studies have shown that different modes of reception and transmission may correspond to different kinds of knowledge.²⁶⁵

²⁵⁴ See Gliozzo 2020, pp. 2-5.

²⁵⁵ Livingstone Smith 2001, pp. 993-998; Tite 2008, pp. 219-220; Rice 2015, pp. 172-175.

²⁵⁶ See Livingstone Smith 2001, pp. 993-998, for a discussion on how intermingled different firing techniques are, as used in modern day Sub-Saharan Africa. A compelling example of open and kiln firing techniques used in the same 'workshop', possibly during the same archaeological phase, comes from Orientalising Veii and can be found in Boitani, Neri, Biagi 2009, pp. 99-103; another example, a lot more open to interpretation in Acconcia, Biagi 2004, pp. 112-114. A further example comes from an excavation I personally took part during this summer (2022). We excavated a multipurpose and multifacility furnace place dated to the 1st century BC, in the Val Marecchia area. Here we found a huge updraft furnace, flanked by a smaller updraft structure and three firing pits.

²⁵⁷ See for instance Livingstone Smith 2001, pp. 999-1000; Rice 2015, pp. 171, 175-176.

²⁵⁸ Rice 2015, p. 177.

²⁵⁹ Cuomo di Caprio 2007, pp. 488-490; Deriu 2009.

²⁶⁰ See for instance Gosselain 1998 pp. 78-82.

²⁶¹ Gosselain 1998, p. 91; Roux 2017, p. 101; 2019, p. 4; Thér 2020, pp. 171-172. Roux states quite categorically: "*there is a strong correlation between technological behaviours [technical traditions] and social groups. Individuals tend to do as their group does, thus maintaining the diversity of cultural traits within their social group and making visible their social borders.*" (Roux 2017, p. 101).

²⁶² As was evident to those who studied it from an ethnographic perspective, see for instance Gosselain 1998, pp. 94-99; Arnold 2020, pp. 25-26.

²⁶³ As Marcia-Anne Dobres pointed out: "*technologies are fundamentally about people, mindful communities of practice, and social relations of production.*"—Dobres 2000, p. 129; More recently Dean E. Arnold thus wrote: "*Making pottery, like engaging in all technology, results from learning that takes place in a social context. Learning the skills and transmitting those skills across space and time requires sustained social contact. Furthermore, learning the semantic categories for obtaining and engaging raw materials and the technical skills necessary to turn those materials into a pot requires enough time in a social context for neophytes to learn them.*"—Arnold 2020, p. 25. See also, Fowler 2017, p. 479.

²⁶⁴ Spataro, Furlholt 2020.

²⁶⁵ For the earliest iteration of this discovery (along with earlier bibliographic references) see Gosselain 2000, pp. 191-193; cfr. Fowler 2017, pp. 480-481.

This discontinuity of transmission of technical knowledge seems roughly to follow the phases of production. Ethnographic observations have shown that many decorative cosmetic techniques involving simple mechanical gestures, usually applied at the end of the shaping phase, change faster over time, and vary considerably even among neighbouring places.²⁶⁶ Conversely, the spread of techniques related to clay quarrying, clay processing, and vessel firing seems to be localised in time and space, changing punctually, possibly according to necessity. Finally, potters have always been reluctant to change the core techniques belonging to the shaping phase, which appear to be unchanging over many generations.²⁶⁷ Observation has led some scholars to think that the spread of these shaping techniques may be indicative even of identity concepts.²⁶⁸

While these considerations are mostly the fruit of direct ethnographic observation, the origins of these phenomena are still to be fully understood. Both Olivier Gosselain and Kent Fowler stressed the duality between visible and invisible outcomes of the crafting actions, for making sense of the difference in their transmission, with invisible actions seen as makers' exclusive preserve.²⁶⁹ Arguably the discontinuity happens not because of different visibilities, however, but precisely because we are dealing with different kinds of knowledge, that may develop and change in different ways.²⁷⁰ In fact, the outcomes of the actions belonging to the clay processing and vessel firing phases are actually quite visible on the end product, sometimes as much as cosmetic decorations (to which they often contribute).²⁷¹ On the other hand, the types of knowledge related to clay processing and vessel firing phases are directly connected to the practical understanding of the materials and the manipulation of their physical and chemical properties, that only coincidentally imply invisible or hidden changes.

This specialised knowledge comes to reflect local and regional networks of artisans more directly.²⁷² Their spread is therefore more constant in time and space, and more evidently affected by innovative choices.²⁷³ These phases consist of techniques with a high degree of complexity, with different kinds of actions and a deeper and necessary knowledge of the materials and the tools used to manipulate them. These techniques cannot be improvised but need to be learned from skilled crafters, and even then, they may not yet be replicated proficiently until honed by the apprentice. We may include in this group also complex decorative techniques, such as barbotine painting, that are highly visible. These more difficult actions may be considered among the secrets of the craft. Some of them may become a reason for pride for the workshop, signature techniques that may be exported to new workshops or kept hidden. A good example of a technique cherished by the makers and not widely shared may be the methods to implement a perfect reductive atmosphere during firing.²⁷⁴

²⁶⁶ Fowler 2017, pp. 480; cfr. Gosselain 2000, p. 191.

²⁶⁷ Gosselain 2000, p. 193; cfr. Arnold 2020, pp. 26-28.

²⁶⁸ “*Such as kinship, language, gendered technical practices, and class divisions*” (Fowler 2017, pp. 480-481).

²⁶⁹ Gosselain 2000, pp. 191-193.

²⁷⁰ As Dean E. Arnold points out, see Arnold 2020, p. 26.

²⁷¹ See the so called ‘ceramica a squame’ for an example of interesting interplay between lumpy and grainy clay texture and the development of geometrical decorations (Irti 1990, pp. 208-210; Pignocchi, Landolfi 2013, pp. 80-81); for the decorative use of firing spots on vessel surfaces, see Hendrick, Friedman, Loyens 2000, pp. 179-183.

²⁷² Fowler 2017, pp. 480; cfr. Gosselain 2000, p. 192.

²⁷³ Spataro, Furholt 2020, p. 12.

²⁷⁴ Perkins 2016, p. 226.

Simpler and more cosmetic decorations are usually the most technically flexible and are more easily transmitted when new individuals learn the craft. They are easy to reproduce, thus change fast and may vary locally to reflect the demands of clientele.²⁷⁵ A maker attentive to his or her clientele may learn a decorative method according to local fashion,²⁷⁶ potentially shifting from former techniques to new ones several times during his or her lifetime. The so-called vessel typology²⁷⁷ may fall into this cosmetic category of swiftly changing techniques if we consider it as a design element of the piece that may have been adopted by local potters taking inspiration from imported products. However, since human behaviour is indeed complex, we cannot exclude that vessel typology may even fall among the core shaping actions in some cases.

The actions at the core of the shaping phase are the most conservative because they are related to *energy conservation*—motor habit, posture and muscle movements.²⁷⁸ People may be specifically unwilling to change a working habit, developed over time in a very precise environment with its specific physical constraints, and through direct individual experience. It is in fact in his or her working environment that the potter develops ‘customary muscular patterns’, and these are ‘*culturally determined and not universal*’.²⁷⁹ As Dean E. Arnold shows, such movements, or patterns of movements, are for the most part learned from others and are reinforced by the presence or absence of furniture, consistent with other different activities that are taking place in the same environment.²⁸⁰ Proper motor habits are thus defined as syntaxes of muscular patterns, and these are principally involved with forming a vessel.²⁸¹ However, not all the shaping actions are strictly motor habits. Although societies of the past were not obsessed with novelty and uniqueness, invention and adaptation still occurred, either in response to necessity, or because the raw material allowed it,²⁸² or deliberately,²⁸³ or even by chance.²⁸⁴ As we shall see at least in certain cases and to a certain scale of observation, shaping actions are not as conservative as they seem, nor are they enacted only following strict cultural restraints.

As Michela Spataro and Martin Furholt concisely pointed out,²⁸⁵ if we drop any positivistic / capitalistic conceptualisation of technology, every novel choice made by an artisan can be defined as innovation. Data, both ethnographic and archaeological, strongly suggest that many such innovative choices—novel actions—have been made (and are constantly made) by artisans, at any level of the production chain. These choices are *loosely* functional, and even pseudo-functional, actions that may bring an improvement, but mostly are neutral, to the quality of the production or to that of the production process.²⁸⁶ When such actions impart a change that is considered an improvement by the artisans themselves, or by the communities they work with or for, they may become adopted by anyone who is interested in achieving a

²⁷⁵ Gosselain 2000, pp. 195-200.

²⁷⁶ A fashion possibly dependent on trading networks prevalent in the local area.

²⁷⁷ I mean here the profile of the vessels, see for instance Mattioli 2013, pp. 21-26.

²⁷⁸ Arnold 2020, pp. 25-27; the importance of motor habits in the practice of crafting was firstly conceptualised by Pierre Bourdieu—his *habitus* (see Bourdieu 1977, p. 78).

²⁷⁹ Arnold 2020, p. 26.

²⁸⁰ Arnold 1985, pp. 147-151.

²⁸¹ Arnold 2020, p. 26.

²⁸² Walls, Malafouris 2016, pp. 628-631.

²⁸³ Ingold 2018, pp. 160-161.

²⁸⁴ Caruana, Cuccio 2016, pp. 710-711.

²⁸⁵ Spataro, Furholt 2020, p. 12.

²⁸⁶ Sofia Servoli investigates this aspect for the firing phase, in Pre-Roman Central Italy (Servoli forthcoming).

similar improvement. Gosselain's rejection of functional interpretations stems by his observation that many of the artisan's actions are not functional at all but embed many other meanings, even cultural or ritual.²⁸⁷ However, functional choices are always there, often hidden behind other actions with different meaning, or acquiring new meanings when passing on from performer to performer.²⁸⁸

The pottery assemblage from Casentino and Valtiberina presents a clear character of continuity. The same shaping techniques are used from the beginning of the 6th century BC to the end of the 2nd century BC, however there are indeed differences recorded for each sub-phase of the shaping (fashioning, preforming and surface treatment techniques). Moreover, some shaping techniques seems to have been used to achieve specific effects in order to determine, or improve, the functionality of the objects. Thus, differences are not necessarily indicative of different cultural traditions but also possibly of specific functional choices. As some of these techniques, producing specific effects on the object, are economically functional, they may be conservative simply because they work.

To conclude, while the basic methodology used for the analysis of ceramics in this chapter can be ascribed to the *chaîne opératoire* studies of the French school, its novelty may lie in the adoption of two elements. The first is certainly the scale of the assessment of the production chains, which were made not only on a single site,²⁸⁹ nor on a group of sites spanning a nation,²⁹⁰ or a continent,²⁹¹ or several continents.²⁹² Instead, the scale of this assessment is contextual, embracing the area of possible and most common interactions in which each settlement may have been involved, including all the other settlements in its vicinity, during the same time horizon. In this way, the grain of detail in the study of ceramic production techniques can be sufficient to make sense of the insidious complexities of transmission processes, precisely because of its focus on the localised interactions and exchanges that contribute to a very specific society with its attendant economies.²⁹³ Secondly, a good deal of attention has been given to the shaping phase, however, each production chain has been defined also by its clay sorting and firing techniques, as understandable from direct autopsy. Thus, the multi-phased production chain has been considered as a single process, so to understand which intentions and necessities may have driven more localised technical developments.

The crafting assessment

Each crafting action leaves a specific trace on the clay whilst the object is being produced. After the ceramic object broke in antiquity, the pottery sherds retained this information. By identifying these traces on the sherd, it is possible to identify a set of actions involved in the productive process and therefore to reconstruct the chains of production of the original ceramic object. The method used to trace clues of crafting actions on potsherds comes from Valentine

²⁸⁷ Gosselain 1998, pp. 79-82; 2000, p. 190.

²⁸⁸ Arnold 2020, pp. 28-29.

²⁸⁹ Kreiter et al. 2017; Arnold 2020.

²⁹⁰ Jeffra, Karr 2013; Burke, Zavahir, Kordataki 2021.

²⁹¹ Arnold 1985; Gosselain 1998.

²⁹² Gosselain 2000.

²⁹³ Spataro, Tezak-Gregl, Burić 2021 also looks at a contextualised group of 4 sites, drawing in fact an interesting picture of interaction (and lack thereof) among them.

Roux's recent publication, *Ceramic and society*.²⁹⁴ This method is fruitful, being “*the outcome of the past three decades of developments in the field of studying ceramic assemblages from a technological perspective, providing a theoretical and methodological framework for the study of pottery forming practices (and many others besides)*”.²⁹⁵ When one knows what to look for, it is possible to identify a good part of the whole productive chain of each archaeological pottery object at hand. The final goal of this assessment was thus viable—to discover *consistent groups* of objects made with the same chains of actions and to classify all pottery material from the two valleys accordingly.

Practically, the assessment of the pottery assemblage was undertaken by direct autopsy of the sherds, using a geologist's lens to magnify visibility of tempers, vacuoles and clay grains. The sherds were investigated looking for the presence of those typical traces of the potter's action indicative of specific techniques, for each phase of the production. The precision of this evaluation varied considerably from production phase to phase. The most trustworthy assessment was undertaken on the phases involving only mechanical actions that left easily visible traces that were not superimposed by subsequent actions—fashioning, preforming and surface treatment. As clay sorting and firing change the chemical and physical fabric of the clay material, discerning most of the important details of those techniques necessitates finer tools not accessible during this phase of the research. The analysis of the clay sorting and of the firing is therefore incomplete.²⁹⁶

The pottery assemblage from the two valleys has been studied site by site and, when the information allowed it, according to single archaeological contexts. Using Roux's methodology, the material from each site was sorted into 247 samples (a single sample comprising several sherds made in the same way, coming from the same archaeological context) and divided among 48 groups, each one a single *chaîne opératoire*. This sorting method was implemented following 57 categories, or variables, that pertained to characteristics that were present or absent on the pottery sherd. Each sample also featured a value for the quantity of sherds, a measure of their weight, a date, a latitude, and a longitude. Thus, a sample record would look like the following example, on an excel sheet, were 0s are for characteristics absent and 1s are for those present.²⁹⁷

TIZ.C.1.2: 001001001000100000011000000001000010001000001000010000100

And TIZ.C.1.2: 64, g 1875, 600-500 BC, 43.599830, 12.053321

This is, for instance, the group number 2 from feature C1 of the archaeological excavation of Tizzano, counting 64 sherds for a total weight of 1875 grams. The sherds come from an archaeological feature dated to the 600-500 BC by the excavators, from a site located in these coordinates (43.599830, 12.053321).

The 57 variables, divided in phases, are as follows:

²⁹⁴ Roux 2019.

²⁹⁵ Thér 2020, p. 172.

²⁹⁶ Further research will necessitate archeometric analyses.

²⁹⁷ The raw data can be found at this repository:

<https://www.dropbox.com/scl/fo/ts8h22s2sad3ryjwb0kzb/ADqWsvdrPh-JYSohdRD8U1A?rlkey=3r5m29u2zedgdp49ra79bl0jf&st=glhkrhk0&dl=0>

- Phase 1—clay sorting: *poorly processed; semi-processed; well processed.*
- Phase 2—shaping: *rotary device; turntable; wheel; mold.*
- Phase 2a—fashioning: *roughing out with RKE* (see below for the meaning of this acronym); *fashioning with assembled element by pressure; fashioning with assembled element by percussion; coiling (segments) and pinching; coiling (rolls) and pinching; coiling and spreading; slab; fashioning on clay mass by pressure; fashioning on clay mass by percussion; pinching; drawing; molding.*
- Phase 2b—preforming: *preforming with RKE; preforming on wet paste by pressure; preforming on wet paste by percussion; preforming on wet paste by pressure and percussion; scraping; scraping and beating; pressing and scraping and beating; continuous pressure; beating and paddling; wheel throwing with paddling; wheel coiling; wheel coiling with paddling; wheel coiling with scraping; wheel molding; wheel coiling method 1; wheel coiling method 2; wheel coiling method 3.*
- Phase 2c—surface treatment: *interior coating with clay; interior coating with slip; interior burnishing; interior shining; interior too worn to say; interior no treatment; exterior coating with clay; exterior coating with slip; exterior burnishing; exterior shining; exterior too worn to say; exterior no treatment; smudging.*
- Phase 3—firing: *oxidising; reducing; both (controlled); both (uncontrolled).*
- Dating: *Bronze Age; Archaic; Late Archaic; Hellenistic.*²⁹⁸

Excel and Primer-E were used to sort and perform a multi-variable analysis on the first part of the sample and then a quantitative analysis on the second part. The multi-variable analysis with Primer-E has been twofold. The first step was a cluster analysis to define groups according to crafting techniques, 48 *chaînes opératoires* were thus identified (see *plate 55*). Then, the second step was a qualitative and descriptive multi-dimensional scaling, that condensed the original 57 dimensions space represented by the samples,²⁹⁹ into a four dimensional one, and then into a three dimensional graph, by consecutively highlighting the correlations between variables, between phases of productions, and between groups of sherds, their location, their date and so on. The output of this consecutive scaling analysis is a graph in which similar samples are grouped together according to the most meaningful set of dimensions, or variables (see *plate 56*). The multi-dimensional scaling is a very powerful interpretative tool for highlighting hidden inter-relationships between variables.

The pottery assemblage

A total of 3 tonnes of pottery sherds has been evaluated during this assessment.³⁰⁰ The 247 samples are all groups of sherds of pottery, coming from their respective archaeological contexts from one of 38 selected sites of both Casentino and Valtiberina (see *plate 54*). This pottery assemblage consists mainly of sherds of coarse ware, with the occasional piece of fine

²⁹⁸ The Bronze Age data was recorded from a single site (Molini) and was kept in the assessment for reference.

²⁹⁹ In the multivariate analysis, each variable represents a dimension.

³⁰⁰ 100% of the ceramic material from the sites representing this assessment.

ware (usually bucchero or grey ware, and black varnish ware). More precisely, just the 4% of the total is fine pottery (8.8% if counting in the semi-fine), the rest is coarse or very coarse ceramic.³⁰¹ Roughly all the pottery assemblage comes from settlements—mostly from refuse pits, levelling dumps, and occupational layers. They are functional objects, tools of everyday life, discarded after use or left behind after the abandonment of the site.

The dating of the material is often problematic, due to the uneven quality of the archaeological record from both valleys. A good example of this aspect is the site of Ama in Casentino, whose occupational layers between buildings have been mixed up, and materials dated to the Hellenistic period ended up together with earlier finds. Alas no site seems to be exempt from similar issues, with Tizzano and Ama being the most affected. As we have seen in Chapter 2, among those that could be assessed only Ama, Poggio Bombari, Poppi, Tizzano, and Molini were ‘proper’ excavations, while the other sites were evaluation trenches (Poggio Alto, Poggio Santi Pagani, Ommorto, Monte Castelsavino) or rushed archaeological mitigations (Casa Bardinelli). To these we may add the several records from surface survey (areas of the Singerna Valley, Afra Valley, Compito, Chiusi della Verna, and Salutio), of even more uncertain dating.

Yet another issue impacts on the composition of the pottery assemblage—the sorting of the finds collected by the archaeologists either during survey or excavation. Generally speaking, common ware is often discarded, especially during surface survey. For this reason, pieces of coarse ceramic may be comparatively fewer than pieces of fine ware, without this being representative of the assemblages of the site itself.³⁰² This aspect is particularly evident again in the Ama assemblage, where the sherds from the body of coarse vessels have been systematically discarded by the archaeologists, who selected and kept just the so called diagnostic pieces (rims and bases) of the coarse ware.³⁰³ This impacted on the quality of the analysis of the crafting techniques which works best when undertaken on sherds from the body of the vessel. The Valtiberina archaeological group used a similar method when undertaking surface survey in the 90s. They kept just the diagnostic rims and bases, while selecting mostly the nicer and finer pottery classes, without keeping as many coarse pieces. This aspect is particularly evident in the Singerna valley. On the other hand, when the totality of the finds has been kept, as for the Casa Bardinelli (Trebbio) archaeological mitigation or in Poppi’s excavation, sherds of coarse ware overwhelmingly outnumbered the finer examples.

Aside from systemic mistakes in the collection of finds during the archaeological investigation, the size and wealth of the settlement may impact on the quantity of pottery sherds per assemblage—a quantity that is very different from site to site. The two extremes of the spectrum are Trebbio and Santi Pagani. A refuse pit, possibly belonging to a pottery workshop, was unearthed during the excavations at Casa Bardinelli, allegedly part of a large and wealthy settlement. The evaluation trench at Poggio Santi Pagani uncovered a single hut in the forest, large yet rather humble. The pottery from Santi Pagani is a small assemblage with few pieces. The assemblage from Trebbio is the most numerous and technically diverse of the lot. Both

³⁰¹ In terms of pieces however the fine pottery represents the 20.5% of the total, 31.1% if including the semi-fine productions.

³⁰² The Casentino archaeological group represents a very welcome exception to this attitude.

³⁰³ Just for the coarse or common ware. The fine ware has been kept like a sacred relic, almost, among cotton balls wrapped in tin foil.

have been treated with the same dignity but such a difference in quantities entails inevitably a difference in the quality of their assessment.

As we could glimpse in Chapter 2 and shall discuss further in Chapter 6, all settlements appear quite different from one another in terms of location choice and in morphology, quantity, positioning, and size of buildings. These features may have impacted on pottery provision and making. More importantly still, the natural resources available to the inhabitants of such diverse settlements depended on their positioning. It is reasonable to think therefore that this interesting variety in settlements may correlate to the relative diversity of their pottery assemblages. As we have seen, pottery production facilities, or more precisely pottery furnaces, are more common than expected,³⁰⁴ especially in Valtiberina. Many of them are very close to one another (e.g. Tizzano and Madonnuccia). Moreover, all these facilities are in similar topographic positions, at the foot of slopes at the bottom of small valleys, next to brooks or rivers. This should suggest the likelihood of the practice of exploiting clays from recent alluvial deposits.³⁰⁵

Traces of single use pit furnaces were found in Poggio Alto, Poggio Bombari, and Santi Pagani in Casentino. These may have not been used for pottery production, as it is uncertain where these settlements may have got their clay supply from. However, we consistently find that a less-processed clay has been used to produce pottery in these more mountainous areas. Moreover, the so called vacuolate ceramic comes mainly from these settlements. The vacuolate is a kind of pottery that has a clay rich in organic tempers (either plants or dung) that enhanced the plasticity of the clay but caused the appearance of a lot of vacuoles, probably already after firing. It could have been a technique to make the lower quality, locally quarried clay into something wieldier and easier to manipulate by the occasional ceramist. More generally, there seems to have been a “make do” attitude towards clay supply for common ware production.

The crafting techniques

Of the three phases of pottery production (clay sorting, shaping, and firing), this analysis has privileged the assessment of the shaping phase, because of initial methodological constraints. Clay sorting and firing have not been assessed as thoroughly; however, they have been considered as part of the same process (their assessment is shape-centric) and the results will be presented after the discussion of the shaping. The reconstruction of the productive chains of the pottery assemblage focused mainly on the shaping subphases, mirroring Roux’s approach and definitions, in both phasing and terminology. These subphases are consecutive and run as follows:

- **Fashioning** is that phase in which the potter performs a series of operations that transform the clay paste into a vessel.³⁰⁶ Without using a wheel, the potter may start from a single mass of clay or by assembling more clay elements. By using the wheel, the potter may decide to *throw* the piece from the start, giving its shape with rapid movements. Wheel throwing bypasses the preforming phase.

³⁰⁴ Cuomo di Caprio 2007, p. 503; Sotgia 2019, pp. 49-50.

³⁰⁵ This likelihood may become certainty only after due archeometric analyses.

³⁰⁶ Roux 2019, p.41.

- **Preforming** is that phase in which the potter gives the hollow volume its final vessel form.³⁰⁷ The potter may decide to work on wet clay or to have it dried to a leather hard state. The main preforming actions are either applying pressure (with or without a tool) or percussing (with or without a tool); or a combination of the two. He or she may decide to use the wheel to implement these actions.
- The next subphase is the **finishing**, in which the potter regularises the surface of the vessel before applying decorations or surface treatments. The finishing actions can be performed on wet paste or leather hard, but they always make use of a hand tool. This phase was practically not assessed during the analysis as the surface treatments covered any trace of finishing techniques. Arguably certain actions recorded in a small number of samples as part of the preforming may have been finishing actions instead.
- The potter applies **surface treatments** with the intention of transforming the inner and/or outer surface of the vessel, usually with a functional or decorative intent. These treatments are applied to unfired leather-hard and dry pastes and to fired pieces. The transformation occurs by friction or coating.³⁰⁸
- The last phase, occurring often along surface treatments, is the **decoration**. This phase has not been considered during the assessment because it was not deemed indicative for the identification of the main productive chains. In fact, setting aside the black gloss ware and the red-figures pottery, of roughly 3 tonnes of pottery from the 38 sites, only three pieces were decorated with singular and small impressed geometric symbols.

One of the main purposes of the shaping assessment was to see whether rotating kinetic energy (RKE) has been used in crafting and to which degree—in other words, what kind of spinning tool was used for production (during which phase and to which level of competence). Roux makes a tripartite differentiation: no RKE (rotary device), slow RKE (turntable), RKE (wheel).³⁰⁹ A simple rotary device can be something from the palm of the potter's hand to a seldom rotating surface of any kind. The kinetic energy is not harnessed to shape the vessel, while the rotating movement is used to turn the piece to reduce irregularities (often the element rotating is the piece itself and not the surface on which it stands). The so-called slow wheel or turntable makes use of a slow RKE to shape the vessel, to several degrees of quality in the end product. It is only with the wheel that a potter can achieve the very fast spinning necessary to wheel-throw the object. The wheel requires a level of technical skill to be used proficiently, even more so to undertake the wheel-throwing technique, in which the vessel is entirely made using fast RKE, from a single lump of clay.

Among the 3 tonnes of pottery not a single piece is manifestly wheel thrown. The wheel is indeed used, but similarly to a turntable just to regularise the shape of the vessel and facilitate the application of surface treatments. Fashioning is always without the wheel. The most used fashioning technique is the coiling, primarily with clay rolls and sometimes with segments. The rolls of clay are almost always spread one on top of the other as a result of the coiling actions (the so called 'coiling and spreading' actions).³¹⁰ Fashioning from clay mass is present but quite rare. Preforming is always undertaken while the clay is still wet. Roughly half of the pieces show a preforming technique not involving the use of the wheel, largely favouring percussive

³⁰⁷ Roux 2019, p.64.

³⁰⁸ Roux 2019, p.96.

³⁰⁹ Roux 2019, pp. 41-42.

³¹⁰ Roux 2019, p.164.

actions. Those that are preformed with the wheel are *all* wheel coiled with the same method—the coils are positioned and joined without RKE, then thinned and shaped with RKE.³¹¹

Finally, we find mainly two surface treatments recorded among the coarse pottery, and these are burnishing and coating with clay. Remarkably, burnishing is found principally among pieces produced with the wheel, to which we may add some turntable productions. Coating with clay is found among objects produced with a rotary device. The only exceptions are the *pithoi*, always produced with the wheel or turntable, they are mainly coated with clay or combine burnishing and coating with clay. Among the fine and semi-fine pottery, we also record smudging and coating with slip. Smudging is used as a cheap alternative mimicking the effects of a reductive atmosphere for finer pieces (in both grey and bucchero cheaper productions).³¹²

The graphs of the multi-dimensional scaling analysis (MDS – *plates 56 to 65*) show the Archaic and Late Archaic samples grouped according to their resemblance to one another.³¹³ Each symbol in the graph represents a sample, a single group of pottery sherds from the same archaeological context, made in the same way. Since the shaping techniques were the main focus of the production chain assessment, the most evident sorting of the samples follows Roux's RKE tripartition in wheel, turntable, and rotary device, as it is clear from the MDS graph at Figure 1. As we shall see, their positioning in the graph is indicative of their level of technical refinement. The Archaic and Late Archaic material consisted of 247 samples from 38 sites. These sites have been divided in 13 areas (from West to East: Consuma, Secchieta, Ama, Poppi, Salutio, Chiusi, Savino, Compito, Tizzano, Singerna, Molini, Trebbio, Afra—see *plate 54*) to simplify the analysis. After performing the cluster analysis, 48 different production techniques (*chaînes opératoires*) were identified (see *plate 55*).

The symbols in the graph displayed at *plate 56* have a meaningful distribution and they spread out and cluster according to levels of technical standardisation and efficiency, as we shall see. The most relevant grouping discriminants of the multi-dimensional scaling analysis are the rotary implement and the preforming techniques (see *plates 57 and 58*). They are in fact the most evident, and probably defining, characteristics of the crafting techniques in Casentino and Valtiberina, according to this assessment. The identifier of each production chain consists of two capital letters describing the shaping tool used to make it (RT for rotary device, TN for turntable, WH for wheel—special wheel productions may have different names like BUCC for bucchero, SEP for separators, etc.), followed by a number representing a 'family' of chains—crafting processes that differ for more than two meaningful steps of the 57. Families may consist of several production chains, variants akin to one another for most of the crafting process, that differ for two or fewer steps among the 57.

For instance, in the RT5 family we have, RT5, RT5a and RT5b, they are all produced with rotary device using the same kind of clay; they are made with segmented coiling, using beating and paddling to impart them shape, they are all coated in clay; RT5 however is consistently fired in non-controlled atmosphere, while RT5a and b are fired in controlled atmosphere. The pieces in RT5a have the external surface coated in clay and the internal one burnished. This

³¹¹ Roux 2019, p.84.

³¹² Just to clarify, grey pottery can be made with or without using smudging techniques, so can bucchero.

³¹³ The following section is a discussion on the MDS graphs found at the end of the chapter. For clarity, these graphs were supposed to be displayed along the main body of the text.

system should be considered mainly a tool helping in the categorisation of the production chains. However, it has been used as a relation tracker between productions in the same group that only differ for a single step in clay sorting or in firing.³¹⁴

Preforming techniques (*plate 58*) involving scraping and pressing actions can be found only with objects made with no RKE, that is with a simple rotary device. The clay is modelled into a vessel by pressing it into shape with the fingers. Beating actions are used but not as the main shaping action, while the surface is made regular by consecutive scraping. Beating and paddling actions are systematically used as a part of the production chain of the rest of the objects, no matter the rotating implement. Though not apparent through the graphics, a beating and paddling series of actions is present even in those objects that are wheel coiled. Beating and paddling in fact are necessary to implement the wheel coiling technique recorded in Casentino and Valtiberina. In a way beating and paddling represent the core actions of all the crafting techniques, along with coiling.

Coiling is by far the most used fashioning technique. However, there is an interesting variety in fashioning techniques for those objects made with a rotary device not harnessing kinetic energy (see *plate 59*). Coiling with segments can be found only among these objects, pinching and drawing as well. Coiling and spreading is the most common fashioning technique, with a distribution parallel to that of the beating and paddling actions. Arguably, the combination of these techniques makes the vessel sturdier, more regular, and more difficult to break. In any case, the actions of fashioning and preforming both point towards standardisation, by leaning more on repetitive actions, more often administered with the help of tools.

A similar technical trajectory is apparent when looking at the clay sorting and firing characteristics that have been part of this assessment (*plates 60-61*). The clay sorting assessment was based on the definition of three degrees of *homogeneity* in the granulometry of the clay paste, as discernible with a geologist's lens. Bearing in mind that the pottery assemblage was essentially made up of coarse pieces, the levels of homogeneity of the paste were not based on the quality or size of the tempers but on the unevenness of the clay paste in size and material and on the visibility of flaking or clumps of grains in fracture.³¹⁵ Thus, three different degrees of clay refinement were determined. These are: a *well processed* clay, when grains were not visible and the absence of clumps and flaking made the paste looking homogeneous; a *semi-processed* clay, when some uneven grains or clumps or flaking could be seen with the naked eye; a *poorly processed* clay, when clumps or flaking were clearly visible, along with uneven grains, often of unsorted materials.

The purpose of this assessment was to understand to which degree of success unspecified clay sorting techniques were used and how they related with the shaping phase. Highlighting the clay sorting classification within the multidimensional scaling graph (*plate 60*), we see how diffuse the knowledge of clay sorting techniques must have been. We also see how semi processed and poorly processed objects are present mostly when RKE is not involved in the crafting. More generally still, we can assert that different pastes seem to associate preferentially with certain crafting techniques.

³¹⁴ As we can see in Figure 12.

³¹⁵ Roux 2019, pp. 32-34, 130-132.

A similar analysis was undertaken for the firing phase (*plate 61*). While recording differences in atmosphere (oxidising, reducing or both) was an essential part of the pottery assessment, for the sake of the simplification of the multidimensional scaling, the single datum that was truly relevant for an assemblage mostly comprised of coarse pottery sherds was the level of firing control. This two-level assessment (*controlled/uncontrolled*) was based on the homogeneity of the colours of the pieces both in surface and in fracture, bearing in mind that some dishomogeneities imply a high level of control (like certain rhythmic discrepancies on fracture, or systemic staking traces),³¹⁶ while others were certainly made during use (like stains due to pyrolysis).³¹⁷ Firing control depends on the type of firing facility that was used and could be deemed among the most basic technical needs to take into account during firing. Specific firing techniques pursued a high level of control of the output while some others did not really necessitate it, this largely depending on the function of the pottery vessel itself.

The presence of traces of pyrolysis is typical of kitchen ware, and since we are talking mainly about kitchen ware, specific attention was paid to the differentiation between traces made during firing, and those made during use. While the pyrolysis traces are mainly superficial, asymmetric in fracture, and tend to appear in functional portions of the vessel, systemic firing issues do reoccur in patterns on the large scale of the pottery assemblage and can be seen both in fracture and on surface. Traces of firing issues and of pyrolysis may both occur on the same piece. Considering therefore the experimental quality of this assessment, it was important to find patterns, as we see in the graph at *plate 61*. The firing control displays a similar trajectory to that of the clay sorting, roughly from left to right. The distribution is also similar, as firing too appears the more often uncontrolled when RKE is not involved in shaping.

The correspondence of the two trajectories in the graph may strengthen the initial assumption of a similar kind of technical knowledge involved in the transmission and performance of clay sorting and firing techniques. Their trajectories seem to aim for a higher level of control of the technical process. Connected with the standardisation trajectory recorded for the shaping phases (and with the general shaping centric character of the assessment), this assumption helps in the interpretation of the distribution of the samples in the initial multidimensional scaling graph (*plates 56 and 62*), as they seem to be distributed according to RKE and levels of control (x axis), and to levels of standardisation of the actions connected with the adoption of shaping tools (y axis).

As we see in *plate 62*, the multi-dimensional scaling clustered the 48 production chains in 4 technical groups. In groups 1 and 2 we have common ware used for storage and cooking. The crafting actions for the making of the objects in group 1 are more intuitive and they do not require specialised tools. Group 2 is similar to group 1 but presents more systemic preforming actions—beating and paddling—that we find then adopted in groups 3 and 4. These actions require tools, are more repetitive, more standardised, and less intuitive than those performed in group 1. Because of their repetitive nature these actions are easier to teach, and thus to learn from another person, and can be honed through practice. In group 4, however, we see the systemic adoption of the wheel—its use cannot be improvised and needs mastering. The objects of group 4 are the finer examples of pottery, including the few decorated pieces, and fine ceramic classes made for banqueting, like *bucchero* or black gloss ware.

³¹⁶ Roux 2019, pp. 207-208.

³¹⁷ Oudermans, Boon 2007, p. 113; Teetaert et al. 2017, pp. 1609-1610.

Moving from group 1 to group 4, the production chains become more controlled and efficient. There is a deviation from intuition to standardisation in the shaping actions, paired with a shift towards control in clay sorting and firing. These aspects also suggest a shift from the possibility of improvisation to a need for practice in performing the crafting activity, as the knowledge behind the making processes becomes more specialised moving from group 1 to group 4. Efficiency and control brought about by standardised crafting processes enable the makers to replicate at will a specific desired output, especially one that is impossible to get without employing specialised tools and techniques. In fact, in group 4 we may find just 5 different shaping production chains, but they connect to a variety of new, very controlled techniques of firing, such as those involving reducing atmosphere (the cluster of grey and black triangles in group 4, visible in *plates 56 and 62*).

Much in the same way that in group 4 standardisation and control allow for predictability and the possibility of replicating a desired outcome, the intuitive crafting techniques of group 1 may respond to more immediate and mundane necessities. It is not a case that objects from group 4 are always found along with objects from groups 1 and 2, as they supply different functions. Groups 1 and 2 include most of the 48 production chains and the vast majority of objects, those used for cookery. The more a process is standardised, controlled, and specialised (as in groups 3 and 4), the more differentiated is the typology and functionality of the products.

Certain techniques may allow the ceramic vessel to be used for specific functions. For instance, adding tempers such as coarse, regular flecks of limestone, allows the pottery vessel to be placed on a live flame for cooking, without cracking.³¹⁸ Yet the presence of these coarse tempers makes the clay more difficult to manipulate harnessing RKE. Moreover, the vessel must be fired at lower temperatures otherwise the limestone will melt into the clay fabric. These characteristics make the cooking pot more fragile,³¹⁹ but also easier to produce. A low level of clay porosity is desirable for cooking pots, not just because of their specific function, but also to preserve the more fragile body of the vessel. Certain surface treatments, such as coating with clay (very common in Casentino and Valtiberina), may enhance the impermeability of the vessel.

Conversely, using finer tempers does not impede RKE modelling and, when fired at higher temperatures, makes the clay more porous. A higher level of porosity in the clay of the vessel improves its efficiency as a container of dry food stuff or of liquid that should be consumed rather quickly. Porosity in fact facilitates perspiration—the evaporation of water within the vessel, lowering the internal temperature and keeping the contents fresher.³²⁰ The second main surface treatment as practiced in Casentino and Valtiberina, burnishing, does not impede perspiration and adds a decorative quality when applied on the exterior surface of the vessel—usually in continuous spiral lines made while the wheel is spinning, or in several parallel vertical or horizontal movements that do not cover all the surface.³²¹ It may contribute to the

³¹⁸ Cuomo Di Caprio 2007, p. 125.

³¹⁹ Cuomo Di Caprio 2007, pp. 125-127; all these aspects are quite evident in the record from Casentino and Valtiberina, even the higher relative number of sherds that could belong to cooking pots. In medieval times the adoption of kaolinic clay, that does not necessitate coarse tempers to make the pot fire resistant, allowed the wheel throwing of cooking pots that could also be fired above the 800 degrees. Kaolinic medieval pots are very common in Tuscany—I was able to record the presence of these productions in Poppi for instance.

³²⁰ Roux 2019, p. 38.

³²¹ Burnishing (and shining) is systematically applied on bucchero ware, and along with the reducing firing, contributes to the shiny metallic appearance of bucchero vessels.

impermeability of the vessel when more systematically applied on its interior, sometimes together with clay coating. This last system is found in Casentino and Valtiberina mostly among *pithoi* and large amphoras (it seems here yet another way to make the surface more impermeable—cfr. *plates 63* and *64*).

It may not be a chance therefore that the coarsest pottery which also presents coating with clay, is made without RKE, cheaply fired, and it is shaped mostly according to the same morphology, that of the *olla*, used for cooking pots. Pots presenting burnishing have the most morphological variety, are generally finer, shaped using RKE, fired with more control, and serve as objects used as tabletop ware (if not fine banqueting) or for food and liquid storage. This stark contrast between two production techniques, one favouring coating with clay and non RKE, the other burnishing and RKE, seems then rather functional. As we shall see shortly, this duality could be related also to two different sources of pottery supply—direct on-site production on one side and exchange and trading on the other.

The functionality/replicability graph (*plate 64*) shows how often a production chain is found/used in Casentino and Valtiberina and for what purpose. An archetype is a production chain that can be found on four or more sites,³²² a triplet on three sites, a pair on two sites, a unique on just one site, while a unique archetype can be found just on one site but on multiple stratigraphic contexts. From the graph at *plate 64*, it seems fair to assume that there are two main productive models applying to the pottery supply of the settlements in Casentino and Valtiberina—intuitive chains that are largely adopted for common kitchen and storage ware; more standardised and specialised chains used to produce ‘banqueting’ ware. There are also several, almost continuous, intermediate stages between standardised and intuitive productions, which are indeed important, yet the duality becomes even more apparent during the Hellenistic period.

This phenomenon may be descriptive of the learning curve of the makers working in workshops supplying the local communities. For instance, Trebbio and Singerna were certainly places of pottery production. One of the results of this analysis, as it will be shown, was to find hints that they may have supplied other nearby settlements, including one another. In both sites, we find that all groups are present (see *plate 65*). In places such as Trebbio and Singerna then, less skilled makers (apprentices?) may have been employed to produce kitchen ware, while more skilled potters would produce more specialised objects (such as *pithoi*) that required different levels of knowledge and expertise. It is also relevant to note how two productive centres that are roughly 10 kilometres apart only shared two intuitive crafting techniques (RT2 and RT4b).

Alternatively, the phenomenon may be related to the place of origin of the products, as we have common kitchen and storage ware possibly produced very locally if not on site, while banqueting ware (and banqueting-related storage ware) may come on site from elsewhere. Since reality is complex, the most likely interpretation is that both cases applied at the same time. Without doubt many pottery products were imported on site from elsewhere, and this holds true also for places of diversified productions such as Trebbio and Singerna. Most objects within groups 3 and 4 were traded from elsewhere, probably even from outside Casentino and

³²² This is a personal definition—Archetype as a single technique of production inherited from others and very commonly found (= in more than 4 sites). I then define as unique archetypes single techniques of production used in multiple contexts of the same site, which are associated with other very similar techniques of production, in the same site and/or in those in the immediate vicinities.

Valtiberina. Certain crafting techniques are ubiquitous because the objects made with them are ubiquitous.

Networks of exchange, networks of production

The causes of an apparent relation between production chains are difficult to ascertain. However, it is possible to highlight three patterns: similar production chains are found on multiple sites (these are the aforementioned pairs, triplets, and archetypes—quartets or more); many variants of a single chain may be found on the same site (unique archetype); unique production chains can be found on single sites (unique). The presence of similar production chains (and their variants) in different sites could be considered either a sign of a direct exchange of knowledge of production, a sign of the trading of goods between places or a sign that similar solutions were intuitive enough to be found independently from one another. Reality was complex and could accommodate all these solutions at once, however these patterns (archetypes, triplets, and pairs) may indeed pertain to networks with different ranges, of pottery production and exchange, that happened at the same time involving multiple settlements. The graph at *plate 66* displays the reach of these networks.

Without further archaeometric analyses to determine the origin of the clay it is impossible to confirm whether the networks represented in the graph illustrate the diffusion of knowledge of similar production techniques, the reach of activity of local potters, or the direct exchange of objects (or indeed all these phenomena altogether). Nonetheless, the graph provides an interpretation of the place of origin of certain techniques, and probably of the objects that were produced with those techniques. The identification of the place of origin is based on the quantitative data of the distribution of the potsherds and considers the types of sites and their level of investigation. Each production chain from each site consists of a group of potsherds, for which quantity and especially weight have been measured. If a technique is found on two or more sites, the first clue considered in order to infer the place of its original provenance has been the presence of production facilities (furnaces or kilns mostly) on one of these sites, then the relative percentual value of the weight of the group of potsherds made with that technique, within the site in which it has been found (see for instance *plate 70.1-2*), with the highest percentage between sites to be considered the place of origin. The position of the site in the landscape is also considered.

In any case, if these interpretative considerations are true, we see that different groups of objects have different ranges of diffusion (see maps at *plates 67 to 69*). Groups 1 and 2 are diffused locally (*plate 68*), while 3 and 4 may very well go beyond the two valleys (*69*). Objects belonging to groups 3 and 4 were more likely acquired by trading, and they are found in varying quantities from site to site. Trebbio seems to be the only relevant outlier to this interpretation. Trebbio is in fact, the only site that may have originated production techniques from Group 2 that are found also in Casentino; the only site of these two valleys that may have produced objects categorised within groups 3 and 4. Currently, in fact, we do not have clear traces of the production of objects belonging to these groups from the other sites, at least in the period between 600 and 400 BC.

As we see from the graph at *plate 66*, network connections vary from Casentino to Valtiberina, yet they share comparable phenomena. In both valleys we see the widespread presence of most archetypes, in both valleys we have centres that can be considered the main centres of production and/or of exchange—Poppi for Casentino, Singerna and Trebbio for Valtiberina (see

map at *plate 68*). These can be considered the centres of origin of many categories of objects present in nearby settlements, or at least of the way the objects were made (RT1, RT6 possibly from Poppi; RT2, RT2a and RT3 possibly from Singerna; WH2, WH3, TN1a, TN4 and RT4b possibly from Trebbio). Two further, very good clues to the presence of diversified trading networks between the two valleys may be provided by the distribution of materials made with the cheap version of reducing atmosphere techniques (those using smudging—BUCCa and GREYa), and the presence of early ‘Vernice Nera’ ware (SLIP), that are recorded only in Valtiberina.

The most ubiquitous production techniques (BUCC, GREY, WH1 and TN3) may be related to trading connections involving multiple valleys, and they pertain to an interesting variety of classes of objects—pots for shipping, serving and/or consuming wine and oil. WH1 and TN3 are employed for making wine *olle*, amphoras and pitchers.³²³ These objects are found in most sites although in relatively small quantities. They may then be indicative of the reach and diffusion of trading of wine or oil from neighbouring territories in this nick of the woods (literally). Bucchero ware (mostly cups and chalices) is also found in most sites, albeit in even smaller quantities, and may have followed the same trading networks since it is used in banqueting. The same can be said for the grey ware, considered cheaper than bucchero, and found in slightly bigger quantities. In short, the goods made with these techniques, supplying banqueting-related functions, may have arrived on site through long distance trade, and may be considered markers of specific trading networks.

A different argument should be made for those common techniques employed for producing *pithoi*—mostly TN2, WH2, and WH3. These are big multi-purpose pottery vessels, generally used to store dry, solid or liquid foodstuffs or other commodities, or used in agricultural production (especially wine), or reused as seasonal small water cisterns,³²⁴ or even as latrines. Since they could store large quantities of foodstuffs on the long-term, they have been used also as transport vessels over long distances.³²⁵ Pithoid vessels, such as the unique Casentino’s ‘churn’ seem to have been used as cooking cauldrons, possibly for pitch making. In any case, because of their unwieldy dimensions, scholars consider their production a matter for a professional.³²⁶ According to reconstructions, teams of professional *pithos* makers may have provided their services moving between settlements, making these objects for several clients.³²⁷ It is important to note that, in some cases, the *pithos* was assembled from many parts that could themselves be made using different preforming techniques.³²⁸

Pithoi were found in most sites, and at Trebbio, Molini, Colvecchio (Afra), Melosa (Chiusi), and Ama in larger quantities. All the recorded techniques of production made use of clay

³²³ However, a further hypothetical division in two trading networks can be made even for objects displaying WH1 and TN3. These techniques are employed for the same set of morphologies (wine *olle*/amphoras, pitchers), and the objects are qualitatively uniform and standardised in regard of every phase of production. Two different temper mixes (one favouring mica crystals, the other possibly augite) are used for making a clay otherwise similar in quality and texture. These mixtures can be found in both valleys while one is overwhelmingly more present, especially in Valtiberina, the other is rarer and found mostly in Casentino.

³²⁴ I personally excavated one near Sansepolcro in September 2020.

³²⁵ By water! Porta 2017, p. 126. The usual dimension of storage *pithoi* makes them more difficult to trade on inland routes.

³²⁶ Porta 2021, p. 155.

³²⁷ Levi et al. 1998, p. 209; Porta 2021, p. 169.

³²⁸ Porta 2021, p. 169.

coating on the internal or on both surfaces for impermeability.³²⁹ The distribution areas of these techniques differ quite substantially, and this could be explained both by direct trading of goods and by movement of professionals (the two may even have happened simultaneously). However, the fact that same techniques were used to produce *pithoi* with different morphologies and different functionalities may corroborate the hypothesis that would see professional *pithos*-makers moving around to provide their work to local clients.³³⁰

WH2, a technique recorded exclusively for *pithoi* and overwhelmingly present at Trebbio, was also found only in the immediate vicinities of the production site—in the settlements of Molini, and of Colvecchio in Val d’Afra. Similarly, WH3 (a technique used for *pithoi* and *olle*), was found in large quantities at Trebbio and then at Colvecchio, and as far as Melosa (*pithoi*), and possibly Ama (*olle*). The connection between Trebbio, Molini and Colvecchio (these settlements are all 3 to 5 km apart from one another) as displayed by the presence of *pithoi* made with WH2 and WH3, could be a sign of an exchange network, possibly extending beyond the area recorded in this assessment (specifically to its East). Melosa (Chiusi) is yet another interesting site. Along with Compito and Monte Castelsavino may form a small network of settlements established at a relevant—yet under studied—mountain crossroad, located at the joining of Valmarecchia, Casentino and Valtiberina. At Melosa we find in fact two other techniques of production of *pithoi* that are unique to this place (TN23, TN7), and may be related to networks that are beyond the areas of this assessment (possibly those extending north, towards the Valmarecchia).

On the other hand, TN2 is a more widespread technique, used mostly for *pithoi* and large *olle*, but also for producing the ‘churn’ only found in Casentino. Objects made with this technique are widespread in both valleys, to the point that TN2 comes to be the most common technique of production along with WH1. Both TN2 and WH1 are absent from Trebbio,³³¹ but they are found in larger quantities among the settlements of Melosa (Chiusi), Compito and Monte Castelsavino. It is unclear whether the *pithoi* at Melosa were produced there, nearby, or elsewhere entirely. A site nearby, Montalone,³³² could have been either a place of production or redistribution. Located at the precise junction of the two valleys it may have collected and then redistributed goods (and/or people with expertise) to both Casentino and Valtiberina.

Small-scale trade and household production

It is possible that unique archetypes may be considered a compelling clue to the presence of household production, or more precisely, of a production whose scale extended only to a small settlement and its immediate vicinities. Two examples of unique archetypes were recorded in this assessment, at Consuma and Madonnuccia (in the Singerna valley). They are far apart and quite different from one another, but both could accommodate such a mode of production. This may be true for Santa Maria, because of the furnace found there. Consuma on the other hand

³²⁹ Bevan 2017, p. 7.

³³⁰ This may be resolved by archaeometric clay analyses.

³³¹ WH1 is present at Trebbio but in negligible quantity (see Fig. 15).

³³² Also known as Ponte Singerna—It has not been included in this assessment, alas, owing to a mistake made during its analysis. A huge quantity of ceramic material has been collected here during recently made surface surveys (2007). The pottery is varied in quality and morphology. If this was not a production centre, given its position, it may have been a sort of Apennine *emporion*.

did not provide yet direct evidence; however, the uniqueness and quantity of ceramic material, the poor quality of its clay, its cheap firing, and the fact that Consuma is quite secluded, may all be hints to the presence of an on-site pottery production.

At Consuma the pottery was found made consistently with 4 different but related production techniques—RT4a, RT4c and RT4d were concentrated in just a single area of the site, while RT4 was ubiquitous. These 4 techniques of production do not differ in shaping actions, but in clay sorting and/or in firing techniques. It is likely that these modes of production represent different batches. This pottery could have been made by the same person, or since it was found on multiple diachronic archaeological contexts, by a group of people sharing the same shaping techniques over a longer period.

A slightly different situation was recorded at Singerna, where we have a single crafting technique (RT1c) that can be found on site and in its immediate vicinities—in the sites of Cartiera, Madonnuccia, and Pista (all sited within a km radius centred on Santa Maria, where the furnaces were found), forming possibly an interconnected community of small neighbouring settlements.³³³ RT2 and RT2a may also be productions that originated at Santa Maria and were used to make medium to big *olle*, coated in clay, thus suitable for cooking. RT2 is found in good quantities also in other Valtiberina settlements and even at Trebbio. RT2a is found in the nearby sites of Monte Castelsavino and Compito. The presence of objects made with these two techniques may have marked outgoing goods produced in the settlements of the Singerna Valley. Yet again, the explanation of this phenomenon may be more complex.

The presence at Trebbio and Singerna of good quantities of objects made with RT2 and with RT4 is problematic (see *plate 70.1-2*). These are the only two techniques of production common to the two biggest production sites found so far in this part of Valtiberina.³³⁴ Until archaeometric analyses are made it is not possible to ascertain whether this is a clue hinting at goods exchange between the two settlements, or if it is an exchange of expertise, involving just the easiest and more intuitive techniques. There may be several explanations. Goods made with RT2 may have been exchanged from Singerna to Trebbio,³³⁵ possibly as containers of other goods (despite their suitability as cooking pots), and goods made with RT4 may have been exchanged from Trebbio to Singerna. Or they may all come from one of these two settlements. Alternatively, their presence may be related to that of potters (apprentices?) moving between neighbouring settlements to learn other crafts or to make their productions for locals—yet both productions are interchangeable in terms of functionality. Finally, since the settlement at Trebbio may have been abandoned shortly after that at Singerna was established, the presence of these techniques in both sites may be the only residual evidence of the movement of the workshop from one site to the other.

Conclusions

To conclude, in Casentino and Valtiberina between the 600 and 400 BC, crafting and exchange of pottery goods were multi-layered phenomena, associated with different degrees of

³³³ Now not only unexcavated, but also under the water of the artificial lake.

³³⁴ Besides the ubiquitous WH1 and BUCC found in negligible quantities at Trebbio (see Figure 15).

³³⁵ Since RT2 was found in a higher percentage at Singerna than at Trebbio and could be related to RT2a, while RT4 is the second most common technique found at Trebbio and could be related to RT4e, only found at Trebbio.

complexity depending on the local economy.³³⁶ From a general point of view, we may be dealing with a single shaping tradition that adapted to circumstances (presence / absence of tools and facilities and of people capable of using them), but at the core privileged almost exclusively coiling and percussion techniques. When we look more specifically, we see a bigger variety of shaping techniques, that diversify primarily according to functionality (kitchen ware, production ware, liquid storage/tabletop/banqueting ware), then situationally from settlement to settlement and valley to valley.

Kitchen ware was made with a functional clay mix (suitable to go on the stove without breaking), shaped with techniques that avoided RKE both for technical reasons (the coarser the clay the more difficult to put it to shape using RKE) and for practicality (sturdier vessels, more quickly made), using specific surface treatments to enhance functionality (impermeability). Production ware, such as *pithoi*, ‘churns’ and large *olle*, were made with similar attention to functionality by professionals who used more specialised tools. The regular shapes of these big objects, made with slow or fast RKE, could contribute to both their durability and their mobility. Finally, medium containers for liquid storage, tabletop and banqueting ware were objects for which regularity was sought also for aesthetic reasons. Further aesthetic qualities may have been imparted using specific surface treatments and special firing techniques, without impeding the perspiration of the vessel that kept the liquid fresher.

Finally, pottery production techniques seem indeed to be descriptive of the ancient society in which they were practised. Their differential diffusion, more specifically, can be related to the different networks of exchange and relationships that coexisted and were involved in different aspects of the daily life of the ancient inhabitants of Casentino and Valtiberina. Different techniques were used to produce objects that had a different exchange diffusion due to their functions and value. Therefore, to different techniques corresponded different societal networks. This is demonstrated not so much by the prevalence of more standardised techniques, such as those used to produce refined banqueting items, but by the presence of unique techniques used to make mundane objects such as cooking pots. Remarkably, this differential system may be explained as a manifestation of ‘spheres of exchange’,³³⁷ in this case comparable to those of certain modern pre-monetary societies.³³⁸

Intuitive productions (groups 1 and 2) were used to make common coarse ware for every-day use. Ceramic cooking implements may have been produced differently in each settlement. Consuma provides the most compelling example of such very localised production (RT4 and its relative production techniques), but most sites seem to have been places of production of such categories of objects at some point.³³⁹ In conjunction with localised production made independently in most settlements, groups of skilled potters may have moved between settlements to offer their expertise and work, using more specialised and standardised techniques (groups 2,3,4), not just for the production of *pithoi*. The example of Trebbio is the most compelling case. *Pithoi* made with Trebbio’s techniques are found as far as Chiusi della

³³⁶ Dominici 2022, pp. 15-16.

³³⁷ See Brondino-Pompeo 2021, for the state of art about the ‘sphere of exchange’ model.

³³⁸ Hart 2005, pp. 163-164, citing the work of Paul Bohannan on Tiv populations, from 1959: ‘*Bohannan argues that the Tiv pre-colonial economy was organised through ‘spheres of exchange’... At the bottom were subsistence items like foodstuffs and household goods traded in small amounts at local markets. Then came a limited range of prestige goods linked to long-distance trade and largely controlled by Tiv elders.*’

³³⁹ The identifiers written under the site’s names on the maps at Figures 13 and 14 represent in fact the unique production techniques found in that site.

Verna (WH3), while ceramic objects and cooking *olle* may be found as far as Poppi (TN5), Ama (RT5 and WH3) and Secchieta (RT5). Finally, all settlements seem to be connected with wider trading networks (for groups 3 and 4), some more localised than others (BUCCa, GREYa, SLIP that may be related to the city of Arezzo), through which they acquire wine *olle* and amphoras and fine banqueting ware (WH1, TN2, BUCC, GREY).

Considering the dating of the sites, it might be possible to attribute the variations in the prevalence of one of these modes over the others, as situationally recorded, to the changes that occurred over time involving these settlements. The presence of workshops at Trebbio and Singerna appears at least partially consecutive. In an earlier period, travelling potters may have moved far, from Valtiberina to nearby valleys, including Casentino, and from nearby valleys to Casentino and Valtiberina. In later moments things seem to crystallise. In the period in which Singerna is more active, Casentino and Valtiberina seemed more apart, with smaller centres relying more on local bigger ones (Poppi in Casentino, Singerna and Molini in Valtiberina), that produced kitchen ware while relaying other trading goods more systematically. The amount of goods traded from nearby valleys seem to increase, as more medium vessels for liquid storage, tabletop and banqueting ware were traded following the wider trading network of the goods they contained. Further archaeometric analyses of the clay are needed to corroborate these considerations. On the other hand, these trading networks may be highlighted further by morphological studies on the pottery vessels, as will be shown in the next chapter.

Chapter 4

The cultural value of things in Casentino and Valtiberina

A multicentric economy in pre-Roman Italy?

Labour and the products of labour are two different things, and both are considered valuable—the formulation of the concept of *value* itself is usually directly associated with them. The ways in which labour and products are considered valuable depend on societal structures and indeed vary within society and between societies. Different behaviours towards objects and labour may be telling about a society's points of suture between economy and culture. This chapter will problematise one of these points of suture—*transaction*—in order to answer the research question: what kind of economies were there in Casentino and Valtiberina? This is an 'identity' question of sorts, aimed at determining the societal aspects of the local economy, rather than just assessing the ways in which local natural resources may have been used and traded in antiquity.

The first assumption—indeed the first clue—of this analysis is that the differential spread of production techniques, and related pottery products, as highlighted in Chapter 3, could be interpreted as the archaeological trace of ancient spheres of exchange. Spheres of exchange are a dialectical device,³⁴⁰ used by ethnographers for describing transactional behaviours. They are defined as an arrangement whereby items (objects or labour) are assigned a transactional value, delimiting a group of items that are identified by the community as equivalent. It is culturally acceptable that objects within one sphere can be exchanged for each other. Ideally, items do not flow between different spheres.³⁴¹

The presence of well-defined spheres of exchange would be a strong hint of a multicentric economy.³⁴² Conceptualised by Paul Bohannan after his ethnographic work among the Tiv of Nigeria,³⁴³ this kind of economy can be broadly described as a socio-economic system based on multiple exchange categories that are culturally defined, separated from one another yet interdependent. An obvious important feature of multicentric economies is the absence of a general-purpose currency form, such as money; instead, transactional values are culturally attributed to different objects, while special currencies, such as tokens or ingots, may be present but used only in certain spheres. The Tiv case-study as presented by Bohannan may be

³⁴⁰ Appadurai 1986, p. 31.

³⁴¹ Brondino-Pompeo 2021, p. 83; cfr. Sillitoe 2006, p. 1.

³⁴² In fact, the concepts of 'multicentric economy' and 'spheres of exchange' have been theorised concomitantly, see Bohannan, Dalton 1965.

³⁴³ Paul Bohannan first described such an economic system in his seminal article "Some Principles of Exchange and Investment among the Tiv" (Bohannan 1955), fruit of 26 months of work among the Tiv people in Northern/central Nigeria, between 1949 and 1953. His conceptualisation of the multicentric economy and of the spheres of exchange has been adopted as a staple in the anthropology of economy—mainly built upon but never really put into doubt.

explicative of two salient characters of this kind of economy—spheres of exchange and their relative impermeability.

Bohannan observed that the Tiv recognised three separate “spheres of exchange” that were hierarchically arranged. At the bottom were subsistence items like foodstuffs (yams being the most common, but also goats and chickens) and household goods (mortars, grindstones, baskets, pots etc.) traded directly in small amounts at local markets.³⁴⁴ Then came a limited range of prestige goods linked to long-distance trade and largely controlled by Tiv elders (slaves, cattle, white woven cloth, jewels, medicines etc.). These were exchanged directly or, more often, using metal rods and quantities of white woven cloth as special currencies. Finally came the sphere of rights-in-people, regarding the rights over wives and offspring, which were often based on the magnitude of wealth in special currencies and prestige goods that a male individual could claim for him and his family of origin. The hierarchical arrangement of these spheres meant that transactions implying conversions between them were considered morally charged. To put it simply, to convert food into prestige goods, or prestige goods into wives, was considered skilful—a measure of success—but to convert in the opposite direction, that is, wives into prestige goods, or prestige goods into food, was morally reprehensible and only done under extreme need. It is important to note, however, that the actors themselves did not necessarily distinguish these spheres as labelled categories.³⁴⁵

In a multicentric economy we may find an effective separation between spheres of subsistence and spheres of wealth. Subsistence items are usually produced and exchanged with one another, since they have comparable values. The same happens for wealth items. While households engaged in this kind of economy can produce subsistence consumables in consistent quantities, they cannot produce wealth items at will. These items are usually acquired through the process of exchange itself, and their procurement is regulated culturally, making multi-centric economies egalitarian in terms of access to subsistence, and usually hierarchical as far as concerns the amassing of wealth items.³⁴⁶ One could therefore add that this system has a *situational* potential, insofar it could be implemented under specific circumstances in response to localised environmental issues and related opportunities, such as among the mountainous slopes of the Apennines, where agriculture is more difficult and trading routes are arduous and could encounter seasonal stoppages.

As suggested by Igor Kopytoff,³⁴⁷ spheres of exchange are always present, no matter the kind of economic system, as a fundamental transactional behaviour of human societies. The visibility of spheres of exchange may be amplified when exchange behaviours are charged with deep cultural meanings or within cultural frames, as was the case of the Tiv and of other structurally multicentric economies.³⁴⁸ In market economies with exchanges based on general-purpose money (of which capitalism is the most extreme example) spheres of exchange tend to be more permeable and fluid,³⁴⁹ revolving around the concept of value and its fluidity in a

³⁴⁴ Bohannan 1955, p. 62-64.

³⁴⁵ Bohannan 1955, p. 61.

³⁴⁶ Sillitoe 2006, p. 2. The introduction of a general-purpose currency into a multicentric economy will eventually upset this egalitarianism, by making items commensurable and linking spheres that usually remain separate.

³⁴⁷ Kopytoff 1986, p. 70.

³⁴⁸ Sillitoe 2006, pp. 2-3.

³⁴⁹ Brondino-Pompeo 2021, p. 83.

more substantial way. Spheres of exchange in market systems making use of general-purpose currencies are less apparent.

Since these ‘spheres’ are a dialectical device to interpret and understand rather complex socio-economic systems with many cultural implications, we ought to bear in mind that people, especially in periods long past, did not perceive their society and economy in these terms. However, these dialectical devices are useful to relativise and assess transaction systems different from our own, especially regarding the value attributed to items by past societies. By extension, a similar argument could be applied to multicentric economies, allowing multicentric aspects to appear situationally in economic systems without necessarily attributing a strong cultural meaning to all exchange behaviours. The assessment of the spheres of exchange implied in the archaeological record of Casentino and Valtiberina will consider them as possible hints of multicentric aspects to the local economy, bearing in mind that these could be descriptive of a system very localised in both time and space.

Since the assessment of the archaeological data took both production and product into consideration in order to identify spheres of exchange in Casentino and Valtiberina, it may be relevant to problematise the meaning of items’ *value*, and how this meaning varies between multicentric and market systems. In fact, it is likely that labour was exchanged—being thus an equivalent to objects—in at least two of the three spheres identified among these two valleys; moreover, slavery was probably a societal element and may have impacted on the local economic structure. Starting from Bohannan’s work on the spheres of exchange, Igor Kopytoff meaningfully problematised the concept of items’ value in economic transactions, defining the duality of commodity/singularity.³⁵⁰ He defines a commodity as a thing that has use value and that can be exchanged in a discrete transaction for a counterpart, that in the immediate context, has an equivalent value, and obviously can be considered as another commodity. The exchange can be direct or achieved via money. Hence whatever is bought with money is at the moment of transaction a commodity.

After transactions, things are decommoditised, usually by use, but may become commodities again. Some things may never be commodities, since they do not have a value that could make them part of a transaction (either they are invaluable or worthless). In any case objects are not perfect commodities or singularities—objects have complex biographies; their status cannot be sharply defined. During singularization, for instance, the exchange value of many objects is simply deactivated, not extinguished; most singularities are in fact potential commodities.³⁵¹ While we are accustomed to considering it as the ultimate commodity, at least in principle, even labour can be treated often as a singularity in the same ways objects are (either by totally devaluing it, as in the case of slavery, or by considering it priceless, as in the case of an artist labour). The interplay between commodity and singularity strongly depends on the context, and often contexts depend on culture. One can buy a good meal in most restaurants (item = commodity), spending money proportionally to the quality of the products on the menu (labour = commodity), however, a five-star cook may prepare the best of his or her repertoire for free (item = singularity), when cooking for friends at home (labour = singularity). A yet more extreme example of how the value of the same labour may depend on culture and context is

³⁵⁰ Kopytoff 1986, pp. 68-71.

³⁵¹ Brondino-Pompeo 2021, p. 83.

the case of slaves and slavery, in which the labourer itself becomes commodity and bears a price, but labours for free.

By redefining the concept of an item's value, Kopytoff's commodisation-as-process theory provides a way to understand transactions in societies that were not based on general-purpose money exchanges. He saw the interplay between singularisation and commodisation of goods as the basis of the compartmentalisation between spheres of exchange.³⁵² The relative independence of each sphere of exchange from one another is due to the fact that things are (culturally?) selected to be part of a specific sphere and need to be made unsimilar, to be unselected, (that is singularised) before they may pass onto another sphere. Furthermore, in each sphere goods are commoditised according to sets of value that differ from sphere to sphere.

Spheres of exchange and value definition

Therefore, there are two different ways of attributing value to things: singularisation and commodisation. There are at least two different levels of singularisation: each user's personal one (which is at the centre of market economies), and the culturally charged, of which we shall speak in this chapter. Similarly, there are many ways of commoditising an object into a category of value, and some of these are arguably connected to the technical difficulty in the making of that object.³⁵³ There may be many different kinds of technical values, in fact, with different culturally charged meanings, as we shall see shortly, however these broadly follow an object's functionality at least for multicentric economies. These two ways of attributing value to goods—singularisation and commodisation—are two different phenomena, and they may apply simultaneously (at the same time on the same object) but they belong to different contexts, defined by the interplay between values assigned by the individual and those that are fruit of social agreements. The fact that in capitalistic societies transactions are singularity-driven (consumerism), causes a blurring between singularisation and commodisation, and value and functionality are no longer connected. In capitalistic societies, the value of a commodity is different between buyer and maker. It can be objectively measured to the maker by the average number of labour hours required to produce that commodity—however, before transaction a commodity is presented to the user (the customer/consumer) as a borderline singularity, by advertisement, inflating its price for maximum profit (prices that are already substantially inflated by market rules).

It follows then, that we cannot understand multicentric societies of the past by merely applying contemporary theories of value or categories that belong to our capitalistic society, since these are pervasive aspects of our upbringing, yet they are absolutely *contemporary*. Marxist theory may still be valid situationally, as situationally other systems of analysis may be valid and even better suited to understand systems that are different from our own. To give an example, the idea that barter is just a worse and unwieldy version of the exchange based on general-purpose money is a capitalistic misunderstanding of non-monetary exchange.³⁵⁴ In fact, barter may come to substitute general-purpose money only in market economies, when money is not

³⁵² Kopytoff 1986, p. 70.

³⁵³ Gell 1992, pp. 58-59.

³⁵⁴ Graber 2014, p. 44.

available, usually because of a market failure or as a consequence of an extraordinary economic crisis.³⁵⁵ In multicentric economies, value and value-equivalence are defined culturally, and non-monetary transactions and transactions based on special-purpose currencies are both embedded in the socio-cultural life of the communities who practice them, and they are practiced in different and separated social contexts.

How do things acquire value in multicentric economies? This assessment will problematise aspects of this complex question by analysing the relation between functionality and value in pottery objects coming from archaeological investigations undertaken in Casentino and Valtiberina. Pottery provides quite the good case-study for the combined assessment of functionality and value, and allegedly for goods included in two spheres of exchange that are ever present—that of subsistence goods and that of luxury goods.³⁵⁶ Pots are usually very common, very *functional* objects, mostly used in association with other goods in household activities (for preparation, storage, and consumption of foodstuff, etc.); however they may also be media for meaningful messages in their own right (they may display something the users consider meaningful—such as the owners’ wealth, their capacity for literacy, the history of their ancestors, and their taste) to the point that they sometimes become status symbols and prestige objects (kept and buried as heirlooms for example). In some cases, their capacity of acquiring meaning seems to transcend their apparent function, as they may be able to traverse many shades of meaning from being very common objects to being pieces of art.

As Alfred Gell pointed out, “valued objects present themselves to us surrounded by a kind of halo-effect of resistance and that it is this resistance to us which is the source of their value”.³⁵⁷ This halo-effect is their capacity for meaning and it may go beyond functionality,³⁵⁸ since common functions are always apparent, as they are primarily imparted by the shape of the objects (their ergonomics, and design features), while Gell’s halo-effect may depend on each individual’s upbringing and, as we shall see further on, on the familiarity (or lack thereof), with the object itself. This familiarity could depend also on the difficulty level in the making of the object, and thus on the technical capabilities of the makers (on their skill).³⁵⁹ For this reason, not everyone may respond to the halo-effect in the same way, and some may not respond to it at all. A *pithos* maker may be aware of the difficulty of the making process, and thus appreciate the full extent of the halo-effect caused by the skilfulness of another maker through the object itself, appraising a value that corresponds more directly to the skills involved in the making. The buyer of the *pithos* may perceive only a part of this halo, appraising the value of good craftsmanship by its role in facilitating his or her farming activities; while his or her family could be seeing the *pithos* as yet another piece of coarse ware, but bigger.

However, the existence of different spheres of exchange implies that even some special objects may be elevated to acquire a value that is universally accepted within the society that makes use of them. In this context, we may think of the halo-effect as yet another function of the objects, that the user can associate with the object through her or his education or upbringing. Therefore, the comprehension of the connection between functionality and value may depend

³⁵⁵ If anything, the opposite may be true, since money, in its versatility, substitutes for culture in transactions, making them always possible.

³⁵⁶ Sillitoe 2006, p.3.

³⁵⁷ Gell 1992, p. 48.

³⁵⁸ Gell 1992, pp. 47-48.

³⁵⁹ Gell 1992, p. 49.

on the scale of the assessment. Singularisation may be at play in determining the value of an object mainly in the eyes of the individual user. The socially attributed value of a valuable object instead depends on the complex net of social behaviours, some of which we will analyse shortly. While, very rarely, something can be archaeologically said on an individual's singularisation of objects, more general social behaviours can be understood through the study of meaningful patterns in the finds, as we shall see. The two sets of values are different and should not be confused.

As seen, the *chaîne opératoire* analysis highlighted two main differential spreads in the diffusion of production techniques among the settlements of the two valleys (*plates 68-69*). These differential spreads may be connected to different spheres of exchange involving ceramic goods. This statement is more problematic than it seems. It may be true if we only consider the techniques of production, on the other hand if we consider the possible functionalities of these ceramic goods, the picture is a lot more complex and blurred. Techniques belonging to groups 1 and 2 seem to spread in areas comprising a handful of neighbouring sites (*plate 68*), while some of those belonging to 3 and 4 are consistently found in almost each site of both valleys (*plate 69*). Arguably, these two patterns indicate two different spheres of exchange involving pottery goods—a local sphere of subsistence to which kitchenware belongs; a luxury sphere with pottery connected to banqueting goods and wine consumption, that may have been produced elsewhere and traded to (and within) Casentino and Valtiberina along with more precious goods as wine and oil. However, as we shall see, kitchenware was produced also using techniques in group 3 and may also have followed banqueting goods and been traded with them.

This means ultimately that all ceramics may have been considered to be within the sphere of subsistence (save the *pithoi* and possibly the fine banqueting ware), and while some of them remained within it locally, some were traded along with other goods. Ultimately then, one thing is to track down the spread of these techniques of production, another is to track down the spheres of exchange they may have been part of. However, ceramics may still represent a *trait d'union* between production and exchange, and thus be informative of ancient spheres of exchange, since they were both goods to be traded on their own right, and containers of goods to be traded. Their value is informed both by their function and by cultural behaviour. The study of the pottery typology as a functionality assessment of the ceramic objects from Casentino and Valtiberina will therefore help not just in grasping clues on the relationship between value and functionality, but also in understanding better how pottery products were part of the local exchange of goods. The typological study that will be presented within this chapter, is more broadly a design analysis, combining a basic assessment of the functionality as facilitated by fabric and surface treatment properties, with a comparative study of rims and vessel sections.

The functionality assessment as an object's biography of intent

As Keith Murphy pointed out, anthropologists—and archaeologists too—have studied objects mostly as “already-existing social forms”, often as ready-produced commodities,³⁶⁰ or at most

³⁶⁰ Murphy 2016, p. 437.

considered them in their materiality as independent actors in human/object interactions,³⁶¹ but the basic fact that they are *designed* by someone has largely been overlooked.³⁶² Did someone design pottery vessels we find in archaeological excavations? If we consider Murphy's notion of design as the line of thoughts "linking intentional action, form, and consequence",³⁶³ then they may. Designer Victor Papanek's well-known definition of design as "the conscious and intuitive effort to impose meaningful order"³⁶⁴ may also provide a helpful starting point to reconceptualise the functionality assessment of pottery. Pottery vessels were objects made with intent or purpose and using intuition and method to manipulate a mass of clay into a useful shape. The intent gave them an initial meaning by imparting to them desired functions, achieved by exploiting certain patterns and technical properties in materials and shape (the order in Papanek's definition).³⁶⁵ The fact that final products may not correspond to the original project while indeed providing a whole new set of unintentional functions for the users to discover and exploit, does not diminish the relevance of the initial intent in designing them, since that imparted the object its shape and materiality. It is important to note that the original idea of the maker may entail outcomes that are totally *unintentional*, or at the most imparted intuitively.

As Murphy suggests, once a maker has an intent, the next step of a design process is to engage with shape, material, and action. The product, the vessel, will therefore have a set of properties that depend on the material used to produce it, on the techniques of production, on the shape imparted by the maker, and on its final shape (that will almost always be different from the project, if ever so slightly). Usually, since design responds to practical needs,³⁶⁶ the basic functionality for which the object is produced is, or should be, intuitively apparent through its shape. Moreover, aside from the intentional design, the object conveys a series of possibilities of use to the user. This communicative (or evocative)³⁶⁷ aspect of the design and shape of the object is an intrinsic property of all objects, as all 'invite' us to interact with them.

Arguably, as we shall see, this evocative aspect of objects contributes to their familiarity.³⁶⁸ The more an object provides a common function, the more familiar and common its basic shape will be, the more socially embedded its basic use (e.g., we all know that a bottle shaped object is good at containing liquids, moving them or storing them without spillage, and at serving them easily in discrete quantities; a mug with a handle is used to consume a hot liquid without burning one's fingers; a spoon is used to eat soup, etc.). In a way, the familiarity of objects is invented by makers and consolidated by society through multiple generations of users. For this reason, familiar shapes may change into novel familiar shapes with the introduction of technical innovations that allow new productive techniques to attain more desirable shapes more easily (arguably at least in Casentino and Valtiberina, a constant predisposition towards

³⁶¹ E.g., Latour 2012; Anusas, Ingold 2013.

³⁶² Murphy 2016, p. 440.

³⁶³ Murphy 2016, p. 436.

³⁶⁴ Papanek 1985, p. 4.

³⁶⁵ And indeed, in many other definitions of design (e.g., Alexander 1964, p. 1; Forty 1986, p. 7; Anusas, Ingold 2013, p. 59; Duranti 2015, p. 26; Murphy 2016, p. 435).

³⁶⁶ Cfr. Winther-Jacobsen 2010, pp. 51-56.

³⁶⁷ Marius Kwint poetically calls this communication between object, maker and user, "evocation", see Kwint 1999, p.3.

³⁶⁸ Kwint's evocative aspect should not be mistaken for Gell's halo effect. The latter in fact seem to be the opposite of the intuitive invitation to use proper of normal objects, as it is directly connected to special character of more precious ones.

regularity led to new shapes of kitchenware only during Roman times, perhaps due to the introduction of different, finer blends of tempers for producing coarse clay pastes that allowed workshops to use the wheel for making cooking pots).

The material of which the object is made conforms to both functionality and familiarity in much the same way as its shape. A good example of this interplay (material/shape) may come from wine and olive oil bottles currently produced and used in Tuscany. Generally speaking, wine and olive oil bottles differ from water bottles in a very simple feature—glass colour. While water bottles may be colourless, wine and olive oil bottles should be made with a transparent glass that is uniformly dark amber or dark green so as to be able to see the content without it being altered by exposure to white light, that drastically quickens the content's oxidation (and loss of flavour). North-eastern Tuscany (see Chianti and Valdarno) is a region famous for wine (especially red) and olive oil productions,³⁶⁹ and local farms may produce both. While wine bottles and olive oil bottles may be made of the same quality of dark-coloured transparent glass, they have different shapes: red wine bottles are cylindrical (and mostly dark amber), as anywhere else; olive oil bottles are parallelepiped with a square base (and mostly dark green). For locals, it would be extremely inappropriate to store anything else other than olive oil in these dark green glass square bottles, and certainly not wine.

In assessing the functionality of the potsherds assemblages from Casentino and Valtiberina considerations combining features of both shape and materials may be helpful in interpreting some of the possible design intentions of the makers, in order to problematise local patterns (in materials and shapes). In other words, since a definitive functional determination is impossible without residue analysis, this assessment will provide a set of *interpretative possibilities* for the basic functions that the objects composing the assemblages may have been designed to fulfil. These functions are not many: kitchenware, storage ware, banqueting ware, and production ware. The main characteristics of the clay fabric, in combination with the surface treatment, that could be assessed via autoptic analysis were **thermal shock resistance, heat conduction, impermeability, and porosity**. These combined in various degrees with five main vessel shapes—*olle*, cups,³⁷⁰ amphoras, cooking bells, *pithoi*—and some more uncommon shapes—plates, pitchers, bottles, *skyphoi*, chalices, possibly *kantharoi*. The overall functionalities that have thus been attributed to pottery objects (the aforementioned kitchenware, storage, banqueting and production) are quite self-evidently connected with the ceramic classes that archaeologists know well.³⁷¹ However, there are certain functional characteristics that are more interpretative and open, such as the differentiation between foodstuff storage and liquid storage, or the assessment of aesthetic qualities and of the functionality of **regularity**. These characteristics may depend more directly on the set of properties imparted on the ceramic by different production techniques (as we shall see shortly) and may spread over different ceramic classes.

Generally speaking, therefore, this functionality study is more an assessment of the possibilities imparted to the ceramic material by technical choices that may have been selected, even intuitively, by generations of makers. The main technical choices connected to the manipulation and the quality of clay materials that have been considered as having an impact on functionality are the use of specific tempers, the surface treatments, and firing temperature; shape

³⁶⁹ The extra virgin olive oil, produced in cold presses, without using modern refinement procedures to extract it.

³⁷⁰ I use here Mattioli's definitions of cups, bottles, and chalices, see Mattioli 2013, pp. 27-31.

³⁷¹ See Rice 1987, pp. 208-209; Orton, Hughes 2013, p. 247.

functionalities may instead depend on regularity, in its different declensions, achieved both with and without harnessing rotating kinetic energy, then on the presence or absence and on the quality of certain features, such as rims, necks, beaks, and handles. It is relevant to remember that many technical choices may have an impact on both shape and manipulation of materials, causing effects that may be positive and negative to different extents at the same time (in other words, bearing pros and cons). Moreover, as an obvious corollary to the presence of unintentional functionalities in the finished product, many features here interpreted as part of the original design intent of the maker may only be coincidentally functional. To give some examples: the use of organic tempers in the vacuolate pottery made the clay paste more plastic and easier to put in shape; the resulting vessels were lighter to transport, very porous to the point of being leaky (and possibly easier to break). Similarly coarse tempers may have been used in small vessels to make the pot resistant to thermal shocks, and in bigger vessels to prevent the collapse of the walls before firing. Finally, surface treatments such as coating with slip or burnishing are mostly aesthetic but may be used to enhance the impermeability of surfaces.

To sum up, functionalities should be considered as a very special selection—indeed an assemblage—of many different technical properties, some of which may be counterproductive, some incidental, some an intentional part of the original idea. All should be considered as parts of the object's design since, paraphrasing Kwint's concept, all contribute to the object's 'evocative' properties—the 'consequence(s)' in Murphy's definition of design. The following list of possible functionalities and correlated design choices (that could be incidental or intentional), were concurrently assessed during the *chaîne opératoire* analysis of the potsherds.

1) The sheer majority of *olle* produced with techniques in groups 1 and 2 present **resistance to thermal shock**, achieved by using coarse tempers and by shaping the clay paste, using mostly beating and paddling, into a vessel with thicker yet uniformly thick walls, rotund and sturdy,³⁷² and by coating it with clay.³⁷³ All of these are fired at lower temperatures, and mostly in an uncontrolled atmosphere, to prevent the limestone flecks of the temper melting. The many and ubiquitous sturdy *olle* made without RKE, in coarse or very coarse ceramic, rich in big to small limestone bits, usually coated in clay, come generally in small to medium dimensions and they seem to be quite fit to go on the cooking fire without breaking. Limestone tempers facilitate **heat conduction** and make the pot less porous when heated, thus contributing to its resistance to mechanical shocks.³⁷⁴ Moreover, the rotund and slightly irregular shape of these *olle* allows a larger surface area to face the cooking fire. They are thus considered as **kitchenware** for cooking and for temporarily storing foodstuffs.

These same technical choices involving tempers and clay pastes, wall thickness and uniformity, and surface treatments, are used to make the so called 'casentinese churns', special cylindrical *pithoi* (over a metre tall, with walls that may be even 4 cm thick, and mouth and bases of about 40 cm of diameter) that have been interpreted as **production** tools, possibly for processing farming or forestry products (either for cooking milk into by-products such as curd and cheese, or for producing pitch—the latter being in fact more likely, because of the dark layer of residual organic material recorded on the bottom of almost all churn specimens, that may indeed be tar, but is yet to be analysed). In these special *pithoi*, the clay paste is very coarse as the big but

³⁷² Cuomo di Caprio 2007, p. 125, 138; Roux 2019, pp. 36-37.

³⁷³ Roux 2019, pp. 99-100.

³⁷⁴ Roux 2019, pp. 37-38.

regular limestone inclusions contribute to vessel's resistance to thermal shock as well as preventing the walls from collapsing.

2) A degree of **impermeability** may have been imparted by clay coating (even more so when combined with burnishing), not to the same degree given by glaze or by fine clay slips, such as barbotine,³⁷⁵ but enough to reduce the perspiration of the vessel by producing a thin outer layer of more uniform and less porous clay. Such impermeability may have been a desired feature for *pithoi* used in wine **production**, or as temporary (seasonal?) water reservoirs—these objects are the only ones in which we systematically find the surface treatment that combined coating with clay and burnishing, and only on the inner surfaces. On **kitchenware**, thin and impermeable layers of clay may have contributed to prolonging the life of the object. Impermeability could also be enhanced by burnishing, mostly present on **banqueting ware** and usually on both surfaces. Impermeability is definitely a feature achieved by the barbotine layer, both inner and outer, of the black gloss ware. However, it is relevant to note that pitcher and other closed vessels in black gloss ware only present barbotine on the outer surface, hinting to its prevalent aesthetic use.

3) A controlled level of **porosity** can be achieved by adding tempers that are destroyed during firing, such as organic tempers dissolving even at low temperatures, or mineral ones that melt while firing in a controlled oxidising atmosphere, above 600°. A good level of controlled porosity is necessary to improve the perspiration effect of a container, which is useful for keeping fresh the liquids stored within.³⁷⁶ Most of the ceramic material belonging to the technical groups 3 and 4 displays a high level of controlled porosity. Medium *olle*, pitchers and amphoras are all made with porous ceramic and harnessing RKE. These ceramic classes have been interpreted as viable for **liquid storage and consumption**. Vacuolate pottery, mostly belonging to groups 2 and 3, usually in the shapes of medium *olle* with or without handles, may also have been made with the intention of achieving high porosity, and it may have been used for **storing dry food**, keeping it fresh, since vacuoles are very large pores and may cause liquids to leak out of the vessel.

4) Among design choices that involve shape manipulation, **regularity**—broadly intended here as the sum of every rhythmic shaping choice that repeats over many pieces and contributes to the standardisation of their shape—is paradoxically quite often the least evident, especially in pieces that are not made with the wheel. Regularity is strictly connected with familiarity, as it facilitates **replicability** as we find shapes that are constantly repeated and do not vary or vary just in size. Regularity (and to some contemporary sensibilities, the lack thereof) contributes to the vessels' **aesthetic qualities**, the latter deemed here as yet another function. Finally, regularity may have been considered a **measure of the maker's skill** and attaining it consistently may have contributed to his or her own sense of accomplishment. Certainly, regularity is sought with consistency by potters. Arguably, the more common the shape the more common the functionality of the vessel. Thus, we can say that regularity actually brings about the *common* in common ware, even though not a single vessel is precisely similar to the next one that bears the same shape and function.

The most basic and intuitive regularity choice is the **adoption of shapes** itself, more specifically here of rounded shapes. A rounded shape is a very intuitive regular shape, it

³⁷⁵ Roux 2019, pp. 99-100.

³⁷⁶ Roux 2019, p.38.

maximises the capacity of vessels, favours the control of their outer surfaces, allows their body to uniformly self-sustain while reducing the breaking points, and drastically optimises their storage in stacks and rows. Moreover, it is the only shape that can be made by harnessing rotating kinetic energy; thus, its production is intrinsically ergonomic in terms of energy management. Regularity can be achieved (and is in fact sought) for rounded shapes even without harnessing kinetic energy, as evident from the recurring *olla* shapes of the kitchenware from Casentino and Valtiberina (see *plate 71*), mostly formed by beating and paddling or by pressing.

Finally, it is worth mentioning that there are different kinds of regularity involving just portions of the vessels that may enhance certain functionalities of the object. For example, regular ‘vertical’ walls with homogenous thickness are made with beating/paddling techniques and we find them mostly in kitchenware, *pithoi*, and other larger vessels used as tools of production.³⁷⁷ This kind of wall is thought to improve thermal shock resistance and heat conduction.³⁷⁸ Another example involves the coiling technique that affords a better control on thickness and size of the vessel’s walls and feet. While feet tend to be rather thick in kitchenware, they may be either flat, almost as large as the vessel’s mouth, and in direct contact with the surface so to absorb heat from it, or small so as to maximise the rotundity of the body and enhance the part of the vessel’s surface directly exposed to the flame, from hanging above it or by being placed on a stove.³⁷⁹

Generally speaking, since regularity seems to facilitate energy efficiency during the production of the object and its subsequent use, it may be that both potter and user intuitively look for it. The need of regularity may thus contribute to normalising the formation of behavioural patterns in ceramic production and use.

5) There are just few basic **vessel-body shapes** that reoccur among the potsherd assemblages of Casentino and Valtiberina: the *olla*, the cup, the plate, and the bottle. They may vary in size and other features, such as the presence, number, shape, size and placement of handles, rims, beaks, necks, and special feet. The interplay between size, added features, and basic body shapes multiplies the variety of vessels (we can thus add to the list the *pithoi*, amphoras, cooking-bells, *skyphoi*, chalices etc.) and can be quite telling as to their function. Thus, for instance, the presence of a ring-foot on a cup makes that cup better at keeping warm the liquid it contains than if the same cup had a wide flat foot. The portion below the body of the cup, inside the ring that forms the foot, actually creates a cushion of air that isolates the cup from the surface below, and air is the best thermal insulator.

Again, the thick, massive rims of the biggest *pithoi*, those that may have been used in wine production, are fundamental features for keeping the vessel intact and durable, preventing its collapse under its own weight. Finally, an interesting example of functional variation due to handle-positioning comes from Tizzano in Valtiberina, where we have an *olla* made without RKE, in clay fabric and surface treatments both suitable for cooking, with two parallel ring handles attached next to one another on the vessel’s rim. Such coarse ware may have been used for cooking food by placing the vessel in front of the fire embers, even directly into them, with the two parallel ring handles facing outward. The cook may have thus been able to shift and

³⁷⁷ Roux 2019, p. 38.

³⁷⁸ Cuomo di Caprio 2007, p. 125.

³⁷⁹ Cuomo di Caprio 2007, p. 138.

manipulate the vessel around by the two protruding handles, without getting burned. Vessels with the same shape and handle positions are still in use in Apennine Lazio to this day.³⁸⁰

Familiar objects and imitation

Thus, the pot's shape with all its features help in conveying to potential users the fundamental function of the object itself, the one it was designed for. This dialectical feature,³⁸¹ the evocative potential of the vessel's shape is one of the most problematic features for the archaeologists since it may combine functional and cultural aspects that are impossible to interpret correctly and unequivocally. However, objects continue to exert their evocative properties on us users, and this interaction is a *fact* that always happens in a context—like a play it requires both actors and stage. Thus, the evocative property of archaeological objects is still there for us to interact with, and if we cannot pinpoint definitive interpretations of an object's cultural connotation, we can certainly assess reoccurring patterns in assemblages which may be descriptive of past interactions between objects and users, and of the context in which these objects were used. In some cases, such as the *olla* with the pair of side-by-side ring handles, the use of some special objects may continue to the present day. Most of the time, however, the function of an object is not so apparent, as some archaeological finds may be either very common and generic (like the *olle*), or quite unique and unfamiliar to us (like the 'casentinese' churn, see *plate 14.2*).

How can we intuitively understand what an object is for, if that object is truly unknown to us, if we have not seen it before, if that object is unfamiliar? Since every pottery vessel is basically always a container, certain shapes may truly be archetypical and certain basic functions always intuitive. We should nonetheless allow the feature of familiarity to help us interpreting the evocative potential of the object,³⁸² especially when many of the object's functions may only be apparent through and after complex environmental interactions that we may have to learn first. We have to see it in use before we can pick it up and start using it in the same way. Familiarity is generated by use, strengthen through generations of users, and on a broader social scale may contribute to the formation of traditions, potentially embedding many cultural aspects connected to everyday life (such as those related to food preparation and consumption, to agricultural production techniques, to home-based cult activities, etc.). Objects then become part of the environmental familiarity of one's socio-cultural context. In that context, these objects have preferred socially-established functions that are known to everyone. Moreover, some functions, especially those related to cult, may be based on the subversion of this familiarity (by making familiar shapes in unfamiliar sizes for instance, e.g., miniaturistic pottery). In short, familiarity affords the interplay between users, context, and objects for the enacting of the small socio-cultural performances, often personal, in some cases unconsciously undertaken, of everyday life.

In the opening sequence of the 1987 British black comedy 'Withnail and I', the protagonist,³⁸³ a young, unemployed, and penniless actor living with his friend Withnail in a messy apartment

³⁸⁰ I have seen one myself while excavating at Fregellae in 2022. Our host in Rocca D'Arce, Pier Giorgio Monti, had such a vessel among the crockery in his kitchen, and told me that it was used to bake soup on live embers, in this case those of his fireplace.

³⁸¹ Kwint 1999, p. 4; Winther-Jacobsen 2010, p. 45.

³⁸² Familiarity here is a softer version of Bourdieu's habitus (Bourdieu 1977).

³⁸³ Although his name is never revealed in the movie, in the original theatre play his name is Marwood.

in Camden, goes to his kitchen to retrieve a mug for drinking some instant coffee; but the mugs are all dirty and piled with dirty dishes in the sink; rather than washing one, he then takes a clean bowl and a spoon and preps his instant coffee therein, eating it with a spoon as if it was soup. The comic element of this sequence is centred on the inappropriate use of the bowl and spoon. Once we see how the protagonist drinks his coffee this opening scene's build-up culminates, and the character's economic situation and generally indolent lifestyle (but also wit) suddenly become apparent—the trigger being that lovely expedient of the inappropriate use of an object, transforming instant coffee into soup.

Similarly, in the Archaic Apennines, objects that were used for eating soup may indeed have been used also for drinking wine or milk, but it would have possibly been an unfamiliar use, maybe even inappropriate, especially considering how ritualised banquets and meals were in pre-Roman Italy. The presence of a ring-foot on most cups³⁸⁴ from Casentino and Valtiberina suggests that these may have been designed to be more suitable for consuming warm liquids than a *skyphos* with a flat foot, or than a fine but small chalice on a high foot. For this reason, we have so many different yet similar objects that may have been used in banquets and meals all at the same time—*skyphoi*, *kylikes*, *kantharoi*, and chalices for milk, wine, and water; cups for soup—they all had their familiar function. The same discourse may be made for kitchenware, as it may have felt inappropriate to use a cooking pot to store or to drink wine.

Imitation seems to play quite the prominent role in shape choice, sometimes down to details. It is uncertain whether this imitation is always done consciously. It may in fact have different meanings depending on the object's sphere of exchange. Arguably, kitchenware imitates common and very familiar shapes, thus familiarity may guide the repetition of shapes without changes, or into unique variants with small differences. The shape of production ware may instead respond more strictly to functional necessities, while the spread of smaller details in rims and handles may follow the potters and the shaping traditions they have developed in their workshops of origin. Finally, many shapes of fine ware may imitate those of even finer vessels of the elites. Thus, differences in the meaning of imitation seem to be directly connected to the culturally demarcated differences in value between goods belonging to different spheres. Arguably still, as we shall see, variations in shape of fine banqueting ware and of liquid storage ware may follow specific trading networks, even in association with other products such as wine or oil. These networks may have started in multipurpose centres of production, where a large variety of goods was made, from the wine to the vessels in which to store it and to drink it.³⁸⁵

Differential spreads and spheres of exchange

Functionality, technical difficulty, and imitative qualities are all features contributing to the definition of the value of pottery objects. Remarkably, since many design choices are involved in the definition of these elements, we see how they are tightly connected to the techniques of production. So, do the differential spreads of the technical groups relate in any way to the spheres of exchange? They seem to, but in complex ways, since objects with the same function

³⁸⁴ I am adopting the name given by Italian archaeologists to this shape (see Mattioli 2013, p. 97) but indeed most objects classed as 'cups' do rather resemble bowls.

³⁸⁵ The best examples of multipurpose workshops have been recorded in Spina, see Zamboni, Buoite 2017; Mistireki, Zamboni 2020.

and belonging to different technical groups may have been locally produced while at the same time being imported from elsewhere. Culture defined value: in some cases, technical difficulty may have been a predominant element in value definition, while fashions may have been at play in assigning different values to similar objects. Conversely, all pottery may have been considered in the same sphere of exchange and only coincidentally following goods of different spheres, maybe as part of trading batches. Bearing these elements in mind, we shall try to highlight different spheres of exchange by finding possible areas of diffusion of techniques of production.

Before analysing in further detail this issue, it is relevant to highlight that this assessment is based on the interpretative organisation of the techniques of production into wider families (not to be mistaken with the technical groups of Chapter 3), defined as groups of local variants of similar techniques of production. The labelling of each single technique's identifier depends on the values attributed to the five phases of production (clay sorting, fashioning, preforming, surface treatment, firing), plus the rotary implement (rotary device, turntable, wheel) characteristic of that technique of production. The first interpretative element of this evaluation is to consider whether an action can be *intuitive* enough to be discovered independently, or be instead a *standardised* action, part of a technique learned from someone and perfected over time—bearing in mind that these two may not be mutually exclusive even in the context of the productions made in the same workshop. This difference makes particular sense for certain subphases of the vessel shaping and especially in fashioning and preforming.³⁸⁶

Clay sorting, surface treatment and firing are considered instead as phases with a more marked technical or functional character, therefore somewhat standardised. Therefore, the difference between two intuitive (or standardised) actions is considered small; the difference between an intuitive and a standardised action is considered big. Techniques may differ just in a single action. Consequently, many techniques are very similar to one another. Techniques that bear one or two small differences are grouped as akin, in the same family. Techniques that bear more than two small differences or even just a single big one, are considered as belonging to different families. In a nutshell, an interpretative assessment has been undertaken to group together techniques that were similar enough to be considered either the same technique or techniques that stemmed from the same technique. These families can be seen in Appendix 1 and are actually displayed on the maps at *plates 67 to 69*.³⁸⁷

The second and more relevant interpretative element is that geographical proximity has also been taken into account in family definition. This element was considered viable after observing how similar families of techniques spread exclusively around the two centres of production that have been archaeologically recorded so far (Trebbio and Singerna). Therefore, geographical proximity of similar techniques may imply a centre of production within the defined area. If we accept this interpretative division of techniques into localised families, we see that many centres may have developed local techniques of production of kitchenware, accommodating the possibility of the presence of very local potters and potentially of more workshops than we have recorded so far. While having traces of facilities is a compelling sign

³⁸⁶ Actions considered more intuitive: for fashioning – segment + pinching, pinching, drawing; for preforming – scraping, pressing. Actions considered more standardised: for fashioning – rolls + pinching, spreading; for preforming – beating/paddling. Rolls + pinching is actually considered quite neutral.

³⁸⁷ Differences and similarities among techniques are not visible in the table of families at Appendix 1 but are apparent when considering the 57 variables according to which each technique of production has been defined.

of production, pin-pointing the place of origin of a technique is in fact impossible (and possibly unnecessary) as more than one facility may have used the same technique at some point, and we have simply not found all the production sites. Moreover, the presence of pottery in one site does not automatically imply the presence of production there. A way to solve this issue is to consider each site in which a specific technique is found simply as a recipient and a relay of pottery objects, one of potentially many places of diffusion of that technique through the production or the acquisition and exchange of objects.

Goods produced with techniques belonging to groups 1 and 2 are almost exclusive to medium and small sized coarse *olle*, interpreted generally as kitchen and food storage ware (see *plate 68*). The families in which we can divide these techniques are recorded among up to five neighbouring sites each (in Casentino from group 1 we have RT1, RT4, RT6, RT7b, and RT5 and RT3a from group 2; in Valtiberina we have RT1d; RT4b; RT6b from group 1 and RT2, RT3 and RT5a from group 2) hinting at a very local production of such goods. Since some of these families are actually similar to one another, they could be considered as local offspring of different production traditions, that were possibly more widespread. It is relevant also to point out that some of these families of techniques are rather object specific, such as RT7b, which groups similar techniques that were used to make *olla* lids. Finally, some of these families spread exclusively in their vicinities (such as RT7b around Ama and Secchieta; RT8 just in Poppi; RT2 and RT3 around Singerna and from there to the other Valtiberina sites). The fact that centres developed local, or very local, techniques of production of kitchenware may accommodate the possibility of the presence of very local trading hubs, with goods that were produced and exchanged locally. The exchange of goods or of services related to kitchenware production may thus have fallen into the category of subsistence exchange, and as such been culturally equivalent to foodstuff and its production.

Not all kitchenware may have been so locally produced, since there is a consistent minority of goods produced with techniques belonging to groups 3 and 4, as we can see on the map at *plate 69*. These techniques may also be divided into families; however, these appear to be more generally widespread and comprising just a main technique with two more extra variants at the most. These techniques are used to make objects that have different functions. Some of these families are actually ubiquitous: TN2 used to make kitchenware (see the piece at *plate 72*), TN3 and WH1, used to make liquid storage vessels, such as amphoras and pitchers, and BUCC, the *bucchero* ware, the most representative of the fine banqueting ware. Apart from the kitchenware, the use of these techniques is directly connected to wine consumption and banqueting, thus are here considered as a strong hint of their association with networks of production and exchange that are more widespread than the single valley. There may be two further hints of this. The most compelling one is that these goods are ubiquitous, but in very small quantities, especially if compared to those produced with techniques of groups 1 and 2. This could be a hint of a rather egalitarian distribution of luxury goods, an element observed in many multicentric economies.³⁸⁸ Moreover, some of the tempers (tiny flakes of metamorphic schist) used to produce the goods made with TN3 and WH1 may not be autochthonous and may be compared to those used in amphoras and pitchers found in Val di Chiana, Lower Valtiberina, and even Valdarno.³⁸⁹

³⁸⁸ Sillitoe 2006, pp. 6-9.

³⁸⁹ See Poggiali 2014, pp. 52-54.

Similar aspects apply to kitchenware: the goods made with TN2 and WH0 are comparatively fewer and present tempers mixtures that are drastically different from those used for kitchenware belonging to groups 1 and 2 (flecks of black limestone and quartz, instead of the usual big white flecks of limestone). This may depend on different techniques used to achieve thermal shock resistance, and also possibly on minor functional differences of the final pots (or even drastic ones, thus on their possible misinterpretation as actually being kitchenware), but it may also be sign of import, especially since the typologies of these wares are linkable with wider trading networks, as we shall see. Therefore, kitchenware may have been traded along with luxury goods. It is unclear whether in this case such ware had a value different than that of the goods in groups 1 and 2. It may be that all kitchenware was considered as equivalent, as any other subsistence object, and thus been traded along with batches of other goods according to the sphere of exchange at play during the transaction. Or it may be that this kitchenware made with a higher level of technical difficulty was considered fashionable, and more valuable. In Lower Valtiberina this kind of ware has been found often associated with pottery stoves (although no such object has been identified yet in Valtiberina and Casentino).³⁹⁰ It may have been used in specific cooking techniques, maybe even for recipes other than those made with kitchenware from groups 1 and 2.

Finally, *pithoi* and larger vessels are also usually produced with techniques belonging to groups 3 and 4 (with some larger vessels that could be identified as the ‘Casentinese churn’ found in Ama produced with RT5a, thus with a technique from group 2). Two of the most common techniques, WH3 and TN5, are found in both valleys, while TN2 has been found used for making *pithoi* only in Ama (again for making the unique typology of the ‘Casentinese churn’), TN6 can be considered a variant of TN5, and TN7 is found only at Chiusi (della Verna), a site on the main Apennine crossroad of Compito, which could have been recipient of handiwork coming from other nearby valleys. Possibly WH3 and TN5 may respond to specific technical and functional needs in the final product—WH3 making the vessel impermeable and resistant to heat; TN5 making it perspirant, maybe fit for dry storage. It is otherwise interesting to note how both techniques are found overwhelmingly present at the site of Trebbio. It may be that the spread of these, and even of some other techniques in group 1 and 2, between the two valleys could be traced to the action of itinerant *pithoi* makers, moving from settlement to settlement, providing their services, and spreading their knowledge of production. It should be noted also that the only typological form common to both valleys is a medium sized *olla* made with RT5a and found in Ama and Trebbio.

Considering the level of technical specialisation required to make large vessels such as the *pithoi*—tools needed as water reservoirs for agriculture, food storage, pitch production, wine, and olive oil production, etc.—we see how these goods could have had a value beyond that of the subsistence sphere. *Pithoi* were big, sometimes huge, and were difficult to make and transport, and we find that they were often repaired or repurposed once their initial function was no longer possible due to wear and tear, suggesting how difficult to replace they may have been, and even how *expensive*. The model of the itinerant potters could thus be valid, with specialised handicrafts exchanged for portable special purpose currency, such as the *aes rude* and *signatum*. The fact that such a local typology as the ‘Casentinese churn’, found only in Ama and Serelli, was made with two different techniques (RT5b and TN2) that are found in other sites, could be considered as a further indirect clue to the action of itinerant potters.

³⁹⁰ Martelli et al. 2009, p. 202, 210.

Itinerant potters may also have been at work on a smaller scale, between neighbouring settlements, making kitchenware. In this regard, it is important to note that the ceramics made with the techniques of groups 1 and 2 did not require fixed or tools that were difficult to move (such as a fast potter's wheel, whereas turntables could still be portable objects) to be made. It is therefore possible that professional potters may have been active even without the need for a permanent workshop.

Shape imitation, fashion, and trading

A final pattern that seems to corroborate the connection between the spread of techniques of production with different spheres of exchange is provided by the typological study of the vessel shapes. Vessel shapes have been reconstructed by singling out diagnostic pieces, usually vessel rims, that have been compared with typologies from 22 published sites in central Italy,³⁹¹ chosen for their (relative) proximity to Casentino and Valtiberina, both on the Tyrrhenian and the Adriatic sides (see map at *plate 73*). Very simply put, the typology *comparanda* and distribution study highlighted two different patterns of spreads that follow groups 1 and 2, and 3 and 4, respectively. Some relevant areas such as Arezzo, Valdarno and Valmarecchia (respectively to the immediate south, west and east of Casentino and Valtiberina) could not be considered since no typological repertoire from these valleys (or even detailed site report) has been published yet. Other relevant areas, such as Cortona, Volterra, Val d'Elsa, and Chianti, on the Tyrrhenian side, and Gubbio, Camerino, and Matelica on the Adriatic side could not be included in this assessment. A total of 143 diagnostic pieces were singled out from the totality of the ceramic assemblage datable between 600 and 400 BC and fit for technical assessment (2913 pieces of the overall initial total of 6881).³⁹² The percentage of diagnostic pieces in relation to the total number of potsherds is surprisingly low (5%). These quantities do not consider duplicates from the same site, while it is relevant to remember that the uneven quality of the original archaeological investigation of the sites also may have impacted on the thoroughness of on-site pottery collection.

As we can see on the map at *plate 74*, the typologies of vessels from Casentino and Valtiberina belonging to technical groups 3 and 4 (excluding *pithoi*) seem to find different sets of *comparanda* between the two valleys (especially between the north-western part of Casentino and all the rest), yet with interesting commonalities. The typological assemblage of fine ware and liquid storage differs between the two valleys, with no typologies in common even for the case of objects with the same function, and with Casentino preferring *coppe carenate* ('ridged cups')³⁹³ and pitchers, Valtiberina *coppe emisferiche* ('hemispherical cups') and platters.³⁹⁴ It is therefore likely that the above map may actually show either preferential trading networks

³⁹¹ The typological analysis was undertaken comparing my materials with materials as recorded in: Bonomi Ponzi 1999; Bouloumié 1978; Bouloumié-Marique 1978; Campana 2013; Campana, Felici 2001; Camporeale 1985; Camporeale 2003; Cappuccini et al. 2009; Cappuccini 2014; Cappuccini 2017; Catucci 1993; De Marinis 1990; Felici 2004; Felici 2012; Gastaldi 1998; Gastaldi 2009; Gelichi, Negrelli 2008; Iaia, Moroni Lanfredini 2009; Lollini 1985; Malnati 1985a; Malnati 1985b; Miari et al. 2012; Miari 2014; Olcese 2012; Picchi 2008; Picchi 2012; Poggesi, Sarti, Vannini 2012; Staffa 2003; Taccola 2019; Thomson De Grummond 2020; Trenti 2013; Vanzetti, Pracchia, Vidale 2003; Zamboni 2013.

³⁹² Trebbio has not been introduced in the assessment yet.

³⁹³ I am using the Italian typological terminology as adopted in Mattioli 2013, next to its literal translation.

³⁹⁴ See Appendix 2 for the typological repertoire of the potsherds divided per sample (and thus site).

or networks of local production imitating the design of ceramic objects considered to be fashionable (in turn closely linked to trade networks, but also to local culinary habits). In Casentino, vessel typologies are more often comparable with those found in Mugello and Valdarno down to Pisa (on *plate 74*, dark and light green markers respectively), areas that are thought to be under the influence of *Faesulae*, possibly since Archaic times.³⁹⁵ Conversely, in Valtiberina the comparative trends seem to point towards the Adriatic side of Central Italy (orange and red markers), and towards both *Clusium* (Chiusi in Val di Chiana, not to be confused with Chiusi in Casentino) and Val Padana (light and dark blue markers respectively) more consistently than it happens in Casentino. In both valleys many comparisons could be drawn with Central Tyrrhenian Tuscany—the areas of Civitella, and Pienza especially, but also with Murlo, and Populonia and Vetulonia (dark and light yellow markers, dark and light purple markers, respectively).

It is relevant to note that in the 6th and 5th centuries BC the inland routes connecting *Clusium* to the Adriatic side of Italy, and to Spina more specifically, became important paths of trading.³⁹⁶ Among these routes we may count the Valtiberina, possibly making use of the river Tiber for moving shipments.³⁹⁷ Riverine networks may have indeed been important, largely facilitating inland interconnectivity. A similar phenomenon may be at play also for the Arno valley. Movement of artisans and stoneworkers following the river Arno from Pisa to Faesulan territory, has been theorised for this same period by Antonio Maggiani who studied the sculptures found in Pisa, Val d'Elsa, Calenzano, and Mugello.³⁹⁸ Clues to this riverine route may be found in Casentino, if we consider the comparisons between local pottery and assemblages found in Pisa, and especially counting the fact that a Pisan wine amphora was found in Pratariccia, as we have seen in Chapter 2. Wine amphoras should be considered good markers of the direct trading of goods, and in this regard it should be pointed out that many of the typologies that found comparisons with the sites of central Tuscany are actually interpreted as wine amphoras.³⁹⁹ These goods may have partially travelled riverine routes connecting Val di Chiana to Valdarno and Valtiberina.

On the other hand, if we look at the comparative typological study of the objects in groups 1 and 2 the situation appears quite different (see map at *plate 75*). The typologies of vessels from groups 1 and 2 appear to be common to all sites of both valleys in which we find objects from such groups, and these can be consistently compared with cases on both sides of the Peninsula. The most common shape among these typologies is the *olla quadribugnata* (see *plate 71*) with other typologies (even unique ones) that could be considered as variants of this basic one, retaining relevant common features such as the knob handles and the simple rim without lips. These shapes are never found reproduced using other techniques from other technical groups, not even among the *comparanda* sites (with some *pithoi* from Trebbio made with WH2 retaining knob pseudo-handles). Can this basic olla shape be considered the *archetype of the cooking pot*, reproduced consistently in the same way, to the point of becoming a staple connected only to certain techniques of production? This question cannot be answered with certainty. An interesting element however is the permanence of this pottery shape in Apenninic

³⁹⁵ Cappuccini 2009, pp. 82-85.

³⁹⁶ Tagliamonte 2017, pp. 128-131; Zamboni 2018; Kramer 2020.

³⁹⁷ Dominici 2022, p. 81; Desibio 2020, p. 31; cfr. Colonna 1986, p. 95.

³⁹⁸ Maggiani 2004.

³⁹⁹ Cappuccini 2014, pp. 64-66, 74.

contexts, as we find it from the late Bronze Age to Roman times, from Liguria to Lazio, from Romagna to *Picenum*.

The *olla quadribugnata* (with its variants) poses then interesting issues in design choices, especially relating to innovation. Shape imitation seems here conservative, not fashion-driven,⁴⁰⁰ perhaps relatable to the familiarity of the cooking pot as an everyday object. This conservatism should not surprise—familiar objects such as the frying pan have been made in the same shape for thousands of years.⁴⁰¹ However, the fact that a shape is also connected to a specific technique of production is telling. Familiarity could be extended then to certain production techniques and be an indication of a possible normality of homemade handicraft production throughout this part of the Apennines. As said, innovation in the shapes and forms of kitchenware seems to come only in Roman times, when the diffusion of new clay fabrics allowed regular forms to be made more easily. It is otherwise likely that these innovations were due to a shift in the value of technical difficulty, perhaps because of the emergence of more professional pottery workshops, such as those we find in *Arretium* from the late 2nd century BC.

Versatile workshops and issues of import

Which ceramic goods were produced in Casentino and Valtiberina? What was imported? A definitive answer will only come by performing further archaeometric analyses. However, at the present stage of the research, we may safely assume that pottery was made at least where pottery making facilities have been recorded. It cannot be coincidental, for instance, that Trebbio is the site with the largest assemblage, and where the most techniques have been recorded, techniques that are found only there and in its vicinity. If we take a look at quantities of pottery objects recorded at Trebbio (see table below), we see that certain samples exceeds 5 kilos, and 100 potsherds, and their techniques (with the exception of RT4b also found in Singerna) are unique to Trebbio. We may consider these groups as probably produced on site. Generally speaking, the ceramic objects made at Trebbio were very large vessels, including many *pithoi*. The site may have supplied tools and objects related to agricultural and farming production.

sample id.	total # of objects	total weight	objects	main size	Technique	Technical group	family	function
BARD.NC.9B	14	2690	cooking bell	large	RT1d	GROUP 1	RT1d	kitchenware
BARD.NC.6B	7	386	olla	large	RT1a	GROUP 1	RT1d	kitchenware
BARD.NC.3	170	10302	olla	very large	RT4b	GROUP 1	RT4b	kitchenware
BARD.NC.3B	17	364	olla	very large	RT4b	GROUP 1	RT4b	kitchenware
BARD.NC.6	12	430	bowl	very large	RT4e	GROUP 1	RT4b	kitchenware
BARD.NC.8	14	1451	olla	large	RT6b	GROUP 1	RT6c	kitchenware
BARD.NC.8B	7	1786	olla	large	RT2a	GROUP 2	RT2b	kitchenware
BARD.NC.9	16	2537	olla	very large	RT5a	GROUP 2	RT5a	kitchenware
BARD.NC.1B	28	657	olla	very large	TN1	GROUP 3	TN1b	kitchenware
BARD.NC.1	171	6216	olla	very large	TN1b	GROUP 3	TN1b	kitchenware
BARD.NC.1C	16	301	olla	medium	TN4b	GROUP 3	TN4b	liquid storage
BARD.NC.2	139	14036	olla	very large	TN5	GROUP 3	TN5	production
BARD.NC.2B	18	794	olla	very large	TN6	GROUP 3	TN5	production
BARD.NC.5B	11	460	bowl	medium	WH1b	GROUP 4	WH1	liquid storage
BARD.NC.4	40	3313	olla	large	WH2	GROUP 4	WH2	liquid storage
BARD.NC.5	185	25877	pythos	large	WH3	GROUP 4	WH3	production
BARD.NC.7	15	159	closed object	medium	BUCC	GROUP 4	BUCC	banqueting

Trebbio's family table (weight is in grams), the difference in colour is inconsequential.

⁴⁰⁰ On the volatility of fashion see Fowler 2017, p. 481.

⁴⁰¹ Whitbread 2015, pp. 28-29.

Conversely, we may also be able to exclude certain techniques, such as BUCC and WH1b, not just because they are outliers. Bucchero was a very specialised production, made in a controlled reductive atmosphere, that required specialised facilities and toolsets that have not been found at Trebbio.⁴⁰² The objects made with these techniques may have been imported. The presence of some of the least recorded techniques (such as RT6b or TN4b) may be due to the fact that certain body parts of some of the larger vessels could be made with a combination of techniques. Errors in the assessment should also be taken into account. Nonetheless, ceramic objects may also have been imported to a site with a marked productive vocation.

This aspect is even more evident for Singerna (see chart below), considering as an aggregation of all the sites recorded through surface survey around San Cassiano and especially Madonnuccia, located at the confluence between the river Singerna and the Tiber, where the collection of separators, chunks of dome and of firing grid indicated the presence of a substantial pottery furnace. Here the situation appears more complex since many techniques found there are common to more sites, even bridging the two valleys. It is very likely that Singerna produced objects with techniques that have been found in Casentino, and the most likely candidates are TN3 and WH0 (that are always found in association with one another). Some production techniques are well represented, exceeding 500 g and 10 sherds; among these, there is a technique exclusive to Singerna and its premises—RT2b (1284g/46 sherds)—while RT4b, the single most represented technique (1303/67), is common to Trebbio. Other techniques that pass the threshold of 500 g and 10 sherds are RT1e (568/31), TN3 (708/19), WH0 (571/12), WH1 (522/13). RT1c, TN3, and WH1 are found in the immediate premises of the furnace at the mouth of the river Singerna. For simplicity, let us suppose then that the productive facilities here made objects using techniques belonging to the families RT1d, RT2b, and TN3, and quite possibly with those belonging to WH0 and WH1. Even by considering the size of the separators, these facilities seem to have been used for producing medium-sized vessels, suitable for storage and consumption of foodstuff.

sample id.	total # of objects	total weight	objects	main size	Technique	Technical group	family	function
SIN.CAR162.2	10	177	olla	medium	RT1e	GROUP 1	RT1d	kitchenware
SIN.CON66.2	21	391	olla	medium	RT1e	GROUP 1	RT1d	kitchenware
SIN.CON52.15.1	3	81	olla	medium	RT1c	GROUP 1	RT1d	kitchenware
SIN.PISTA.3	6	190	olla	large	RT1c	GROUP 1	RT1d	kitchenware
SIN.S.CAS157.1	24	550	olla	medium	RT4b	GROUP 1	RT4b	kitchenware
SIN.ZFOSSI.1	13	126	olla	medium	RT4b	GROUP 1	RT4b	kitchenware
SIN.PISTA.1	30	627	olla	medium	RT4b	GROUP 1	RT4b	kitchenware
SIN.S.CAS157.2	8	402	olla	medium	RT2	GROUP 2	RT2b	kitchenware
SIN.PISTA.2	38	882	olla	medium	RT2b	GROUP 2	RT2b	kitchenware
SIN.CAR162.1	1	14	olla	medium	RT3	GROUP 2	RT3	kitchenware
SIN.CON66.1	21	335	olla	medium	RT3	GROUP 2	RT3	kitchenware
SIN.CAR162.3	3	49	olla	large	TN2a	GROUP 3	TN2	kitchenware
SIN.CON66.3	12	219	olla	large	TN2a	GROUP 3	TN2	kitchenware
SIN.CON52.15.2	2	91	olla	large	TN3	GROUP 3	TN3	liquid storage
SIN.CON34.1	4	140	olla	large	TN3a	GROUP 3	TN3	liquid storage
SIN.PISTA.4	17	617	olla	large	TN3	GROUP 3	TN3	liquid storage
SIN.PISTA.5	12	571	bowl	medium	WH0	GROUP 4	WH0	kitchenware
SIN.COLLE.6	2	11	bowl	medium	WH0	GROUP 4	WH0	kitchenware
SIN.CON52.15.4	1	76	olla	medium	WH1	GROUP 4	WH1	liquid storage
SIN.CON52.15.3	12	446	pitcher	large	WH1	GROUP 4	WH1	liquid storage
SIN.CON67.2	2	10	bowl	medium	BUCC	GROUP 4	BUCC	banqueting
SIN.CON52.15.5	38	162	bowl	medium	BUCC	GROUP 4	BUCC	banqueting
SIN.FORM.2	1	5	closed object	large	BUCC	GROUP 4	BUCC	banqueting
SIN.GRIC.4	12	93	olla	small	GREY	GROUP 4	GREY	banqueting
SIN.COLLE.5	7	27	pitcher	small	GREY	GROUP 4	GREY	banqueting
SIN.CON52.15.6	1	8	olla	medium	GREY	GROUP 4	GREY	banqueting
SIN.GRIC.3	7	124	plate	medium	GREYa	GROUP 4	GREYa	banqueting
SIN.COLLE.4	15	40	plate	medium	GREYa	GROUP 4	GREYa	banqueting
SIN.CON52.15.7	2	20	bowl	medium	SLIP	GROUP 4	SLIP	banqueting

Singerna's family table (weight is in grams), the difference in colour is again inconsequential.

⁴⁰² Maritani, Mazzoli, Saracino 2009, p. 81.

The site of Tizzano is also part of this network of small settlements at the mouth of the river Singerna. Tizzano was a rushed excavation, and the finds collection may have been particularly biased towards keeping just the finer pieces. Nonetheless it appears to be the wealthiest site of this assessment (see chart below), with many fine productions, including decorated black varnished ware. Given its lengthy history, down to the Augustan age,⁴⁰³ we may consider it as having a relevant role in the surrounding area, possibly as the seat of a wealthy family, as a centre of wine production, or as a small trading hub (or as all these things at once). The large quantity of ceramic produced with WH1, used for liquid storage (7496/220), may be a further clue to the presence of wine production—although with more than a grain of salt, given the uncertainties in finds dating, connected to the poor level of the stratigraphical documentation.

sample id.	total # of objects	total weight	objects	main size	Technique	Technical group	family	function
TIZ.C.3.4	3	42	olla	large	RT2	GROUP 2	RT2b	kitchenware
TIZ.C.3.5	3	25	olla	large	TN1b	GROUP 3	TN1b	kitchenware
TIZ.C.1.2	64	1875	olla	large	WH1	GROUP 4	WH1	liquid storage
TIZ.C.2.1	60	662	pitcher	large	WH1	GROUP 4	WH1	liquid storage
TIZ.C.3.2	13	268	mortarium	medium	WH1	GROUP 4	WH1	liquid storage
TIZ.E.1.2	14	208	olla	large	WH1	GROUP 4	WH1	liquid storage
TIZ.NC.1	10	657	cup	medium	WH1	GROUP 4	WH1	liquid storage
TIZ.NC.2	27	833	olla	large	WH1	GROUP 4	WH1	liquid storage
TIZ.A.3.2	1	2513	amphora	very large	WH1	GROUP 4	WH1	liquid storage
TIZ.C.1.1	23	378	olla	large	WH1	GROUP 4	WH1	liquid storage
TIZ.C.3.1	8	102	olla	large	WH1	GROUP 4	WH1	liquid storage
TIZ.NC.3	11	114	cup	medium	BUCC	GROUP 4	BUCC	banqueting
TIZ.C.1.3	4	34	cup	medium	BUCC	GROUP 4	BUCC	banqueting
TIZ.C.2.4	24	228	cup	medium	GREY	GROUP 4	GREY	banqueting
TIZ.C.1.5	15	70	cup	medium	GREY	GROUP 4	GREY	banqueting
TIZ.C.3.3	4	32	cup	medium	GREY	GROUP 4	GREY	banqueting
TIZ.E.1.4	2	6	cup	medium	GREY	GROUP 4	GREY	banqueting
TIZ.NC.4	24	868	cup	medium	GREY	GROUP 4	GREY	banqueting
TIZ.E.1.3	3	126	cup	medium	BUCCa	GROUP 4	BUCCa	banqueting
TIZ.C.2.3	8	28	cup	medium	BUCCa	GROUP 4	BUCCa	banqueting
TIZ.NC.5	38	540	cup	medium	GREYa	GROUP 4	GREYa	banqueting
TIZ.C.2.5	10	109	cup	medium	GREYa	GROUP 4	GREYa	banqueting
TIZ.E.1.5	2	27	cup	medium	GREYa	GROUP 4	GREYa	banqueting

Tizzano's family table (weight is in grams).

In Singerna and Tizzano we find many sherds of fineware produced in a reductive atmosphere—both bucchero and grey ceramic. The objects made with BUCC and GREY are generally finer, proper examples of pottery made in a reductive atmosphere; those made with BUCCa and GREYa are their cheaper versions. Some of these cheaper productions seem to be rough imitations of very common cups thought to be made in *Clusium*—Chiusi in Val di Chiana. It could be that Singerna was the centre originating these imitations, or it could be that Tizzano was the centre that relayed them from elsewhere (*Arretium*?). Productions made with BUCCa and GREYa are only found in Valtiberina, where a local fashion for *Clusium* products is otherwise suggested by the presence of direct imports of fine bucchero (see typological repertoire in Appendix 2).

Trebbio and Singerna appear to be quite versatile workshops, supplying the needs of the surrounding communities with goods made with almost all the ranges of technical difficulty. They may have been *just* facilities used by the surrounding communities, not necessarily enterprises in themselves—such communal facilities have been recorded at least for Roman times in other parts of Tuscany.⁴⁰⁴ However, their connection to an enterprise could not be ruled out, not even in the case of Trebbio. The two aspects are not mutually exclusive. The versatility

⁴⁰³ Alberti 1998, p. 78.

⁴⁰⁴ See Vaccaro *et al.* 2013.

of these workshops probably comprises other productions, such as copper smelting (metal slugs have been found at Trebbio). It is suggestive to associate the model of these versatile workshops to those recently found in Marzabotto and Spina, where wine production was directly associated with the production of wine containers, but also with the production of metal objects and, in the case of Spina, of wood parts for barges or small boats.⁴⁰⁵ Such an adaptive model of workshop, where production was not compartmentalised nor specialised, is suggestive of the strong situational aspects of the economy of central Italy in pre-Roman times.

On the other hand, these workshops may have been versatile insofar as the production went: the knowledge of pottery making may have been available to many, as suggested by the ubiquitous coexistence on every site of local productions and of imports. The case of Consuma, in Casentino, may be helpful to highlight the possible interplay between on-site productions and imports. Consuma was investigated with three small evaluation trenches, and even though no clear productive facility was found, the uniqueness of the ceramic assemblage and of its techniques suggest the likelihood of on-site production. The vessels made with techniques of the family of RT4 (6339 g/348 sherds), only found here, are all produced with a badly processed dark brown clay paste, fired in uncontrolled atmosphere for which a pit firing technique may have sufficed.⁴⁰⁶ The goods made with RT4 were found in multiple layers of one of the huts that were investigated; those made with the other variants (RT4a, c and d) were all found outside and inside another nearby hut. These objects have been interpreted as kitchenware. Their use in forestry or farming productions could not be excluded, especially given the presence of kitchenware made with other techniques necessitating both a fast wheel and a built furnace, that must have been imported (or better transported) on site.

sample id.	total # of objects	total weight	objects	main size	Technique	Technical group	family	function
ALTO.US2.1	6	22	olla	medium	RT4	GROUP 1	RT4	kitchenware
ALTO.US4.1	31	259	olla	large	RT4	GROUP 1	RT4	kitchenware
ALTO.US8.1	29	346	olla	medium	RT4	GROUP 1	RT4	kitchenware
ALTO.US8.2	8	99	cooking bell	medium	RT4	GROUP 1	RT4	kitchenware
ALTO.US9.1	8	78	olla	large	RT4	GROUP 1	RT4	kitchenware
ALTO.US10.1	12	163	olla	medium	RT4	GROUP 1	RT4	kitchenware
ALTO.US13.1	140	3493	olla	large	RT4	GROUP 1	RT4	kitchenware
ALTO.US15.2	2	38	olla	large	RT4a	GROUP 1	RT4	kitchenware
ALTO.US12.1	103	1461	olla	large	RT4c	GROUP 1	RT4	kitchenware
ALTO.USM1.4	9	380	olla	large	RT4d	GROUP 1	RT4	kitchenware
ALTO.US16.1	1	15	olla	large	RT6	GROUP 1	RT6	kitchenware
ALTO.USM1.1	3	40	olla	large	RT6	GROUP 1	RT6	kitchenware
ALTO.US17.1	1	55	olla	medium	RT3a	GROUP 2	RT3a	kitchenware
ALTO.US2.4	15	215	olla	large	TN1	GROUP 3	TN1	kitchenware
ALTO.US8.3	2	26	olla	medium	TN1	GROUP 3	TN1	kitchenware
ALTO.US16.2	4	83	olla	large	TN1	GROUP 3	TN1	kitchenware
ALTO.USM1.2	14	148	olla	large	TN1	GROUP 3	TN1	kitchenware
ALTO.US4.2	44	628	olla	medium	TN2	GROUP 3	TN2	kitchenware
ALTO.US13.2	14	417	olla	medium	TN2a	GROUP 3	TN2	kitchenware
ALTO.US4.3	13	218	olla	medium	TN3	GROUP 3	TN3	liquid storage
ALTO.US10.2	9	122	olla	medium	TN4a	GROUP 3	TN4	liquid storage
ALTO.US9.2	8	184	olla	large	TN4	GROUP 3	TN4	liquid storage
ALTO.US3.1	1	11	pitcher	medium	WH1	GROUP 4	WH1	liquid storage
ALTO.US4.4	8	219	cooking bell	medium	WH4	GROUP 4	WH4	kitchenware
ALTO.US8.4	18	163	olla	medium	WH1	GROUP 4	WH1	liquid storage
ALTO.US2.3	3	10	bowl	medium	BUCC	GROUP 4	BUCC	banqueting
ALTO.US12.3	5	46	bowl	medium	BUCC	GROUP 4	BUCC	banqueting

Consuma's family table (weight is in grams and colour differences are still inconsequential).

Consuma was possibly part of a small network of connected settlements, located on the Apennine ridge (along with Bombari, Santi Pagani and Ommorto) joining Falterona to the Secchieta. They may have controlled the main mountain pass connecting Valdisieve to Casentino, thus benefiting to an extent from the passage of people and goods. The imported

⁴⁰⁵ Zamboni, Buoite 2017, pp. 382-384.

⁴⁰⁶ If it was not for the presence of several sherds of other ceramic material and of bucchero, this site might have been dated to a period earlier than the 6th century BC.

assemblage, constituted by kitchenware, *olle*, pitchers, and *bucchero* cups, displays a strong connection with Valdisieve and Mugello. In this regard, the case of a *bucchero* cup otherwise only found at Monte Giovi⁴⁰⁷ is particularly interesting. Therefore, at Consuma ceramic goods may have been both locally made and imported, depending on their function, at the same time and according to need.

Conclusions

To conclude, the best model for explaining the distribution patterns of ceramic artefacts and their production techniques may be that of a multicentric economy with two or three spheres of exchange (a sphere of subsistence, and one or two spheres of luxury). With the need of simplifying the complexity which thus emerged, we may say that most kitchenware directly followed the exchange of subsistence goods, such as produce, farming products, and small animals (hens, goats, sheep, maybe hogs). This pottery was easier to make, it did not need refined clay pastes, nor high temperatures of firing (firing could be performed without needing a kiln), and worked better if sturdier, with thicker walls, and slightly uneven rotund shapes. Families and individuals may have been capable of making such goods according to need, and/or to directly exchange them for other comparable subsistence goods, with other families and individuals of the same settlement and/or of nearby settlements.

Liquids such as water and wine were better stored in more regular, slenderer, and porous vessels that required more difficult techniques to be made. These goods too, along with other kinds of kitchenware, may have been exchanged within the subsistence sphere but were possibly made by more skilled makers that had access to more specialised tools (people who, for instance, could use turntables or wheels, and knew how to attain temperatures above 600° consistently to make pottery more porous). The same kind of pottery was used for shipping wine and oil, and in these cases may have followed the exchange routes and behaviour of these goods. Wine and oil may have been both imported and locally produced, and their value within the sphere of luxury, or between subsistence and luxury, may have varied accordingly. Finally, banqueting ware and *pithoi* may have been goods with an inherent value making them fit for luxury exchange, in virtue of their halo effect—the first being a fashionable symbol of the elites and a sign of the societal allure for elite lifestyle, the second being a tool very difficult to make but indispensable for the wealth of the household.

It is therefore likely that production *in situ*, local imitation of fashionable fine pottery, import and exchange between Casentino and Valtiberina, and import from other areas of Central Italy, were all phenomena that may have been happening at the same time, on the same sites. This may have been a further sign of the egalitarian access to subsistence goods theorised as inherent to many multicentric economies.⁴⁰⁸ It is important to note, however, that the multicentric egalitarianism is not the socialist one, insofar as it implies a culturally reinforced equality in the *access* to the means of subsistence and to some luxury goods, with a clear separation between subsistence and wealth.⁴⁰⁹ It does not imply the *redistribution* of wealth nor its abolition, and therefore allows for the existence of social classes. As we may glean from the

⁴⁰⁷ Cappuccini 2017, p. 95, n. 17, p. 104, n. 5.

⁴⁰⁸ Sillitoe 2006, p. 17.

⁴⁰⁹ Sillitoe 2006, pp. 6-9.

chart below—displaying the quantities of ceramic recorded in each site according to function—the functional distribution of ceramic objects of each site’s assemblage differs quite substantially from one another. This difference may be due mainly to the unevenness in the quality, extension, and thoroughness of the archaeological investigation, and also to mistakes in the present technical assessment. Therefore, the main datum that we can get from the chart is that the functional division of ceramics seems quite evenly distributed, with kitchenware and liquid containers found in comparable quantities at each site, and fine tableware present everywhere in minimal quantities.

	kitchenware	liquid storage	banqueting	pithoi								
	CONSUMA	SECCHIETA	AMA	POPPI	CHIUSI	COMPITO	SAVINO	SINGERNA	TIZZANO	MOLINI	AFRA	TREBBIO
sherds groups 1/2	353	46	20	58	0	22	161	175	3	119	20	257
total weight (g)	6449	1868	1122	1167	0	603	1483	3775	42	8791	555	19946
sherds groups 3/4	101	50	23	22	21	3	56	29	3	0	41	199
total weight (g)	1736	1426	782	291	742	151	683	850	25	0	1377	6873
# sherds	49	1	206	58	6	142	117	36	220	126	5	67
weight	698	10	3532	1074	297	2542	1884	1370	7496	6955	100	4074
# sherds	8	5	83	12	1	8	39	85	145	59	119	15
weight	56	250	330	75	68	126	553	489	2182	147	740	159
# sherds	0	0	6	16	27	0	0	0	0	4	4	342
weight	0	0	1119	146	4519	0	0	0	0	1723	5080	40707

Functional distribution of the assemblages for each site.

Tizzano and Trebbio are the two outliers to this distributional pattern, however these are special sites that may have had specific functions among the local communities, and possibly they were not actually settlements. Trebbio was a production facility and may thus have been used by many settlements in its vicinity (and two of them stand out: Molini and the settlement on the hilltop of Collevocchio). Tizzano may be considered the real outlier. If we take the relative absence of kitchenware as a genuine feature of the site (not as a bias in its archaeological record), Tizzano may be interpreted as a trading post, otherwise it may have been a wealthier settlement (possibly a villa). It should be noted that other relevant sites have not been assessed yet in this analysis. Were all societies in Central Italy potentially multicentric? The economy sustaining cities and their inhabitants may have been different, yet very probably capable of relating to multicentric realities, or be rooted itself in multicentric behaviours. The study of the ancient settlement strategies in Chapters 5 and 6 will help in reconstructing local societal structures, as recoverable from the archaeological record, to contextualise these posited multicentric aspects.

Chapter 5

Land cover and land use

The environmental signature of Archaic urbanisms

As we have seen in Chapter 2 the settlement of Casentino and Valtiberina during Archaic and Late Archaic periods was characterised by clusters of small communities located just in certain areas. In Chapters 3 and 4 we have seen that these communities may have been part of a multi-centric economy. In this and the following chapter we shall investigate what sort of environment may have been associated with this kind of settlement strategy, and with the economy that was supporting it. We shall provide answers to three questions: was the settlement strategy a response to local environmental conditions? What kind of human impact could the local economy have had on the natural environment? How can we relate the wider patterns in land cover and land use of central Italy, during the period of Archaic urbanism processes, to these two valleys? In this chapter we shall focus more specifically on implementing the answer to this last question, by drafting an empirical paleo-environmental model based on pollen data of the whole central Italy. In Chapter 6 we shall zoom in again to Casentino and Valtiberina, bringing together this paleo-environmental study and a pedologic assessment, to provide answers to all the three questions. In a nutshell, these two chapters will investigate what kind of environmental impact, if any, urbanism processes at play in Archaic and Late Archaic times had first in central Italy, and then in the two valleys.

Paleo-environmental reconstructions of central Italy in pre-Roman times tend to be limited to tracking down clues, from site to site, of the introduction of various crops (usually cereals, legumes, and vines, occasionally cannabis and linen),⁴¹⁰ the exploitation of trees such as the olive, walnut, and chestnut; or to looking for signs in the wider landscape of intensive agricultural exploitation,⁴¹¹ and of the systematic opening of grazing areas; in short they are focused on agriculture and farming. This specific focus has prevented broadening the picture to the wider landscape of central Italy, which certainly included agricultural fields, but also floodplains, mountains, forests, and so on. Increasingly, novel environmental studies highlight land use patterns specific to Archaic times,⁴¹² yet mainstream reconstructions still somewhat bend these to paint a very precise image of an anthropised landscape, one that is arguably more akin to the medieval countryside—or in general one that is quite familiar to ours. As the medieval city was sustained by the agricultural and farming economies of the medieval countryside,⁴¹³ so the Archaic city had to be sustained by a countryside that must have been

⁴¹⁰ E.g., Shriver-Rice, Schmidt 2022; de Grummond 2018.

⁴¹¹ E.g., Stoddart *et al.* 2019.

⁴¹² E.g., Stoddart 2016; Stoddart *et al.* 2019; Trentacoste *et al.* 2020; and especially Trentacoste forthcoming.

⁴¹³ A very compelling example of such phenomena, in the case of pastoralism, can be found in Cristofori 2019.

similar to the medieval one.⁴¹⁴ Data however may provide a rather different picture of the landscape of Archaic central Italy.⁴¹⁵

Ultimately, in this chapter I argue that the city as a social structure may have changed in time as much as its countryside. I also argue that there were many social processes we may identify as urbanism, and these may have happened many times in the history of central Italy, involving cities and countryside alike. Every urbanism process may have had its environmental impact, or rather signature. Different signatures of different moments in the history of societies in central Italy may therefore be found while assessing patterns in the regional pollen diagrams of the last 2700 years. Moreover, in order to investigate what kind of environmental signature may be associated to the many processes of urbanism of Archaic central Italy, assessing the kind of land cover of the time is paramount, including all recordable taxa and not just those typical of agriculture and farming, since many more taxa beyond agricultural species would have been affected by human activity.⁴¹⁶ The reconstruction presented in this chapter will thus revolve its focus on forest coverage and its diachronic evolution, and will also investigate possible traces, or rather lack thereof, of land reclamation in the wetlands of the floodplains.

Forests were certainly a prominent feature of the landscape of Archaic central Italy. Countryside and urban dwellers alike had to relate to the presence of forests (and of wetlands) when establishing routes across the land, or when deciding where to implement clearances or reclamations for agriculture and farming. Moreover, forests were a fundamental, often overlooked, source of foodstuff and crafting materials, besides just timber and fuel. The knowledge connected to this kind of exploitation entailed understanding of the properties of different kinds of woods, from different trees, that of their fruits, and that of the sap from certain trees, for products that were commonly used (such as pitch, tannins for the treatment of leather, and ingredients for medicinal ointments). In short, woodland products were integral to other forms of production.⁴¹⁷

Forests may be a very good indicator of societal changes. Two of the works that were inspiration for this chapter are the recent publications by Scott Mensing and his team on their research on the *Lacus Velinus* pollen cores, providing a surprisingly accurate pollen sequence of the last 2700 years.⁴¹⁸ As argued by the authors, the pollen diagrams from *Lacus Velinus* may show how important societal changes (e.g., economic crises, wars and the passage of frontlines, the implementation of new subsistence systems, and even the introduction of new agricultural techniques) are mirrored in drastic fluctuations in the pollen records of *tree* taxa (as displayed on pollen diagrams). These changes seem to reflect new environmental conditions that may last for several human lifetimes—quite surprisingly coinciding with the permanence of macro socio political phases (such as the early empire, the late empire, the late antiquity, the early Middle Ages, and so on), historically recorded. They basically argued that abrupt environmental change as recorded in pollen cores, was more closely linked to sociopolitical

⁴¹⁴ E.g. the picture painted in the second chapter of Cifani 2021; but see also Potts, Smith 2022, p. 605, 625-629.

⁴¹⁵ See Stoddart *et al.* 2019, pp. 771-772, which however considers this data *incomplete*, on the ground that they do not paint the expected picture—that of an intensely anthropised landscape that we assume fundamental for supporting the mainstream idea of what an Etruscan city should have been.

⁴¹⁶ See on the topic Horden, Purcell 2000, pp. 178-186.

⁴¹⁷ Horden, Purcell 2000, p. 185.

⁴¹⁸ Mensing *et al.* 2015, 2018.

and demographic transformation than to climate change.⁴¹⁹ This is a problematic stance, but the conclusion is intriguing.

Obviously, not all the societal changes seem to have a discernible environmental impact, and those which do, may be represented differently in the diagrams. Certain societal changes may have a localised environmental impact and be apparent only on a local scale. Certain periods may not have had a palynological proxy at all, moreover accurate dating is always problematic. A landscape archaeology approach to pollen data analysis presents good chances of mitigating these uncertainties, as well as many others of which we shall talk shortly. Thereof, the other source of inspiration for this chapter is the work of the team at Rewilding Later Prehistory.⁴²⁰ The methodology used for drafting this reconstruction is in fact inspired by their landscape archaeology study displaying a diachronic reconstruction of the environment of Great Britain as inferred from the collection of pollen diagrams from dozens of sites in Britain and Wales, all of which are related to their archaeological surroundings, both at a local and regional scales. The core of their method is the indicator taxa approach, that looks at relevant diachronic shifts in taxa representation on the pollen diagram of certain families of plants in relation to important changes in settlement strategies as recorded by archaeologists.

The problems of pollen as data source

Pollen analysis is a blunt tool,⁴²¹ that works better when in combination with other paleo-environmental analyses. Pollen, however, provides undeniable opportunities. Patterns of pollen percentages in space and time reflect in fact patterns in vegetation composition. Pollen percentages do not correspond numerically with vegetation percentages and are systematically affected by production bias and dispersal bias.⁴²² Moreover, pollen assemblages are characterised by low taxonomic resolution (identifying families but rarely single species) and by taphonomic and sedimentation processes that may alter considerably the shape and state of preservation of pollen grains.⁴²³ These qualities make pollen assemblages not necessarily suitable for representing vegetation communities with accuracy,⁴²⁴ but good in highlighting broad trends and changes in environmental conditions. Dating pollen cores is usually done through C₁₄, and seldom with other more experimental techniques. The level of precision of calibrated C₁₄ dating may be enough to investigate phenomena at the level of geological time scales within the Holocene, but affects assessments at a finer time scale, including those that may revolve around the many fluctuations recorded in the last 2700 years.

During the right season, pollen rain falls to the ground, becoming part of the soil. It then decays, at different rates according to plant species and kinds of soil. Waterlogged environments usually offer the best chances to prevent the decay of organic material, therefore, pollen

⁴¹⁹ Mensing *et al.* 2018, p. 1.

⁴²⁰ See for instance, Aldred *et al.* 2023, pp. 5-6, for an example of their approach to landscape archaeology.

⁴²¹ Quote from a chat I had with Dr. Louise Matthews of the Rewilding Later Prehistory team—without her help the research of this chapter would have not been possible.

⁴²² Colin Prentice 1985, p. 76.

⁴²³ Anthropogenic taxa, especially cereals, are among the most difficult to identify with a suitable level of precision. In the case of cereals, moreover, their pollen rain is too scant to be used for providing sure signs of environmental changes due to anthropogenic activity, thus the need of using an indicator taxa analysis that focuses instead on plants that are easier to record and well responsive to human driven environmental changes.

⁴²⁴ Goring *et al.* 2013, p. 1137.

deposited on underwater soil may be fairly well preserved and/or have the best chances of fossilising. Moreover, since soil stratifies over time it may indeed provide a diachronic archive of consecutive pollen rains. In order to undertake pollen analysis, sediments are collected vertically, by coring, drilling, or columning, to catch discrete quantities of pollen from each sedimentary unit. Thus, each core consists of a vertical diachronic succession of pollen rain events, directly interconnected with the sedimentation of the soil strata at the site from which it is taken. These cores are then sampled horizontally, at intervals decided by the researchers and usually mirroring the sedimentation quality—the evener the sedimentation processes the more samples can be taken on a single core, the better their quality. Pollen grains are counted for each sample and are then used to draft diachronic pollen diagrams, displaying diachronic taxa variation on the same site.

A pollen diagram (see *plate 76.1*) displays usually the percentages of pollen grains of each taxon. The diagram can be a histogram or a continuous curve, depending on the numbers of entries. Each sampling site (lake, bog, seabed, etc.) may be considered a basin catching pollen rain from its surrounding—in other words, each site has its particular catchment area, which is never determinable with utmost precision. A fundamental feature of pollen diagrams is thus that they bulk together pollen produced within the sampling site itself (lakes for instance are themselves habitats to many plant species), in its immediate premises, and those within a much wider surrounding basin, the catchment area, that may vary between 10 and 50 km around the sampling site. Catchment area depends on site location, on the extent of surface subjected to the pollen rain, on the modes of sedimentation of the soil, and on overall climatic and environmental conditions (direction of winds, sun exposure, rainfall, etc.). The quality of the sample is therefore dependant on very many factors and can fluctuate considerably even within the same core or column sample. Samplers may only control the sampling technique and sampling location and need to be aware of the local depositional events through geological studies. Yet certain sites are more controlled than others, and small natural lakes are considered the best case-study for most pollen analysis (depending on the method) since they are rather young geologically (mostly formed during the Holocene and thus part of a temporal zone that is susceptible to fairly accurate dating), and controlled in both sedimentation mode (slow, undisturbed, with low levels of water oxygenation) and surface exposure (small).

A pollen diagram displays the curves of each family of plants as recorded from the surface to the bottom of the core. These curves are subdivided vertically according to pollen zones (or pollen assemblage zones). Within a pollen zone we find groups of different families that may share similar taphonomic processes of spread, deposition, and preservation, as determined by multivariate cluster analysis on the different groups of counted pollen grains. These zones always follow the stratigraphic succession but may involve more than a deposition event, and/or change many times within a single geological layer. In short, groups of grains that belong to the same pollen assemblage may have deposited in similar conditions, therefore pollen zones are thought to depend tightly on the local environment. These pollen zones may then be dated using calibrated dating based on C_{14} .

Drafting a model of forest cover

In most pollen diagrams, families of plants are divided into the three macro groups of trees, shrubs, and grasses (which actually include grasses, flowering plants, and herbs).⁴²⁵ Ferns and aquatic plants are often omitted, and fungi spores count are usually made into a separate diagram. Pollen diagrams display the overall percentage of arboreal taxa (AP) and non-arboreal taxa (NAP) at one end of the string of families. Some studies consider this portion of the graph already representative of the evolution of the forested land around the sample site. Because of all the variables at play in the deposition of the pollen grains, the interpretation of this part of the pollen diagram is still very problematic, much debated, and often misunderstood. Generally, trees produce much more pollen than grass. Pollen rain may vary drastically among species or may be overrepresented or underrepresented because of depositional biases due to site location.

To give a few examples, pine trees are copious pollen producers, and above a certain percentage (10%) are considered intrusive and thus sometimes omitted from the general AP/NAP count. Oak trees on the other hand tend to be underrepresented—and olive and chestnut trees even more. Alders may be overrepresented because they thrive around lakes, thus are expected to be found around most sampling sites, but since they are only present in wetlands they are still considered good environmental indicators. Among the grasses, the family of the *poaceae* is usually the most represented since it is a family with thousands of species, including all cereals. They are among the most difficult to identify with a suitable level of precision and are often indistinguishable from more common grasses. Moreover, the pollen rain of cultivated cereal is too scant to be used for providing sure signs of environmental changes due to anthropic activity, thus the need of using an indicator taxa analysis that focuses instead on plants that are easier to record and well responsive to human driven environmental changes. Finally, spores are also present in pollen diagrams, among the grassland—some of them are good indicators of dung presence, thus of grazing land.⁴²⁶

Pollen diagrams could therefore be used to trace the vegetation history of the area were the core sample comes from. Crucially, the same environmental event and/or the same environmental change may appear on several pollen diagrams from different coring sites in the same region—yet only seldom synchronically, because of different errors in calibrated dating that may pertain to each core.⁴²⁷ Pollen diagrams can display the extent of forestation only to a degree. If we consider a well-drafted pollen diagram, done on a suitable sample, we may reliably accept that the AP/NAP percentage could be considered representative of the forest coverage when arboreal pollen is above 80%. From an empirical standpoint, in fact, studies of samples from small lakes taken in remote forested areas display a continuous spectrum of arboreal pollen values above 80%, and usually fluctuating around 90%.⁴²⁸

The opposite side of the spectrum is a lot more complex to evaluate. Examples of pollen diagrams of cores taken from occupation layers, inside houses, within archaeological sites,

⁴²⁵ Things may drastically change from place to place, and much of what will be written from now on should be considered as not only applicable but possibly limited to central Italy. To give an example, in central Italy *Ericaceae* may grow to be arboreal taxa, while in Britain forming just grassland.

⁴²⁶ E.g. van Geel *et al.* 2003.

⁴²⁷ Sadori 2018, p. 37, fig. 6.

⁴²⁸ E.g. Cruise 1990; Lowe, Watson 1993; Watson 1996; Bertoldi *et al.* 2007; Vescovi *et al.* 2010a; Vescovi *et al.* 2010b.

usually present values of arboreal pollen below 15%,⁴²⁹ while those taken immediately outside of ancient settlements may even display an arboreal pollen quantity above the 80% (during the phases of Archaic settlement).⁴³⁰ Samples taken from land that has been farmed for several centuries (and quite intensely in the last 3 centuries), in and around central/northern Italy (like the val Padana), seem to generally display an arboreal pollen quantity that may fluctuate between 7 and 55% (and even above 55% if pine is taken into the count—which alas happens quite often—making AP substantially increasing). However, despite these complicating factors, diachronic fluctuations in AP from several neighbouring sites should be considered representative of environmental events involving the forest cover, most of which, at least in the last 2700 years, are of human origin.⁴³¹ Quite remarkably, for instance, the reforestation which happened in central Italy after the Second World War is represented on many examples as an AP increment of about 10-15% in the arboreal pollen, and in some cases of up to 40%.⁴³² With the due contextualisation, pollen diagrams are particularly good at highlighting diachronic environmental changes while also providing a diachronic description of the vegetation around the collection site.

The development of techniques in which pollen diagrams can form the basis of models to evaluate the extent of forestation is an ongoing research problem.⁴³³ Recently, algebraic models such as the Landscape Reconstruction Algorithm (LRA),⁴³⁴ the Regional Estimates of VEgetation Abundance from Large Sites (REVEALS),⁴³⁵ and the Multiple Scenario Approach (MSA),⁴³⁶ have provided promising alleys, yet with some restrictions. Both LRA and REVEALS work better with samples from large lakes, fjords, and the seabed, since one of the main factors in their algorithms is the catchment surface of the pollen site.⁴³⁷ Moreover, they do not work well in complex geographical settings where vegetation composition is expected to vary markedly over relatively short distances, such as the Apennines of central Italy. LRA and REVEALS usually provide reconstructions of vegetation at the macro-regional scale, sufficient and appropriate for continental-scale research questions. Finer reconstructions are also possible by using pollen from small lakes, but these require very complex correcting calculations and the implementation of an *ad hoc* project that should include the measuring of several precise dating values.

Where both LRA and REVEALS take an algebraic approach to reconstructing past land cover numerically—which can then be extrapolated into mapped forms—the MSA uses computer simulations to produce many possible reconstructions, which are then tested using the LandPolFlow software. MSA consists of two elements: a basic GIS study which takes grids of landscape constraints (e.g., topography, geology) and generates possible ‘scenarios’ of past

⁴²⁹ E.g., Mariotti Lippi *et al.* 2002; Carra *et al.* 2005; Aceti, Ravazzi, Vescovi 2009; Marchesini, Marvelli 2009; Mercuri *et al.* 2009; Mariotti Lippi *et al.* 2010; Marvelli *et al.* 2014; Ciani *et al.* 2018.

⁴³⁰ See for instance the many samples from the Lake Accesa right next to a big Archaic settlement, see Drescher-Schneider *et al.* 2007; Vannièrè *et al.* 2008.

⁴³¹ Muigg, Tegel 2021, pp. 2-3.

⁴³² E.g. Pini *et al.* 2020, p. 534.

⁴³³ Githumbi *et al.* 2022, p. 1582; cfr. with Bunting *et al.* 2018, p. 2.

⁴³⁴ Hjelle *et al.* 2015; Deza-Araujo *et al.* 2022.

⁴³⁵ Sugita *et al.* 2010; Trondman *et al.* 2015a, b.

⁴³⁶ Bunting, Middleton 2009; Bunting *et al.* 2018.

⁴³⁷ Hjelle *et al.* 2015; Trondman *et al.* 2015b. More specifically, for instance, the LRA requires that large (>750 hectares) basins are available for reconstruction of the regional vegetation and thus the past background pollen rain component and assumes that the region (defined as a radius of 100–200 km around the large site) has uniform vegetation composition.

land cover using a combination of probabilistic and deterministic placement rules to distribute defined plant communities within the landscape, and a pollen dispersal and deposition model which simulates pollen loading at specified points within each scenario and compares that statistically with actual pollen assemblages from the same location. The MSA is precisely designed to adapt to local geographical morphology and environmental conditions, so it should be considered particularly promising in reconstructing the land cover of central Italy. It allows reconstructions to be carried out with, at a minimum, a single pollen record from a site within the area of interest. However, it needs some physical parameters, including a digital elevation model, for the landscape surrounding the site, and some of these, such as the model of winds directions, and that of flowing waters, are difficult to produce and require further adjustments to be brought together within the software.

The implementation of a MSA analysis for Casentino and Valtiberina is feasible but was not possible at the present stage of the research because of time and resource constraints. However, these are not the only methodologies that can provide a picture of the land cover in ancient times, from pollen data. The analysis presented in this chapter is in fact an empirical comparative landscape study of pollen diagrams, inspired by the study of Britain and Wales, produced by the team of the Rewilding Later Prehistory project,⁴³⁸ utilising considerations on vegetation distributions as drafted in other recent works.⁴³⁹ Some of these works make use of a single pollen diagram, some of many from nearby sites, to create empirical models of vegetational change in a given area, by contextualising the diagrams at the light of the local morphology, geology, and climatic condition at the collection site (in short according to local vegetation belts).

Given the lack of suitable direct palynological data from Casentino and Valtiberina,⁴⁴⁰ the idea of drafting a map of ancient vegetation belts of central Italy in the Archaic period based on pollen data, from all the relevant, reliable pollen records collected in central Italy, was deemed as the most promising solution to answer the research questions. Cores from small ancient lakes in the Apennines have been deemed as the most reliable source of data for drafting environmental reconstructions—the raw data was collected by several research teams and made available as open access data on the Neotoma European database. Cores from archaeological sites were considered to be context-dependent and therefore not good for drawing a more general environmental picture. New pollen diagrams were created using pollen data from lakes, and these were employed to reconstruct the possible composition of Archaic vegetation belts, then to highlight more general patterns that may be considered the environmental signature of the forms of urbanisms at play in the Archaic period.

Vegetation belts and climatic patterns

All living beings occupy an ecological niche characteristic to their species, in which they compete for resources with individuals of the same species and often of other species. Plants are very susceptible to surrounding environmental changes since they are literally rooted in their ecological niche. If undisturbed, vegetation, and especially trees and shrubs, tend to

⁴³⁸ A work that is forthcoming, and that I was able to read thanks to prof. Micheal Charles.

⁴³⁹ Kouli, Dermitzakis 2008; Rubel *et al.* 2017; Mensing *et al.* 2018; Forster, Charles 2022.

⁴⁴⁰ The core at the Lake of Idols was dated between 10000 and 5000 years BP (see Benvenuti *et al.* 2011), while the palynological study at Trebbio has not been published yet.

populate the land distributing according to so-called climatic—or vegetation, or altitudinal—belts (these depend firstly on altitude, then on humidity), and specific habitats (such as shadier spots, or more humid ones, etc.) that fulfil each species requirement for sunlight exposure, humidity gradient (humidity gradients also change according to altitude and soil composition), access to nutrients, and temperature. Since different species of plants are often competing with one another for similar ecological niches, associations between different families vary considerably. Regional variation may be coupled on the medium to very long term with internal migration, when the associations of families of plants shift in altitudinal preference following the so called ‘tree line’ as the wider climate changes. In short certain groups of families of plants will distribute preferably along certain altitudinal ranges, and within certain specific associations of families.⁴⁴¹

Altitudinal temperature and humidity variations and the local climate are interconnected. Italy presents climatic patterns that are particularly complex. Recent paleo-hydrological studies, based on palynological data, showed that rainfall in the late Holocene depended on complex factors, and that there is a belt between parallels 40 and 43 (this includes Casentino and Valtiberina),⁴⁴² in which the situation has always been particularly fragmented. More specifically, a southern climatic zone influenced by the tropical African zone collides with a European continental one around parallels 40 and 43;⁴⁴³ this generally contributes to quickly varying seasonal rainfall patterns, prone to influences from local terrain morphology such as mountain ridges and enclosed valleys. Such climatic patterns contributed to, and were influenced by, a further division in precipitation gradient between the east and west of Italy, with a wetter Adriatic side connected to the rainier zone of central Europe, and the Tyrrhenian side influenced by the drier Spanish zone.⁴⁴⁴

The reconstructions of precipitation patterns of the late Iron Age have shown a situation that is roughly comparable with the one of the last 50 years,⁴⁴⁵ with a drier coastal area and a wetter inland area on the Tyrrhenian side, and an overall wetter Adriatic side. Outliers are to be expected,⁴⁴⁶ as the climate is more prone to be influenced by the fragmentation of the land, with small neighbouring valleys potentially presenting slightly different localised climate situations, being wetter or colder than their surroundings (and vice-versa). The complexity of the rainfall patterns of the Late Holocene compounds that of the behaviour of families of plants. As Odile Peyron points out, in this part of the Mediterranean area, precipitation limits vegetation type in plains and lowland areas, but temperature gradients have primary importance in mountain systems. Also, temperature and precipitation changes are not independent but interact through bioclimatic moisture availability due to the presence of forests, and season length. Finally, from the Late Holocene, human manipulation may have been the principal factor in influencing forest coverage and composition.

⁴⁴¹ E.g. Firs may be found in woods that tend to be almost mono species only above certain altitudes, while they may be found sporadically distributed at lower altitudes—birches can be found in mono-species woods above certain altitudes, but they are also present in mesic woods, that may be found almost at any altitude in particularly moist or dark conditions but are found essentially on floodplains.

⁴⁴² Magny *et al.* 2013; Peyron *et al.* 2017.

⁴⁴³ Magny *et al.* 2013, pp. 2044, 2053-2054; Peyron *et al.* 2017, p. 254.

⁴⁴⁴ Peyron *et al.* 2017, pp. 256-258.

⁴⁴⁵ Magny *et al.* 2013, p. 2054.

⁴⁴⁶ Peyron *et al.* 2017, p. 259; Stoddart *et al.* 2019, p. 771.

This fragmentation is evident also in the reconstructions of the climatic zones of the last 200 years (and the next 100), of northern and central Italy, recently made by Franz Rubel and his team using the Köppen-Geiger classification.⁴⁴⁷ This generic climate classification, initially developed by Wladimir Köppen and Rudolf Geiger in 1936,⁴⁴⁸ has become a standard to help environmental reconstructions in characterising the climate of a region,⁴⁴⁹ and very useful for the definition of local vegetation belts.⁴⁵⁰ As seen in the map at *plate 76.2* Rubel's diachronic reconstruction of the climate of northern Italy from 1876 to 2100 displays a clear differentiation between the Adriatic and Tyrrhenian sides of Italy, with vegetation cover following suit.⁴⁵¹ Rubel and his team also reconstructed the shifting of the forest line, and of the related vegetation belts, in the northern part of Italy, over time (*plate 76.3*). The level of accuracy of this reconstruction does not reflect the potential diversification among each single valley, yet it is well suited to highlight the climatic difference between the Apennine ridge and the Tyrrhenian and Adriatic sides of Italy.

There is a close correspondence between current rainfall patterns and the quality of forest cover on the Italian peninsula. It is generally accepted that the same can be said for the past. This assumption underlies the use of pollen to draw up climate reconstructions of the past. Therefore, we can say that the distribution of trees in the Archaic time was substantially determined by complex precipitation patterns, consistent with the mosaic of geological, morphological, pedological, and environmental characteristics of the Italian territory. The recent work published by Donatella Magri and her team, reconstructing nation-wide Holocene patterns in forest composition and quality (not land cover!), highlighted a fundamental similarity between the modern heterogeneity of vegetation and that observed in the last 3000 years.⁴⁵² Magri also argued that in the past as at the present geographic and geo-morphologic features are more relevant than latitudinal gradients in determining distributions of trees in the land of the Italian peninsula.

To sum up, at the geographical scale of this assessment we may expect that forest cover of Archaic central Italy followed the same environmental patterns as it does today:

- a difference in rainfall patterns between Tyrrhenian and Adriatic sides that influences both forest composition and density;
- a more localised difference in rainfall and temperature depending on the geomorphological fragmentation of the Apennines that influences forest density;
- a general latitudinal homogeneity in forest composition;
- a differentiation in forest composition on a local scale due to altitudinal belts (also known as climate or vegetation belts), which can actually be considered the main phenomenon determining forest variability.

While the present, visible landscape will be used as a term of comparison in this paleo-environmental reconstruction of the land cover of Archaic central Italy—precisely because of

⁴⁴⁷ Rubel *et al.* 2017.

⁴⁴⁸ Köppen 1936.

⁴⁴⁹ Rubel, Kottek 2011.

⁴⁵⁰ Rubel *et al.* 2017.

⁴⁵¹ Rubel *et al.* 2017, pp. 116-120.

⁴⁵² Magri *et al.* 2015, p. 283.

comparable general environmental settings—a stress will be made on the possible human impact of the changes highlighted in pollen diagrams.

The Archaic vegetation belts of central Italy

site	type	latitude	longitude	altitude (m OD)	bibliography	quality/reliability	archaeological sites nearby	very anthropised (va), anthropised (a), natural (n)
Lago del Greppo	core (lake)	44.120291	10.672924	1442	Vescovi et al. 2010b	good	no	n
Lago di Pratignano	core (lake)	44.173835	10.818040	1307	Watson 1996	good	no	n
Colfiorito	core (bog)	43.026428	12.874854	752	Brugiapaglia, de Baulieu 1995	average	yes	a
Pavullo	core (bog)	44.320090	10.838650	692	Vescovi et al. 2010a	average	yes	a
Lacus Velinus	core (lake)	42.475560	12.847220	375	Mensing et al. 2015; 2018	good	yes	a
Lago di Martignano	core (lake)	42.113010	12.317055	200	Kelly, Huntley 1991	average	yes	a
Lago dell'Accesa	core (lake)	42.987870	10.895160	157	Vannier et al. 2008	good	yes	a
Massaciuccoli	core (lake)	43.837840	10.330800	-5	Colombaroli et al. 2007; 2009	good	yes	a
Mar Adriatico - Po Delta	core (seabed)	44.751944	12.750000	-32	van der Knaap, van Leeuwen 2012	good	modern	va

Sites used in this environmental assessment.

Among the 26 sites in central Italy (modern regions of Liguria, Emilia-Romagna, Tuscany, Umbria, Marche, and north Lazio) from which pollen data have been collected and published in the past 30 years,⁴⁵³ only 8 (see diagram above) were of a suitable kind, quality, and date to be descriptive of the wider surrounding environment in the Archaic period.⁴⁵⁴ Pollen diagrams from archaeological sites, usually from column samples taken within manmade archaeological features such as occupational layers or pit infills, have been discarded since they all display some heavy selective contextual bias. However, of the 9 cores that were selected for this indicator *taxa* analysis, 5 are close to an ancient settlement or within an area densely settled during the period of interest. Among them, Greppo and Pratignano are from mountain lakes, sited within forests well above 1000 m OD; of those within hilly territories (between 800 and

⁴⁵³ Kelly, Huntley 1991 (Martignano); Brugiapaglia, de Beaulieu 1995 (Colfiorito); Watson 1996 (Pratignano); Magri 1999 (Bolsena); Mariotti Lippi *et al.* 2002 (Grosseto); Mariotti Lippi *et al.* 2007 (Pisa); Arobba, Caramiello, Firpo 2004 (Albenga); Court-Picon *et al.* 2004 (Drac); Guido *et al.* 2004a, b, c (Savona); Carra *et al.* 2005 (Monte Bibele); Colombaroli *et al.* 2007 (Massaciuccoli); Drescher-Schneider *et al.* 2007 (Accesa); Vannièr *et al.* 2008 (Accesa); Aceti, Ravazzi, Vescovi 2009 (Noceto); Marchesini, Marvelli 2009 (Emilia-Romagna); Mercuri *et al.* 2009 (San Marino); Mariotti Lippi *et al.* 2010 (Chianti); Vescovi *et al.* 2010a, b (Greppo; Pavullo); Mercuri *et al.* 2012 (Terramara di Santa Rosa, Terramara di Montale, Necropoli di Casinalbo); van der Knaap, van Leeuwen 2012 (Adriatic sea); Savelli *et al.* 2013 (Montelago); Marvelli *et al.* 2014 (Sant'Agata Bolognese); Mensing *et al.* 2015; 2018 (Lacus Velinus); Ciani *et al.* 2018 (Gonfienti); Brugiapaglia 2020 (Montelago); Mariotti-Lippi *et al.* 2020 (Cetamura in Chianti); Rattighieri, Mercuri 2020 (Molino San Vincenzo in Val di Pesa).

⁴⁵⁴ Raw data were obtained from the Neotoma Paleoecology Database (<http://www.neotomadb.org>) and its constituent databases. The work of data contributors, data stewards, and the Neotoma community is gratefully acknowledged.

150 m OD) Colfiorito and Pavullo cores are from bogs, and are sited east of the Adriatic side of the main Apennine ridge. *Lacus Velinus*, Martignano, and Accesa are lake cores taken on the Tyrrhenian side (see map at plate 78).

Each pollen diagram will have certain features that are connected directly with the kind of sampling site and its immediate vicinities, thereof the first step will be to evaluate such features. The main aim of the analysis of the pollen diagrams from these sites is to infer the pollen signature of the general environment between 700 and 200 BC, essentially by comparing diagrams and tracing patterns in diachronic changes from 700 BC to modern times. The human impact will also be assessed, by highlighting the extent of man induced changes in the diagrams, through the indicator taxa analysis, when possible. Bearing in mind that the environmental settings of central Italy are overall comparable in the last 2700 years, the hope of the diachronic assessment is to facilitate the correlation between what is displayed in the diagrams and more familiar, better recorded landscapes (such as those from the medieval period to the present), in order to visualise features in land use and land cover proper of the period of interest. To this end the core from the Adriatic Sea has been selected to help highlighting features of a modern, heavily anthropised area, such as the Val Padana. The aim of this analysis is therefore to assess the shifts of the ecological niches over time, and to relate them to environmental changes, due to climate and to human intervention.

Some environmental changes may drastically affect niches, to the point of determining if the land is covered prevalently in grasses or in trees, yet different altitudes may experience different changes. In a mostly hilly territory such as central Italy (538 m OD on average)⁴⁵⁵ flood plain areas should be considered the altitudinal belt most susceptible to short term environmental changes.⁴⁵⁶ Most crops grow better in clayish hilly slopes, and in the lowlands. Manmade interventions on the land for agricultural and/or farming purposes tend to affect the floodplains and low hilly terrain the most, through land reclamation and ploughing. These same activities may affect floodplain trees too, making access to their specific niches—usually requiring sandier soils—more difficult (and in fact sometimes controlled—e.g. the implementation of tree hedges at the sides of agricultural fields). At higher altitudes, manmade changes may affect vegetation communities in different ways, often through the guided selection of certain tree families considered useful, or through the opening of clearances by felling of trees or manmade controlled fires.

In any case, no matter the altitude, crops, and cultivated trees and shrubs, when compared to other families of species, have usually a very small pollen output, in fact too low to be fully representative of the extent of their agricultural exploitation in a given territory. A single pollen sample may thus be helpful to highlight their presence/absence at a point, at most. A diachronic succession of such pollen samples on the same site, on the other hand, may highlight patterns concerning other families of plants that could be connected to the implementation of different modes of land use, different agricultural and farming activities of different intensities, since these activities manipulate ecological niches, and or may facilitate the onset of plant maladies that quickly curb entire tree populations. A notorious example of tree population change collateral to human productive activities, is the elm decline happened in the Neolithic in the British Isles,⁴⁵⁷ usually connected to many different causes, including the opening of clearances

⁴⁵⁵ Source: WorldData.info, retrieved on 21/02/2024.

⁴⁵⁶ Piovesan, Mercuri, Mensing 2018, p. 508.

⁴⁵⁷ See for instance Parker *et al.* 2002; Kearney, Gearey 2024.

for farming and agricultural activities. At the present stage of the research, there is no such an equivalent for the Mediterranean area at least in the period of interest.

As Mensing pointed out,⁴⁵⁸ societal changes and meaningful changes in land cover seem to have happened concomitantly at least at the spatial and chronological scale of his investigation—the last 2700 years in the area around the former *Lacus Velinus*. This analysis focused on tracking down similar diachronic patterns, expanding Mensing's hypotheses correlating land cover, as seen on pollen diagrams, and societal changes (thus land cover to land use) from his case study of the *Lacus Velinus* to all the other suitable cases of central Italy. The pollen diagrams from the 8 sites are very different from one another, and the most likely cause of this is a combination between features due to the climatic difference between Adriatic and Tyrrhenian sides of Italy, and those due to the sites' ecological uniqueness, and to the randomisation of pollen sedimentation. On the other hand, human interventions on land characterisation may have, among other things, a direct impact on the sedimentation of lake deposits, and thus on pollen preservation and pollen quantity per sedimentary unit. Finally, human interventions may indeed follow major societal and technical changes, at least for more modern times. This is particularly evident when comparing pollen records from the last 150/300 years with anything else prior.

Recent climatic reconstruction of the temperature fluctuations of the past 3000 years in the central Western Mediterranean (see *plate 77.1*), as drafted using a wide range of datasets and methods,⁴⁵⁹ have a fundamental resemblance to one another, with differences possibly due to sampling precision and fluctuations of dating uncertainties. According to these reconstructions temperature pulses seem to verge towards a warmer period around the Augustan age, and to a colder period from the late Empire onwards. Similarly, since pollen abundance depends on temperature conditions, certain differences among the curves of the pollen diagrams from the 8 sites may be due to fluctuations due to dating uncertainties. The recent study by Lucia Sadori and her team shows how these dating fluctuations in pollen graphs appear in relation to well-recorded events such as a sedimentary unit from a volcanic eruption found well beyond the place of eruption (Vesuvius), known as the Avellino tephra (see *plate 77.2*).⁴⁶⁰

Methods

The pollen diagrams from the sites have therefore been subdivided not just in AP/NAP, but in subgroups of *genera* of plants, that could be related to different altitudinal belts. This division mirrors essentially the one presented in Mensing *et al.* 2018,⁴⁶¹ adding a category from Rubel *et al.* 2017, and grouping some *genera* of plants in subgroups, indicators of human activities. Thereof, the first division is that of the **Mixed Forest**,⁴⁶² representing the woodland at higher altitudes, and including the *genera* of *Abies*, *Fagus*, *Picea*, and *Pinus sylvestris* (firs, beeches, spruces or red pines, and pines). The Mixed Forest is usually relatively clean of shrubbery and can be found today mostly between 1000 and 1400 m OD.⁴⁶³ The second and most ubiquitous

⁴⁵⁸ Mensing *et al.* 2018, p. 1.

⁴⁵⁹ E.g. Cisneros *et al.* 2021; Grauel *et al.* 2013; Margaritelli *et al.* 2018.

⁴⁶⁰ Sadori *et al.* 2018.

⁴⁶¹ Mensing *et al.* 2018, pp. 2-3.

⁴⁶² Rubel *et al.* 2017, p. 121.

⁴⁶³ These and the following are today's altitude values and are from Rubel *et al.* 2017.

is the **Mixed Oakwood** found mostly at hilly altitudes, between 200 and 800 m OD, including the *genera* of the *Quercus robur*, *Ilex*, and *Cerris*, *Fraxinus*, *Hedera*, *Erica arborea*, and many others (oaks, holly oaks, turkey oaks, ashes, ivy, arboreal heats, etc.). The Mixed Oakwood has usually a rich undergrowth and thick shrubbery, unless holly oaks predominate. The third group is that of the **Floodplain/Mesic Forest**, including *genera* that we may find mainly on floodplains (0 to 200 m OD) and by bodies of water even at higher altitudes (up to 1200 m OD), and including *Alnus*, *Ostrya*, *Corylus*, *Carpinus*, *Betula*, *Ulmus*, *Salix*, *Tilia* (alders, hop-hornbeams, hazels, hornbeams, birches, elms, willows, lindens, etc.).

Grassland has been subdivided into three groups: **Poaceae**, which is grassland proper, including all the *Poaceae* save the cereals, and the sedges, or *Cyperaceae*, taller grass-like plants with small flowers that are typical of wetter soils; **Plantago**, a kind of tall herb that is sometimes associated with pastures; and **Meadow**, including most flowering herbs that may thrive in more undisturbed soils, like *Rumex*, *Caryophyllaceae*, *Rosaceae*, and *Leguminosae*, among the many others (e.g. sorrels, then the *Asteraceae*, a wide family of flowery plants to which daisies belong, and the wide *Rosaceae* family to which also apple trees belong, then white clovers, etc.). Cereals, vine, and useful cultivable herbs such as linen and cannabis, have been grouped in the **Crops** category. Trees that may have been systematically selected or planted, such as *Castanea*, *Olea*, and *Juglans* (chestnut trees, olive trees, walnut trees) have also been grouped in the same category of **Cultivated Trees**; the *genera* in this group thrive at different altitudes.

This categorisation, along with the tracking down of diachronic patterns of change in the distribution of these categories, constitutes the bulk of the indicator taxa analysis presented in this chapter. The diachronic trends of the relative percentages of these categories, site by site, may present some patterns that can be interpreted as societal, thus fruit of human intervention, in the form of plant selection and land manipulation. A specific attention has been given to patterns that may pertain to land reclamation and ploughing, since intensive agriculture requires increased efficiency. *Genera* of ferns and aquatic plants have been excluded from the diagrams, as have fungi; uncertain and non-identified taxa, when recorded, have also been excluded. *Pinus*, who is a pollen overproducer, has been capped at 11 grains per sample, when consistently exceeding that quantity and, in the case of the core from the Po delta, it has been excluded altogether, along with other *genera* typical of coastal land.

There is a diachronic correlation connecting the relative quantities of floodplain/mesic forest taxa and those pertaining to *Poaceae*, meadow, and crops. Usually when one increases the others decrease, and vice-versa. Likewise, there is a similar set of trends connecting mixed forest and/or mixed oakwood with cultivated trees. These two correlations are here interpreted as due to human interventions, to manipulate land and land cover into areas fit for growing plants useful for human activities and consumption. Such correlations are especially evident when comparing diachronic samples from the same core. The analysis considers the pollen records from the last 200 years as particularly characteristic of intensive agricultural exploitation. We may also include the late Medieval / early Renaissance period since, as recently reconstructed by Davide Cristoferi, the medieval cities of Tuscany may have been the first in centuries (or even the first ever, at least locally) to evidently require the implementation of intensive agriculture and farming to sustain their urban populations.⁴⁶⁴

⁴⁶⁴ See on the topic Cristoferi 2019.

Assessment

I will now present here a discussion of the pollen diagrams as elaborated from the raw data of each site of this assessment—these are personal *ad hoc* elaborations. The first set of diagrams, made using Excel, includes two histograms, one of the percentages of pollen in each sample belonging to the different vegetation belts and grassland divisions, used to infer different diachronic patterns in land cover and use; the other of the pollen concentration for each sample, again divided according to vegetation belts and grassland divisions, used to highlight anomalies in the sedimentation. The samples within these two histograms are arranged diachronically. Between the two histograms, vertical bars with roman numbers represent possible different diachronic patterns in land cover and land use, as inferred from the percentage histogram. The colour / Roman number coding of the patterns is representative of each single site only, and same coding across sites may pertain to different patterns. These patterns are not to be mistaken for the pollen zones often found in pollen diagrams—even though the two are related, the patterns may compound more than a single zone. The second set of diagrams was made using Tilia software. These are proper pollen diagrams and are used to highlight the diachronic relationships among different *taxa*, belonging to different vegetation belts and grassland divisions.

Lacus Velinus

The paleo-environmental study at Lago Lungo, formerly part of the ancient *Lacus Velinus*, consisted of 5 cores, drilled between 2009 and 2012, recording a geological stratigraphy up to 14 m thick, from which 91 diachronic samples were taken, dated from 693 BC to AD 1984.⁴⁶⁵ The chronology of this core was developed using paleomagnetic secular variation (PSV) fit to the well-dated archaeomagnetic PSV model for Europe, since C₁₄ presented very high uncertainties. The error on the paleomagnetic age model varies from a minimum of 49 years at around AD 1320 and in the upper part of the core, and a maximum of 200 years, around 300 BC and in the lower part of the core, with an average of 109 years. Further adjustments to the chronology were made by consulting historical and archaeological sources.⁴⁶⁶ As evident from the histograms (*plate 79*), samples comprised in patterns I, II, IV, and V have also comparable absolute grain quantities, the comparison between them may thus be considered descriptive of different land cover situations.

The first 15 samples from the bottom, with 15 dates going between 693 and 49 BC, have been grouped within Pattern I. In this group AP/NAP ratio veers considerably towards AP, with arboreal pollen between 80% and 93% of the total, suggesting possibly a prevalently forested environment around the *Lacus Velinus*. The most prominent arboreal group is that of the floodplain / mesic forest, with a good representation of the mixed forest that we usually associate with higher altitudes or generally colder local climatic conditions. Cultivated trees and crops are present, but in small quantities. Among them *Olea* and *Vitis* are the most conspicuous *taxa*. The area around the former *Lacus Velinus*, in between the ancient cities of Reate and *Interamna Nahars*, has yielded several interesting signs of pre-Roman settlement.⁴⁶⁷

⁴⁶⁵ Mensing *et al.* 2015, pp. 74-76.

⁴⁶⁶ Mensing *et al.* 2018, p. 2.

⁴⁶⁷ Colivicchi, Zaccagnino 2008, pp. 221-223.

Within Pattern I the pollen record suggests a rather low and constant level of anthropisation of the land cover. The floodplain seemed to be fairly well populated by trees, possibly a sign that there were no systematic ploughing activities on a large scale, thus no sharp increases in pollen outputs related to crops or cultivated trees.

We know from classical sources that the *Lacus Velinus* was partially drained by the Romans under the auspices of consul Manius Curius Dentatus, in 271 BC. Considering the samples dates, if this feat of engineering really happened *immediately* and all at once, to the scale that the sources and current reconstructions tend to imply, any environmental change has not left evident, incontrovertible traces on the pollen record. We have however a few hints that we may attribute to land reclamation in the parallel increase in pollen belonging to mixed oakwood and floodplain/mesic forest *taxa*, and especially in the increase in pollen belonging to *Cyperaceae* that thrive in more disturbed, moisturised land, as recorded in the two samples of 215 BC and 106 BC (*plate 80.1-2*). No evident signs of increasing agricultural activities seem to follow the draining of the ancient lake, since no subsequent spikes in crops or cultivated trees are recorded. When considering the 100-200 years error of the dating of the samples, then we may also interpret the more drastic change as recorded at the onset of Pattern II as if due to the land reclamation of 271 BC.

Pattern II starts with the sample dated to 2 BC and includes 10 samples dated up to AD 436, however is characterised by a decrease in *Cyperaceae*. This is coupled to a sharp decrease in pollen from trees of the mixed oakwood and especially of the floodplain / mesic forest, and a sharp increase in *Poaceae*. This pattern could be the hint of the transformation of forests and wetland on the plain into prairie, used for both agriculture and farming, as suggested by the presence of coprophilous fungi, and by the slight increase of *Plantago*. The coprophilous fungi, not included in the diagrams presented in this chapter, are to be considered, however, of very local origin, since the diffusion of their spores does not go beyond few hundred meters around the site of the core. There is a small yet evident increase in *Cerealia*. Among the three *taxa*, there seem to be an increase in the pollen from *Fagus*—grouped here within the mixed forest, but more probably here belonging to the mesic areas of the plain. This could also be due to human selection, since *Fagus* (beech) was quite a versatile tree in antiquity and was used as *materia* (timber for construction), for making furniture,⁴⁶⁸ but also for providing fodder for hogs. In short, when compared with Pattern I, Pattern II seems to pertain to a more evidently anthropised land, in which land cover and land use are more closely aligned.

In Pattern IIa we see an increase in the floodplain / mesic forest and in mixed oakwood, happening roughly between AD 505 and 859, that seems however to be parallel to an increase in sedimentation disturbances as suggested by the concentration histogram. The same can be said of Pattern III, that starts around AD 875 and seem to last until 1380. This part of the core is disturbed because of a generally higher and more chaotic sedimentation rate, a feature that suggests a more *worked* surrounding environment. Parallel to this there is an overall increase Non Arboreal Pollen, that reaches even the 75% of the total. The records of *Poaceae*, flowering herbs, and *Plantago*, and a consistent increase in *Cerealia*, strongly suggest the implementation in this period of more intensive agricultural and farming activities. The spikes in quantity of coprophilous fungi may imply that what was left of *Lacus Velinus*, the Lago Lungo, was used

⁴⁶⁸ Ulrich 2007, p. 250.

for watering herds, a hypothesis that may also explain the different gradient of sedimentation and its more chaotic character.

Historical sources speak about the reforestation of Italian countryside happening after the Plague of 1349,⁴⁶⁹ and Pattern IV seem to fit very well with this event. A very conspicuous spike in *Olea* pollen seems to suggest that olive trees were planted in the area after 1415. Patterns Va and V are also very interesting, since we see a further opening of the plain, with a consistent reduction in floodplain forest and a parallel implementation of *intensive* agriculture. From 1704, *Olea* returns and remains stable until today, while *Cerealia* record their spike of 20% of NAP in 1722, and after that we have the record of the *Cannabis* cultivation, lasting until 1898, and used in rope making, for which this part of Italy was renowned. *Cerealia* again pick up in modern and contemporary times, with records above the 15% of NAP. The current land cover, characteristic of a well anthropised, tilled floodplain and reforested hills, presents an AP/NAP ratio of about 60%.

Martignano

The record from the Lake of Martignano, sited next to Lake Bracciano in northern Lazio, at roughly 200 m OD, is not of the same quality as the one from *Lacus Velinus*. A single core was taken at Martignano in 1990, about 6.50 m thick. The geological stratigraphy consisted of quite disturbed sandy deposits, with very scant organic material, and with a mode of formation that may have impacted the preservation of some of the pollen taxa, selecting certain groups over others.⁴⁷⁰ This core was originally dated through 8 uncalibrated C₁₄ measures, its dates were subsequently reassessed by Thomas Giesecke and *his* team in 2014, providing calibrated dates.⁴⁷¹ The precision of Martignano's dating is variable with a mean uncertainty of about 300 years, for the 9 samples dated to the last 3000 years (only pertaining to a third of the original core). At Martignano, quite interestingly, the AP/NAP ratio revolves around 50% and *Cerealia* are usually quite well represented (comparatively yet not absolutely), but it is unclear whether this is caused by pollen selection due to the more chaotic sedimentation processes.

Despite this, we can see a succession of patterns that is *roughly* comparable with that of the *Lacus Velinus*. Pattern I seems characterised by a rather wet grassland, with more *Cyperaceae* than *Poaceae*, while a prairie seems to open up and dry out in the passage between Pattern I and Pattern II, when the pollen of *Cyperaceae* decreases (*plates 81* and *83*) and that of *Poaceae* increases, apparently at the cost of the mixed oakwood. Pattern I consists of four samples dated between 564 BC and AD 529. It is preceded by Pattern Ia dated to 924 BC, included because of the uncertainty of 300 years. Ia seems to pertain to a forested landscape, rich in *Castanea* (*plates 81* and *82*). Pattern II includes two records dated to AD 897 and 1266, with the second displaying feeble hints of farming activities, namely an increase in *Plantago*, and in flowering herbs, that may indicate a more disturbed soil that correlates well with the grazing of herds and with their droppings. Pattern III, with a single record dated to 1636, sees an increase in the mixed oakwood, that at the *Lacus Velinus* happened in pattern IV. Pattern IIIa dated to 1897 could be interpreted as a disturbed outlier because of the drop in pollen from the genus *Quercus*,

⁴⁶⁹ Mensing *et al.* 2015, p. 78.

⁴⁷⁰ Kelly, Huntley 1991, pp. 211-212.

⁴⁷¹ Accessed through the Neotoma database. See Giesecke *et al.* 2014.

a drop that may be connected with the relative fragility of the *Quercus* pollen and that we see in the sample of Ia, which could also be considered an outlier. The well attested presence of *Olea* in pattern IIIa can be considered interesting, since olive trees are currently not part of the land use surrounding the lake.

Accesa

The Lake of Accesa is in central Tuscany, not too far from the Tyrrhenian coast, in a small, enclosed valley, at an altitude of 157 m OD. The pollen study from this lake's deposits is based on 3 cores taken in 2002, varying from 1 to 8 m in thickness.⁴⁷² Their C₁₄ calibrated dating was based on 12 measures taken from plant macro-remains, and presents an uncertainty of about 250 years for the part of the samples that pertains the last 2700 years.⁴⁷³ The pollen record from Accesa is quite solid, despite the low level of precision with just 12 samples for the last 2700 years (a sample each 8-16 cm). On the shores of the lake a small yet industrious settlement thrived between 700 and 500 BC.

This settlement is usually connected with the exploitation of the nearby iron mines,⁴⁷⁴ as suggested by traces of smelting activities. The presence of this settlement does not have an evident impact on the pollen diagram (*plate 84*). The first visible change in the pollen record is represented by the shift from pattern I to pattern II, dated here to the 5th century AD, with the usual decline in floodplain forest in favour of *Poaceae* (*plates 85-86*). There is also an increase in *Plantago*, that may be interpreted as a sign of herding activities. It is unsure whether the change from pattern II to pattern III, where this decline is even more prominent, is due to changes in sedimentation rate; it is however tentatively comparable with that seen at *Lacus Velinus*.

The diachronic interplay between *Quercus robur* and *ilex* during and after the centuries of occupation of the small settlement of Accesa is of particular interest, however (*plate 85*). *Quercus ilex* appears unusually abundant during the centuries of the settlement (700-500 BC), while *robur* unusually scarce. The decrease in *ilex* is parallel the increase in *robur*, as they both happen once the settlement is abandoned—*robur* and *ilex* are competing species and usually in Tuscany *robur* has territorial prominence.⁴⁷⁵ The interpretation of this pattern can be twofold. On one side *robur* is the most common timber used as fuel, and its population may have been kept low around the Accesa settlement because it was used to supply the furnaces. On the other, *ilex* that is not as good as fuel, keeps the shrubbery away, making the woods tidy, easier for people to manage, and generally more viable for settlement.

Massaciuccoli

The palynological record at Massaciuccoli, a small yet ancient lake near Pisa on the Tuscan coast, is also of interest for its level of detail. The record consists of over 70 samples (one each 8 cm) on two separate cores of about 6 m in thickness, that have been dated with calibrated C₁₄

⁴⁷² Vennier *et al.* 2008, p. 1182.

⁴⁷³ Vennier *et al.* 2008, pp. 1182-1184, see also Table 1.

⁴⁷⁴ Camporeale 1985, pp. 127-130; Giuntoli 2018.

⁴⁷⁵ Agnoletti 2020, pp. 115-134.

performed on the fossils found in the deposit. 33 of these samples date to the last 2700 years and show an uncertainty of about 150/200 years each.⁴⁷⁶ The patterns at Massaciuccoli are rather similar to those found at the *Lacus Velinus* (plate 87), even though we are in a coastland environment. At Massaciuccoli, Pattern I consists of 7 samples dated between 874 and 9 BC. *Cerealia* are always present, while *Secale* and *Vitis* start to appear in the record of 183 BC (plate 89). After 9 BC there is a sharp increase in *Castanea* (plate 88), that represents the main change between patterns I and Ia.

In Ia, the increase in *Castanea* seems to be parallel to the decrease of *Fagus* and the mixed forest, and it may have had a human origin. Ia lasts until AD 278, when we have a sharp increase in *Poaceae* pollen, while both floodplain forest and mixed oakwood decrease. This is what constitutes the same kind of shift between I and II that we see in the other sites. Here at Massaciuccoli during Pattern II the oakwood seems to decrease slightly in favour of *Pinus*, and possibly of *Olea*, which both see a small increase, as do *Cerealia*. While the grassland remains rich in both *Poaceae* and *Cyperaceae*, as may be expected in wetlands between lake and sea, *Plantago* also increases, slowly but constantly, possibly to be connected with the widening of grazing areas. Even as the pollen apport of grassland *taxa* increases, meadow *taxa* remain mostly unchanged, thus undisturbed land where meadows can grow may have remained roughly unchanged—this could be interpreted as a further clue to the fact that the grassland opening characteristic of Pattern II was controlled, if not actually originated by human activity.

During Pattern III, dated between AD 925 and 1429, *Olea* increases further. In the mid-14th century mixed oakwood increased, as recorded in all of central Italy, along with the coastland forest (mainly *Pinus* and *Phillyrea*). The area around the lake seems to be thoroughly dedicated to agriculture as *Cerealia* and *Secale* record a lasting increment. From 1501 to 1717 we have Pattern IV, when the area around the lake seems to have been dedicated intensively to the cultivation of *Cannabis*. Finally, during Pattern V (3 samples dated to 1788, 1860, 1932) we see an overall drastic reduction of the tree *taxa*, and a further sharp intensification of *Cannabis* cultivation.

Greppo and Pratignano

The two lakes are sited on the same ridge of the northern Apennines, relatively far away from settlements and archaeological sites, above 1300 m OD. Their records are both of good quality, and relevant for this analysis. Greppo's record consists of two cores 350 cm thick, dated with C₁₄ with an uncertainty of about 500-600 years.⁴⁷⁷ Within this substantial uncertainty, of the 41 Greppo samples, only two date BC, and only three are from before AD 1000. Most of them date to the last 500 years. The basic succession of Patterns I, II, and III seems as evident at Greppo as at the sites assessed previously (plate 90). It is relevant to note that while the mesic / floodplain forest reduces considerably between Patterns I and II, partially in favour of grassland, this is so especially in favour of the expansion of *Picea* (spruce), *Abies* (fir), and eventually of *Castanea*, at higher altitudes, and of *Olea* at lower altitudes (plate 91). These *genera* of trees are all very useful to man—fir and spruce, for instance, were the preferred source of *materia*. Patterns III, IIIa, and IV are all dated to the last 150-200 years and bear a

⁴⁷⁶ Colombaroli *et al.* 2007, pp. 756-757.

⁴⁷⁷ Vescovi *et al.* 2010b, p. 221, 226.

very good level of precision, comparable only with the core from the Adriatic Sea as we shall see shortly. After Pattern II, Greppo's level of AP is considerably reduced, for then increasing again in the samples from the last 30 years.

Pratignano's record of the last 2700 years consists of 23 samples, dated between 640 BC and AD 1192. Cores of about 12 metres of thickness were drilled in the lake / bog sediment.⁴⁷⁸ Four uncalibrated C₁₄ dates were the basis of the calibrated dates recalculated in 2014 by Gieseke and his team.⁴⁷⁹ The uncertainty of the calibrated dates increases with depth and fluctuates for the records of the last 2700 years between 300 and 900 years. Nonetheless, the same succession of Patterns I, II, and III is recorded also at Pratignano (*plate 93*), with mean dates that correspond roughly to those of the *Lacus Velinus*. However, while at the *Lacus Velinus*, the difference between I and II was based on a decrease in mesic forest, and an increase in grassland *taxa*, at Pratignano is the mixed forest that decreases in favour of grassland, and secondarily of mixed oakwood. Tentatively, we may consider the slight increase in mixed oakwood as a hint of a climatic change between Patterns I and II, and due to higher temperatures that may have caused the expansion of the mixed oakwood vegetation belt at the expense of the mixed forest. The parallel increase in *Cyperaceae* however would suggest wetter conditions (*plate 95*). Pratignano's record is generally not very precise with regard to the definition of *taxa*, and plants that are useful to man were not highlighted (*plates 94-95*).

Pavullo

Pavullo is not too far away from Pratignano, yet at the considerably lower altitude of 692 m OD. Albeit quite in the Apennine backcountry, it is sited in the Adriatic side of the peninsula, and since pollen records from this side of Italy are rather scarce, it has been taken into account despite the fact that its quality is far from pristine. Its record of the last 2700 years is the least accurate of those included in this analysis, with only 10 samples. The pollen analysis was made on a single core 16 m thick taken on the bog of Pavullo, and dated with calibrated C₁₄, with an uncertainty of about 100 to 200 years.⁴⁸⁰ As evinced from the pollen concentration histogram (*plate 96*) however the samples from the last 2700 years display a marked sedimentary disturbance that affected the pollen concentration, and probably also pollen preservation, both varying substantially from sample to sample. For this reason of the 10 samples, 2 (204 BC and AD 1692—the 2nd and the 8th from the top of the histograms) have been deemed unsuitable for this analysis because of the over-representation of *Poaceae*.

Bearing in mind all these issues, Pavullo's record seems actually to describe a similar succession of patterns as those seen in most Tyrrhenian cases, if with some differences. Pattern I displays an arboreal pollen percentage above 70%, with little trace of *genera* of plants that can be ascribed to human intervention with a good degree of certainty (*plates 97-98*). In Pattern II grassland *taxa* increase slightly while the most interesting increase is that in *Juglans* pollen (walnut trees). The increase of grassland is more marked in IIa, and in III, where *Castanea* seems to replace most of the mesic and mixed forests. In Pattern IV we see an increment of mesic or floodplain forest, while cultivated trees seem to disappear. Both of the outliers, on the

⁴⁷⁸ Watson 1996, pp. 812-813.

⁴⁷⁹ Watson 1996, p. 819; cfr. Gieseke *et al.* 2014, as recorded on the Neotoma's Pratignano entry.

⁴⁸⁰ Vescovi *et al.* 2010a, pp. 34-35.

other hand, display similar features, with higher levels of *Cyperaceae*. These features may be interpreted as environmental changes due to wetter conditions (floodings?) or, at least in the case of the AD 1692 sample that presents a spike in *Plantago*, to an increment in herding activities in the surroundings of the bog.

Colfiorito

The second core that could be considered from the Adriatic side of Italy, if well within the Appenines, comes from the ancient bog of Colfiorito, on a plateau at 752 m OD. Next to this bog the ancient settlement of Colfiorito provided consistent and uninterrupted traces of occupation from the early Iron Age until today.⁴⁸¹ The 35 samples of the last 2700 years have been recalibrated by Gesieke and his team and are dated from the 823 BC to AD 1487, with an uncertainty of about 300 years.⁴⁸² Colfiorito's pollen record is very interesting if problematic. It is in fact rich in aquatic weeds of a kind (*Myriophyllum*) that may have impacted considerably on the extension of the catchment area of the bog—potentially covering it for the most part during the pollen raining season—and it is unsure if and how this aspect affected the overall patterns. These weeds have been excluded from the current analysis and are not shown in the graphs and were prominent especially along Pattern III. Moreover, as hinted by the concentration histogram (*plate 99*), the sedimentation was rather uneven, and especially for the last 8 samples.

Generally speaking, the percentages of arboreal pollen keep between 50% and 60%. This said, Colfiorito's patterns are different from what we have seen so far. For once, *Cerealia* are constantly present, and their relative quantity fluctuates but does not vary considerably. The usual shift between a Pattern I and a Pattern II seem to happen and roughly at the same relative period as anywhere else so far, yet it does not pertain the floodplain / mesic forest and the level of *Poaceae*, but the mixed oakwood and the cultivated trees, *Olea* in particular (*plate 100*). More specifically Pattern I, dated between the 9th and the 5th century BC, has a low level of cultivated trees and a good level of *Cerealia*. Pattern II lasts until the 2nd century AD and is characterised by an increase in the pollen from mixed oakwood and especially from *Olea*. This increase, albeit fluctuating in time, is overall parallel to a decrease in *Poaceae* and meadow herbs. It is therefore possible that during this period the area around the bog and the settlement of Colfiorito may have been used for cultivating olive trees. The growth of the mixed oakwood may also have been controlled, as hinted by the increase of *Quercus robur* and *Juglans*, parallel to that of *Olea*.

A similar trend remains in Pattern III, lasting until AD 1117. Arboreal pollen from *Olea* decreases, while that from mixed oakwood does actually increase, however not as dramatically as shown in the percentage histogram. Pattern III is distorted by the peak in the aquatic weed infestation, possibly screening short range pollen such as that of *Poaceae* from being deposited at the bottom of the bog. *Brassicaceae*, *Cichorioideae*, *Cyperaceae* and *Poaceae* do decrease while the infestation persists (*plate 101*), and then record a peak after this infestation subsides, in pattern IV. Not so *Cerealia*, which remains constant (maybe a record bias?). Grassland, and especially *Cyperaceae* (*plate 101*), seem to be over-represented in the last 8 records, that are

⁴⁸¹ E.g., Bonomi Ponzi 1997, pp. 13-32.

⁴⁸² Brugiapaglia, de Baulieu 1995; Gesieke *et al.* 2014.

coincidentally those more disturbed. The increase in *Plantago* in association with such disturbances makes the hypothesis of a local increase in grazing of herds tempting but wanting more substantial support. The spike in *Cerealia* is also noteworthy.

Records from bog cores such as Pavullo and Colfiorito seem to be more problematic if compared with cores from small lakes. Bogs may be contested plant ecosystems in a way small lakes are not. However, the record of Colfiorito does seem descriptive of a succession of slightly different land use patterns when compared with the other records from the Tyrrhenian side. At Colfiorito the passage between a Pattern I and a Pattern II is not one from a more forested landscape to a more open one, but from a wilder landscape to a more controlled one, and still forested. This forestation could have been driven by human intervention, since it consists of the increase of three very useful *genera* of trees, *Quercus Robur*, *Juglans*, and *Olea*. It is yet uncertain whether this difference may pertain to climatic conditions, to human intervention, or to local conditions contributing to different catchment and selective pollen sedimentation.

Modern Po Delta

The last case to be considered in this analysis is a modern record from a seabed core at the mouth of the river Po. The Po Delta core is a single 57 cm core collected by divers in 1990. It was used for 29 samples, dated with a sedimentation rate model to the last 150 years before 1990.⁴⁸³ The reason behind the inclusion of this modern record from the area of the Po plain, is to provide a comparison with a situation from an agricultural area that could be considered as notoriously *intensive*. The Po Delta record is however problematic since its catchment area is not definable with precision, mixing pollen from different places and environments. This core collects together pollen from the vicinities of the coring site, from the surrounding sea currents, and from the basin of the river Po itself—thus potentially from the entire Padana plain.⁴⁸⁴ Despite these features this record bears important similarities to the coeval samples from the other sites—these features are considered therefore characteristic of the average pollen record descriptive of an intensively exploited agricultural area (*plate 102*). The features are:

- 1) A high level of NAP between 40% and 50%, and often even up to 60-70%.
- 2) A higher level of pollen from crops and cultivated trees. We see for instance an increase in *Cerealia* pollen from the 15th century onwards—the number of counted grains doubles or even triples, yet it remains quite contained. This may be due to the general difficulty of differentiating between wheat, rice, and the rest of the *Poaceae*. The absence of rice among the *genera* counted in the Po Delta core (the Padana plain has extensive rice plantations) should be considered as exemplifying of this inherent difficulty in discriminating between *Poaceae* sub-*genera*. This implies that the real quantities of cereals and especially rice may be hidden among the *Poaceae*.
- 3) A higher variety of cultivated *taxa* (see for instance the introduction of *Rubiaceae*, *Rubus*, *Zea Mays* etc.), often coupled with

⁴⁸³ van der Knaap, van Leeuwen 2012, p. 301; cfr. Sangiorgi, Donders 2004, p. 71.

⁴⁸⁴ van der Knaap, van Leeuwen 2012, p. 307.

- 4) The selection of single *species* that occupy other *genera* niches (see for instance *Cannabis Sativa* replacing *Poaceae*), and
- 5) The introduction of exotic *taxa* (such as *Rubiaceae*, *Zea Mays*, but also *Hyppophaeae* *Ramnoideae*, and other exotic trees or shrubs often introduced for landscaping rather than agriculture).
- 6) To these, we may add the decline of *Cyperaceae* parallel to the increase of *Poaceae* and *Plantago*, that can be interpreted as a sign of a more systemic land reclamation of the marshy areas around the Po Delta.⁴⁸⁵ Quite remarkably, something similar can be seen in the more recent samples from the *Lacus Velinus*, yet not in those from the times of Classical antiquity.

Another interesting feature of the Adriatic core, shared with the most recent samples of Greppo, is the sampling frequency that allows for smoother transitions among diachronic samples, so to perceive and then interpret any pulse that appears in their transition. Coincidentally, both Greppo and Po Delta show a pulse in AP/NAP ratio between their AD 1855 sample, and what is before that (switch between Patterns I and II of Po Delta, and between II and IIIa of Greppo—*plates 90 and 102*). This marked pulse could be *very tentatively* identified with the shifting from the so called Little Ice Age to a warmer climate pattern,⁴⁸⁶ allegedly happened in Europe between the 1850s and 1890s. In both Greppo and Po Delta this change seem to affect the mixed forest the most, its pollen output shrinks while that of the mesic / floodplain trees increases. This could be considered, *very tentatively*, as a natural shifting upwards of the vegetation belts in a very anthropised and controlled landscape. It is relevant to note on this topic, that in all the records we have assessed that present samples datable to the last 100-50 years, a recent reforestation phase is recorded by the increase of mixed oakwood and/or of mesic / floodplain forest especially after the Second World War.⁴⁸⁷

Patterns in land cover and land use

The intricacies behind environmental sampling, pollen analysis, pollen count, and pollen diagrams, the separate complexity of the assessment of climatic conditions, the random character of the circumstances of each site and their catchment areas, are all elements contributing evidently to the definition of the patterns highlighted in this analysis. However, behind these patterns there are meaningful changes in land cover and some of them pertain to land use, thus to the relationship between people, the society they made, its economic systems, and the land they inhabited. The most relevant features of this analysis, especially for the period of interest, are the definition of Patterns I and II and the way these patterns may differ between the Tyrrhenian and Adriatic sides of central Italy. Further studies are needed to confirm especially this last aspect—Colfiorito alone is not enough to define an Adriatic trend of Patterns I and II. Climate should be considered the main reason behind the specific shift between Pattern I and II, as it was for the case of the pulse at the end of the Little Ice Age recorded at Greppo and Po Delta. Fluctuations in dating are all within the uncertainty of each sample. Moreover,

⁴⁸⁵ van der Knaap, van Leeuwen 2012, p. 307.

⁴⁸⁶ Something comparable in Mathewes 2023, pp. 119-120.

⁴⁸⁷ See on the topic Agnoletti 2020, pp. 170-275.

similar patterns are recorded in climatic studies made with different methodologies, based on different datasets.

Human interventions are evident too, affecting the pollen diagrams at different scales, involving single species and a discrete number of *genera*, yet also affecting and/or controlling entire populations of plants. Humans may in fact exploit climatic changes to their advantage, contributing to the veering of such populations in certain directions—that are however already imparted by climate—so as to make room for ‘useful’ plants that can be maintained even in adverse environmental conditions thanks to agricultural techniques. Humans can select *genera*, reclaim land, transform land for agricultural purposes, widen the open land, keep open land as grazing land—until recently they could not directly affect the altitudinal belts. While they are currently most certainly affecting them through climate change, humans (at least in central Italy) still cannot impede the general distribution of plant populations according to such belts, and thus according to climate. The interplay between human caused and climate caused shifts in the pollen diagrams is still an unsolved debate. Rest assured that pollen diagrams do display the results of this interplay.

This said, Patterns I and II are related to two different land covers, and potentially different land uses. Neither of them is characteristic of intensive agriculture. Human intervention in Pattern I seems to be of low impact—with no evident traces of land reclamation on the floodplains that appear forested. Pattern II is characterised by more open land, very likely on floodplains, as suggested by the increased level of grassland, and especially of *Poaceae* and *Plantago*, and the parallel reduction of the floodplain / mesic forest. However, floodplains may have been still wet, as suggested by the usually high level of *Cyperaceae*. Cultivation of cereals seems more widespread, as does that of *Olea*. It is uncertain how much of this expansion of the prairie on the floodplain is due to the generally drier conditions that are recorded for this period, as opposed to human intervention. It is very likely that both acted concurrently and that humans exploited a climatic trend.

Considering Pattern I (save obviously that of Po Delta) as the environmental signature of Archaic central Italy, we may argue that such signature did not imply intensive agriculture, nor extensive, systemic land reclamation. Floodplains may have been rather wet, wild, and forested, even in proximity to settlements. Settlements under canopy may have been a normal occurrence, as the Accesa case may suggest, and so other cases from Casentino and Valtiberina, such as the settlements on mountain tops. The agricultural and forest exploitation must have been different to what we have imagined so far, as the urbanised societies of central Italy may have relied on a different—smaller—level of subsistence production that the one we are assuming today. Central Italy may have been more of a woodland, and people more accustomed to exploit and traverse the forest. The shift to a more open and controlled landscape, that is between Patterns I and II, may have happened only around the Augustan period, however an earlier date to the Hellenistic period may not be ruled out, since an increase in settlement is generally recorded in central Italy after 350 BC.⁴⁸⁸

⁴⁸⁸ See on the topic Sewell 2016; a very well recorded example in Acconcia *et al.* 2001, pp. 292-297.

Chapter 6

Subsistence strategies / settlement strategies

Bringing it all back home

When I was a kid, I grew up in a place named Miransù in the Tuscan countryside. It was not a wild place, nor even too far away from the city of Florence,⁴⁸⁹ but it was nonetheless at the edge of the woodland. Our house was an ancient building, next to a Romanesque *pieve*. My grandmother had a field, an orchard, and also hens and goats. There was a lot of free time. Even my grandmother, a farmer, could devote a few hours each day to small interchangeable activities that had different degrees of usefulness, and we did a lot of walking and gathering. As the food provider, she was always followed by an assortment of animals, and I was often one of them. We would go walking both goats and dogs in the woods. We walked in the woods. I often ended up walking in the woods alone, or with one of our dogs, or with my uncle, or with one of my cousins.

From this experience, among some other things, I came to realise the following. Firstly, the woods around my house in the Tuscan countryside were not *wild*. Part of the forest was cyclically cut down for fuel, and areas that had to be kept wild were also often tended. Despite this, traversing them was not straight forward: these were mixed oakwoods made of several species of trees and shrubbery, and to walk through them you needed a path. Obviously, there were large established paths, made by men and roughly paved. In more recent years, I discovered that these paths were usually made in post-medieval times to connect countryside settlements and to bring the *coloni* (as labourers would have been known) to their fields. These paths were in use with the same purpose up until the second post-war period. There were also narrow paths that would go directly into the woods. Sometimes these would appear, and then disappear the following year. Some of these paths were made by the woodcutters, yet we never met them, although we could often hear their chainsaws at some distance. In the woods it is difficult to bump into people and animals unless you follow the same routines.

My grandmother said that the longest-lasting paths would have been those made and used by wild animals, especially wild boars and badgers. Manmade paths would usually take you somewhere, while animal paths would almost certainly end in the thicket. However, when encountering them midway along, one way to discern animal paths from manmade ones is the absence of clearances in the canopy above them. Manmade paths are clear and look for clearances. Sometimes, when I was alone and had nothing to do, if I wanted to find a new place in the woods, I would try to go along what I thought may have been an animal path, and often end up at some animal's den (usually empty, again I thankfully assume because of different routines).

⁴⁸⁹ Miransu is in a small valley between Valdarno, Chianti, and the basin of Florence—while not in Casentino nor in Valtiberina, it is not too far away from them.

I also had landmarks; obviously the post-medieval roads; our neighbours' houses; an abandoned cemetery; a river with ponds in which we would try to swim in hot days of summer (too cold even then); the stub of a Lombard tower at the top of the hill; two crosses along the way to mark the graves of two children died there a few years before my family moved in (my least favourite place; I would avert my eyes in front of them); *etcetera*. These would be places on the beaten path, from which I would start my walk in the woods, walking around, finding new places. Very simply put, my turf as a kid extended as far as these paths and landmarks would take me. Traversing these woods was not complex, as far as I was concerned. I did not need to traverse the woods in all directions, and only did where they were familiar.

However, this kind of familiarity was not related to the degree of novelty of a place, or to its distance from home, let alone to the view of a mountain ridge. It was due rather to the kind of path: as long as I knew who made the path I was on, I knew what to expect, and I felt on my turf. I can still feel as if I am on my turf whenever I go walking in a wood that presents similar patterns. This way of living the woods has certainly been my own personal one, and it may have not been that uncommon for any person growing up in a rather forested countryside. On the other hand, I may have intuitively developed, or carried on, small adaptive behaviours that fit well with the woodland.

In her work on the Huaorani tribe of Ecuador, Laura Rival describes the ways this forest-dwelling people experienced their walking in the forest, and how they perceived and defined certain elements of it; my experience of the woods had some intriguing similarities.⁴⁹⁰ As Rival herself puts it:

*“I came to understand that the Huaorani territory is not definable from without as a well-demarcated space bounded by clear limits on all sides. It is, rather, a fluid and ever evolving network of paths used by people when ‘walking in the forest.’ Walkers keep these paths open...As soon as they have fallen into disuse, paths revert to the forest, undistinguishable from the vegetation cover. Well-trodden paths, located at strategic intersections, have become the repositories of traumatic memories, in the same way that physical landmarks, such as creeks, particularly tall and old trees, lagoons, or hill formations recall bloody attacks or spearing raids. Other paths form a network criss-crossing unknown or forgotten land; they lead to exciting discoveries, especially food plants said to have been planted by past people.”*⁴⁹¹

As hunters, gatherers, and under-canopy farmers, the Huaorani had free time to spend simply walking in the forest, because the forest is there, it surrounds their lives, they know it, they have familiarity with it.

*“Men, women, and children spend a great part of their lives slowly exploring the forest. They hunt and gather, of course, but they also simply walk, observing with evident pleasure and interest animal movements, the progress of fruit maturation, or vegetation growth”.*⁴⁹²

As it is apparent from the evidence collected by Rival—and to a much smaller extent also from my own background—the perception of the land strongly depends on the experience that

⁴⁹⁰ Rival 2002, pp. 1-2.

⁴⁹¹ Rival 2002, p. 1.

⁴⁹² Rival 2002, p. 1.

pervasive land features, such as the forest, may provide. A few points may be more relevant than others. We can glean from Rivals' account of Huaorani practices that there may be quite a difference between land and *landscape*—the first being a space traversed and experienced, the second being a conceptualisation and mental image of a specific kind of parcelled countryside connected, especially in Tuscany, to property and agricultural land divisions.⁴⁹³ Ideas of boundaries and land exploitation may work differently for peoples used to traversing lands necessarily associated with specific visual and sensory experiences, such as forested countryside. The boundaries of people living in forested land may actually coincide more precisely with paths and with landmarks (that is, with an experience of a land that needs to be traversed) rather than with mountain ridges or water bodies.⁴⁹⁴ A similar discourse can also be made for grasslands, easily perceived just as land useful only when repurposed for agriculture and farming.⁴⁹⁵

The forest is never the piece of untouched wilderness it may seem; it may sustain and conceal different kinds of anthropic endeavours to different degrees, including agricultural activities, subsistence exploitation, and forest cultivation and maintenance. Rival's own experience may come in handy one last time:

*“It is walking through the forest with informants that I came to realize that there was no clear boundary between wild plant foods and cultivated crops or between gathering and cultivating. What Huaorani people call monito ömë ‘our land’ is a large stretch of forest comprising palm groves, patches of fruit trees, untidy and minimalistic manioc plots, abandoned gardens that still produce edible plantain, and crops once cultivated and now growing with no or very little human intervention, as well as a great number of useful plants, wild and domesticated, found in hunting camps or along riverbanks”.*⁴⁹⁶

Dwelling within or near a forest requires a mix of adaptation and manipulation. It certainly requires adjustment, to its physical presence, to its variety and richness, and to its different timescales (from the annual seasonal cycles to the lengthy growth of the trees, to the slow plurennial fluctuation in forest composition).

Forests should therefore be considered as primary actors in the development of settlement and subsistence strategies on a local scale, especially in the case of societies that have economies not necessarily based only on producing, storing, and trading grain surplus, as it may have been the case of Casentino and Valtiberina in Archaic and late Archaic times. Given that the environmental signature of the Archaic societies of central Italy is one of rather limited human impact on forestation and of limited management of wetlands,⁴⁹⁷ it should be helpful to rethink the ways in which we tend to reconstruct agricultural techniques and the magnitude of their outputs. Agriculture was certainly tied to settlement strategies,⁴⁹⁸ rethinking its scale may imply rethinking the way we envision the settlement of central Italy.

Forests provide a wealth of produce for subsistence, and regardless of their extent, their manipulation is descriptive of the local economy and, at a finer scale, of the relationship

⁴⁹³ Purcell 2006, p. 123.

⁴⁹⁴ Rival 2002, p. 1.

⁴⁹⁵ Steger 2023, p. 3.

⁴⁹⁶ Rival 2002, p. 2.

⁴⁹⁷ Aside from what seen in the previous chapter, a similar point is made in Stoddart *et al.* 2019.

⁴⁹⁸ Horden, Purcell 2000, pp. 204-209; 271-274.

between inhabitants and the woods. Therefore, to better understand settlement strategies as suggested by the archaeological data, it may be useful to take the woodland into account. Living in a forested land affects one's perception of the land itself. Altering and controlling a forested land in Archaic times must have been a serious concerted community endeavour.⁴⁹⁹ For these reasons, it is relevant to ascertain the possible role of woodland in Casentino and Valtiberina, both as a subsistence asset and as a land feature, by bringing back into these two valleys the results of the analysis of the previous chapter and combining them with the assessment of relevant archaeological clues, and some pedological evidence.

In this chapter I will therefore group a series of considerations that may be useful for the understanding of the relationship between settlers and land in Casentino and Valtiberina. These considerations are but starting points for further investigation. What can the archaeological data say about the relationship between settlers and land? What is the relationship, if any, between subsistence strategies and settlement strategies in this neck of the woods? Answering these questions will help in unpacking further aspects of the local economy, but it will also afford a window on the way people lived. Both the *chaîne opératoire* study of the local pottery assemblage and the paleo-environmental reconstruction provided substantial clues of an economy that differs from models based on surplus redistribution,⁵⁰⁰ an economy where productive activities were concerned with answering subsistence needs and therefore required the implementation of a network of people practicing exchange that was culturally regulated, happening in known intervals and in shared spaces accessible to all taking part in it.⁵⁰¹ As we have seen, Casentino and Valtiberina were part of wider networks of exchange that reached outside the two valleys.⁵⁰² An argument can be made for considering the economies of urbanising societies of central Italy in the Archaic period as supported essentially by inter-connectivity on different scales of exchange based on a set of shared or comparable cultural customs.

Goods from trees

In the previous chapter we have divided the land cover according to altitude belts, useful for identifying what *taxa* of trees we may expect to find in a given place. These altitude belts are displayed on the map at *plate 105*, and they conservatively exemplify what the situation as it may have been between 600 and 400 BC. As seen in the previous chapter, the climate of this area in Archaic times may have been both colder and wetter, making the ancient altitude belts lower than the current ones. The highest belt is covered with the Mixed Forest, found above 800 m OD, very low in shrubbery, mostly made up of pines, firs, beeches, and sometimes spruces, chestnut trees, and oaks. Pines are present also within the Mixed Oakwood, that is a kind of forest found between 300 and 800 m OD, made up of different kinds of oaks (*Robur* oaks, holm oaks, turkey oaks), many other *genera* of trees (cypresses, olive trees, laurel oaks, yews, junipers, larches, sorbs, other fruit trees such as apple trees, strawberry trees, cornelian

⁴⁹⁹ On the use of fire for controlling land cover see Agnoletti 2020, pp. 29-33.

⁵⁰⁰ A good description of surplus/consumption models in Horden, Purcell 2000, pp. 105-112, these are the models most endorsed by mainstream scholarship, see Cifani 2021.

⁵⁰¹ Something akin to what described in LaViolette, Fleisher 2005, pp. 339-342.

⁵⁰² To be part of such networks must have been fundamental for the continuation of the local settlements, as these may have failed if the wider networks ceased to operate, as suggested by the diachrony of settlement of the two valleys for other periods in classical history (see Dominici 2014).

trees, fig trees, hazel trees, walnut trees etc.), and of shrubs, especially ivy, and those of the *Phillyrea* and of the *Ericaceae* genera, that may grow to tree size. Finally, the floodplain/mesic forest, that we may find in the floodplain and ubiquitously wherever moist areas exist (ponds, lakes, riversides, marshes, narrow dales, etc.). Mesic areas and flooded plains can be populated by trees such as willows, alders, elms, ashes, birches, and beeches. Some of the best represented genera of grasses, herbs, and grass-like plants are also found in flooded or mesic areas, especially the *Cyperaceae*, to which all the reeds belong.

These altitude belts, with their associated plant species, are mostly clear-cut, but many species are in fact ubiquitous, especially grasses and herbs. Most plants can be found sporadically outside their belts. The floodplain may represent a vegetation belt in its own right characterising the low altitudes above datum of plains made by rivers, yet floodplains can happen at all altitudes, and so do all kinds of mesic environments. Within the limits of the simplification proposed in this thesis, these altitude/vegetation belts could be considered as sets of habitats, home to species of plants and animals, presenting different opportunities to humans. The use of trees for their timber and for fuel would be the most obvious exploitation that comes to mind, yet hardly the only one.

Ancient authors from the 4th century BC onwards, such as Theophrastus, Cato, Vitruvius, and Pliny the Elder devoted lengthy commentaries to the suitability of tree species for harvesting wood, elucidating the properties of the timber from each species, and eventually recounting their most common use in carpentry. The account written by Pliny the Elder in the 16th book of his *Naturalis Historia* of the trees of the forest is particularly interesting, since it includes information on the use of many forest products beyond timber. He dedicates a series of chapters to describing the use of different varieties of acorns and other three galls. This account may be particularly relevant in order to start reevaluating the woodland as an important source of subsistence in pre-Roman times and Classical antiquity more generally.⁵⁰³ In the next section I will present a quick overview of some of the possible uses of products of the forest, and of the timbers from the trees that may have likely been indigenous to Casentino and Valtiberina, and for which we have direct local archaeological clues.

The trees that we find in the Mixed Forest are among the most useful in carpentry and subsistence alike. Beeches are today the most staple tree of Casentino, since the monks of Camaldoli implemented from the 12th century a mono-species forest of beeches between Camaldoli and the Falterona mountain, followed by the monks of Vallombrosa, further leading the forest on the Secchieta mountain to become a mono-species beech forest. Beeches must have been very common in these areas in the Archaic period as well, since they are omnipresent in the pollen charts of central Italy. Beech charcoal is quantitatively relevant at the Trebbio furnaces, second only to oak charcoal.⁵⁰⁴ Beech grows fairly fast and tall, and it is one of the most commonly used timbers in beam-making, and was used in antiquity also in utensil making, since it is sturdy and durable, resistant to wearing (Ovid tells us that it was commonly used for making kitchen bowls).⁵⁰⁵ Pliny notes that beechnuts are edible for humans and rather sweet, that mice love them, and says that beech woods are the preferred habitat for dormice,⁵⁰⁶ that may nest in and around beech trees—dormice were a delicacy in Roman times. It is

⁵⁰³ Pliny the Elder, *Naturalis Historia*, XVI, 6,7,8,9.

⁵⁰⁴ Carra 2009, p. 87.

⁵⁰⁵ Ulrich 2007, p. 250; Agnoletti 2020, pp. 242-245.

⁵⁰⁶ Pliny the Elder, *Naturalis Historiae*, XVI, 7.

therefore quite relevant to note that fragments of the very typical dormice jars (*gliraria*) have been found in the archaeological features of the sites of Serelli and Ama, dated to the Augustan period,⁵⁰⁷ both sites within the mixed forest altitude belt.

Beech and fir compete for the same ecological niche, and usually when one abounds the other eventually suffers. Fir's presence in the pollen charts of central Italy is relatively modest, even from the most mountainous areas, while beech-pollen abounds. Nonetheless fir was the most sought after timber for any kind of carpentry use, from beam making to ship building,⁵⁰⁸ and may have been exploited in these valleys, even though there are no archaeological finds of fir-wood or charcoal to date among the Archaic and Late Archaic sites of Casentino and Valtiberina. Pine trees on the other hand are very common, in today's Mixed Forest, in the pollen charts that have been assessed in this study; pine charcoal was found at Trebbio.⁵⁰⁹ Pines grow fast, tall, and straight, but were not considered good as *materia*, since they warp when aging.⁵¹⁰

The timber of all species of pine is rich in resin, however, and that makes it good for implementing timberworks that have to be water resistant and have to be replaced periodically, such as posts, elements used in water channels for irrigation and sewers, and water barrels.⁵¹¹ Another very resinous tree, the spruce, today found only in a small area of the Massa Trabaria region (north and east of the Valtiberina, beyond the Apennine ridge), was sought after in antiquity for pitch-making;⁵¹² note its scientific name *Picea*—the pitch tree. *Picea* may have been more widespread back in pre-Roman times, since it is found from west to east, abundant in the pollen record of Greppo, and present also in those of Pavullo, and Colfiorito. In pre-Roman times however the most recorded ways of producing pitch made use of timber from trees of the family of the *Betulaceae*, and especially of birch trees.⁵¹³ Birch trees favour heathland and mountainsides, need plenty of light, and do best on dry, acid soils.⁵¹⁴ They were ubiquitous in Archaic central Italy, as evident from the pollen diagrams shown in chapter 5. The so called Casentinese churns may actually have been used as portable kilns for pitch or tar production using birch bark.⁵¹⁵

Many materials can be harvested from oak trees, making it the most exploited *genus* of trees in classical antiquity. Timber of both the holm oak and the *Robur* oak is very good for making long lasting, sturdy beams, versatile for many uses in carpentry, and abundant enough to be used as fuel.⁵¹⁶ Oaks are the most common trees in the countryside of central Italy, and were equally common in antiquity, as suggested by the pollen charts—oak-charcoal, moreover, is the most abundant found at Trebbio.⁵¹⁷ Oak acorns were used as fodder for swine and may have

⁵⁰⁷ Incammisa 2013, p. 86.

⁵⁰⁸ Ulrich 2007, pp. 242-243.

⁵⁰⁹ Carra 2009, p. 87.

⁵¹⁰ Ulrich 2007, p. 256.

⁵¹¹ Ulrich 2007, p. 256.

⁵¹² Pliny the Elder, *Naturalis Historia*, XVI, 18; Orenco *et al.* 2013, pp. 4-5. For some of the very common uses of pitch and tar in Roman times see Regert *et al.* 2019.

⁵¹³ Rageot *et al.* 2018, pp. 279-280; Sauter, Puchinger 2018, pp. 596-597; Regert *et al.* 2019, pp. 1554; Ninich *et al.* 2022, pp. 4-5; Rageot, Sacchetti forthcoming.

⁵¹⁴ Vedel 1971, pp. 141-142; Simpson 2019, p. 335-337.

⁵¹⁵ They bear similarities to a metal jar, used in contemporary traditional pitch production as seen in Tintner *et al.* 2021, p. 2.

⁵¹⁶ Ulrich 2007, pp. 257-258.

⁵¹⁷ Carra 2009, p. 87.

been rather common in human consumption as well. Acorn bread was a common food in southern and central Italy until the Second World War.⁵¹⁸

Strabo, Ovid, and Pliny however report the common use of acorn for making flour and bread for human consumption. Strabo spoke of this practice being undertaken in the mountainous area of north-western Spain, up to his time.⁵¹⁹ Ovid wrote that ancestors made bread from acorns, until they received wheat from Ceres—aside from the poetic trope, the juxtaposition between acorn flour and wheat flour is used within a panegyric praising Roman rule as harbinger of a new golden age of wealth for everyone—having to revert to acorn bread may have been still a foreseeable possibility.⁵²⁰ In fact, Pliny stated that acorn bread was still commonplace when wheat or other kinds of grain were scarce, and went on to mention Spain as a place where roasted acorns were a common side dish on most tables.⁵²¹ Pliny also mentioned bread made with chestnut flour,⁵²² a practice well attested in medieval central Italy. Roasted acorns are seldom found, and usually in association with other foodstuffs, such as fig-seeds, hazels, cornelian stones, broad beans, *etc.* especially in sites dated to the Bronze Age,⁵²³ and seldom in those of the Iron Age to the late Archaic periods.⁵²⁴

Acorns are rich in tannins, which give them a very bitter taste and prevent humans from metabolising many of their nutrients; however, when boiled or roasted, they easily lose this bitter substance. As a result of boiling acorns, the water becomes rich in tannins, and this is still one of the most traditional and easy ways to produce this substance necessary for treating leather.⁵²⁵ When tannins are removed, acorns can be ground into flour, and they are indeed full of nutrients.⁵²⁶ They are, therefore, a very optimisable subsistence resource. To my knowledge, roasted acorns have not been recorded in the sites of Casentino and Valtiberina.

On the other hand, oak-galls have been found *in situ* at the Cetamura well,⁵²⁷ and especially at Monte Giovi, within a very interesting archaeological context.⁵²⁸ Pliny mentions oak-galls specifically as the ‘fruit’ of the oak richest in tannins, and very commonly used for the preparation of leather.⁵²⁹ The roasted galls of Monte Giovi were part of what has been interpreted by the excavator, Luca Cappuccini, as a burnt offering made probably on the occasion of the foundation of a building.⁵³⁰ They were found around a pot, within a small pit, made just in the middle of a gap between wall foundations, probably the building’s entrance. This interpretation is debatable but interesting. If true it could corroborate the value of such forest produce to the builders of the Monte Giovi structure, as goods worthy of a sacrificial offering.

⁵¹⁸ Primavera, Fiorentino 2013, p. 211.

⁵¹⁹ Strabo, *Geographica*, III, 3, 7.

⁵²⁰ Ovid, *Fasti*, IV, 393-416.

⁵²¹ Pliny, *Naturalis Historia*, XVI, 6.

⁵²² Pliny, *Naturalis Historia*, XV, 25.

⁵²³ Primavera, Fiorentino 2013, pp. 212-213; Perego *et al.* 2022, pp. 68-71.

⁵²⁴ Mariotti Lippi *et al.* 2020, p. 35; Perego *et al.* 2022, p. 71; Shriver-Rice, Schmidt 2022.

⁵²⁵ Rodriguez 2013, pp. 5-6.

⁵²⁶ Perkins, Attolini 1992, pp. 108-109; Primavera, Fiorentino 2013, pp. 219-222.

⁵²⁷ Mariotti Lippi *et al.* 2020, p. 35.

⁵²⁸ Cappuccini 2017, pp. 23-25.

⁵²⁹ Pliny, *Naturalis Historia*, XVI, 9.

⁵³⁰ Cappuccini 2017, p. 23.

Among the *genera* of trees found within mesic environments, yet not in the plain, worthy of mention are sorb and yew. Traces of these timbers were found in fact among the charcoal record from the Trebbio furnaces. More specifically, the fragments of yew charcoal were pieces of small branches including yew needles and were therefore interpreted as timber used for starting the fires of the furnaces.⁵³¹ However, both sorb and yew timbers are still considered very useful in carpentry, since they have similar properties and can sustain very well traction and strain.⁵³² While the sorb is commonly used in carpentry for making carts,⁵³³ the wood from yews is used for making tools that need to resist to continuous strain, such as hammers, gears (e.g. for making pumps), and weapons (particularly sought after for making bows).⁵³⁴ These timbers have very specialised properties, and both are relatively difficult to obtain especially yew. Sorbs are usually found in the colder climates of the mountains, while yews are reclusive trees with specific ecological niches only found in the thickets of woodland, in shady and moist spots. Their presence in furnaces found on the plain such as those of Trebbio may therefore be interpreted as a sign of a rather secondary purpose in their usage, following an original selection, likely due to their properties, suggesting therefore a deep knowledge of the characteristics of materials harvested in the wilds.

Plant materials and building techniques

Building techniques of Casentino and Valtiberina seem to have relied mostly on provision of very local materials, often by-products of, or integrable with, other productive activities. As seen in Chapter 2, the stone we find used for the footings of the buildings at Ama, Poggio Bombari, Poppi, and Tizzano, for instance, includes different varieties, mostly local *alberese* schist and sandstone, all materials easily gatherable from the immediate surroundings of each site. Unfortunately, little can be said of the earthen walls since these were never recorded during the excavations. We have some burnt daub collected at Trebbio, Molini, Poppi, and Monte Castelsavino. The Trebbio fragments are the best preserved, and most numerous. They bear thick impressions of canes or straight branches; the clay is well-processed, coarse, and evidently kneaded. It is impossible to determine the kind of plant used for making the wattle, but given the roundness and straightness of the marks, hypothetically it could have been cane of *Arundo donax*, the very common and often-exploited cane species of the *Cyperaceae* genus, that thrives in floodplain/mesic environments of central Italy.

Two interesting fragments of burnt earth were collected during the investigation at Santi Pagani, and they bear some noteworthy features. The clay mixture is particularly badly processed and may have been gathered very locally—it does present kneading folds, however, meaning that it was prepared before laying, possibly by non-professionals. One of the chunks may actually have been an irregular mudbrick, given the absence of wattle impressions. We may think that this technique of construction was used by the builders of the Santi Pagani structure. It is possible that the other fragment, bigger and without shape, may have belonged to the dome of a provisional furnace since the clay bears evident traces of exposure to very high temperatures. The Santi Pagani record does not provide many insights into the

⁵³¹ Carra 2009, p. 87.

⁵³² Wagenführ, Wagenführ 2021, pp. 268-270; 281-283.

⁵³³ Ulrich 2007, pp. 329-330.

⁵³⁴ Agnoletti 2020, pp. 58-59; 118-119.

archaeological contexts that were excavated, and further investigations are required. Another interesting piece of burnt earth comes from Tizzano, since it could be interpreted with some degree of certainty as a burnt mudbrick, regularly squared, with a well-mixed paste. It was collected from one of the two Archaic macro-features that were excavated in a rush. Such layer could be interpreted as a collapse, maybe in connection with a fire that caused the cooking of its mudbricks.

Generally speaking, the most common technique for building walls, used in Casentino and Valtiberina, seems to be wattle and daub. Pisé was never recorded but its use could be hypothesised for a few sites, such as Ama, Serelli, and Poggio Bombari, because of the wide stone footing walls without post holes in direct association with them.⁵³⁵ Finally, the mudbrick technique could also have been used if more rarely. The dating of the adoption of different techniques, in this neck of the woods is very problematic given the lack of attention to their proper record during archaeological investigation. It seems likely that more than a single technique was used for the same building, either in different phases, or for different structural elements.

Given the relative scarcity of roof tiles among the sites of the two valleys we can assume that roofs were usually thatched. Roof-tiles were found at Ama, Poppi, Pratariccia, Socana, Chiusi, Tizzano, Catiglianello, Compito, and sometimes in good quantities; yet it is only in Tizzano that excavators clearly recorded the collapse of a tiled roof. It is possible that tiles were only seldom used in construction, at least locally, and not necessarily for roofs. The total absence of tiles among the furnace dumps of Trebbio may therefore be a hint of a local preference in building materials and therefore in building techniques, or more simply that tiles were not produced in those furnaces. Thatched roofs on the other hand seem to have been ubiquitous. Thatch in fact can be made using different kinds of plant-based material, varying possibly to altitude, and most of all adapting to plant availability, potentially integrating very well with cereal culture.⁵³⁶ While all considerations on the topic are hypothetical, as no traces of thatches have been recovered yet from any site in Casentino and Valtiberina, some indirect clues may help.

A thatched roof is usually made with long, straight, and light plant elements that can be quickly dried without rotting and made up in tight bundles (the density of the parts in each bundle prevents the leaking of rainwater, preserving the other underlying layers of bundles, roofing frame, and clay walls); these bundles are the single elements composing the roof.⁵³⁷ Branches from trees are too heavy to be used and cannot be made up in discrete waterproof, unrotting bundles, unless palm branches are used. The most common elements used as thatches in Mediterranean Europe are reeds and canes of the *Cyperaceae* genus, that thrive in mesic areas of the land at any altitude, heather bushes (*Ericaceae*) that provide ready-made natural bundles,⁵³⁸ and long stems of some other *Poaceae* plants.⁵³⁹ Usually, the single most common stem used is the rye stem, since rye may grow as long as 1.5 m.⁵⁴⁰ Rye is a sturdy and versatile cereal that can grow in shadier or colder environments that are prohibitive for wheat and barley,

⁵³⁵ Miller 2017, p. 157.

⁵³⁶ Wichmann, Köbbing 2015, pp. 1063-1064.

⁵³⁷ Walker *et al.* 1996, pp. 1-6.

⁵³⁸ Walker *et al.* 1996, p. 27.

⁵³⁹ Steger 2023, pp. 2-3.

⁵⁴⁰ Curtis *et al.* 1988, p. 508.

and roof-making and rye-cultivation may be by-productions. According to some theories, rye cultivation entered Italy only during the 3rd century BC.

Rye pollen is relatively easy to identify among the cereal pollens, and it is therefore quite commonly recorded in pollen charts. However, the separation between pollen of wild and domesticated rye is currently impossible.⁵⁴¹ Among the sites assessed in chapter 5 it was recorded only at Martignano and Massaciuccoli. Roasted rye grains are rather difficult to identify among the carpological remains of archaeological sites, yet despite of this they were found in sites from Archaic central Italy.⁵⁴² Given the abundance of *Ericaceae* pollen in all the records of central Italy, ubiquitous in the sites assessed in Chapter 5, the most viable material for local thatch making may have been indeed heather. *Ericaceae* charcoal has been found abundantly at the site of Accesa, and also as microcharcoal from the core taken at the lake.⁵⁴³

Forests, farming, and agriculture of Casentino and Valtiberina

People most certainly did not live on forest goods alone. The economies of both valleys revolved substantially on agriculture and animal husbandry. The only reliable paleo-environmental record from these two valleys comes from Trebbio,⁵⁴⁴ and testifies to consistent pig farming, occasional goat herding,⁵⁴⁵ and possibly oat cultivation.⁵⁴⁶ Despite the relative lack of paleo-environmental data from the two valleys, arguments can be made from assessing what the land can currently offer to settlers, and what it could offer in the more recent past, since there are recurrent patterns that could be due to people's response to local pedological conditions. Currently both valleys are heavily forested, especially Casentino (as visible at *plates 109 and 111*). Large patches of forest are fairly young, planted only after 1954. The passage of the Gothic Line, during the Second World War, affected especially the mountain ridge between Falterona and Secchietta, that was stripped barren.

Even before the war, the top of the Falterona and portions of the Catenaia ridge were kept barren of trees, for pasture. The long-lasting pasturing vocation of this part of the Apennines is still attested by toponyms. On the Falterona side of Casentino we have for instance Passo della Calla ('calla' is the dialect word meaning the counting of the heads of cattle), Passo dei Mandrioli ('mandrioli' meanings herd-keepers), Badia Prataglia (meaning the 'church of the pastures'), and on the opposite site of the valley, the Pratomagno mountain (a name that literally means 'huge pasture'). Since the 13th century, the Casentino was in fact used as one of the main seasonal destinations of the Tuscan transhumance routes, sustaining the herds providing wool to competing Tuscan medieval city-states such as Siena, Arezzo, and Florence, and even to the Papal State.⁵⁴⁷

From the 11th century onwards, the two monasteries of Vallombrosa and Camaldoli started to tend to the forested patches on the mountain ridges on the north side of Casentino around the Falterona—the mountains of Secchietta and of the Catenaia ridge. These forests, still present to

⁵⁴¹ Seabra *et al.* 2023, p. 2.

⁵⁴² Shriver-Rice, Schmidt 2022, pp. 122-123.

⁵⁴³ Vannièrè *et al.* 2008, pp. 1186-1188.

⁵⁴⁴ Carra 2009; Crezzini 2009; Milanese 2009.

⁵⁴⁵ Crezzini 2009, pp. 92-93.

⁵⁴⁶ Milanese 2009, p. 90.

⁵⁴⁷ Cristoferi 2019, pp. 29-30.

this day, were probably planted by the monks, or in any case selected and subdivided in monocultural areas of beechwoods and chestnut woods, and of oak woods at lower altitudes.⁵⁴⁸ It is uncertain how the land cover would have been prior to the installation of these two monasteries in the 11th century. The forests around Camaldoli and Vallombrosa became one of the main sources of wealth for the monks and the local populace. The monks in fact were clever enough to sign contracts for providing building material to the archbishops of Florence, and to several rich Florentine families, and much of the timber used in medieval Florence, including the material used for the Duomo, is firwood, beechwood, and oakwood of Casentinese origin.⁵⁴⁹ These forests were also used to produce chestnut flour, the peasants' flour, used by locals and sold to the nearby cities. The municipality of Florence eventually established a colony in the Magellan side of the Falterona mountain—the settlement of Castagno (that means 'chestnut tree')—to tend to an extensive patch of mountainous land dedicated to the chestnut cultivation, for providing flour to its citizens.⁵⁵⁰ In the Soci valley, under the mountain of Camaldoli on the Casentinese side, the monks established also several farms—some of which clustered into the Soci settlement—and reclaimed the land for agriculture, apparently after years of abandonment.⁵⁵¹

Benedictine monks already established from the 10th century onwards small monasteries in Casentino and around its mountains, but they were short-lived, and eventually incorporated within Vallombrosa or Camaldoli. One such early Benedictine monastery, Santa Trinita in Alpe, is a very interesting example of the way in which a rather swift change in land cover may affect the settlement of mountain areas. The abbey, founded by two German monks at the end of the 10th century, is sited in a narrow wrinkle of the Pratomagno, a small valley formed by a local brook (quite remarkably the abbey was built on top of its springs), mid-way on the ancient road between Talla and Loro Ciuffenna. This road is along the only natural opening that passes through the steep, and unstable, sides of the Pratomagno, connecting Casentino and Valdarno, prior to the artificial opening of the Passo della Crocina, in the 18th century. Since both Loro and Talla provided archaeological finds that span from the Archaic period to the medieval period without a break in continuity,⁵⁵² it is possible that this road may have been ancient indeed.

The church of Santa Trinita, of quite substantial dimensions, thrived as long as this route was in use. Its abandonment is dated in the second half of the 15th century, and probably connected to the moment when the Anciolina route was founded (eventually becoming the Passo della Crocina).⁵⁵³ Going to Santa Trinita in Alpe is currently a long and difficult journey and can only be done by trekking. The reforestation work of 1954 was connected to acts of re-landscaping, often unnecessary, but concerned with providing quick labour to quench local post-war unemployment. The area of Santa Trinita was firstly deforested, and then quickly reforested. The original beechwood with patches of chestnuts was replaced by a mixed pinewood of black pines and Douglas pines (non-native species), that grow quick and are harvested for fuel. The new forest transformed the look of the area, hiding the ruins of the

⁵⁴⁸ Agnoletti 2020, pp. 235-245.

⁵⁴⁹ Becattini 2015, pp. 11-14.

⁵⁵⁰ Fortuna 2018, pp. 4-8.

⁵⁵¹ Dominici 2014.

⁵⁵² See Vilucchi 2002 for an overview on the excellent, well recorded archaeology of Loro Ciuffenna.

⁵⁵³ Mercurio 2013, cfr. Guerrini 1981, p. 59.

abbey—for these are tall and dark trees—and untended, eventually erased the path to the landmark.⁵⁵⁴

In the post-Medieval period, under the management of the Grand-duchy of Tuscany, and until the beginning of the 20th century, Casentino kept these diverse vocations. In recent years, and with the many post-war economic and social changes affecting Italy, local livestock activities have been industrialised and the need for pastures dropped considerably. The Pratomagno for instance have been largely reforested, only its tops are kept as pasture for Chianina cows, a species that can only be farmed in non-industrial ways. Pastures have generally been replaced by forests; however, these are very controlled and have their ongoing commercial use (mainly fuel production at lower altitudes, and building materials from trees at higher altitudes), their life cycle following accordingly. The land of Valtiberina on the other hand, has been more widely devoted to agricultural activities, with some important limitations.

Since the soil is generally too clayey, its drainage is rather difficult, and it requires careful hydraulic-agricultural measures to remove excess water. Wheat can be grown here but depending on the very local soil characteristics, may be more expensive to maintain—while sturdier plants may thrive, and in Valtiberina we find in fact extensive tobacco plantations, sunflowers, and corn. It is remarkable to note that the description given by Pliny the Younger of the soil of Valtiberina (see Chapter 2, note 41) is still quite apt in providing a precise description of the difficulties modern farmers face in yielding produce in this valley. A difficulty that however repays, since the soil is nutritious and bountiful. The characteristics of the local surface geology, and the different qualities of soil seem to determine quite precisely land cover and use. We can see from the map at *plate 110* that both valleys are rather difficult to cultivate and that areas good for agriculture are limited, especially in Casentino,⁵⁵⁵ while the soils are apt for forestry and for pasture (see *plate 111*). Remarkably, the darker purple areas displayed on *plate 110* along the Pratomagno mountain are its permanent natural clearances, due to the rocky shallow nature of the soil.

As suggested by the environmental reconstruction provided in the former chapter, the local society may have not been one practicing a systemic and intensive land reclamation of the floodplain while, given the forested character of these places, it is possible that slash-and-burn—also known as shifting agriculture—was undertaken when needed (especially in those areas of the map at *plate 110* that are in darker green). Slash-and-burn is an agricultural technique that may have several different purposes. It is usually thought to be typical of areas where non-intensive agriculture is performed when wanting to transform quickly a forested area into a cultivable clearance.⁵⁵⁶ Yet forms of it are still in use in both valleys to this day—a technique called *debbio* that is used first to create clearances and then to periodically control

⁵⁵⁴ Mercurio 2013—until recently, when new forestry works reopened the Loro Ciuffenna side of the ancient road.

⁵⁵⁵ This map and the following ones are personal re-elaborations of the “Carta dei Suoli della Regione Toscana in scala 1: 250.000”, made by the Regional Government between 2003 and 2017, and accessed from the Regione Toscana website between the 26th and the 29th of March 2024. The colour code, sometimes not exactly helpful, is the original one, and could not be changed.

⁵⁵⁶ Slash-and-burn has been usually associated with ‘developing countries’ that make use of un-nuanced agricultural techniques for small subsistence yielding, see Carneiro 1960 (that provides some intriguing *equations* for calculating how often a field must be burnt to yield again at a good capacity)—but it is indeed more of an efficiency technique than a subsistence one, that integrates ploughing and manuring for making fields yielding even more, while optimising resources and providing an effective mean of controlling landcover and making landscape, see Kleiman *et al.* 1995, Dussol *et al.* 2021.

them, while also contributing to regulating soil nutrients.⁵⁵⁷ Currently the *debbio* is used mainly for very limited areas, and undertaken by a small team of people to keep fields clear. These fields are used for olive trees—and the *debbio* is practiced even among adult olive trees, since its flames are kept under strict control—or for pastures, or simply to clear spaces around houses.⁵⁵⁸ The coeval slight increase in micro- and macro-charcoals recorded in sites such as Massaciuccoli,⁵⁵⁹ *Lacus Velinus*,⁵⁶⁰ and possibly Accesa (although in Accesa it has been connected with ore-smelting activities),⁵⁶¹ could be due to slash-and-burn techniques such as the modern *debbio*.

Considering the results of the paleo-environmental reconstruction presented in the previous chapter and the pedologic maps at *plates 110* and *111*, we can safely assume that the land cover of these two valleys must have been rather forested even during the centuries between 600 and 400 BC. The plains of both Valtiberina and Casentino have altitudes between 200 and 400 m OD, and they are thus a mesic environment within the mixed oakwood vegetation belt. From the preliminary publication of Trebbio's pollen record it seems apparent that that the plain was rich in *Fagus*, *Fraxinus*, *Carpinus*, *Corylus*, and *Populus* (beech, ash, hornbeam, hazel, and aspen), but also *Quercus* (oak), and that it was generally wetter and may have been more forested than we see today.⁵⁶² These considerations combine well with the assessment of Trebbio's macro vegetational remains.⁵⁶³

We can envision for both valleys a floodplain with a mixed woodland quite similar to what has been recorded at Trebbio. As already mentioned, the pollen record from Trebbio, albeit its rather poor quality,⁵⁶⁴ may suggest traces that could be of cereal cultivation (pollen of wild oat was in fact collected). Traces of pig farming, as inferred from osteologic data, are obviously more abundant, yet they are consistent over time.⁵⁶⁵ It is possible that while agriculture was practiced, it may have not been the sole source of main subsistence. Moreover, cereal cultivation may have been more adaptive to local conditions on the floodplain, even on a seasonal level, rather than the other way round, as suggested in recent studies on cereal macro-remains from central Italy, more specifically from Lake Bolsena.⁵⁶⁶ These studies highlight the importance of millet (a very fast growing, sturdy, and versatile cereal), in junction with a good variety of cereal cultures, such as spelt, oat, and barley, growing in different moments of the year and requiring all slightly different environs to yield.

To sum up, in Casentino and Valtiberina between 600 and 400 BC, we may not have any trace of a substantial transformation of the land into a landscape set to implement what we may consider more intensive agriculture and farming. Among the characteristics of what could be

⁵⁵⁷ Agnoletti 2020, p. 29.

⁵⁵⁸ Agnoletti 2020, pp. 30-31.

⁵⁵⁹ Colombaroli *et al.* 2007, p. 761.

⁵⁶⁰ Mensig *et al.* 2015, p. 86.

⁵⁶¹ Vannièrè *et al.* 2008, pp. 1189-1193.

⁵⁶² Milanesi 2009, p. 90. The palynological record from Trebbio was taken from a small series of column samples on two layers—an occupational layer dated the Archaic period, and the natural soil beneath it. This record has not yet been fully published.

⁵⁶³ See Carra 2009.

⁵⁶⁴ Milanesi 09, p. 90.

⁵⁶⁵ See Crezzini 2009.

⁵⁶⁶ Fundurulic *et al.* 2022, that however seems to downplay the importance of millet in her findings—I think because it is not wheat proper: to modern viewers millet does not seem to befit an urbanising society as much as wheat, or barley at the most.

considered non-intensive agriculture and farming as practiced locally we may find in fact traces of adaptive agricultural productions and a marked diversification both in zones around the settlements, and at different times of the year. A further characteristic is the joint exploitation of wild plant species, along with cultivated ones, and often of both hunting and animal farming.⁵⁶⁷ This specific aspect may help in making sense of the consistent traces of wild fruits, ubiquitous in the archaeological excavations of Archaic central Italy.⁵⁶⁸ The most commonly found are cornelian stones and acorns, followed by wild grape pips, arbutus berries seeds, and fig seeds, all from plants that are commonly found within the mixed oakwood. Quite interestingly, these considerations come mostly by juxtaposing the admittedly scant evidence collected by the archaeology of these two valleys against what is recorded in other sites of central Italy. We may be able thus to simply extend a similar set of arguments to central Italy more in general, during the Archaic period—with its many forms of urbanism—as more and more hints pointing to techniques of farming and agriculture that we may deem non-intensive are surfacing from many sites of central Italy,⁵⁶⁹ for those who may be willing to take note of them.

Topographic considerations on land, visibility, access points, and defence

Our perception of the land is commonly centred on the floodplain, as we are used to consider it as the portion most suitable for settlement and subsistence activities of any kind. However, between 600 and 400 BC, the floodplain of Valtiberina, and especially of Casentino, may have not been subject to systemic, extensive, nor conclusive land reclamation, and may on the other hand have been more forested and wetter (thus somewhat inhospitable, and even unhealthy) than what we are accustomed to today. Conversely, there may have been areas of the land more suitable and healthier for both settlement and transport implementation than the floodplain. The archaeological evidence suggests in fact a greater variety of settlement strategies, that goes beyond the centrality of floodplain exploitation, as implied by the diverse positioning of the various settlements.

The variety of settlement positioning in the land could be considered a further hint of the character of the local economy, situationally adapting to different environmental surroundings, with different functional specialisations possibly allotted preferentially to certain settlements.⁵⁷⁰ Moreover, this diverse positioning is a testament of the specific relation between local settlers and the land, and of their familiarity in traversing mountains and forests. A series of branching mountain ridges and small plateaus in the area connecting the Valtiberina and the Casentino—the Compito area, between 800 and 1200 m OD, quite devoid of modern settlements—has turned out to be one of the most densely inhabited, according to the archaeological investigation conducted so far. Mountain ridges may have not constituted

⁵⁶⁷ E.g., Lavolette, Fleisher 2005, p. 334; Watling *et al.* 2015, pp. 542, 548-549.

⁵⁶⁸ Even in farms that specialised in a kind of production (e.g. grapevines), such as Podere Tartuchino, in southern Tuscany (see Perkins, Attolini 1992, p. 109), and in rich settlements such as Gabii (see Phyllida 2006, pp. 20-21); for a general overview of multiple Etruscan sites see Shiver-Rice, Shmidt 2022, pp. 123-124, and also Moricca *et al.* 2023, pp. 66-67; for Gonfienti see: Mori Secci *et al.* 2021; for Cetamura see: Mariotti Lippi *et al.* 2020, p. 35; for Monte Giovi see Cappuccini 2017, p. 25.

⁵⁶⁹ E.g., Stoddart *et al.* 2019; Trentacoste forthcoming.

⁵⁷⁰ An interesting example validating the relation between settlement specialisation and implementation of a functioning non-intensive agricultural and farming economy in Douman, Coutros 2023.

boundaries back then but in fact meeting points as good as any other, as the forest cover could have contributed to a different perception of the land and its features.

As evident from the vegetation belt map (*plate 105*) the majority of settlements of Casentino and many of those from Valtiberina were actually within the mixed forest belt, as were the paths joining them. This should be considered as particularly relevant, since the mixed forest is actually very clean of shrubs and usually devoid of dangerous wildlife during daytime. As we have seen, this kind of forest is mostly made up of beech trees, a very peculiar species that tend to dominate their surroundings, expanding chemicals around them that select any other plant species and make room for each individual, while also harming individuals from the same species.⁵⁷¹ The result is a more open forest (*plate 106*), both on the ground and at the canopy, allowing the spontaneous forming of viewpoints on the surrounding land, from ground, even during summer. In short, the mixed forest is relatively easy to inhabit, very easy to traverse at any point of the year and does not need a high level of maintenance. The same cannot be said for the mixed oakwood (as discernible from *plates 107* and *108*), which requires well marked, periodically maintained paths to be traversed, given the thick shrubbery it hosts.

In Casentino the only settlements not sited within the mixed forest are Poppi and Socana. These may have had special roles for all the other communities of the valley—primarily defence and cult respectively, and for both trade and exchange. The mountainous positioning of Casentino's settlements may therefore be due to the convenience of implementing suitable conditions in the mixed forest vegetation belt, connected to the viability of the economic activities that could be undertaken within it. The situation of Valtiberina is comparatively different as at least two substantial settlement clusters (Madonnuccia/Tizzano, and Collevocchio/Trebbio) are within the mixed oakwood belt and the floodplain. As we have seen from the pedological maps, Valtiberina offers the possibility to implement agricultural activities more easily than Casentino. The importance of the oakwood for the subsistence of Trebbio and its farming and productive activities has already been discussed.

Going back to Casentino, if we take a look at a viewsheds analysis of the settlements along the mountain ridge of Pratomagno, Secchieta, and Consuma, it seems that each settlement did not share the same view and they were not able to see one another, despite their proximity. If we combine this viewshed analysis with the pedologic maps, we may infer that these settlements were separated by forest, in fact sited at its outskirts, while in some cases holding a clear view of the parts of the Pratomagno that are permanent clearances. Poggio Bombari, for instance lies at the edge of the permanent natural clearance at the top of the Pratomagno, and the view from it spreads almost exclusively on this extensive clearance (*plate 7.2*). This specific choice of positioning may be a hint of the farming vocation of the Bombari settlement, and parallel exploitation of the top of the Pratomagno as pastures as early as the Archaic period. The use of these clearances has been historically grazeland, and the pedological maps state their unviability for any other purpose. The big dimensions of the hut of Bombari, and of those of the other mountain top sites may be *very tentatively* connected with cows' husbandry: they are

⁵⁷¹ Mixed forests are so silent and austere, no one would wonder that they are in fact an invisible and silent warzone, theatre of a bloody war among each beech tree, and among beech trees and all the rest, fought at the very different timescale of trees.

very big for single families, but possibly enough for a gang of workers sleeping in the same building with the animals they are warding.⁵⁷²

Both Ommorto and Poggio Alto (Consuma), while still being at the edge of the forest, are next to areas, smaller than the Pratomagno clearance, that could have been kept as clearances or even cultivated. The views from both Ommorto and Poggio Alto extend towards these areas. While Bombari (Secchieta) and Santi Pagani (Secchieta) are sites with only one building, Ommorto and Poggio Alto (Consuma) were composed of up to five separate structures. Little can be said of the settlements of the Compito area, since no sites have been excavated, and they have only been recorded as finds scatters. It is quite relevant to note however that the four major spreads—La Melosa (Chiusi), Pian Linare (Compito), Fosso Singerna (Compito), and San Cassiano (Singerna)—are all clusters of localised spreads and are all sited on small plateaux. According to the shapes and characters of the finds spreads, each site may have been a small settlement formed of four to six neighbouring buildings.

The viewshed analysis of the mountain-top fort of Monte Castelsavino has a completely different character (*plate 42*). The view from this site is its most prominent feature. The fort of Monte Castelsavino has a vantage point over the Fumaiolo Mountain—where the river Tiber springs—that its located just to its north, and that presents two saddles at its sides, that lead to the Val Savio, on one side, and Val Marecchia on the other—directly to the Adriatic side of central Italy. From Monte Castelsavino is also possible to have an extensive view of the Valtiberina, from the springs of the Tiber to Città di Castello, that is visible on days when the sky is clear. A portion of Casentino is also visible, and notably Poppi, as is the peak of the Falterona, at the opposite end of the same mountain ridge. No nearby coeval site is visible from Monte Castelsavino with the exception of Castelvecchio. The Castelsavino site may have been a tower, within its rampart enclosure, and/or necessitated a clearance area around it. Further archaeological investigation are of the essence to better understand the role of this site in relation to all the others around it.

It is unclear if Castelvecchio hill is indeed another similar mountaintop fort (as hinted by the toponym, meaning ‘old castle’) since it is only recorded from satellite pictures and located only a few kilometres apart from Monte Castelsavino. The view from Castelvecchio is limited to its immediate surroundings, and encompasses the slopes where the Compito sites are, and a good portion of the Valtiberina. If this too was a fort and coeval with Castelsavino, it was likely overlooking the road leading towards Compito and the Casentino from Valtiberina. The fact that the views from the two forts are complementary should be considered as a supportive clue to their coexistence, and combined role. Such role may include functions of defence against threat and that of providing a place of seasonal gathering, possibly connected to herding and trade, and especially that of control of the routes passing through the mountain passes.

It may not be coincidental in this regard that a piece of *aes signatum* has been found at Castelsavino. These forts could have been used by all the local communities both in case of threat approaching from beyond the Fumaiolo, or beyond the Città di Castello area, and as seasonal gathering points, along local herding routes. As we have seen in Chapter 2, the finds assemblage from Monte Castelsavino with the exception of the of the *aes signatum*, consists of coarse ware, probably mostly *hydriai* and *pithoi*. As we have seen in Chapter 3, some of these objects were made with techniques not found anywhere else and may thus come from

⁵⁷² Flannery 1972.

beyond Casentino and Valtiberina. The majority of pottery objects are otherwise made with the most common techniques found in the two valleys, and they display very often the inclusions of big flakes of mica crystals that are very common among the pottery of the Singerna sites.

While walls alone may not necessarily indicate a need for defence, this should not be excluded, especially considering the rather controlling position of Monte Castelsavino with its view set on very relevant access points to both Casentino and Valtiberina. It is important to note however how, besides Castelsavino, and possibly Castelvecchio, only a single other site has returned features that were interpreted as defensive—Catiglianello, that may have been home to local elites. Among defensive activities we may also include a more ‘environmental’ kind of protection such as against herd-scattering or seasonal climatic conditions, and among these protective gatherings, trading exchanges would happen. I would like to foster the hypothesis however that the main role of Monte Castelsavino and Castelvecchio was controlling the access to the mountain passes, in fact a well organised control, as suggested by their intriguing complementarity. Moreover, given the *directionality* of the settlements on the Singerna and the Rassina valleys, and of those at Compito (as apparent from *plates 1* and *2*), clustering along the routes pointing directly towards Monte Castelsavino, we may also add that these two forts may have been centres of unspecified yet relevant economic activities. Control and economic centrality may imply the existence of *tolls* imposed within or near these fortified sites. An involvement of some form of Archaic state in this part of the Apennines may therefore not be excluded.

Poppi does not have clear signs of defensive structures datable to the Archaic period but given its prominent and controlling position over the Arno valley, we may imagine that it may have featured some defensive structures. Two massive, squared sandstone boulders found under one of the footings within the crypt of the medieval hospice next to San Fedele church, sited on the norther edge of Poppi’s plateau, have been interpreted as the vestiges of a pre-Roman defensive wall, dated probably to the Hellenistic period. It is possible that such defensive structures or ditches have not been actually found yet for most, if not all, of the sites of this assessment, which are often only minimally investigated. On the other hand, considering the need of defence as something rather extraordinary at the least, we may even imagine that only some fortified sites were communally used by many surrounding settlements in the case of such emergencies—and among these Castelsavino, Castelvecchio, and probably Poppi. To sum up, these same sites may have been used by many settlements occasionally for defence, and otherwise as sites for periodical gathering and exchange.

Interconnected clusters

As we have seen, in Casentino and Valtiberina the relationship between environment and settlement strategies appears substantial—or more precisely the one between subsistence strategies and settlement strategies. These varied from one valley to the next, adapting to what the land could offer. The subsistence of the settlements of these two valleys relied on forms of agriculture that may have not required extensive land reclamation, integrating it with forest exploitation (for beech acorns, oak acorns, chestnuts, etc.), farming and herding, more substantially that we have formerly assumed. While we may have traces of oat cultivation at least in Valtiberina, we may hypothesise that the most common species of cereals cultivated in these two valleys may have been millet, barley, oat, and maybe rye, similarly to what found for

other coeval parts of the inner Apennines, such as Lake Bolsena, and San Marino. These cereals could adapt fast, grow in colder, darker, and wetter environs, and yield even in conditions that would be prohibitive for wheat.

Some of the settlements of Casentino may have been more closely connected with forest exploitation and herding. Agricultural activities may have been more prominent in Valtiberina, where we have also what could be interpreted as indirect traces of wine production in sites such as Tizzano and Mutale (if we interpret the *pithoi* found there as facilities for wine production). All settlements from both valleys must have relied on connections to trading routes, implementing exchange on a regular basis among themselves and with the outside. All these may have formed thereof an interconnected and inter-sustaining community, possibly part of a wider interconnected, inter-sustaining community involving nearby clusters and valleys. Within these interconnected clusters, certain sites may have been more central than others, either for their multifunctionality or for their positioning—these may have acted as exchange relays. The most obvious are the sanctuaries, such as Pieve a Socana, to which we may add fortified settlements, such as Monte Castelsavino and maybe Poppi, but also notably the areas where we find workshops, such as Trebbio and especially Madonnuccia (the Singerna of Chapters 3 and 4). As assessed at archaeological sites from other parts of the globe,⁵⁷³ an economy propped by interconnected clusters of settlements practicing a mix of non-intensive agriculture and other forms of subsistence and exchange, may function as the basis of processes of urbanism, whereby the main meeting points are founded as places of, or often acquire in time, political relevance among neighbouring settlements.

⁵⁷³ For some compelling examples of different forms of urbanism see for instance McIntosh 1999; La Violette, Fleisher 2005; McIntosh 2015; Leadbetter, Sastrawan 2023.

Chapter 7 Conclusions

The countryside in Archaic and late Archaic times

The analysis presented in this thesis is ultimately about the processes of urbanism. The initial assumption is that whichever societal process we include under the umbrella term of urbanism, this must have involved all strata of the Archaic society of central Italy, and thus the settlement of what we may consider countryside—all the land beyond the urban centres and their immediate vicinities. The very same processes at play when and where a city was formed, were at work in this neck of the woods, where instead we find more dispersed settlements. How can we define the countryside in the Archaic times, and how is it settled in relation to the urban centres? What can the settlement of the countryside tell us about the forms of urbanism developed in central Italy and the economic strategies that sustained them? These primary research questions were unpacked in the following five sets, each set investigated in one of the chapters of this thesis:

- 6) Were Casentino and Valtiberina hinterland to any Archaic city?

There are hints of phenomena in the archaeological record that seem to connect two specific parts of this area with two wider networks, separated from one another, that could originate in two different nearby urban centres. These clues are two different site phasings (seen in Chapter 2), mirroring a differential distribution of luxury goods (as seen in Chapter 4), and even the presence of facilities where tolls may have been exacted (as argued in Chapter 6). Tentatively, therefore, the northernmost of these two portions of land seems to gravitate more prominently towards Mugello, the lower Arno valley, and Faesulae, the rest towards the upper Arno valley, the Tiber valley, and Arretium. While this pattern holds true for luxury goods, no archaeological evidence seems to connect the settlements of Casentino and Valtiberina with a supply system of subsistence goods to surrounding urban centres. What were they trading for the luxury goods?

- 7) Who made the pottery objects in Casentino and Valtiberina?

The pottery we found in the Casentino and Valtiberina sites was both produced by locals and imported from outside these two valleys. Local productions pertained to subsistence goods and pithoi, imported pottery pertained most relevantly to luxury goods (fine banqueting ware). This division should be considered indicative of the way exchange was generally implemented.

- 8) What kind of economies were there in these two valleys?

The division set out above can be considered as an archaeological clue of the existence of the spheres of exchange, and thus of the multi-centric character of the local economy. In a multi-centric economy things are exchanged according to values acquired on a cultural basis. Subsistence goods are locally produced and exchanged (and thus locally consumed), while luxury goods come from elsewhere (or are much more difficult to produce than subsistence goods) and are exchanged for other luxury goods, or for

goods that may be of local production but are considered luxuries by the place with which the exchange takes place via the merchant.

- 9) What kind of human impact could the local economy have had on the natural environment? What can environmental patterns (as seen in pollen diagrams) say about the economy supporting the Archaic processes of urbanism?

According to the diachronic pollen analysis presented in Chapter 5 the environmental signature of Archaic urbanisms is very different from that of the medieval city, contrary to what is maintained by mainstream reconstructive models.⁵⁷⁴ This environmental signature speaks of a low impact on the landscape, that seems rather forested in all central Italy. Land reclamation is evident archaeologically through the presence of land divisions around settlements, as also seen in Casentino and Valtiberina (Chapter 2). However, the land reclamation did not have a lasting impact on the floodplain until well into Roman times—this has been interpreted here as suggesting that the Archaic land reclamation must have been limited, possibly located in the immediate vicinities of the urban centres.

- 10) Was the local settlement strategy a response to environmental conditions? What can the archaeological data say about the relationship between settlers and land? What is the relationship, if any, between subsistence strategies and settlement strategies in these valleys?

As suggested by the positioning of the sites on the land, making the most of very local environmental features (as seen in Chapter 6), the relationship between settlement strategies and local environment is tighter than expected. Moreover, from this positioning, in the light of the environmental considerations set out in Chapter 5, it seems plausible that many settlements may have been made within the forest. Human impact on land cover may have been rather limited, more generally situational and adaptive, even in regard to food production. The knowledge of the local environment, from the forests to the mineral resources of this part of the Apennines, may have been at the basis of the goods produced locally, and mainly found locally, to be exchanged with luxury goods from elsewhere. These may have been material goods such as pitch, medicinal objects, and timbers of different qualities, but also the native copper ores of the Monti Rognosi; and more immaterial goods, such as the possibility of providing support to travellers and merchants going from one side of the Apennines to the other, and very hypothetically tolls exaction.

To sum up, therefore, the countryside of Archaic times, in this part of central Italy seems indeed at once an area of settlement, a place of passage of networks of exchange, and a place of production. The character of this production however may have been twofold: subsistence for locals on one side, and on the other production of goods that could be traded outside these valleys for luxury goods that could not be produced therein. Since the spheres of exchange are impermeable, as we have seen in Chapter 4, I argue that the goods locally produced to be traded for luxury goods were not items of subsistence. It is likely that the archaeological clues to the spheres of exchange presented in this thesis may have been particularly visible in Casentino and Valtiberina insofar as they were “marginal” lands. One of the assumptions of this thesis (as seen in Chapter 1) is that these areas were in fact part of an interconnected system of settlements, upholding similar societal and cultural values in order to exist, if not thrive. We

⁵⁷⁴ E.g., Horden, Purcell 2000, pp. 204-209; 271-274; Cifani 2021; Potts, Smith 2022, pp. 607-608, 625-629.

may therefore think that there are other ‘marginal’ areas of central Italy that function with similar economic strategies to those found in Casentino and Valtiberina, those, to be clear, belonging to a multi-centric economy.

Multi-centric economy and the cities

It is important to bear in mind that what I intend as ‘multi-centric aspects of the economy’ are better understood as interpretative concepts useful for describing complex sets of social behaviours, that may have not been regulated by written laws yet be culturally embedded in the everyday lives of people. What could be then the economy as practiced in the most prominent centres, those centres—let’s say cities—in which networks were established, exchange happened involving more people than in the ‘marginal’ areas? The most obvious answer is that the economic system at the centre, sustaining the networks and sustained by the networks, must have upheld similar multi-centric aspects as those found along its networks. There is no strong evidence yet for this statement, however there are clues that this might be true, and even beyond the Archaic period. First and foremost, multi-centric aspects seem to appear in each semi-monetary society, almost as a spontaneous way of self-regulation.⁵⁷⁵ This should not surprise, since labour and rarity (of objects) seem to be the most intuitive, immediate features determining the value of things in every kind of economy. In market economies their values are tightly connected to and regulated by the market and by its written and unwritten rules (markets also dictate some cultural behaviours of consumers); in multi-centric economies these are firstly culturally regulated, and then may acquire written rules when required by those who may be able to use them. Multi-centric economies do not require literacy to be upheld.

Archaeologically speaking, accepting the multi-centric features of Archaic economies may help in explaining certain phenomena often recorded in archaeological sites, and equally often overlooked, that may actually be considered as ‘soft’ clues of a multi-centric economy. A first set of clues could be found when assessing productive sites. These phenomena were briefly discussed in Chapter 4 in relation to Casentino and Valtiberina, yet they are very common among the sites of central Italy, even in famous urban sites, such as Spina and Marzabotto.⁵⁷⁶ These are the surprising number of productive areas that can be found in each settlement—almost one for each household, even when neighbouring—connected with the fact that most if not all productive sites and productive areas seem to be multi-purposed, producing different kinds of goods. Both these phenomena may make sense when considering the need of differentiating the kinds of productions so to possibly tap into more than a single sphere of exchange, while also accommodating skills and vocational differences within the household and making productive processes more cost-efficient.

Multicentric economies are versatile, but they are also situational. These features may couple well with the reconstructions provided in Chapters 5 and 6 of an agricultural economy of low impact, that was making the most of the local environmental conditions. This kind of agriculture may have produced surplus but was not geared towards its production, its redistribution probably being one of the many economic activities that could be undertaken but

⁵⁷⁵ Sillitoe 2006.

⁵⁷⁶ For Marzabotto see Mattioli *et al.* 2017; Morpurgo 2023. For Spina see Zamboni, Buoite 2017; Mistireki, Zamboni 2020; Reusser 2023.

not directed exclusively in fuelling the subsistence of a bigger nearby city. The situational character of such economy may be at the basis of the often sudden variations in the diachronic settlement of the valleys of central Italy, as expressed in Chapter 2 and as seen in many other examples during all Classical Antiquity. A multi-centric model is therefore inclusive of aspects that may tend towards, or be similar to, features we may be inclined to associate to surplus models. More importantly, processes of urbanism may have been based on an economy with marked multi-centric aspects, implying the need of rethinking our economic models based on surplus and redistribution of subsistence goods, and the specific idea of city we entertain, often implicitly, when speaking about *urbanisation*—the ‘economic’ city (as defined by Micheal E. Smith and Joseph Lobo).⁵⁷⁷

Rethinking synoecism?

*‘When we focus on the institutional framework of cities, including the mechanisms that generate urban growth, there are two fundamentally different forms of cities. We call these economic cities and political cities ... the dominant institutions [of political cities are] in the realms of power and administration by a ruler or ruling elite... [in] economic cities, economic considerations dominate the locational decisions of individuals and production units, economic activities largely shape their social structure, and economic forces dominate their processes of growth’.*⁵⁷⁸ Economic cities privilege and are directed towards developing and sustaining a denser and growing aggregation of people in one place, while making the economy of the hinterland converge towards the subsistence of an increasing urban populace. Smith and Lobo however point out that this model of city is rather modern, and that economic cities in pre-medieval antiquity are a rare, even debatable, exception and thus they stand out (e.g., Rome and Athens). *‘Most cities before the Industrial Revolution were political cities and most contemporary cities are economic cities. This dichotomy is based on the nature of economic activity, its prominence in urban dynamics, and its relationship to growth’.*⁵⁷⁹

The political city as defined by Smith and Lobo,⁵⁸⁰ is essentially a place of ‘meeting places’ rather than a place of homes. In ‘political cities’ meeting places cluster—a market square, one or more sanctuaries, one or more workshops, a fortification, in later examples a theatre, a bath or gymnasium, etc. We may call many of these places ‘political institutions’ since they are structures that provide citizens with specific alleys for activities often connected to the rights granted by their citizenship. Stable, permanent aggregation of people may or may not happen around institutions—citizens may keep on dwelling in the countryside around the place where the institutions are sited and gather there periodically. Instead that having a single bigger centre of aggregation, such as the ‘economic city’, there are often many settlements conveying towards a centre where places of meeting and political institutions are sited. Such a system has been hypothesised by Cristiano Vigiatti even for Archaic Rome, carefully bringing together clues from classical Latin sources within a cultural-relativistic framework.⁵⁸¹

⁵⁷⁷ See Smith, Lobo 2019.

⁵⁷⁸ Smith, Lobo 2019, p. 2.

⁵⁷⁹ Smith, Lobo 2019, p. 3.

⁵⁸⁰ Smith, Lobo 2019, pp. 5-6.

⁵⁸¹ Vigiatti 2011, pp. 109-128.

Crucially, the division between ‘political city’ and ‘economic city’ is not clear cut, as reality is complex, and is connected more specifically to the way the city grows and to the systems on which its subsistence may be based, rather than to the presence or absence of an ever-denser concentration of homes. Places of political and religious aggregation may be from the outset, or become in time, places of preferred economic aggregation, and eventually places around which settlers decide to dwell. Quoting again Micheal E. Smith, “*most anthropological archaeologists avoid the Classical world, and most Classicists ignore other early state economies [from elsewhere than the Mediterranean and the Near East], but these biases have little theoretical or comparative justification*”.⁵⁸² As recorded from several case-studies around the globe,⁵⁸³ denser aggregations of homes can be supported by economies that are not based on systemic and concerted making and redistribution of subsistence surplus, especially if these cities are political, cultural, and religious centres at one end (or at the centre) of strong, long lasting networks of exchange inter-connecting smaller settlements scattered in the countryside, unified by comparable cultural customs.

Arguably, the model of the ‘political city’ may work very well in interpreting the current archaeological and historical evidence from Archaic central Italy—in fact much better than that of the ‘economic city’, a model ultimately unsustainable in Archaic times. Economic models based strictly on surplus-making and redistribution seem in fact always to require the postulation of further data to be proven feasible—namely a clear, definitive, yet always elusive trace in the paleo-environmental and/or archaeological record of extensive cereal culture, especially wheat, capable of creating the surplus which a city, we think, required. Such postulation is never questioned since the redistribution system is seen as the only logical one through which a city could be sustained—an idea of city very similar to our own. In doing so however we often overlook or under-estimate what the data can show us already.⁵⁸⁴

The settlement of Casentino and Valtiberina during Archaic and Late Archaic times seems to display a sort of reverse-synoecism,⁵⁸⁵ whereby the number of settlements in the countryside increases in time, between 600 and 400 BC. What we have is a series of settlements and a series of possible gathering places, such as the temple of Pieve a Socana, the settlement of Poppi, or the fortification of Monte Castelsavino. We have a dispersed urbanism in the countryside, made up of clusters of settlements that may have been at once self-sustaining (producing all the goods exchanged within its subsistence sphere) and well interconnected (for exchanges pertaining to the luxury sphere and to that of the ‘rights in people’), possibly privileging relations with certain political centres over others. Such interconnected system of settlements may also be interpreted as a part of a *heterarchical society*,⁵⁸⁶ based on places of social gathering, often forming spontaneously in meaningful locations of passage (such as Poppi), where economic and political activities could also be undertaken. These places could therefore function as parts of wider networks of exchange. Cities could also have fostered the formation of places of gathering in the countryside, so to control the networks (such as Monte Castelsavino or even Pieve a Socana). Yet it is relevant to note that this kind of control, that cities like *Arretium* or

⁵⁸² Smith 2004, p. 78.

⁵⁸³ The most striking are for instance Djenné-Djenno (see McIntosh 2015), and the cities on the Swahili coast (see La Violette, Fleisher 2005).

⁵⁸⁴ As is the case of Stoddart *et al.* 2019.

⁵⁸⁵ A similar, coeval phenomenon is recorded in other parts of central Italy (see for instance Acconcia *et al.* 2001).

⁵⁸⁶ See Crumley 1995, p. 3. Guy Bradley seems to suggest a similar system for the towns of Hellenistic Umbria, see Bradley 2000, pp. 252-257.

Faesulae may have exerted in Casentino and Valtiberina, could function by relying on systems that were already present, based on customs and rules that were socially and culturally embedded and thus upheld by all strata of society in all parts of the countryside.

Continuing the research

The model of the ‘political city’ goes very well with the possible multi-centric character of the Archaic economy of central Italy. Both concepts—that of the multi-centric economy, and that of the political city—are worthy of further investigation, problematisation, and unpacking, while the archaeological data we have may be assessed in their light. They are very promising, even essential for a better understanding of Archaic societies. Arguably, for instance, the current discussions on the Archaic economy, privileging models of surplus-making and redistribution, may have been focusing solely, yet unknowingly, on goods belonging to the sphere of luxury. What we consider intuitively as subsistence goods—foodstuffs such as wheat, olive oil, and wine—may have required special production techniques and a lot of effort in their production, making them in fact luxury goods, at least in Archaic central Italy.⁵⁸⁷ Being aware of the cultural implications of the multi-centric character of the economy implies understanding the difference between the spheres of exchange of subsistence and of luxury and acknowledging the impermeability between the two. The fact that goods may have not been exchanged from one sphere to the other may be a significant feature for a better understanding of the real social role that foodstuffs such as olive oil, wine, and wheat had in Archaic society, possibly as luxury goods. Again, our attention should turn to the parallel relevance that the cultivation of other cereals, such as barley and millet—less nutritious but sturdier, more adaptive, and easier to cultivate than wheat—may have had, along with other common forms of subsistence.

There are other phenomena in Archaic central Italy that may be relevant to investigate in the light of the concept of ‘spheres of exchange’—especially considering that the economy of the cities of Archaic central Italy was semi-monetary.⁵⁸⁸ Here are some research questions that stem from this assessment, essentially revolving around investigating the cultural definition of the value of things in Archaic central Italy:⁵⁸⁹

- The possibility of considering *aes rude*,⁵⁹⁰ and even the very rare Archaic minted coins of central Italy, as ‘special purpose coins’, utilised only for exchanges within the sphere of luxury and that of ‘rights in people’. *Who minted the aes rude? Where? What was its value? What was it used for?*
- The multipurpose character of workshops and workspaces in Archaic central Italy has been often brought up, but seldom investigated in relation to economic models of any kind. Workspaces used for producing several different kinds of goods seem to be very common in Archaic settlements of central Italy, including those assessed in this thesis. Workshops, intended as bigger workspaces with several productive facilities, are also very common and they too seem to have produced more than a single category of object.

⁵⁸⁷ However, I suspect even well beyond those boundaries of time and space.

⁵⁸⁸ See on the topic D’Ercole 2017.

⁵⁸⁹ Expanding on what was theorised in Bohannan 1955, Kopytoff 1986, Gell 1992, and Graeber 2014, for semi-monetary economies.

⁵⁹⁰ Such as those in Zamboni 2021.

In the light of the theory of the spheres of exchange many of these workshops may have been able to produce goods that could fit more than a single sphere. *What role did workshops have within the development of different forms of urbanism in Archaic central Italy? Were workshops truly multi-purpose? What kind of traces interpretable as specialisation of work can we find, if any?*

- The relationship between work and the attribution of ‘cultural value’ to things, and the relationship between cultural value and prices, if any, may therefore be investigated through a reassessment of the productions of the workshops and workspaces of central Italy. *How valuable was work? How were wages implemented? Did all goods have a comparable price? What was the role of negotiation in transactions, eventually in changing the value of things?*
- The role of slavery in determining the value of things may also be investigated through the lenses of the spheres of exchange. *Did slavery contribute to changing the value of objects, probably by making certain luxury items more generally accessible? Or by concentrating their production with those who had specialised slaves?*
- Finally, a possible first step in assessing whether the cities of Archaic central Italy were more ‘political cities’ or ‘economic cities’, may be in the evaluation of rural settlement around famous urban centres, and the parallel re-evaluation of the actual extent of political spaces and that of dwelling spaces within them. *Were Archaic cities places of continuously growing settlement? Could they be sustained by cultivating their immediate vicinities, or were they sustained by exploiting a wider hinterland for agricultural production? Did different cities privilege slightly different models of settlement, or were all following a similar trend? Was the countryside of Archaic central Italy commonly urbanised or are Casentino and Valtiberina an exception?*

To conclude: the research is far from over. I believe that utilising anthropological tools for the interpretation of ancient economies may provide the means to reintegrate all societal strata in the investigation of the many forms of urbanism, acknowledging their relevance. These same tools have great potential even in expanding the interpretative possibilities provided by material culture studies, going beyond typological studies and the exclusive assessment of luxury objects.

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