IN-ROME
Studies Series
- 1 -

(RE-)UNITING CITY AND COUNTRY

New Research on Urban and Suburban Socio-Topographical Structures

Edited by
Barbara E. Borg, Antonio Campus, Francesca D'Andrea, Daniel P. Diffendale, Consuelo Manetta, Umberto Soldovieri

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1. Comunità urbane. Italia antica

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Preface

(Re-) Uniting City and Country is the inaugural volume of a new publication series related to 'IN-ROME – The INscribed city: urban structures and interaction in imperial ROME', a project funded by an ERC Advanced Grant (GA 101054143). The project seeks to provide a fuller understanding of how the ancient city of Rome managed to function and thrive for several centuries, sustaining an extraordinary population variously estimated between 750,000 and 1 million inhabitants at the time of Augustus. To this end, its primary goal is to produce the first comprehensive synthesis of the features and urban structures of Rome beyond the fourth-century BCE 'Servian Wall' – already long surpassed by the time of Augustus – and of its peri-urban surroundings between the first century BCE and the third century CE. Bridging the divide between research on the area within and beyond the late Aurelian Wall, it will consolidate the widest possible range of activities and their locations including military stations, meeting places of associations, sanctuaries and cult places, various production sites, quarries and mines, gardens and fields, infrastructure and water supply, market places, baths and entertainment venues, guesthouses, taverns and villas, graveyards and tombs. These activities are studied within their natural environment through topographical, geological and pedological maps.

The project area's outer limits are determined by a key element of its methodological approach, the re-contextualisation of inscriptions from Rome and its surroundings with a known provenance as collected in *CIL* VI and the Epigraphic Database Rome, directed by our project partner Silvia Orlandi. *CIL* VI and EDR traditionally include an area up to about the ninth milestone of the consular roads. Re-uniting the information these inscriptions contain with the archaeological evidence and the natural landscape allows us to add activities that did not leave any physical remains and to restore agency to the archaeological landscape. The aim is not merely to provide a more integrative description of an inhabited landscape, but also to reconstruct from these 'topographical facts' organising principles (intended or unintended) as well as likely interactions and relationships between sectors of society that may differ in social status, occupation, gender, or ethnicity. It will literally map the social history of Rome.

The *IN-ROME Studies Series* publishes the results from this project as well as from the conferences that complement it. This first volume offers food for thought on one crucial aspect of IN-ROME, the bridging of the divide between the study of the city centre and that of its surroundings outside the Aurelian Wall, a disciplinary division which also prevents us from understanding how the city worked and was perceived in its lived experience. The following chapters enhance our own research by offering both theoretical and methodological considerations and empirical, comparative studies.

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We gratefully acknowledge the funding obtained through the ERC Advanced Grant (GA 101054143). Views and opinions expressed are however those of the authors only and do not necessarily reflect those of the European Union or the European Research Council. Neither the European Union nor the granting authority can be held responsible for them.

The British School at Rome provided us with a wonderful environment to discuss our ideas during the conference in November 2024, and we are deeply indebted to its Director Abigail Brundin and the BSR staff. We are also most grateful to the publisher L'Erma di Bretschneider and its CEO Roberto Marcucci for accepting our series into their programme, and to its staff for their excellent work and advice on the production of the book. Last but not least, we wish to thank the anonymous reviewers of the 16 chapters presented here. We appreciate their commitment and valuable advice that have enhanced the quality of the volume as a whole while any remaining shortcomings remain, of course, our own responsibility.

Pisa, October 2025
Barbara E. Borg, Antonio Campus, Francesca D'Andrea,
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List of illustrations

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Paolo Carafa is Professor of Classical Archaeology and Deputy Rector for Archaeological Heritage at Sapienza University of Rome. His main scientific interests are Roman topography, Etruria during the Etruscan and Roman periods, Magna Graecia (especially the ancient Sybaritide), the suburbium of ancient Rome and the analysis of monumental complexes (Rome, north slopes of the Palatine, Volterra, Pompeii, Veii). In 2005, with Andrea Carandini, he created a patented Archaeological Information System. He has coordinated research projects dedicated to Roman urban architecture and landscapes of ancient Latium and published more than 150 contributions including monographs, editions, reference books, articles and other works.

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Introduction

This volume intends to offer food for thought about the relationship between cities and the land that surrounds them. When this relationship became a focus of attention, it was typically thought of in binary oppositions: city vs. country, centre vs. periphery, urban vs. rural, etc.[1] Such conceptualisation appeared to be in tune with ancient thinking, which does indeed present city and country as distinct and contrasting entities, often conceived of in moral terms.[2] As is often the case with binary oppositions, they help raise awareness of characteristic differences and dynamics between these opposites. For instance, in the case of Roman cities, scholars have explored the distinction between urban *domus* and sub-urban or rural villas as places of *otium* vs. *negotium*.[3] Economic historians have created the hierarchical model of the 'consumer city' that siphons off taxes and produce from the surrounding land in a quasi-colonialist process.[4]

Criticism of this binary thinking is not new and has come from both theoretical and empirical angles. In 1990, Andrew Wallace-Hadrill noted that 'the current tendency is to undo the separation of town and country and reunite the town with its non-urban environment', among other things pointing to the fact that the Greek term *polis* refers to both the urban centre and the entire territory belonging to it.[5] The boom of survey archaeology, and of landscape archaeology more broadly, since the 1960s, as well as new, non-invasive technologies and the reconstruction of the ancient natural environment have greatly enhanced our knowledge of the countryside, allowing us to think more deeply about its relationship with the cities. And yet, at a disciplinary level, to the extent to which survey and landscape archaeology were set against the traditional study of cities in terms of their monumental centres, the dichotomy was quietly perpetuated,[6] and critical and nuanced discussions of the 'consumer city' have by no means discarded this model altogether. While there was a new focus on the countryside, the dichotomy was frequently maintained.[7]

More recently, however, and in tune with rising scepticism against the binary world of structuralist thinking, the city-country dichotomy has been called into question – or at

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[1] On core-periphery models, see e.g. Isaac 2017, 99-121.

[2] Goodman 2007, 9-11; Zuiderhoek 2016, 41-3, for overviews.

[3] E.g. Wallace-Hadrill 1988; Bodel 1997.

[4] The concept ultimately goes back to Max Weber's characterisation of the Medieval city, first published posthumously as Weber 1921, on which see Bruhns 2020; for influential revivals, see Finley 1981, 3-23; Hopkins 1978.

[5] Rich, Wallace-Hadrill 1990, ix.

[6] But see, for instance, Salomon et al. 2018, for a better understanding of the relationship between city and country through geoarchaeology.

[7] Ditto e.g. Van Oyen 2019; de Haas 2025, 321-2; and Witcher in this volume.

least its hierarchical conception has. Already in 1996, Neville Morley and David Mattingly demonstrated that the relationship between city and countryside was not a one-way road, but that it was bi-directional and symbiotic.[8] These observations have been further developed in socio-ecological models of various forms that strongly focus on the interdependency and interaction between nature, human action and 'culture'.[9] An explicit aim of this model's proponents is to bridge the gap (once more) between sciences and humanities and to avoid the one-sided approaches of New Archaeology with its determinism as well as the contrasting model of Henri Lefebvre, who downplayed the significance of the natural environment to a background against which space is conceptualised as the creation of human mind and practice.[10] Yet the extent to which social and cultural factors feature in the actual case studies varies significantly. In this context, the originally Marxian concept of 'social metabolism' has seen a revival in various incarnations that sometimes focus mainly on aspects of consumption/appropriation (of what nature provides under input of labour), and of excretion (the release of waste back into the environment), but now often stress the equal importance of cultural aspects to avoid overly deterministic models and account for a fuller spectrum of what makes up human life.[11]

Not least in light of these debates, the centre-periphery model has also received a major overhaul in that the centrality of central places is now established empirically and deductively based on 'the relative concentration of interaction' in various fields of activity rather than on predetermined calculations of spatial parameters.[12] It often integrates the metabolism model but adapts it to the needs and potential of landscape archaeology and pays particular attention to topographical aspects.[13] This is the key underlying model of a project under the egis of the German Archaeological Institute at Istanbul directed by Felix Pirson, Brigitta Schütt and Thekla Schulz, who have more recently introduced the concept of Micro-Regions 'as spaces of socio-ecological interaction', as one book title has it.[14] The concept is still somewhat fuzzy with some scholars focusing primarily on the economic aspects and interaction between humans and the environment while others want to include

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[8] Morley 1996; Mattingly 1997; for a more recent, balanced discussion, see e.g. Erdkamp 2001.

[9] Fischer-Kowalski, Mayer, Schaffartzik 2023; de Haas 2025.

[10] Lefebvre 1974; cf. Napoletano, Foster, Clark 2022, who stress, though, that Lefebvre did not reduce nature 'to a mere social category or an assemblage of hybrids', as some have presented him to do. More recent sociologies of space allow for a more active role of the physical environment: see e.g. Löw 2016; Pérez Hernáiz 2002.

[11] These debates originate in modern socio-ecology: see e.g. González de Molina, Toledo 2014; González de Molina, Toledo 2023; Fischer-Kowalski, Mayer, Schaffartzik 2023, all with bibl. For some recent applications of this model to the Greco-Roman world, see e.g. Daems et al. 2021; various papers in Pirson, Schütt, Schulz 2024; Boogers, Beaujean, Poblome 2025.

[12] Knitter, Nakoinz 2018; cf. also de Haas 2025, 322, for a definition of cities as 'hubs in networks of social, cultural, political, and economic interactions'.

[13] Pirson, Schütt, Schulz 2024, with figs 5-6; Daems et al. 2021.

[14] Pirson, Schütt, Schulz 2024. This publication and research strand is linked to the TransPergMicro project directed by the editors of the volume: www.dainst.blog/transpergmikro/ (accessed 11.08.2025). Their concept of micro-region is thus different from that proposed by Horden, Purcell 2000, who stress the geographical factors defining and shaping their regions. For a social ecological approach, see also Knitter, Schier, Schütt 2021.

also human interaction beyond the economy, approaches that can result in rather different extensions of the micro-region.[15]

Less theory-concerned, empirical studies have equally opened up the view to a more inclusive assessment of the city-country relationship. Villas were found to bring an element of *urbanitas* into the countryside, both in architectural terms and in terms of activities taking place there. *Horti*, which started to be established by the rich and powerful in the first century BCE on the fringes of Rome's city centre, were explored as liminal areas, spilling across Rome's fourth-century city walls, or lying just beyond them or on the other side of the Tiber. They offered a lifestyle that included elements of both traditionally urban and rural character.[16] Nero's Domus Aurea that comprised a luxury residential part, extensive gardens and parks, and even a lake, is perhaps the most extreme attempt to bring the rural into the urban, and it can be viewed as both an example of a general tendency to blur traditional boundaries and, considering the reactions to his bold move, the (partial) persistence of and insistence on these boundaries.[17]

With regard to Rome, Nicholas Purcell started to explore the fuzziness of boundaries already in the late 1980s,[18] and the *suburbium* became a new focus of attention beginning in the 1990s and especially in the new millennium.[19] While it was generally viewed as a transitional belt around cities that was neither fully urban nor fully rural, many publications considered the *suburbium* as a separate and distinct entity. Yet some scholars deliberately aimed to break down these new boundaries describing their shifting nature and permeability and the gradual transition from more densely inhabited and built-up areas to the more rural countryside. Robert Witcher in particular has argued forcefully that these areas were not only inseparable from the cities, that they formed extensions of the cities in the widest range of practical terms, but also not subordinate to them,[20] while Simon Malmberg and Hans Bjur proposed that the *suburbium* of Rome even surpassed the centre in importance between around 200 and 500 CE.[21] If we agree with the majority of scholars that the population of Rome had reached 750,000 to 1 million by the first century BCE, the inevitable conclusion must be that a major part of it lived outside the *continentia*, as also Malmberg in this volume demonstrates.[22]

In 2007, Penelope Goodman was the first to make the 'urban periphery' the subject of a monograph.[23] Based mainly on empirical evidence, she disqualified once and for all any simplistic, contrasting characterisations of city and country, urban and rural, describing the full range of activities that characterise these peri-urban areas and looking not only at Rome but at

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[15] Cf. F. Pirson in Pirson, Schütt, Schulz 2024, 233-8, for the state of the debate. The exploration of this concept is ongoing, with two conferences organized by the German Archaeological Institutes in Istanbul and Madrid in 2025 that will be published in due course.

[16] Carandini 1985; Purcell 1996; Cima, La Rocca 1998; Purcell 2007.

[17] Purcell 1987, 198-203; Moormann 2020.

[18] Purcell 1987; Purcell 1995, 177; and many later papers.

[19] Publications are too numerous to mention, but for Rome, *LTURS*, Santangeli Valenzani, Volpe 2003, and Jolivet 2009 stand out. For the Greek world, see Darcque, Étienne, Guimier-Sorbets 2013, on the *proasteion*, the equivalent to the Latin *suburbium*; see also Neuenfeld, this volume.

[20] Witcher 2005; see also Patterson, Witcher, Di Giuseppe 2020; Witcher 2013.

[21] Malmberg, Bjur 2009.

[22] For an attempt at calculating the suburban percentage of Rome's population, see also Witcher 2005.

[23] Goodman 2007.

larger and smaller cities in Gaul. While her focus was on the urban periphery, she did not lose sight of the interdependency between this area and the city, arguing that it was the increasing urbanisation of growing centres by the elite that pushed more modest people into peri-urban areas. A second monograph on urban peripheries – here called 'suburbs' –, this time focusing on the Italian peninsula, was published 13 years later by Allison Emmerson.[24] It equally aimed at a holistic view of activities taking place there and argued against a binary opposition between urban periphery and city, yet with a less hierarchical outlook. Her urban periphery is not the result of accidental circumstances, nor of pragmatic necessities, but of specific social desires and needs and deliberate decisions.

In fact, the struggle for an appropriate vocabulary for describing the relationship between cities and their surroundings reflects the dilemmas involved. While all can probably agree that there are spaces that are not 'city', finding an appropriate terminology for these spaces that also accounts for their varied characteristics has proven difficult.[25] Tymon de Haas rightly points out that the problems already begin with defining what should count as a city.[26] The term *suburbium*, while ancient, was actually used very rarely and primarily in Rome.[27] Moreover, mostly attested in its adjectival form, it typically designates the lifestyle of private villas and is thus a very reductionist and elite concept. Modern studies that recognise the diversity of activities in cities' surroundings consider the *suburbium* as the area that is 'neither fully urban nor fully rural in character' and give the term a new, etic definition that serves well modern empirical enquiries.[28] However, scholars have objected that the linguistic similarity with the modern term 'suburb' carries too much unreflected-upon baggage so that both terms should be avoided. Alternative terms such as 'peri-urban' or 'urban periphery' are preferred by an increasing number of scholars,[29] while Saskia Stevens prefers to speak of 'borderscapes' as a term that suggests connections and interaction between two different areas that meet in these hybrid zones, here urban and rural populations.[30] Others again favour a more detailed zoning model. Matthew Mandich, for instance, proposes for Rome five suburban zones depending on travel time and distance from the *continentia*, and on social and agricultural activities performed: the Urban Fringe, the Daily Zone, the Peri-Urban Zone, the Functional Urban Area, and the Rural Hinterland (starting at ca. km 80).[31] There are difficulties with all of these terms, not least because they are bound up with concepts and scientific approaches that may not be shared by everyone.

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[24] Emmerson 2020.

[25] For discussions, see e.g. Royo 2018; Volpe 2000.

[26] de Haas 2025; cf. already e.g. Osborne, Wallace-Hadrill 2013. Criteria include the level of architectural urbanisation, administration, juridical definitions, economic role, size etc., and the choice of criteria results in strikingly different calculations of the number of cities in the Roman empire or in the Italian peninsula (cf. e.g. de Ligt 2012; Hanson 2016; and Sewell, Witcher 2015). Morley 2011, 147, observes that most cities in Roman Italy, when defined on a political and legal basis, would not be counted as 'urban'.

[27] Champlin 1982; Annibaletto 2010, 21-4, 172-300, for the most comprehensive collection and study of sources. Cf. Goodman 2007, 1-6, 19-28; Emmerson 2020, 8-10.

[28] Goodman 2007, 1, who uses, however, the term 'urban periphery'; cf. Vega 1994, 143.

[29] E.g. Goodman 2007, 2-4; Vega, here n. 28; Emmerson 2020, 8-10.

[30] Stevens 2020; a similar picture of Rome's *suburbium* and hinterland painted already by Marazzi 2001.

[31] Mandich 2015.

A second difficulty is the spatial definition of the areas concerned. The various city boundaries – walls, the *pomerium*, tax borders, the *continentia* etc. – have been discussed extensively, especially for the case of Rome.[32] Yet boundaries were permeable, and legal concerns are only one aspect of ancient life. They could be re-defined, and the *de-facto* use of land could differ widely, disregarding sacred borders or city walls. With the extension of the *pomerium* and/or the *continentia*, tombs that were once outside of the *pomerium* were suddenly located within, and with authorisation, burial could take place inside the city anyway.[33] The ancient term *continentia* (*aedificia*) was coined for the spread of urban architecture and related activities beyond the traditional urban boundaries.[34] Moreover, abstract zoning models such as von Thünen's and its derivatives,[35] even when based on ancient terms such as *ager* (land, fields), *saltus* (grazing land) or *silva* (woodlands), are hard to map onto ancient topographies given that the use of land depends on a large number of parameters such as topography and soil suitability, water supply, road systems, religious concerns and other socially determined factors.[36]

Accordingly, there is also no agreement on the exact extension of the *suburbium* even in ancient authors, and modern uses of this and alternative terms vary widely, according to convenience or definitions of these spaces' character.[37] This uncertainty refers to both its distinction from the city, the 'urban',[38] and from the wider rural countryside.[39] Defining the *suburbium* of Rome as the area up to 50 km from the centre not only includes what others would describe as rural (as opposed to the *suburbium* or borderscape), but also multiple minor centres that may well be called cities and urban depending on definition.[40]

This brief overview of the state of the debate, by no means comprehensive and arguably with a bias towards Rome, has shown how much the argument is still in flux. It is acknowledged in most contributions that the project of integrating city and country is still at its beginnings, and that more research and thought needs to go into both empirical studies and theoretical conceptualisation to adequately describe and understand the lived experience of topographical organisation and structures. It has also not gone unnoticed that the integration of 'cultural' and socio-economic and socio-ecological aspects is still a challenge.[41] The present volume intends to contribute to these debates. It does not start from any particular model or concept

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[32] E.g. Panciera 1999; most recently, esp. Dubbini 2019; Goodman 2007, 13-18 (for physical markers of the urban border); Stevens 2020; Dally, Fless 2023; Buongiorno in this volume.

[33] E.g. Volpe 2019.

[34] Goodman 2007,14-16; Emmerson 2020, 5-8; now Buongiorno in this volume with some qualifications.

[35] Thünen 1910.

[36] The same goes for 'Central Place Theory', as again Mandich 2015, 84-85, and de Haas 2025, 324, note. More sophisticated versions are isochronic distance mapping (measuring the time it takes to travel the distance between locations), or accessibility and cost maps that also take into account the effort needed to cover a certain distance. On these, see Mandich 2015, 88-90 with bibl.

[37] For instance, *LTURS* sets the limit at about the ninth mile of the ancient roads, while Witcher 2005, 121, argues for an extension up to 50 km from the centre. For ancient views, see Mandich 2015, 82, and passim for a discussion of approaches.

[38] E.g. Goodman 2007, 59-68.

[39] Stevens 2020, stresses the shifting and unstable nature of the borderscape.

[40] Smith 2020, for an overview and bibl.

[41] E.g. F. Pirson in Pirson, Schütt, Schulz 2024, 234.

to test or promote it. Its only premise is the need for a re-unification of city and country, metropolis and hinterland, centre and periphery, urban and non-urban, and of 'culture', nature and economy (with the latter perhaps more an aspect of 'culture' than is often acknowledged). Ultimately, these integrations will lead to a more holistic understanding of the ancient world, that is also concerned about the lived experience of societies studied.

The conference, on which this volume is based, and the volume itself, which includes two additional papers not delivered at the conference, form part of and contribute to the project 'IN-ROME – The INscribed city: urban structures and interaction in imperial ROME', funded by an ERC Advanced Grant (GA 101054143). Its aim is to map a range of activities as wide as possible from the first century BCE to the third century CE outside the fourth-century city walls up to about the ninth mile of the consular roads, and to integrate them with the conditions provided by the natural environment. It thus bridges the disciplinary divide between research on the area within and outside the third-century Aurelian Wall, re-uniting the urban with its surrounding area. Its ultimate aim is to translate topographical patterns into social relations and to better understand the reasons behind the choices from which these patterns result.[42] We wanted to learn from other projects' insights and bring together approaches of very different nature that are hoped to advance our thinking precisely because they vary between more theoretical and conceptual and more empirical studies.

The volume is divided into three sections. The first section is dedicated to general methodological considerations and opens with a paper by Pierangelo Buongiorno, who provides an in-depth review of legal sources on defining key terms and concepts of spatial organisation such as *urbs, oppidum, continentia aedificia, suburbium* etc. The following papers demonstrate the limited relevance and impact of boundaries on daily life. Penelope Goodman discusses three examples of localised encroachment and dismantling of city walls in the Roman world, while Emlyn Dodd shows how the distinction between town and country is blurred by agricultural activities inside the city walls. In turn, Nicole Neuenfeld draws attention to the temporal dimension of our question and uses the case of Pergamon in Asia Minor for a diachronic perspective on the dynamic changes in activities over time. Adopting Stevens' concept of borderscape for discussing the north-eastern part of the city's hill, she shows that even within a city as defined by its walls there can be urban peripheries while urban activities may spill across the city wall at other times. Robert Witcher then explores many of the questions raised above from a theoretical viewpoint before turning the conventional perspective around and challenging us to consider 'what suburbs "did" for rural populations' in the wider hinterland. Günther Schörner follows suit in presenting the Hispanic case study of Regina Turdulorum as a place where the *suburbium* was the centre of people's daily activities while the town consisted almost exclusively of public buildings and was the true marginal space as far as lived experience was concerned. In the final paper of this section, Nicolas Solonakis proposes new parameters for modelling the interdependence between urban growth and rural agricultural production.

The remainder of the volume is organised topographically. Section two focuses on Rome and opens with a paper by Simon Malmberg, who explores the implications of the assumption that Rome's population counted 750,000 to 1 million inhabitants. In whichever way we

[42] For instance, we will compare the agricultural potential of Rome's surrounding area with the activities actually taking place there to highlight the extent to which the environment did or did not shape patterns of activities.

distribute these people in Rome's territory, the intricate link between city and country becomes apparent. The following paper by Paolo Carafa and Maria Teresa D'Alessio takes a long view of the history of Rome and its *suburbium* from the tenth century BCE to the seventh century CE. They explore the changes in the spatial distribution of people and activities demonstrating also two methodological points, the difference in results produced by modern surveys and by legacy data, and the power of a GIS database that has been in the making for over three decades. Mirella Serlorenzi and Paolo Rosati then illustrate the potential of the archaeological WebGIS SITAR of the Soprintendenza Speciale Archeologia Belle Arti e Paesaggio di Roma in conjunction with data for the natural environment and scientific analyses of bore hole samples. Their particular focus is on the reconstruction of Rome's ancient suburban landscape as a predictive tool that aids in modern space and heritage management. Rita Volpe offers an overview of the methodological difficulties in identifying precisely those activities that must have dominated the areas outside the *continentia*, different kinds of agricultural production, and thus reminds us to consider archaeological visibility in our topographical studies. Finally, Mary-Evelyn Farrior explores how inscriptions, when restored to their original display contexts, contribute to our questions. Focusing on Greek dedicatory inscriptions, she demonstrates that the Greek language was deliberately employed for different purposes by different social groups in Rome's inner city and its periphery.

The third section is dedicated to case studies from Italy. Fabio Fabiani, Stefano Genovesi, Antonio Campus and Alberto Caroti examine the fluidity of the boundary depending on both natural and socio-economic circumstances in the medium-sized city of Pisa in Etruria. Similarly, using their long-term field project at Interamna Lirenas as an example, Alessandro Launaro, Ninetta Leone and Lieven Verdonck demonstrate in concrete terms what a floating and permeable borderline between city and *suburbium* looks like. Allison Emmerson uses the case of Pompeii to show how the natural environment and the port outside its walls substantially shaped the urban area and its economy inside the walls, providing an example of the dangers of studying city and country separately. Anna-Katharina Rieger in turn takes a look at the religious landscape of the Clitumnus valley in Umbria and argues that activities related to religious cult outside city centres must not be forgotten when assessing the relationship between city and country.

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Part 1
Approaches & Methods

Chapter 1

Where the cities end. Intramural urban fabric, walls and *continentia aedificia* between epigraphic evidence and classical Roman jurisprudence

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Abstract
The paper offers an in-depth review of legal, literary and epigraphic sources for defining key terms and concepts of spatial organisation such as *urbs*, *oppidum*, *suburbium*, *ager* and the Augustan notion of *continentia aedificia*.

Keywords
Urbs; *oppidum*; *suburbium*; *ager*; *continentia aedificia*

At the end of the 19th century, in an essay that would become a point of reference for decades in the debate about the legal aspects of organisation of space in the ancient city, Lodovico Zdekauer highlighted how city walls did not necessarily constitute an element of division, and how the land and built-up residential areas adjacent to the walls were instead continuous with the spaces within them.[1] This is certainly significant for Rome and also for the majority of the cities that constituted its empire, as suggested by evidence in historiographic and epigraphic sources but also in the texts of classical jurisprudence (even if these are not very numerous due to the selectivity of the Justinianic compilers). The aim of this contribution is to revisit the main evidence available to us in order to trace the evolution of the legal relationship between the Roman city and the spaces immediately adjacent to it up to the classical period.[2]

1. *Urbs* and *oppidum*

It is necessary to start from a premise that establishes the rules of the game, so to speak. In classical technical and legal terminology, there are essentially two terms that describe an urban agglomeration: *urbs* and *oppidum*. From the fragmentary evidence from jurisprudential

[1] See Zdekauer 1889, 276.
[2] I am grateful to Daniel Diffendale for having translated this chapter.

literature available, it appears that both of these terms were discussed in Pomponius' *Enchiridion*, probably systematically, as suggested by paragraphs 6-7 of *D.* 50.16.239, which not coincidentally precede the definition of *territorium* (which follows at *D.* 50.16.239.8) by the same author:[3]

> (6) The word 'city' is derived from the verb *urbo*, which means to mark a boundary with a plow. Varus says that the curve of a plowshare, which is ordinarily used for tracing the boundaries of a city about to be built, is called *urbum*. (7) The term 'fortified town' (*oppidum*), is derived from *ops*, for the reason that its walls are constructed to provide for the safety of property. (8) The word 'territory' means all the land included within the limits of any city. Some authorities hold that it is so called, because the magistrates have a right to inspire fear within its boundaries, that is to say, the right to remove the people. (transl. S.P. Scott)

According to Pomponius, the term *urbs* derives from *urbum*, meaning the curvature of the plough, from which derives also the verb *urbare*, meaning 'to define with the plough', to trace furrows – precisely what was usually done when founding a city. The definition of Pomponius recalls one apparently attributable to Alfenus Varus, which is likely the same upon which *D.* 50.16.87 (Marcell. 12 *dig.*) also depends, a text to which we will return later, and which brings together the notions of *urbs* and *Roma*, connecting the *urbs* with the circuit walls that surround it.

The *urbs*, however, is not the only form of residential agglomeration provided with a circuit wall. The idea of fortification of a cluster of houses and public buildings is, in fact, stronger in the term *oppidum*, whose etymology, according to Varro (*ling.* 5.32.141), could be traced back precisely to the idea of *ops*, that is, of defence.

What distinguishes *urbs* from *oppidum* is the fact that the former is surrounded not just by walls but also by a *pomerium*, a sacred boundary of Etruscan origin but also adopted widely in *Latium vetus* – including for Rome (Varro *ling.* 5.32.142-143). Despite the relatively limited number of sources, this is a topic on which an impressive body of literature has accumulated, with recent turns towards an anthropological interpretation of the phenomenon. After all, the delimitation of the *pomerium* was one of the most ancient rites in the cultural *koiné* of central Italy and appears to have survived in Roman culture into the late empire, when it no longer had any relevance, and therefore its sacred origins remain in the background.[4]

From a legal perspective, the *pomerium* is in fact closely connected to the delimitation of the *auspicium urbanum* (Gell. 13.14.1) and therefore to the distinction between *imperium domi* and *imperium militiae*, with its implications for the applicability of the *provocatio ad populum* and the deployment of the *exercitus armatus*.[5]

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[3] 'Urbs' *ab urbo appellata est: urbare est aratro definire. et Varus ait urbum appellari curvaturam aratri, quod in urbe condenda adhiberi solet.* 7. *'Oppidum' ab ope dicitur, quod eius rei causa moenia sint constituta.* 8. *'Territorium' est universitas agrorum intra fines cuiusque civitatis: quod ab eo dictum quidam aiunt, quod magistratus eius loci intra eos fines terrendi, id est summovendi ius habent.* See now Nasti 2023, 200-205, who nevertheless remains in doubt about the systematic nature of Pomponius' treatment.

[4] Among the extensive literature on the *pomerium*, Mommsen 1876, and 1879, 23-41, and Magdelain 1990, 279-303 remain essential, but see more recently the studies of De Sanctis 2007, 503-26; Maccari (Maccari 2014, articles in *Studi Classici e Orientali* from 2015, and most recently Maccari 2019, 139-59, with reference to previous articles at 158-9); now the detailed monograph of Emmelius 2021, with further bibliography. For a reading of Varro cf. also Piras 2013, 295-313.

[5] On the relation between *pomerium* and the *auspicia* of magistrates, see now above all Humm 2024, 313-36, but cf. also the useful considerations of Sini 2011-2012, § 2.

From a spatial point of view, the delimitation of the *pomerium* also determined the definition of a physical space within the circuit of the city walls, aimed at preserving the space adjacent to the walls. As Livy writes (1.44), no buildings could be built against the inside of the walls, and the land had to remain pure from any contamination by human use. This space, which was not permitted to be ploughed or inhabited, was called the *pomerium*, not so much because it is located behind the wall, but because the wall is located behind it:

> The word *pomerium* is interpreted by those who look only at its etymology as meaning 'the tract behind the wall', but it signifies rather 'the tract on both sides of the wall', the space which the Etruscans used formerly to consecrate with augural ceremonies, when they proposed to erect their wall, establishing definite limits on either side of it, so that they might at the same time keep the walls free on their inward face from contact with buildings, which now, as a rule, are actually joined to them, and on the outside keep a certain area free from human uses. This space, which the gods forbade men to inhabit or to till, was called '*pomerium*' by the Romans, quite as much because the wall stood behind it as because it stood behind the wall; and as the city grew, these consecrated limits were always pushed out for as great a distance as the walls themselves were to be advanced.[6] (transl. Loeb)

The space between the *pomerium* and the walls evidently served to facilitate the magistrate's exercise of *imperium militiae* and the conduct of defensive manoeuvres along the walls by the assembled people in arms. This function, moreover, coincides with what we know of the legal status of the walls themselves, which belonged to the sphere of *res sanctae*, and therefore were removed from *commercium humani iuris* and considered *res nullius*. Usually placed under the protection of Quirinus, a guardian deity (linked to Hercules), the walls could not be violated, damaged or trespassed, nor even restored, it would seem, without specific authorization. As Pomponius specifies, the prescribed punishment is death, since traversing the walls other than through the city gates is considered a hostile act and an abomination, analogous to the behaviour that led to the killing of Remus, slain because he wanted to scale the wall.[7]

A series of citations from jurists dating back to the school of Sabinus and Cassius underlines how the regime established for the walls of Rome (which possessed a *pomerium*) had also been extended to the walls of *municipia*, which is to say walls that enclosed *oppida* that rarely had a *pomerium*. Occasional exceptions are mostly *municipia* in *Latium vetus*, e.g., Aricia. The municipal walls are therefore also *res sanctae* and it is forbidden to build anything on them (*D.* 1.8.8.2 [Marcian. 4 *reg.*]), or even to restore them, except with the express authorisation of the emperor or the provincial governor (*D.* 1.8.9.4 [Ulp. 68 *ad ed.*]). Such an authorisation was necessary to be able to satisfy that *pulchritudo iungendi* referred

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[6] *Pomerium, verbi vim solam intuentes postmoerium interpretantur esse; est autem magis circamoerium, locus quem in condendis urbibus quondam Etrusci qua murum ducturi erant certis circa terminis inaugurato consecrabant, ut neque interiore parte aedificia moenibus continuarentur, quae nunc volgo etiam coniungunt, et extrinsecus puri aliquid ab humano cultu pateret soli. Hoc spatium quod neque habitari neque arari fas erat, non magis quod post murum esset quam quod murus post id, pomerium Romani appellarunt; et in urbis incremento semper quantum moenia processura erant tantum termini hi consecrati proferebantur.*

[7] *D.* 1.8.11 (Pomp. 2 *ex var. lect.*): *nam cives Romanos alia quam per portas egredi non licet, cum illud hostile et abominandum sit: nam et Romuli frater Remus occisus traditur ob id, quod murum transcedere voluerit.*

to by Pliny the Younger (3.19.2), for instance, and of which we find archaeological traces when looking at private buildings excavated in Rome or Pompeii, often in ways that transgressed natural boundaries. We would therefore expect that the superfetation carried out by Calpurnius Piso *supra portam Fontinalem… iungendarum domum privatarum causa* (*SCPP*, ll. 106-108), for example, had received an explicit concession by the emperor. The *renuntiatio amicitiae* would have entailed the additional penalty of demolition of these private structures that stood on a *res sancta*.[8]

In sum the distinguishing element between *urbs* and *oppidum* is the presence of a *pomerium*, and *urbes* are all those urban areas whose foundation involved the tracing of a *pomerium*, that is, a furrow delimited by a plough in accordance with an ancient Etruscan rite; the city walls would later be erected in relation to (and adjacent to) this sacred enclosure. The sequence *urbs oppidum vicus* of the epigraphic *lex agraria* of 111 BCE in the fourth of the surviving *kapita*, which regulated the assignment of *loca publica* within residential contexts, and which some scholars have considered a 'terminological anomaly that is difficult to interpret',[9] seems to suggest nothing other than this taxonomy: agglomerations equipped with walls and *pomerium* (*urbes*), agglomerations equipped with walls (*oppida*) and agglomerations without walls (*vici*).

In short, if *the urbs* by definition is Rome, all the *coloniae civium Romanorum* are *urbes* (in the sense of urban agglomerations whose external boundaries were traced with the furrow of a plough in implementation of a sacred rite) since they were built in imitation of the city of Rome. It follows that these *coloniae* also had their own *pomeria*: traces of the existence of such pomerial enclosures can be found, for example, in *kaput* 73 of the *lex Coloniae Genetivae Iuliae* and in *CIL* X, 3825 on Capua. Furthermore, a significant number of colonies deducted between the Caesarean and Augustan periods bear the name of *urbs* in their institutional denomination, for instance, the *colonia Iulia Urbs Triumphalis Tarraco, Urbs Iulia Nova Carthago, Salacia cognominata Urbs Imperatoria, colonia Urbs Iulia Baeterrae Septimanorum, Urbs Victrix Hesca, Urbs Iulia Gaditana* and, in Italia, probably, *Urbs Salvia* in *regio V Picenum*.

More than half a century after the *lex agraria* of 111 BCE, however, in the statute of the *Colonia Genetiva Iulia*, the intramural residential area of the *colonia* is consistently referred to as *oppidum coloniae* (*kapita* 73-76, 91, 99). This suggests the beginning of a semantic shift in the notion of *oppidum* (perhaps also due to the tralatistic nature of many of the *kapita* in the municipal and colonial statutes) to indicate more generally clusters of buildings organised according to urbanistic criteria and delimited by a circuit of walls, regardless of whether they had a *pomerium*. Similarly, *oppidum* is used to refer to Aricia, even though we know it had its own *pomerium* (Varr. *ling*. 5.32, 143; Plin. *nat*. 3.63).

In short, as time passed, the terminology became looser. Not only did the conceptual distance between *urbs* and *oppidum* shrink (already in Cic. *rep*. 1.44 the terms seem to be used synonymously), but there is evidence, albeit extremely sporadic, of the term *pomerium* even indicating generically the line of demarcation between the city and the countryside.

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[8] On the regime of the walls see, most recently, Malenica 2014, § III with bibliography. The theme of construction along the 'Servian' walls undertaken by members of the elite is also clearly evident in the case of Maecenas, whose *horti* stood on the Esquiline astride the walls in the stretch between the *Porta Esquilina* and *Porta Querquetulana*: see Häuber 1991, *passim*.

[9] Thus Sisani 2015, 130.

An example is Papinianus on the sale of slaves (*D*. 18.7.5 [Pap. 10 *quaest*.]), where he refers to the *pomerium* of any city (*pomerium cuiuslibet civitatis*) to indicate its urban core.[10] This is the only testimony of the use of *pomerium* that has survived in jurisprudential literature.

2. Suburbium

As we have seen above, Pomponius links the definitions of *urbs* and *oppidum* with that of *territorium*. This term refers to the set of agricultural lands (*universitas agrorum*) within the boundaries (*intra fines*) of a given *civitas*. Thus, for the jurist, the expression *intra fines civitatis* also establishes a link between the *urbs/oppidum* (the urban core) and the *ager* (the rural territory). It is precisely this demarcation, analogous to that between *polis* and *chora* in the Greek-speaking world, that raises the question of where the city physically ends and to what extent the territory immediately outside the city walls is continuous with that within.

Let us begin with the concept of *suburbium*. This term, originally coined for the territories surrounding the *urbs Roma*, has no technical or legal significance. Indeed, in classical literature, *suburbium* is essentially a *hapax legomenon*, documented only once in the late Republican period; this is a famous text by Cicero (*Phil*. 12.24), which specifies that the concept of *suburbium* refers to the space in the vicinity of the *urbs* that can be reached and returned from on the same day, *eodem die*. We are evidently dealing with a subjective measure, which nevertheless can be estimated as no further than 10–12 miles. More widespread is the adjective *suburbanus*, attested over a hundred times, which should essentially be interpreted in the same sense as the noun *suburbium*: that which is in the vicinity of the urban agglomeration, such that it can be visited in a day, arriving and returning by evening (as suggested, for example, by Plin. *nat*. 8.144: *...e suburbano redeuntem, cum advesperavisset...*). Thus, the *praefectura* of Atina, in Latium, which was more than a day's journey from Rome, is ironically defined, again by Cicero (*Planc*. 19), as *non tam suburbana*. Livy, for his part, writes of *suburbana litora* and *suburbani loci* (Liv. 23.32.19; 33.6.7).

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[10] Similarly, Emmelius 2021, 353, with bibl. I cannot agree with Sisani 2016, 65-80, part. 67, according to whom, due to a 'slittamento semantico apprezzabile a partire almeno dal II sec. d.C., … (il) termine *pomerium/pomeria* … in autori come Apuleio e Servio e nei testi giuridici passa a significare il suburbio delle città' (cf. also Id. 2014, 362). Even though in some sources from the Imperial period *pomerium* clearly designates a strip of land immediately outside the city walls, I hesitate to draw a general rule from this for all 'juridical texts' (a formulation which is, moreover, decidedly anodyne, since it brings together fragments of jurisprudential works and texts from the imperial chancellery), especially considering that the further testimony cited by Sisani in addition to Papinian is *CTh*. 10.3.5, namely a constitution of Arcadius and Honorius from November 400 CE, which refers to *aedificia,* areas and places *quae aut includuntur moenibus civitatum aut pomeriis sunt conexa,* i.e. spaces adjacent to the demarcation line of an urban centre (cf. also Maragno 2020, 157). This concept was further explicated by the same chancellery a few months later (July 401 CE) in a constitution that refers to *aedificia… intra muros posita vel etiam muris cohaerentia,* that is, buildings that fall within the walls or are connected to them. Cf. Dubouloz 2003, 107. On the other hand, Mommsen 1879, 27, according to whom the editor of *CTh*. 10.3.5 'offenbar unter dem Einfluss jener Schulerklärung, das im praktischen Gebrauch damals verschollene Wort mit löblichem Schülerfleiss verwerthet', is not far-fetched. I intend to return to the exegesis of *D*. 18.7.5 elsewhere.

The notion of *suburbanus* obviously concerns not just Rome, but any urban agglomeration in general. The *suburbani loci* to which Livy refers surround the city of Larissa in Thessaly. Epigraphic evidence from Italy and the western provinces, moreover, documents certain *pagi* that are expressly classified in their name as *Suburbani* (the most famous is the *pagus Augustus Felix Suburbanus* of Pompeii, not coincidentally a *colonia*, and therefore an *urbs*[11]). But in general, references to suburban *agri*, *fundi*, *praedia*, *horti*, *domus*, and *villae* often recur in written sources without allowing any conclusions on a specific legal regime for this suburban space.

In any case, the *loci suburbani* must have had a significant economic value (their proximity to the city clearly made them easy to cultivate and visit), and in my opinion, this is the reason for prohibiting *curatores* and *tutores* to alienate *praedia rustica vel suburbana* unless the deceased had provided otherwise in his will or *codicilli* (*D*. 27.9.1.2 [Ulp. 35 *ad ed.*]). This prohibition was introduced by an *oratio in senatu habita* of Septimius Severus on 13 June 195 CE and was evidently aimed at protecting assets perceived as being of great economic value. The same is suggested by Cervidius Scaevola, who records the repeated exhortations of a testator who advised the appointed heirs not to alienate or pledge the *praedium suburbanum* or the *domus maior*, without however such *nuda praecepta* determining an insurmountable constraint (*D*. 32.38.4 [Scaev. 9 *dig.*]; but see also *D*. 32.93 pr. [Scaev. 3 *resp.*]).

If, on the other hand, the notion of *suburbium* does not appear to correspond to any particular legal regime, at least in the classical period, a different perspective emerges if we assume that the continuity of habitation immediately outside the walls surrounding the urban fabric is the distinguishing element between the city and its territory.

3. *Cura aquarum*

In his *De aquaeductu urbis Romae*, the senator Sextus Julius Frontinus, who had been appointed to the *cura aquarum* in 97 CE,[12] presented a report on the state of Rome's water supply to the emperor Nerva or Trajan. This insightful treatise by a dedicated public official contains not only technical data, but also an interesting dossier of legislative acts connected to the preservation of public waters: six *senatus consulta*, all proposed by the consuls Q. Aelius Tubero and P. Fabius Maximus (i.e. in 11 BCE), and a law approved on 30 June 9 BCE (the *lex Quinctia*).[13]

The six *senatus consulta* are faithfully reproduced by Frontinus, evidently excerpted from the *tabularium* or from a cento which had previously collected them, with only the *praescriptiones* and the *discessionis eventus* at the end of each *decretum* omitted.[14] The sixth *senatus consultum* regulated the undue occupation of spaces intended for canalisation work by

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[11] Possibly located between modern Boscoreale and Boscotrecase: cf. Grimaldi 2013, 65-70, but for a *mise au point* on the Pompeian *pagi* cf. above all De Carlo 2008, 71-80.

[12] Frontin. *aq.* 102.17

[13] For the *senatus consulta* see Frontin. *aq.* 100, 104, 106, 108, 125, 127 (on which see *FIRA* I^2, 41; Volterra 2017, 134 nos. 60-65); for the *lex Quinctia* Frontin. *aq.* 129 (on which see Rotondi 1912 [1990], 453; *FIRA* I^2, 14; *Roman Statutes* 63). Cf. Peachin 2004, *passim*, and on Frontinus, Maganzani 2012, 135-53.

[14] Buongiorno 2016, 17-60.

trees, buildings or the construction of local roads.[15] Anyone who contravened this regulation would be fined 10,000 sesterces:[16] to this end, the Senate had established the power of the *curatores aquarum* to investigate, in the form of *cognitio extra ordinem*. The Senate also considered the question of how to define the urban area, i.e. where *Roma* ended.

As was common from the Augustan period onwards, the *decretum* opens with the reasons for the deliberation (*cum... corrumpantur*), followed by the decree of the *patres*.[17] The latter establishes both the obligation to maintain a distance of 15 feet from springs, arches and walls, and the obligation to maintain a distance of 5 feet from subterranean channels and conduits (*rivos qui sub terra essent et specus*). It is specified that these fall within the urban and peri-urban fabric: *intra urbem et urbi continentia aedificia*.[18]

The *verba* of the *senatus consultum* reveal a certain systematic approach, with provisions relating first to general works and then to provisions relating to hydraulic works typically falling within the urban and peri-urban fabric. This interpretation is also usefully corroborated by the aforementioned *lex Quinctia* cited in Frontinus.

The *lex Quinctia* established, among other things, that anyone who maliciously damaged aqueducts and drainage systems would be sentenced to pay 100,000 sesterces if their damage prevented water from flowing into the city of Rome or from being distributed to concessionaires *in urbe Roma et in iis locis, aedificiis quae urbi continentia sunt erunt, in his hortis, praediis, locis* (Frontin. *aq.* 129.4). Another *senatus consultum* from 11 BCE, also referred to by Frontinus (*aq.* 104.1), takes its cue from a *relatio* by the consuls on the number of public fountains (*salientes*)[19] installed by Agrippa *in urbe... intraque aedificia urbi coniuncta*, i.e. within the *urbs* and in the inhabited *continuum* immediately adjacent to the *urbs*.

The text of the *lex Quinctia* and the *senatus consulta* of 11 BCE therefore document unequivocally how, at the height of the Augustan period, the administrative organisation of Rome and its immediately surrounding areas knew a distinction between the *urbs*, that is, the part of Rome falling within the Servian walls and the *pomerium* (at the time substantially coinciding), and a part outside the walls made up of *loca* and *aedificia* classified as *urbi continentia* (or *coniuncta*), that is, adjacent to the *urbs*.[20]

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[15] Frontin. *aq.* 127.1.

[16] Frontin. *aq.* 127.2.

[17] Frontin. *aq.* 127.3: *cum ad reficiendos rivos specusque <* * *> per quae et opera publica corrumpantur, placere circa fontes et fornices et muros utraque ex parte quinos denos pedes patere et circa rivos qui sub terra essent et specus intra urbem et {extra} urbi continentia aedificia utraque ex parte quinos pedes vacuos relinqui…* There is a lacuna in the text at this point, possibly due to the loss of a line of text. For a review of the proposed integrations, see Rodgers 2004, 318.

[18] I adopt here the edition of Rodgers 2004, 113, followed also by Maganzani 2012, 141-2, which is based on the restitution of the text by Bücheler 1858, 48.

[19] Numbering 500, if we trust Plin. nat. 36.121. On Agrippa's plan for water supply in relation to the topography of the *urbs*, see Evans 1982, 401-11.

[20] For information on the *continentia* (*aedificia*), beyond the already-cited work of Zdekauer 1889, 273-91, see Leist, G.A. 1900, *RE* 4.1, 1149 *s.v. Continentia urbis*; De Ruggiero, E. 1910, *DizEp* 2.2, 1185 *s.v. Continentia* (*urbis*); a survey of the attestations of this *iunctura*, almost all of a juridical nature, in Vollmer, F. 1906-1909, *TLL*, 710 *s.v. contineo*. In contrast to the formulation *aedificia continentia*, that of *continentia aedificia* is to be preferred. It is widely attested in the sources with the adjectival participle *continentia* consistently set off by attributive position (e.g., *D.* 27.1.45.3 [Tryph. 3 *disp.*] e *D.* 33.9.4.4 [Paul. 4 *ad Sab.*]).

How and, especially, when did this development came to be consolidated? And above all, what was its relationship with older forms of division of urban and extra-urban spaces?

4. The 'thousand paces'

The Republican practice documents an archaic norm for the organisation of space, namely that of the thousand paces from the *urbs*. This spatial limit of the *urbs* dates back at least to the origins of Republican practice, and according to an authoritative hypothesis, it was religiously motivated and connected to the creation of sanctuaries.[21] According to Livy (3.20.7), for example, in its original configuration the right of 'appeal to the people' (*provocatio ad populum*) ended within a thousand paces from the *urbs* (*neque provocationem esse longius ab urbe mille passum*), beyond which the consul exercised a repressive power over *cives* that was 'substantially identical' to that granted to him over enemies.[22]

The *mille passus* are continuously documented from the end of the third century BCE onwards.[23] The *Lex Oppia*, approved in the midst of the war with Hannibal, established that no woman could possess more than half an ounce of gold, wear clothes of different colours or travel in Rome or other cities on a two-horse chariot if the distance was less than a thousand paces, with a sole exception for public sacrifices (Liv. 34.1.3). A *senatus consultum* of 170 BCE delegated to the praetor M. Raecius the task of recalling to Rome senators from all over Italy, except those absent *rei publicae causa*. An obligation for *patres* to reside in Rome was established and a ban imposed on traveling further than a thousand paces (*ne quis ultra mille passuum ab Roma abesset*, Liv. 43.11.5).

Valerius Maximus (2.4.2) records a *senatus consultum*, approved in 154 BCE and deliberated on the *sententia* of P. Cornelius Scipio Nasica Corculum, which among other things established *ne quis in urbe propiusve passus mille subsellia posuisse sedensve ludos spectare vellet*.[24] This prohibition on attending shows while seated, in the *urbs* and within the first thousand paces from it, constitutes the earliest attestation of the formula '*in urbe propiusve passus mille*' that we find attested with minimal stylistic variations in numerous legislative texts. For example, among the requisites to take part in juries of trials *de repetundis*, the *lex Acilia* (123 BCE) defined a *domicilium* within a certain territorial limit of Rome, once again reckoned at a thousand paces: *queiue in urbe Romae propiusve urbem Roma]m p*(*assus*) *M domicilium non habeat*.[25] And again, in the first *kaput* of the *lex Cornelia de sicariis*, introduced by Sulla, the *praetor iudexve quaestionis* was given jurisdiction to judge criminal offences committed in the city of Rome or within the first mile (*eius quod in urbe Roma propiusve mille passus factum sit*).[26]

Nonetheless, in relation to *viae publicae* and their upkeep, staging of *ludi*, transit of beasts of burden, the extracts of the laws of the Roman people inscribed on the *tabula Heracleensis* refer on several occasions to specific regulations for the *Urbs* and the first mile (*propiusve urbem*

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[21] Colonna 1991, 209-32 [= Id. 2005, 693-716], to which add Curcio 2020, 137-64. On the relationship between *pomerium, ager effatus* and the areas facing the Servian walls, see Carlà 2015, 599-630, esp. 625-8. Still stimulating in methodological terms, Valeton, 1898, 1-93.

[22] Santalucia 1994, 92.

[23] Here follows a brief review of examples. For a further survey see also Dubbini 2019, 143-7.

[24] On the topic see Marino 2018, 381.

[25] *Lex Acilia repetundarum* (*CIL* I², 583 = *FIRA* I², 7 = *Roman Statutes* 1), ll. 13-14 e l. 17. On the topic Licandro 2004, 114-16.

[26] Ulp. 7 *de off. procos. sub tit. de sicariis et veneficiis*, *Coll*. 1.3.1.

Romam passus M),[27] mentioning in particular six magistrates responsible for cleaning streets: four within the *Urbs* (*IIIIviri viis in urbem purgandis*) and two for the first mile from it (*IIviri viis extra propiusve urbem Romam passus M purgandis*).[28] We will return to this last point later.

From an examination of these cases, it clearly emerges that the space within the first mile of Rome constituted a sort of appurtenance of the *urbs* that enjoyed specific legislation comparable to that of the *urbs* proper. The *urbs* and the first thousand paces from it constituted what Léon Homo defined as a 'comprensorio', beyond which extended the *ager*, whose limits could in turn be defined negatively with respect to the boundaries of the surrounding cities: Fregenae and Veii to the north, Fidenae to the north-east, Ficulea to the east, Gabii and Tusculum to the south-east, Bovillae and Aricia to the south, Lavinium and Ostia to the south-west.[29]

We now need to ask where the *Urbs* ended and whence the counting of the thousand paces began. The question has been variously answered, but the most concrete hypothesis is that the latter were counted from the circuit of the Servian walls and its gates.[30] In this regard it is useful to recall the affirmation of Alfenus Varus, transmitted by Ulpius Marcellus (*D*. 50.16.187 [12 *dig.*]): *Ut Alfenus ait, 'urbs' est 'Roma', quae muro cingeretur* et rell.[31] we will return later to the intricacies of this fragment.

The criterion of a thousand paces from the *urbs*/*oppidum* is also found in the *lex coloniae Genetivae Iuliae*.[32] *Kaput* 91 refers explicitly to the requirement for decurions to reside in *ea col*(*onia*) *oppido propiusve it oppidum p*(*assus*) *M*. The text confirms that the thousand-pace rule outlined for Rome was reflected in the regulations of the colonies and, given that the *lex Ursonensis* dates between 47 and 44 BCE, it was still fully in force at the end of the Caesarean period.

One should also not be misled by the peculiar wording of one of the *kapita legum* contained in the *tabula Heracleensis*, which, ll. 20-21, opens the section of regulations for the repair of roads in Rome. The regulation established the obligation for owners of buildings facing the street to maintain the relevant tract of the roads serving their buildings, in accordance with the provisions laid down by the competent aedile.[33] Recently, it has been argued that this is the first attestation in a regulatory text of the concept of the inhabited *continuum* of Rome and its surroundings. Yet a closer reading of the text reveals two distinct levels. Firstly, we have the spatial context to which the regulation applies in abstract terms, namely Rome and its immediate surroundings defined as the area within a thousand paces. Secondly, the rule only applies in practice to those areas within the first mile of

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[27] *Tab. Heracl.* (*CIL* I², 593 = *ILS* 6085 = *FIRA* I², 13 = *Roman Statutes* 24), ll. 20, 25, 50, 64, 67, 68, 77.

[28] For an interpretation of the pleonastic titulature of these magistrates see Zdekauer 1889, 283-4.

[29] Cf. Homo 1976, 99, and Lo Cascio 1997, 14.

[30] See Zdekauer 1889, 277 and n. 3 with the sources.

[31] The reading of Pomponius' definition of *urbs* (D. 50.16.239.6 [Pomp. *l.s. enchir.*]: *'Urbs' ab urbo appellata est: urbare est aratro definire. Et Varus ait urbum appellari curvaturam aratri, quod in urbe condenda adhiberi solet*), which also depends on Alfenus, and to which Querzoli (2013, 104-5, with bibliography) has rightly called attention, seems to confirm that Alfenus focused on the problem of the original tracing of the limits of the *urbs* with the plough, from which derived the definition of the Romulan *pomerium* and later the layout of the Servian walls. Cf. Zdekauer 1889, 275: 'nel condurre l'aratro si formano, con l'andare del vomero, il solco e la zolla; questa disegna l'andamento del muro, quello traccia il fossato.'

[32] *CIL* II², 5, 1022 = *ILS* 6087 = *FIRA* I², 21 = *Roman Statutes* 25.

[33] *quae viae in urbem Rom*(*am*) *propiusve u*(*rbem*) *R*(*omam*) *p*(*assus*) *m*(*ille*) *ubei continente habitabitur sunt erunt, quoius ante aedificium earum quae* / *viae erunt, is eam viam arbitratu eius aed*(*ilis*)*, quoi ea pars urbis h*(*ac*) *l*(*ege*) *obvenerit, tueatur*.

the walls that show signs of residential agglomeration.[34] However, this does not necessarily mean that such agglomerations, even if located within the first mile of the walls, were immediately adjacent to the urban and peri-urban fabric. Lines 55ff. of the same *tabula Heracleensis* support this interpretation,[35] which prohibit daytime transit of the streets located in the *urbs Roma* and, more generally, in places where there are built-up residential areas: *quae viae in u*(*rbem*) *R*(*omam*) *sunt erunt, intra ea loca ubi continenti hab<i>tab<i>tur* et rell.

The criterion of a thousand paces beyond the *urbs* was still applied by Augustus in 21 BCE. As Cassius Dio (54.6.6) reports, it was in this year during his consulate with Agrippa that the emperor prohibited (by edict?) Egyptian rites from being celebrated in the city and also ἐν τῷ προαστείῳ … ἐντὸς ὀγδόου [ἡμι]σταδίου, that is, within the limit of the eighth *stadion* immediately adjacent to the *urbs*. A distance of eight *stadia* is more reasonable than the transmitted 'half-stadia', in as much as it suggests that this provision conformed to the rule of the thousand paces.

5. Rome's expansion

Rome's demographic expansion after the end of the civil wars must have resulted in the expansion of the space considered 'urban' within a few years[36] with the built-up residential areas now pushing beyond the limit of a mile from the walls. In consequence, the city appeared immense to the eyes of a Greek like Dionysius of Halicarnassus, who did not fail to point out how the ancient Servian walls were now incorporated into a much larger urban fabric. The historian of the Augustan period records 'inhabited places around Rome, which are many and large, undefended and without walls',[37] so much so that 'if someone wanted to estimate the size of Rome by looking at these suburbs, he would necessarily be misled by the lack of a precise indication to determine to what extent it is still a city and where it ceases to be one; thus the city is closely connected with the countryside, giving the spectator the impression of a city that extends to infinity',[38]

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[34] On this point see already Zdekauer 1889, 278. The useful overview in Panciera 1999, 9-15, esp. 10 (= Id. 2006, 927-36, esp. 927-8) also points in this direction; ditto Sisani 2023, 473, following my argument in Buongiorno 2020, 227.

[35] The text is absent from Todisco 2016, 712. I would like to reiterate here the reading that I offered – in line with a well-established tradition – in Buongiorno 2020, 227-8. The reconstruction by Guidetti 2022, 158-9 is arbitrary; with a certain measure of creativity, he hypothesises the loss of the text of an original 'locuzione formulare' that would have referred to the thousand paces from the *urbs Roma* in l. 56 of the *Tab. Heracl.*, thus postulating that the prohibition of vehicles during daytime concerned 'le vie che si trovano e si troveranno nella città di Roma, <o entro un miglio dalla città di Roma> entro quelle aree in cui vi sia contiguità di abitazioni': that is to say, an area much wider than the modern *zona a traffico limitato* (ZTL). This is highly unlikely: a limited-traffic zone that encompassed not just the urban fabric within the Servian walls, but also the areas of greater density immediately outside them would be unfeasible even in the mind of a radical environmentalist administrator.

[36] For a graphic representation of the relationship between the extramural settlement documented for the Caesarean period and its Augustan-era expansion cf. Lafon 2001, 211-12.

[37] D.H. 4.13.3: τὰ περὶ τὴν πόλιν οἰκούμενα χωρία, πολλὰ ὄντα καὶ μεγάλα, γυμνὰ καὶ ἀτείχιστα.

[38] D.H. 4.13.4: καὶ εἰ μὲν εἰς ταῦτά τις ὁρῶν τὸ μέγεθος ἐξετάζειν βουλήσεται τῆς Ῥώμης, πλανᾶσθαί τ᾽ ἀναγκασθήσεται καὶ οὐχ ἕξει βέβαιον σημεῖον οὐδέν, ᾧ διαγνώσεται, μέχρι ποῦ προβαίνουσα ἔτι πόλις ἐστὶ καὶ πόθεν ἄρχεται μηκέτ᾽ εἶναι πόλις, οὕτω συνύφανται τὸ ἄστυ τῇ χώρᾳ καὶ εἰς ἄπειρον ἐκμηκυνομένης πόλεως ὑπόληψιν τοῖς θεωμένοις παρέχεται.

especially since the walls are 'difficult to discover because of the buildings that surround them in many places'.[39]

The scenario described by Dionysius of Halicarnassus[40] for the height of the Augustan period was dysfunctional on a practical level. As a consequence of the progressive expansion of the city's boundaries beyond the walls, and in consideration of 'religious scruples and considerations of political expediency <that> suggested not to modify, not even minimally, the original juridical-sacral limit', there must have been numerous legal problems related, for example, to the residency or property of the inhabitants, which an elaboration of the notion of (*urbi*) *continentia aedificia* would have allowed to resolve, at least in part.[41]

The development of a residential *continuum* close to the city proper, even though it extended beyond a thousand paces from the walls, took on the appearance of a new 'mobile border' (in the words of Filippo Coarelli),[42] malleable to the needs of a society undergoing demographic and topographical expansion. There are reasons to date this development to the high Augustan period, though it is difficult to specify the year exactly. Certainly after 21 BCE, if we are to believe the aforementioned passage from D. C. 54.6.6 on the suppression of the Egyptian cults, and before 11 BCE, the year of the *senatus consulta* copied by Frontinus. By 7 BCE, when the XIV *regiones* were created[43] (seven of which extramural!),[44] the notion must have been fully established.

In this regard there are several crucial aspects. In 20 BCE the *cura viarum* was instituted and the *miliarium urbis* was set up at the north-west end of the Forum, beside the *aerarium Saturni* (D. C. 54.8.4). The *miliarium urbis* was a marble column clad in bronze, which served as starting point of all the roads that led from Rome into the empire. In this same period (already in 20 BCE according to Mommsen,[45] or between 16 and 13 BCE if we believe D. C. 54.26.7[46]), during the absence of Augustus from Rome, the Senate had decreed a downsizing of the vigintisexvirate to a vigintivirate, suppressing the four *praefecti Cap*(*uae*) *Cum*(*is*) and, more importantly, the *IIviri viis extra propiusve urbem Romam passus M purgandis*. The abolition of this latter magistracy is a clear sign that the domain of these magistrates was considered obsolete, since the space of a thousand paces immediately outside the *urbs* was no longer considered an autonomous area of jurisdiction. In other words, the (*urbi*) *continentia aedificia* had become an integral part of the spatial reality of Rome.

But the problem did not concern only Rome. There must have been other contexts, in Roman Italy as well as in the provincial *coloniae*, in which demographic growth had rendered the *oppida* as originally laid out no longer adequate to accommodate all their inhabitants. Nor is it a coincidence that *kaput* 62 of the *leges Irnitana* and *Malacitana*,[47] a Flavian reworking of Augustan municipal laws, extended norms originally conceived for the *oppidum* to yet-to-be-constructed *continentia*[48]

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[39] D.H. 4.13.5: τῷ τείχει τῷ δυσευρέτῳ μὲν ὄντι διὰ τὰς περιλαμβανούσας αὐτὸ πολλαχόθεν οἰκήσεις.

[40] Source overlooked by Todisco 2016.

[41] Querzoli 2013, 106-7.

[42] Coarelli 1997, 90.

[43] On the creation of the *regiones* of Rome see Fraschetti 2005, 171-80, and now Procchi 2020, 114-17 with bibliography.

[44] Cf. Frézouls 1987, 382.

[45] Mommsen 1887, 604.

[46] On which see now Gallo 2018, 55-6.

[47] For the *lex Malacitana* editions in *CIL* II, 1964 = *ILS* 6089 = *FIRA* I^2, 24; for the *lex Irnitana* I follow Wolf 2011.

[48] Phillips 1973, 95 also thinks of a tralatician clause, which 'would derive from a charter of Augustan or early Julio-Claudian date'. On the other hand, formalisation of the *de facto* existence of *continentia*

(*quae ei oppido continentia aedificia erunt*[49]) by restricting the regulation on demolition of buildings found in the *lex municipii Tarentini* (*kaput* 4)[50] and in the *lex coloniae Genetivae Iuliae* (*kaput* 75).

As already mentioned, Flavian-era municipal legislation re-elaborated material of the Augustan period. The prescriptions of *Irn*. 62 recall the same climate within which the Augustan-era antiquarian Verrius Flaccus recorded the extension of the second definition of *vicus* found in the gloss of Festus 502 and 508 L. – namely the Caesarean definition of 'neighbourhood' as buildings inside cities that are distributed along streets and among districts separated from one another and distinguished by different names –, also to neighbourhoods outside the *oppida* and adjacent to them (*quae continentia sunt his oppidis*).[51]

6. *Continentia*

To better understand the process by which the notion of 'adjacency' took root in Augustan juridical culture, I would add a further point. *Kaput* 91 of the *lex Irnitana* – which explicitly recalls the prescriptions of *kaput* 12 of the *lex Iulia de iudiciis privatis* (17 BCE) and those of the senatorial deliberations interpreting said *kaput*[52] – confirmed that the distinction between *legitima iudicia* and *imperio continentia iudicia* (already mentioned by Gaius)[53] had been introduced into the legal system by the Augustan legislation itself.[54] As Gaius explains, the *legitima iudicia* are those that are conducted within the radius of a thousand paces from Rome, between Roman citizens and before a single *iudex*, and become extinct if no judgment is reached within a year and six months.[55] Instead:

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also in provincial contexts is demonstrated by a third-century inscription from *Sicca Veneria* (*CIL* VIII, 1641 = *ILS* 6818 = *AÉpigr* 1991, 1685 = *FIRA* III^2, 55 b) that explicitly refers to *continentia coloniae nostrae aedificia*; on this inscription see Gagliardi 2006, 376-7.

[49] The text of *Irn.* 62 and *Mal.* 62 must also have corresponded with *kaput* 62 of the *lex* of the *municipium Flavium Ostipponensis* (*CIL* II^2, 5, 959, where, however, the formula '*oppido continentia aedificia*' is restored; a fact that seems to have escaped Todisco 2016, 713 and n. 17).

[50] *CIL* I^2, 590 = *ILS* 6086 = *FIRA* I^2, 18 = *Roman Statutes* 15.

[51] *Altero, cum id genus aedificio<rum defi>nitur, <quae in oppidis aedificantur* (*sive continuantur*?)*, aut> quae continentia sunt his oppidis, quae<que>... itineribus regionibusque distributa inter se distant, nominibusque dissimilibus discriminis causa sunt dispartita*. For a reconstruction and exegesis of this gloss see Letta 2005, 81-96. Hardly or not at all convincing are the attempts at reconstruction of the gloss by E. Todisco, most recently in Todisco 2011, part. 57-70. On the profound perplexities raised by the reading proposed by Todisco see, justly, Letta 2012, 65-9.

[52] *legis Iuli/ae quae de iudici*(*i*)*s privatis proxime lata est kapite XII* // *senatusve consultis* [[*ad it kaput*]] *ad it kaput legis pertine/ntibus.*

[53] Gaivs *inst*. 4.103: *Omnia autem iudicia aut legitimo iure consistunt aut imperio continentur*.

[54] The identification of the *lex Iulia* specified in *Irn*. 91 has been the object of sometimes rather heated debates, above all in relation to the *duae leges Iuliae* mentioned by Gaivs *inst*. 4.30: an accurate examination now in Beggio 2015, 131-5, who substantially favours the hypothesis by Talamanca 1999, 218, of the existence of two laws, one of general scope on *iudicia privata* and another on the administration of justice in the *municipia,* and who also draws attention to Tac. *ann.* 13.28.2. For different views, see Lamberti 1993, 208-20; Bertoldi 2001, 37-44, esp. 40-44, with Kunkel 1962, 34. I will return to this point at greater length elsewhere.

[55] Gaivs *inst*. 4.104: *Legitima sunt iudicia, quae in urbe Roma vel intra primum urbis Romae miliarium inter omnes cives Romanos sub uno iudice accipiuntur; eaque e lege Iulia iudiciaria, nisi in anno et sex mensibus iudicata fuerint, expirant. Et hoc est, quod vulgo dicitur e lege Iulia litem anno et sex mensibus mori*.

> Courts dependent on magistral authority are defined as those before assessors, or those which are under a single judge but involve a foreinger as judge or party. The same definition covers any courts beyond the first milestone from the City of Rome, whether in causes between Roman citizens or foreigners. They are described as dependent on magistral authority because they are only effective as long as the person who set them up holds authority. (Gaivs *inst*. 4, 105, transl. W.M. Gordon, O.F. Robinson).[56]

The *imperio continentia iudicia* include judgments of a recuperative nature, i.e. those held in Rome under an *unus iudex* but in which a *peregrinus* (whether the *iudex* or one of the parties to the case) intervenes, as well as all judgments held beyond the first mile from Rome. These are therefore *iudicia* whose duration is closely connected to the term of office of the magistrate who presides over them: in this sense, they are *imperio continentia*, in that they expire together with it.[57] The connection between *iudicium* and the magistrate who establishes it, expressed with the formula '*continens* + dative', expresses the same sense of 'conjunction' that is characteristic of the notion of *urbi continentia aedificia*.[58]

In the ongoing debate surrounding the notion of *contineo*/*continens,* it is worth noting that the development of the 'overseas provinces' or *transmarinae provinciae* and, conversely, of the (*Italiae*) *continentes provinciae* also dates back to the Augustan era. The former are known from epigraphically attested senatorial resolutions concerning Germanicus, as well as from scattered references in historiographical sources. Agrippa had already been entrusted with missions to the East, but the development of the category of 'overseas provinces' seems to be later, attributable, if not to the mission of Tiberius in 6 BCE,[59] certainly to the appointment of Gaius Caesar *ad ordinand*(*as*) *trans*]/*marina*[*s provincias,* according to the formulation used by Verrius Flaccus in the *Fasti Praenestini*.[60] On the definition of (*Italiae*) *continentes provinciae*, clearly developed to draw a distinction, we are instead informed by a later text of Ulpian (1 *off. cos*., *D*. 50.16.99.1):[61]

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[56] *Imperio vero continentur recuperatoria et quae sub uno iudice accipiuntur interveniente peregrini persona iudicis aut litigatoris; in ea causa sunt, quaecumque extra primum urbis Romae miliarium tam inter cives Romanos quam inter peregrinos accipiuntur. ideo autem imperio contineri iudicia dicuntur, quia tamdiu valent, quamdiu is qui ea praecepit, imperium habebit.*

[57] This would also explain the anxiety, mocked by Ivv. 16.42 and noted by Serv. *auct*. Danielis *Aen.* 2.102, with which the beginning of the 'judicial year' was awaited. For these two texts and a detailed study of the relationship between *legitima iudicia* and *imperio continentia iudicia* see now Fargnoli 2015, 126-53, with extensive bibliography.

[58] As far as I can see, this aspect has so far been overlooked with the sole exception of Jhering 1880, 668 n. 929. But on the use of *continens* in the sense of *iunctus* see also Nicolau 1935, 352, followed by Balzarini 1971, 452 n. 8.

[59] Vell. 2.99.4.

[60] *AÉpigr* 1980, 214 = EDR077655. Similarly, Arnaud 1994, 253. Unsurprisingly, Velleius Paterculus also traces this notion back to practices of the Late Republic such as that of Pompey *ex lege Manilia*. As Arnaud observes, he made use of categories contemporary at the time of writing.

[61] *'Continentes provincias' accipere debemus eas, quae Italiae iunctae sunt, ut puta Galliam: sed et provinciam Siciliam magis inter continentes accipere nos oportet, quae modico freto Italia dividitur.* An echo of the reception of this category already in the Augustan period also in Liv. 28.12.12, a passage that suggests that, at the time, *Sicilia* was understood to be a *transmarina provincia*. In general Livy pays attention to such categories: at 31.48.7, for example, he uses the idea of *continentia tecta* rhetorically in reference to the *coloniae* of *Placentia* and *Cremona*.

> We should understand the neighboring, contiguous provinces to mean those which are joined to Italy, as for instance, Gaul. We should, however, include the Province of Sicily among them, as it is only separated from Italy by a narrow arm of the sea. (transl. S.P. Scott)

The *continentes provinciae* were, therefore, in territorial continuity with *terra Italia*, a continuity that the sea did not guarantee. And thus, if Ulpian considered *Sicilia* a *continens provincia* in view of the narrow strip of the sea, Tacitus (*ann.* 2.43.1) explained that the characteristic of the *transmarinae provinciae* was that these *mari dividuntur*.

The adoption of the notion of 'continuity' – spatial (as in the case of *aedificia* or *provinciae*) or figurative (as with *iudicia*) – expressed by the verb *contineo* thus appears to be of Augustan origin, that is, the work of a generation of jurists among whom figures such as Gaius Ateius Capito and Marcus Antistius Labeo stand out (even if the latter was 'non-aligned' with the regime).

The aforementioned text of Gaivs *inst*. 4.104-5 permits some further considerations. It explicitly states that among the requirements for *legitima iudicia* was that they be conducted 'in the city or within the first milestone from the city of Rome' (*in urbe Roma vel intra primum urbis Romae miliarium*). This formula seems to suggest that, at the moment of the promulgation of the *lex Iulia* (17 BCE), the category of *urbi continentia aedificia* was not yet completely abolished (which it seems to have been, by contrast, in the *lex Aebutia*). It is, however, worth asking whether the *senatus consulta* interpreting the *lex Iulia iudiciorum privatorum*, cited at *Irn.* 91, had not also worked in this direction.[62]

The measure of the thousand paces had certainly not been superseded:[63] it was simply that the mechanism of its calculation had changed. It is no coincidence that at the beginning of the third century CE Aemilius Macer specified in his comment on the *lex Iulia de vicesima hereditatum* of 5 CE (1 *ad leg. vic.*, *D*. 50.16.154), that the distance of one thousand paces had to be calculated from the edge of the *continentia aedificia*, that is, from the limit of the inhabited area of the city: *mille passus non a miliario urbis, sed a continentibus aedificiis, numerandi sunt*. As is widely agreed,[64] this clarification by Macer was necessary to define the extension of the respective territorial spheres of the *procuratores vicesimae hereditatum* established by the *lex Iulia* responsible for Rome and Italia respectively.[65]

7. *Urbs* and *continentia*

This explains the concern of Roman jurists to define the spaces of Rome: the *urbs* proper, that is, the 'parte nucleare' of the city,[66] which ended at the Servian walls; the *urbi continentia aedificia*, which together with the *urbs* made up the *urbs Roma* (*V R* in the *litterae singulares*

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[62] Also, in *Irn.* 91, the formulation *itaque iis omnibus de ea re et in eos dies in quos ex h(ac) l(ege) licebit denuntiandi intra it municipium et mille passus ab eo municipio* would seem to suggest that by *muncipium* was meant the sum of '*oppidum* + *continentia aedificia*' and that therefore the thousand paces *ab eo municipio* were counted from the confines of these.

[63] After all, the *senatus consultum* conferring posthumous honours on Germanicus called for, on the anniversary of his death, the closing of the *templa deor*(*um*) *immortalium quae in urbe Roma*{*m*} *prop*{*r*} *iusve urbem* [*Romam passus* (*mille*) *sunt erunt quot annis*]. On this point see, rightly, Dubbini 2019, 145.

[64] See already Hirschfeld 1877, 66, followed by many others, most recently Demicheli 2006, 306 with bibliography.

[65] Cf. Demicheli 2006, 307.

[66] Thus Casavola 1992, 20-21, with an overview of the fragments cited below. On these aspects see also Gagliardi 2006, 371-6.

of Valerius Probus), with its 'mobile boundaries'; and finally the first mile, calculated from the edge of this movable boundary.

The most straightforward passage for the modern reader to understand is Pavl. 1 *ad ed.*, *D.* 50.16.2pr., which specifies that the notion of *urbs* referred to the area within the walls, while the more general notion of *Roma* also included the *continentia aedificia* (*'Urbis' appellatio muris, 'Romae' autem continentibus aedificiis finitur, quod latius patet*): the text was probably developed within the framework of the description of the *vadimonium Romam faciendo*.

More generally, however, the jurists of the Antonine and Severan periods assumed that the spatial area of *Roma* was everything that fell within the *urbs* and the *continentia*. Neratius, if we accept that his text refers to *urbi continentia aedificia*, considered *stabula* located outside the *continentia aedificia* not to be comparable to *praedia urbana*, not because of their intended use (shelters for the use of the inhabitants of the peri-urban area), but rather because of their physical location, 'because they are separated from the other buildings' (*cum a ceteris aedificiis separata sint*), thus limiting their assimilation to *praedia urbana* only with regard to a landlord's rights of seizure.[67]

Tryphoninus, on the other hand, considers a tutor to be appointed in *Roma* only if appointed by the *praefectus urbis* or praetor, or by a will *Romae confecto vel in continentibus*.[68] Two texts of Ulpian establish that only those who are *extra continentia urbis* are considered absent from court proceedings.[69] Another lacunose passage (Ulp. *D.* 48.22.14pr., reconstructed on the basis of *Bas*. 60.54.14) suggests that 'a person is said to be exiled when he is forbidden to enter a province or a city and its continentia either permanently or temporarily' (*relegatus est is cui interdicitur provincia aut urbe continentibusve in perpetuum vel ad tempus*).

In any case, that the *continentia* were the natural extension of *Roma* must already have been clear to Sabinus, as is suggested by Pavl. 4 *ad Sab.*, D. 33.9.4.4.[70] This passage, on the

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[67] Ner. 1 *membr.*, *D.* 20.2.4.1: *Stabula quae non sunt in continentibus aedificiis quorum praediorum ea numero habenda sint, dubitari potest. et quidem urbanorum sine dubio non sunt, cum a ceteris aedificiis separata sint: quod ad causam tamen talis taciti pignoris pertinet, non multum ab urbanis praediis differunt*. The interpretation of this text, however, is disputed. Some have understood the expression *in continentis aedificiis* as referring to a generic proximity of the *stabula* to other buildings, e.g. Frier 1980, 107 and Mentxaka 1986, 160. See now also Castagnetti 2023, 68-9 and 113-16, which I think highlights how the negation *non sunt in continentibus aedificiis* offers a plausible interpretation of Neratius only if it is read in the literal sense of 'shelters not surrounded by other constructions', such that, being separate, they cannot be assimilated to urban properties.

[68] Tryph. 3 *disp.*, *D.* 27.1.45.3: *Romae datos tutores eos tantum accipere debemus, qui vel a praefecto urbis vel a praetore vel in testamento Romae confecto vel in continentibus dati sunt.*

[69] Ulp. 39 *ad Sab.*, *D.* 50.16.173.1: *Qui extra continentia urbis est, 'abest': ceterum usque ad continentia non abesse videbitur*. Ulp. 8 *omn. trib.*, *D.* 50.16.199pr.: *'absentem' accipere debemus eum, qui non est eo loci, in quo loco petitur: non enim trans mare absentem desideramus: et si forte extra continentia urbis sit, abest. Ceterum usque ad continentia non abesse videbitur, si non latitet.* By contrast, Paul. 3 *ad ed.*, *D.* 3.3.6, considers present at Rome *et qui in foro et qui in urbe et in continentibus aedificiis*. On these passages see also Platschek 2005, 194-6.

[70] *Si ita legetur 'penum, quae Romae sit', utrum quae est intra continentia, legata videtur an vero ea sola, quae est intra murum? et quidem urbes fere omnes muro tenus finiri, Romam continentibus, et urbem Romam aeque continentibus.* The mere absence of the governing clause (in the absence, that is, of further formal criteria for attributing the lemma to Sabinus) is not, as Astolfi 2001, 2-3 and n. 4 reminds us, a sufficient motive to suppose that that clause was '*Sabinus ait*'. A core of Sabinian thought is undeniable: see Ormanni 1962, 620.

subject of *penus legata*, concludes with the observation that almost all cities end at their walls, whereas *Roma* is composed of the *urbs* and the *continentia*. Therefore, if the *penus quae Roma sit* is to be bequeathed, so too will be the provisions located in the *continentia*.

On the other hand, even before Sabinus, Labeo seems to have had a clear notion of *continentia* in the sense of *aedificia* adjacent to the urban fabric as well. Ulpian records Labeo's opinion that the *actio aquae pluviae arcendae* could be brought only in the case of water that had injured it by being diverted from the *continentia* (*aedificia*) to the immediately adjacent *ager*; in contrast, if water that had flowed naturally from the *ager* to the *continentia* immediately adjacent to it, the *dominus* of the *ager* would not have been liable.[71] As already noted by Lodovico Zdekauer, this is the 'earliest notice we have of the commonality and union between the *continentia* and the city'.[72]

In short, from the beginning of the Imperial period, jurists were aware of the *definitio per differentiam* between *urbs* and *Roma*,[73] with the latter extending to the limits of the *continentia aedificia*. It was a matter of providing hermeneutical categories to readers of jurisprudential works, clarifying the misunderstandings that could arise when reading the texts of laws. We referred earlier to Macro's contribution on the calculation of the thousand paces in defining the jurisdiction of the *procurator vicesimae*.

Two further texts considering the *continentia* as an integral part of the notion of *Roma* must be considered, one by Terentius Clemens and the other by Ulpian, each taken from their respective commentaries *ad legem Iuliam et Papiam* and included in *D*. 50.16.[74] Neither necessarily suggests that the *continentia* were explicitly mentioned in the *lex Iulia de maritandis ordinibus* nor in the *lex Papia Poppaea nuptialis*,[75] but they allow us to glimpse the possibility that in the text of these laws there was a generic reference to *Roma*, without specifying whether this term referred only to the *urbs* or also to the (*urbi*) *continentia* (*aedificia*), as already argued by Gothofredus in the 17th century.[76]

It was therefore a question of updating the provisions of normative texts, adapting them to the *Zeitgeist*; the jurists did the same, updating the opinions of their predecessors where these were still widely circulating. It seems therefore possible to interpret along these lines the text of Marcellus (12 *dig.*), excerpted in *D*. 50.16.87:[77]

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[71] D. 39.3.1.20 (Ulp. 53 *ad ed.*): *Apud Labeonem autem invenio relatum, si ex agro meo aqua fluens noceat loco qui est intra continentia, hoc est aedificio, non posse me aquae pluviae arcendae conveniri: quod si ex continentibus profluens in meum agrum defluat eique noceat, aquae pluviae arcendae esse actionem.*

[72] Zdekauer 1889, 288; his tentative proposal that said 'notizia' alluded to a regulation already introduced in the Twelve Tables, however, is unconvincing.

[73] Thus Marrone 1994, 593 [= Id. 2003, 539]. By contrast Martini 1966, 292 n. 412, held categorically that these texts did not contain a *definitio* in the strict sense.

[74] *D*. 50.16.147 (Ter. Clem. 3 *ad leg. Iul. et Pap.*): *Qui in continentibus urbis nati sunt, 'Romae' nati intelleguntur. D*. 50.16.139pr. (Ulp. 7 *ad leg. Iul. et Pap.*): *Aedificia 'Romae' fieri etiam ea videntur, quae in continentibus Romae aedificiis fiant.*

[75] As instead supposes Todisco 2016, 712.

[76] Gothofredus 1653, 282-3.

[77] *Ut Alfenus ait, 'urbs' est 'Roma', quae muro cingeretur, 'Roma' est etiam, qua continentia aedificia essent: nam Romam non muro tenus existimari ex consuetudine cotidiana posse intellegi, cum diceremus Romam nos ire, etiamsi extra urbem habitaremus.*

> Alfenus says the City of Rome includes all that is encircled by its walls; but Rome also consists of all the buildings which adjoin it, for it should not be considered to be merely bounded by its walls, for when we say that we are going to Rome, we do so according to the ordinary acceptation of these words, even if we live outside of the city itself. (transl. S.P. Scott)

Lenel places the text palingenetically under a rubric pertaining to the opening of wills, so that it seems to refer to the need to define the spatial bounds within which a will could be considered to have been opened at Rome.[78] While for Alfenus, who was active at least until the beginning of the Augustan era, the definition of the term *Roma* was limited to the *urbs*, and the thousand paces were counted beginning from the latter, Marcellus specifies that this notion should now be integrated with the *continentia aedificia*.[79] Moreover, the fact that *Roma* was not limited to the circuit of walls that enclosed the *urbs*, was proven by the everyday custom of saying that one was going to *Roma* even if one lived outside the *urbs*, as Marcellus notes. This argument is based on *consuetudo loquendi* and, better than anything else, allows us to appreciate the dialectic between common sense, spoken language and technical-legal elaborations.[80] This is perhaps one of the most effective signs of the evolutionary interdependence between a society and its law, for the reconstruction of whose processes research on the history of law, and indeed historical research *tout court*, should always strive.

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[78] According to Saccoccio 2017, 105-6, (with literature review), in connection with the formalities relative to the application of the *vicesima hereditatum*.

[79] Personally, and for reasons to be detailed elsewhere, I am not inclined to believe that the assertion *'Roma' est etiam, qua continentia aedificia essent* should be ascribed to Alfenus (as recently argued by Saccoccio 2017, 105-6, and Procchi 2020, 115).

[80] On this point see at length Guzmán Brito 1997, 439-40. And exactly this *consuetudo loquendi* cited by Marcellus highlights the captiousness of the theories of Goodman 2007, esp. 14-17, 68-74, according to whom the existence of a 'periphery' in the modern sense should be sought also in the Roman world, a periphery that would have occupied an intermediate space between city and countryside. On this point I agree with the evaluation of Saccoccio 2017, 106-7.

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Chapter 2

Breaching the walls, blurring the boundaries: the localised dismantling of city walls in the Roman world

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Abstract
City walls were protected against violation by legal rulings, religious rituals and their own symbolic capital. Nonetheless, at the height of the *pax Romana*, they often underwent localised breaching by monumental public buildings, supplementary gates or housing. This chapter examines how these projects altered the relationships between cities and their surroundings. At Corduba in Spain, breaching the city walls to build a temple-forum-circus complex maximised the visibility of the temple and made a show of its role in bringing city- and country-dwellers together. At Ostia, the new Porta Secondaria extended a characteristic gate quarter already developing outside the nearby Porta Romana, while also enhancing traffic flow and thus Ostia's economic relationship with Rome. And at Timgad, a stretch of wall was obliterated by domestic buildings, but the city's streets were not extended across its former course. Here, then, traffic flow was *not* enhanced, but the project's sponsors may have been aiming instead to blur the conceptual boundary between the original walled core and new development on Timgad's western edge. While all three scenarios involve localised breaching, the differences between them help to illuminate how communities both responded to and sought to develop the relationships between their cities and their surroundings.

Keywords
City walls; urban boundaries; Corduba; Ostia; Timgad

Introduction

The power of the Roman Empire at its height protected cities in its central areas from attack, reducing the defensive importance of their walls. They were not, though, dismantled wholesale. Walls are large, solid structures designed to resist destruction, so that demolition was reserved as a punishment for defeated enemies, and even then often applied only tokenistically.[1] Studies are increasingly showing that in the generally peaceful period from the late first

[1] Purcell 1995; Stevens 2017, 123-4; Taylor 2023.

century BCE to the early third century CE, city walls were treated differently along different parts of their circuits, frequently in ways which appear contradictory. At Rome, Ostia, Pompeii and many other locations, gates and occasionally some sections of wall were restored while other parts were neglected, encroached upon, or demolished.[2] This behaviour reflects the symbolic capital of walls in the Roman world, which made it desirable to maintain their visual impact even as their defensive function was compromised. It also raises the question of how this piecemeal treatment of walled circuits affected the relationship between the cities which they enclosed and their surroundings, both practically and symbolically.

This chapter examines the localised breaching of city walls at the height of the Roman empire: that is, dismantlement or encroachment in a limited section of the circuit. Three contexts in which this typically happened are discussed: monumental public buildings straddling the city walls, new gates cutting through them, and their displacement by houses or other private buildings. For each, while a range of examples are noted, the discussion will focus on one case-study site for the purposes of close analysis. Taken from Corduba, Ostia and Timgad, these sites are archaeologically well-documented, but their character as examples of localised breaching has not been the main focus of the existing scholarship on them, and nor have they been brought into dialogue with one another. All three eroded the defensive integrity of their walled circuits and blurred the symbolic boundary between city and country, but they reflect different goals and had different impacts on the relationship between the city and its surroundings. As such, it is not enough simply to note that they breached the city walls. We can achieve a fuller understanding of the needs and priorities of the communities concerned by engaging closely with the specific ways in which they breached their own walled circuits.

Walls and their symbolic capital

Both the physical characteristics of Roman urban defences and their symbolic connotations emerged out of a wider Mediterranean culture of regular inter-urban warfare. Common characteristics of early city walls in Italy include capitalising on natural defensive features like steep slopes, reinforcement with earthen ramparts, external ditches to hamper attack, large stone blocks to resist siege, narrow, easily-defensible gateways, and protruding towers for shooting attackers.[3] But these practical features could also be symbolic, demonstrating for example the community's wealth and commitment to defending its autonomy, and could be designed for visual as well as defensive impact.[4] Nor did communities entrust their safety to physical features alone. They appealed to divine protection through mechanisms such as the *lustratio*, a propitiatory procession around the city limits, the *pomerium*, a religious boundary closely related to the walls of Rome, and laws defining city walls as *res sanctae* (sanctified things).[5] Walls were protected by secular authority too. Legal codes from the Roman principate

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[2] Haselberger 2007, 204-7, 230-37; Stevens 2017, 123-59; Van der Graaff 2019, esp. 112-39; Glogowski 2020; Stops 2023, 131-204.

[3] Becker 2013, 19-20; Van der Graaff 2019, 175-88.

[4] Müth 2016; Stevens 2017, 78-92; Van der Graaff 2019, 188-201.

[5] Liv. 35.9 and 42.20; App. *BC* 1.26; *D.* 1.8.1 and 1.8.8.2; Stevens 2017, 13-60 and 105-10; Goodman 2018, 75-9.

record that it was a capital offence to violate them, and also forbidden to rebuild them or build over or against them without permission from the emperor or provincial governor.[6]

As prominent urban landmarks, walls also accrued further symbolic significance. In literary account of Rome's foundation, Romulus ploughing a furrow to mark its future wall defines the city not only spatially but also temporally (marking its beginning) and conceptually (categorising it as urban).[7] Indeed, throughout the Roman world, ploughing a boundary furrow was considered the symbolic act of city foundation. Walls also functioned as the legal and administrative limits of urban space, while artists and writers frequently used them as shorthand for whole cities.[8] The use of precise quadrangular circuits, high-quality facing stones, and decorative details on gates and towers also served to maximise their visual and symbolic impact.[9] Indeed, by the time Rome's emperors began presenting themselves as the guarantors of the *pax Romana*, city walls had evidently become more symbolic than defensive. New cities in provinces such as Gaul and Britain were frequently built without walls, and their construction was reserved as a badge of honour for *coloniae* or cities favoured by the emperor.[10]

Meanwhile, the relationships of communities to existing walls changed. Competition for space, the attraction of economic resources and a desire to showcase monumental architecture all encouraged urban-style development outside city walls.[11] For lawyers and urban administrators, this created a problem. They had long defined cities by their walls, but there was increasingly a mismatch between the areas the walls enclosed and the extent of the actual cities as widely understood. Their solution was the concept of the *continentia aedificia* (continuous buildings): a term encompassing the entire built-up area of the city, within and beyond the walls.[12] This allowed them to deal effectively with property legacies and the maintenance of the extra-mural urban fabric, while the currency of similar concepts beyond legal and administrative circles is reflected in Pliny the Elder's measurement of Rome *ad extrema vero tectorum* (to the far extreme of the rooftops).[13] But these concepts, the extra-mural development which they included, and the reality that security was now guaranteed by the empire's borders rather than individual city walls, gradually undermined the thinking which still equated walls with urban status. Thus a context emerged in which localised breaches of city walls could be permitted, despite their symbolic significance.[14]

Monumental public buildings

The first type of localised breaching for discussion concerns the demolition of a section of wall in favour of a monumental public building. This is surprisingly common and often involves

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[6] *D.* 1.8.9.4 and 1.8.11.
[7] Liv. 1.7; D.H. 1.87-8; Ov. *fast.* 4.807-62; Plu. *Rom*. 10-11; Goodman 2018, 71-5.
[8] Goodman 2007, 29-31; Stevens 2017, 13-23, 61-6, 72-7.
[9] Pinder 2017, 37-8; Stevens 2016; Stevens 2017, 89-92.
[10] Esmonde Cleary 2003; Pinder 2017; Stevens 2016; Stevens 2017, 86-9.
[11] Goodman 2007; Goodman 2016; Stevens 2017; Emmerson 2020.
[12] *Tab. Heracl.* ll. 20 and 56; *Lex Irnitana* ch. 62; *D.* 33.9.4.4 and 50.16.87; Goodman 2007, 14-16.
[13] Plin. *nat.* 3.67.
[14] Stevens 2017, 107-10.

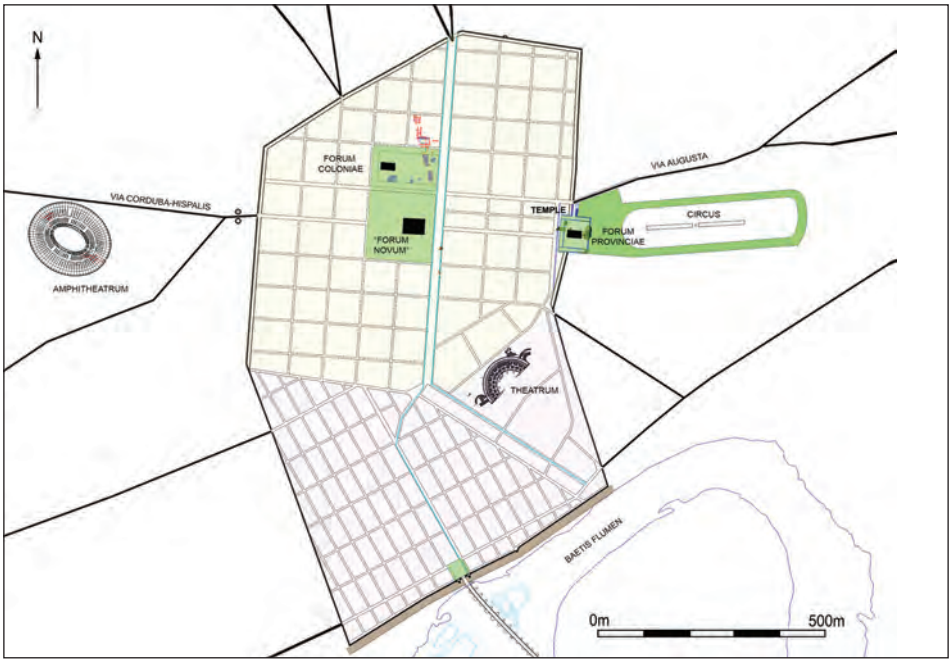

Fig. 2.1 Plan of Roman Corduba, showing the temple-forum-circus complex on the east side of the city.

a spectacle building.[15] Two well-known examples are Herdonia (Ordona), a Messapian city in south-eastern Italy which was sacked during the Second Punic War but became a *municipium* under Rome, and Albintimilium (Ventimiglia), a Ligurian centre in the north-west which came under Roman control in the second century BCE. At Herdonia, a fourth century BCE ditch and rampart were augmented with a stone wall in the third century, but part of that wall was dismantled in the mid-first century CE so that an amphitheatre could be constructed in the hollow of the original ditch.[16] At Albintimilium, one corner of a first-century BCE circuit was breached by a Flavian theatre built into the defensive rampart.[17] These decisions may have been made to enhance the monuments' visual impact, utilise existing slopes, facilitate access from outside the city, and flatter the emperors by demonstrating that the walls were no longer necessary. These and other factors can be explored in more detail at Corduba in Spain.

Corduba was a mid-second century BCE Roman foundation, built on a plateau overlooking the river Baetis.[18] It was equipped from the start with a double-skinned wall around 10 m thick, complete with towers, a defensive embankment and a ditch, which strengthened the defensive properties of the plateau edges.[19] Corduba was sacked by Caesar's side during his war with

[15] Stevens 2017, 142-5 and 153-5; Emmerson 2020, 180-81.
[16] Mertens 1995, 139-49 and 207-10; Emmerson 2020, 179-84.
[17] Lamboglia 1964, 17-22 and 46-68; Tosi 2003, 474-7.
[18] Vaquerizo, Murillo, Garriguet 2011, 11-12; Jiménez, Carrillo 2011; Vaquerizo, Murillo 2016, 38-9.
[19] Vaquerizo, Murillo, Garriguet 2011, 12-13; Jiménez, Carrillo 2011, 58.

Pompey, but afterwards became a veteran *colonia*, probably under Augustus.[20] Sometime between the eras of Tiberius and Nero, its walls were extended down the slope south of the plateau towards the river, with the easternmost of the two new sections again following a natural ridge. Our interest lies with a monumental complex on the eastern side of the original walled city, consisting of a temple, a circus and a forum connecting the two (Fig. 2.1).[21] While it was the temple that breached the walls, the three elements of the complex were inter-related and probably planned together, so the discussion includes all three.

Work on the temple began in the Claudian era, and the circus not much later, though elements may not have been finished until the Flavian period.[22] The temple itself stood on the eastern edge of the plateau occupied by the original urban centre, overlooking the forum immediately below and the circus beyond. The full complex extends over around 10 hectares, and its construction entailed demolishing almost 100 m of the eastern wall, shifting the Via Augusta around 30 m to the north, displacing existing housing, and undertaking major terracing and hydraulic works.[23] The landscape was thus significantly altered in order to accommodate this spectacular display architecture.

We do not know the temple's dedicatee(s), but by analogy with similar complexes combining temples with spectacle buildings at Narbo (Gaul) and Tarraco (Spain), it was probably built in honour of the emperors. Indeed, several scholars have suggested that, like those complexes, it was used by the council of the imperial cult for the surrounding province, Hispania Baetica.[24] The Baetican *concilium provinciae* certainly had a seat in Corduba, since statue bases honouring its priests (*flamines*) or dedicated by the council have been found within the walled urban centre.[25] For Fishwick, the absence of such bases from the eastern temple-forum-circus complex is one of the 'significant difficulties' with identifying it as the seat of the provincial cult; the other being that the temple was begun in the Claudian era while a provincial cult is not attested in Baetica until the Flavian.[26] But the earliest statues of Baetican provincial *flamines* date from the mid-second century, making it difficult to be sure what was happening before this period. Others have argued for earlier origins for the Baetican provincial cult, suggesting that its flaminate was not fully formalised before the Flavian era, or posited that its statues were moved into the urban centre in the late second century CE, when the circus and adjoining forum were abandoned and the temple precinct modified.[27] The question remains unresolved, but the temple-forum-circus complex was certainly intended for use by large crowds, whoever organised the events there.

The Claudian date of the temple makes it broadly contemporary with the Tiberian to Neronian extension of Corduba's walls from the plateau down to the river. The chronology is not precise

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[20] Jiménez, Carrillo 2011, 58; Vaquerizo, Murillo 2016, 41-2.

[21] Murillo et al. 2001; Murillo et al. 2003; Fishwick 2004, 90-98; Vaquerizo, Murillo 2010, 468-72; Vaquerizo, Murillo 2016, 42-6; Garriguet-Mata 2017, 290-93.

[22] Murillo et al. 2001; Murillo et al. 2003.

[23] Murillo et al. 2001; Murillo et al. 2003, 75; Vaquerizo, Murillo 2016, 44-5; Garriguet-Mata 2017, 290-92.

[24] Murillo et al. 2003, 79-86; Ventura Villanueva 2007, 232-4; Vaquerizo, Murillo 2010, 470-72; Garriguet-Mata 2017, 290-93.

[25] Fishwick 2004, 73-9, 83-90 and 98-101; Garriguet-Mata 2017, 276-8.

[26] Fishwick 2004, 88-9 and 96-7; Fishwick 2014, 666 (quotation).

[27] Murillo et al. 2001; Murillo et al. 2003, 79-86; Ventura Villanueva 2007, 233-4; Vaquerizo, Murillo 2016, 45-6; Garriguet-Mata 2017, 290-93.

enough to determine which project started first, but the lag between them can only be a couple of decades at most either way, and it is quite likely that both were under construction simultaneously. Meanwhile, although the temple certainly breached the original walled circuit, there is no evidence of additional breaches during the same period. Not all parts of Corduba's walls are archaeologically attested, so we cannot be sure of the fates of all sections, but substantial sections of the original circuit still survive today, and it appears to have remained a 'live' monument when the temple was built. Certainly, the extension suggests that the community still valued their walls and wished to enhance and amplify them.

Nonetheless, the temple was allowed to breach Corduba's original walls. Although we do not know who paid for the work, its scale is such that the city council must have condoned it, including the breach. Some practical factors may have influenced the temple's placement. The back end of its platform sat directly atop the demolished circuit's foundations, providing additional support. But the prevailing motivations must have concerned the temple's monumental impact, and especially its visibility. Indeed, the arrangement of the complex resembles the Circus Maximus area in Rome. The Corduban temple on the edge of the plateau is in a similar position to those which overlooked the Circus Maximus from the Palatine hill such as Magna Mater, Victoria, Victoria Virgo and perhaps the temple of Apollo built by Augustus.[28] Importantly, this could not have been achieved without demolishing part of the city walls, which had been occupying this location and would have continued to block intervisibility between the temple and the circus. The walls themselves stood at the top of a natural slope which maximised their visibility, and the slope had been further enhanced by the terracing undertaken for the temple-forum-circus project. The demolition and the terracing combined thus made the temple highly visible, not only from the circus itself, but also from the Via Augusta, the Baetis river valley and a considerable section of the largely agricultural landscape extending to the south and east.[29]

Something of the temple's monumental impact can be appreciated in modern Córdoba thanks to a recent restoration project (Fig. 2.2). But it stands today surrounded by other buildings which distract the eye. At the time of its construction, most of the rest of Corduba's urban fabric was hidden from an approaching traveller behind the remaining sections of the walled circuit. These formed a blank canvas, focusing attention on the temple-forum-circus complex. At the same time, the complex was itself a monumental addition to the walled circuit, paradoxically embellishing it even as it breached it. As such, the temple's location not only enhanced its visibility, but also drew attention to the original city walls. In a first century CE context, when cities in Gaul were being built without them, this underlined the fact that Corduba *had* city walls, in a similar spirit to the extension of the circuit during the same period.

The functions of the adjoining forum and circus may also help us to understand why the temple was allowed to breach the walls. In the Roman world, circuses were urban monuments, yet their size and need for flat, open ground meant that they were usually situated outside the city boundaries.[30] If the temple at Corduba was always intended to be associated with a circus,

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[28] Murillo et al. 2003, 69; Vaquerizo, Murillo 2016, 43; Garriguet-Mata 2017, 291. The connection with the temple of Apollo weakens if Claridge 2014 is right that it faced away from the Circus Maximus.

[29] Vaquerizo, Murillo 2010, 472; Vaquerizo, Murillo, Garriguet 2011, 23-5.

[30] Humphrey 1986 *passim*, e.g. 333-4 and 390-91.

Fig. 2.2 The eastern temple on the modern calle de Claudio Marcelo, Córdoba.

then, it was inevitable that it would be built on the fringes of the city. But this could have been achieved by building both wholly outside the walls. Instead, the temple remained closely connected with both the walled urban centre *and* the landscape beyond. Though oriented to face away from the city, it was also aligned with and accessible from a major east-west street on the city side. This led to one of Corduba's most important urban features: a major first-century CE precinct known as the *forum novum* or *forum adiectum* which was architecturally similar to the Forum of Augustus at Rome and probably used for worship of the Deified Augustus.[31] The temple was thus closely associated with other monuments both inside and outside the city, and may be understood as a hub connecting the two domains.

The complex which it was part of was clearly designed to be used by large numbers of people. Chariot races were inherently crowd-pullers, while the forum area between circus and temple provided gathering space for use before and after races or during religious rituals. Events of this kind usually drew participants from both the city and its surrounding territory, and if this complex was indeed the seat of the provincial council, they may have come from all over Hispania Baetica. The complex would still have brought these people together if it was located wholly within or outside the walls of Corduba. But its actual location, straddling the walls and visible from afar, seems designed to make an active statement of its role in bringing city-dwellers, country-dwellers and perhaps visitors from other communities together. It slices boldly outwards into the landscape, ostentatiously bridging the urban-rural divide. Indeed, the

[31] Fishwick 2004, 79-83; Ventura Villanueva 2007; Vaquerizo, Murillo, Garriguet 2011, 21-3; Fishwick 2014.

arrangement recalls the rhetoric of the early principate regarding Rome's unlimited character, such as Ovid's observation that 'the space of the city and the world is as one' or Dionysius' famous passage on the extent of its suburbs:

> If anyone wishes to estimate the size of Rome by looking at these suburbs he will necessarily be misled for want of a definite clue by which to determine up to what point it is still the city and where it ceases to be the city; so closely is the city connected with the country, giving the beholder the impression of a city stretching out indefinitely.[32]

It is possible that the Corduban elite were aware of this trope and sought to reflect it in the design of their own city. If so, this might seem at odds with their decision to define the southern extension of their urban centre with new walls around the same period. But the desire to demarcate urban boundaries while simultaneously overspilling them is equally attested in early imperial Rome, where several Republican gates were restored even as other parts of the walls were built over and the city extended far beyond them.[33] In many ways the two things go together, since a city can only be seen to be sprawling beyond its boundaries if those boundaries are clearly marked. Meanwhile, the fact that the temple at Corduba was almost certainly dedicated to the emperors is probably another reason why building it across the city wall was desirable. The emperors presented themselves as guarantors of peace and stability, rendering individual walled circuits obsolete. Thus by embellishing and breaching its walls with a temple honouring the emperors, the community at Corduba could demonstrate both that it was lucky enough to have a walled circuit, and that the care and oversight of the emperors meant it was no longer defensively necessary.

Supplementary gates

Another common form of localised breaching involved cutting a new gate through the city walls. I will refer to such gates as 'supplementary' to distinguish them from secondary gates: that is, gates smaller than the main gates, but built as part of the original circuit. To understand the effects of creating a supplementary gate we first need to understand what impact ordinary gates have on urban development. Work by Malmberg and Bjur, Van Tilburg and Stops has shown that gates acted as nodes within the urban landscape, with the flow of movement through them prompting distinctive uses of space.[34] For one thing, gateways were imbued with religious significance, reflecting their character as openings in walled circuits themselves considered sacred and distinct markers in journeys between cities and their surroundings.[35] Many were named after gods or incorporated shrines or images of deities, while temples frequently clustered just inside or outside gates.[36] Gates were also intensive channels for pedestrian, animal and vehicle movement, making properties lining the roads passing through them highly visible. This favoured their use for shops, bars and workshops which could capitalise on the footfall and

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[32] Ov. *fast*. 2.684; D.H. 4.13.3-5 (trans E. Cary, Loeb Classical Library).

[33] Haselberger 2007, 204-7.

[34] Malmberg, Bjur 2011; Van Tilburg 2007; Van Tilburg 2022; Stops 2023.

[35] Stevens 2017, 66-9; Van Tilburg 2022, 194-207.

[36] E.g. Porta Boiano and Porta Benevento, Saepinum (Pinder 2016, 29-31); Campo della Magna Mater, Ostia (Rieger 2004, 96-104 and 113-17); temples in insula XXX, Silchester (Fulford et al. 2017).

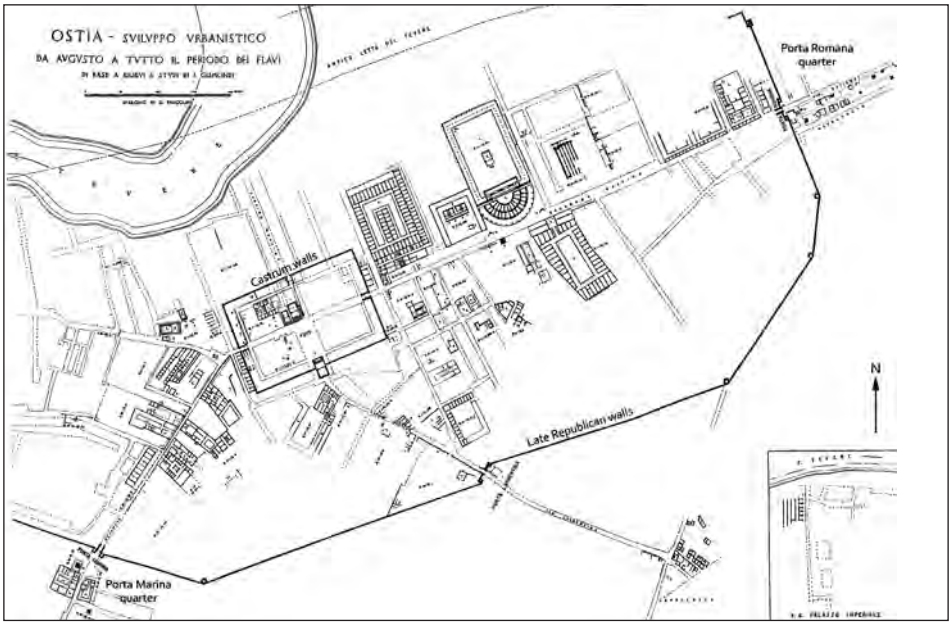

Fig. 2.3 Plan of Ostia in the late first century CE.

enjoy access to both customers within the city and deliveries from outside it.[37] Market spaces or buildings were also common close to gates, partly because they were responding to the same factors as shops and workshops, but in some cases perhaps also because being located just outside gates allowed traders to avoid paying tolls or customs charges.[38]

The need to pay such charges might oblige both people and vehicles to wait outside gates, as might restrictions on wheeled traffic or the checking of visitors' credentials.[39] Wider sections of street, piazzas or courtyards could accommodate this waiting, as well as providing space for temporary markets.[40] Facilities for travellers such as inns, stables or driver hire were also often situated close to gates, and might likewise require open spaces.[41] Finally, the extra-mural approaches to gates were frequently lined with tombs.[42] Since religious restrictions excluded burials from the urban centre, such locations were a popular alternative, offering proximity to the urban population and visibility to travellers. Here, families could visit at festivals and anniversaries, and some funerary monuments catered to lingering, whether by the family or others, by incorporating benches into their design.[43]

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[37] Goodman 2016; Ellis 2018, 85-125; Emmerson 2020, 125-62; Van Tilburg 2022, 188-93; Stops 2023, 43-54.

[38] Malmberg, Bjur 2011, 364-6.

[39] Palmer 1980; Malmberg, Bjur 2011, 368-70 and 374-5; Stevens 2017, 69-72; Van Tilburg 2022, 179-85.

[40] Van Tilburg 2007, 28-9, 94 and 171; Malmberg, Bjur 2011, 376-7.

[41] Poehler 2011, 201-2; Malmberg, Bjur 2011, 368 and 371-2; Van Tilburg 2022, 191-2.

[42] Goodman 2007, 150-53; Stevens 2017, 161-213; Emmerson 2020, 56-91.

[43] Emmerson 2020, 68-82, 141-3 and 193.

With the characteristics of a typical gate-like quarter understood, we can turn our attention to the Porta Romana district in Ostia. Ostia was founded as a military *castrum* (fortress, outpost), but evolved into a port city serving Rome, bringing economic and physical growth (Fig. 2.3). By the middle of the first century BCE, it had significantly outgrown its original quadrangular walled circuit, but the unrest of this era, and especially pirate raids, prompted the construction of a new one.[44] This late Republican circuit included a major gate on the eastern side known today as the Porta Romana because it faced towards Rome. The area thus became a gate quarter from this period onwards. However, by the early second century CE a supplementary gate, known today as the Porta Secondaria, had been cut through the wall only around 30 m south of the Porta Romana.[45] Thanks to Heinzelmann, we can follow the area's development closely, revealing both how a typical gate-like quarter developed around the Porta Romana and what additional impact arose from the creation of the Porta Secondaria (Fig. 2.4).[46]

The earliest attested features pre-date the Republican wall, and are small, simple burials along the southern side of the road into Ostia.[47] The north side was unavailable for burials since it gave almost immediately onto the bank of the Tiber and in Heinzelmann's view was probably *ager publicus*. The Republican walls and Porta Romana were added between 63 and 58 BCE, after which the tombs became larger and more monumental, reflecting the community's growing wealth.[48] Competition for space along the road frontage was clearly intense, so that some tombs were built adjoining one another in the manner of terraced housing, and a second row developed behind those fronting onto the road. This intensive clustering of funerary monuments is characteristic of a gate quarter, albeit not yet a particularly diverse one.

It was between Heinzelmann's second and third phases that the Republican wall was breached by the Porta Secondaria. Heinzelmann considered the new gate Hadrianic based on the stratigraphy of the associated street horizon, but Pensabene has argued that although embellished in marble around this time, it was probably created in the late first century CE.[49] The road now known as the Via dei Sepolcri was paved when the gate was built, passing through it to join an internal road, though an unpaved forerunner had provided access to the second row of tombs since the early first century CE. During this period, competition for space along the road from Rome intensified further, and structures other than tombs began to appear.[50] A row of shops was built in the Trajanic period just outside the Porta Romana, obliterating a smaller row of early first century tombs.[51] More or less opposite them on the south side of the road, Heinzelmann's structure A6 is another set of three porticoed shops with upper rooms.[52] A15, meanwhile, is a courtyard with an unusually-wide entrance containing a water storage installation, which may have been a stable designed to receive wagons and horses. Shops and stables are characteristic of gate quarters, but because they all face onto the original road through the Porta Romana, we should understand these features as responding to that, rather than the supplementary gate. That is, the original gate quarter was starting to diversify.

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[44] Zevi 1997; Coarelli 2021, 210-17.
[45] Glogowski 2020, 5.
[46] Heinzelmann 2000, 28-37 and 123-217.
[47] Heinzelmann 2000, 34.
[48] Heinzelmann 2000, 34-5.
[49] Heinzelmann 2000, 32-3; Pensabene 2007, 191-3.
[50] Heinzelmann 2000, 35-7.
[51] Heinzelmann 2000, 29-30 and 36.
[52] For all alphanumeric references, see the catalogue at Heinzelmann 2000, 123-217.

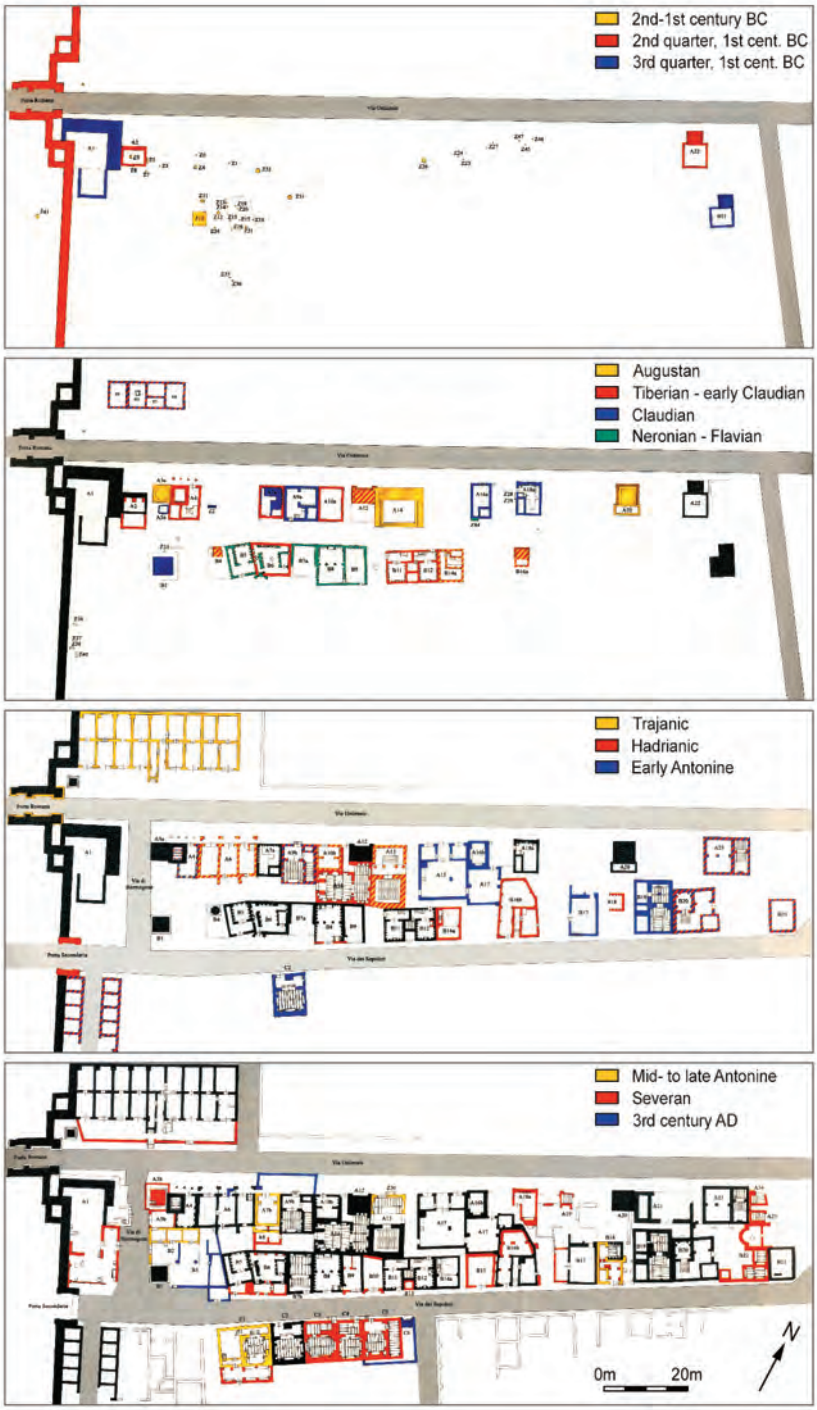

Fig. 2.4 Phases of development in the Porta Romana district, Ostia.

Meanwhile, along the Via dei Sepolcri, we can see the impact of cutting a supplementary gate and transforming a dead-end path into a route into the city. The most obvious manifestation is the appearance of tomb C2 on the southern side of the newly-paved road. This responds directly to the Via dei Sepolcri, seemingly reflecting its conversion into a busy through-route. But more broadly the row of tombs which stood behind those facing onto the road from Rome began to reorient themselves towards the newly-paved road. Perhaps most indicative of this change is tomb B8, which had been built facing the main road in the mid-first century but was now modified to present an embellished façade towards the Via dei Sepolcri. Several structures were also now built facing the new road. Most were tombs, but B16b was a two-storey complex of rooms, probably used for commerce and / or storage on the ground floor and habitation above. In addition, two rows of shops were built immediately outside the Porta Secondaria, flanking a road running south from the Via dei Sepolcri along the city walls.[53]

The final phase saw further filling-in of space, especially along the Via dei Sepolcri.[54] Tombs remained the dominant feature, but other types of structures were added, specifically along the new road. B9 and B10 are two more shops, possibly with upper rooms, slotted between tombs and in the case of B9 converted from an existing tomb antechamber. B2 and B3 are rooms around an open courtyard with a wide entrance and a well which may constitute an inn. Again, these are characteristic of gate quarters with their heavy footfall and numerous travellers. The construction of the southern wall of B3 also formalised a slightly widened section of road in front of the Porta Secondaria which could have been used by waiting vehicles or pedestrians. The construction of the Porta Secondaria thus appears to have had a distinct impact on the area just outside it, visible especially along the newly-paved Via dei Sepolcri. Though a gate quarter already existed outside the Porta Romana, the Porta Secondaria prompted the development of a new one alongside and blending into it. Indeed, this area is only the most intensively used sector of a larger landscape extending south and east from this corner of Ostia, which was characterised by wealthier burials plus domestic and commercial occupation closest to the city, and poorer burials further out.[55]

The community at Ostia was clearly still invested in its walls when the Porta Secondaria was created, at least in this area of the city. As noted at the beginning of this chapter, city walls were frequently treated in different ways at different points along their circuit, and Glogowski's study of the Republican circuit at Ostia bears this out. She has shown that throughout the period of the principate, some sections were repaired while others were demolished or encroached upon.[56] At the western end of the city, the Porta Marina was probably demolished by the end of the first century CE, and the walls allowed to disappear gradually through a combination of sea damage and private encroachment.[57] But the Porta Romana was restored and embellished by Ostia's city council at almost the same time.[58] This suggests that on this side of the city, a walled circuit was still considered desirable, perhaps as a monumental façade greeting visitors from Rome. Nonetheless, the Porta Secondaria was cut through this section of the circuit, again around the same time. Like the temple at Corduba, we must assume that

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[53] Heinzelmann 2000, 30.
[54] Heinzelmann 2000, 37-8.
[55] Pannuzi 2018.
[56] Glogowski 2020.
[57] Glogowski 2020, 12-13.
[58] Pensabene 2007, 184-91; Glogowski 2020, 4.

this was approved by the city council. Indeed, given the scale of the project, it was probably undertaken on their initiative, just like the restoration of the Porta Romana. As a formal gate rather than merely a gap in the walls, it created an additional entrance without compromising their symbolic and monumental impact: though it also created a new defensive weak spot which would need protection in a siege.

Heinzelmann viewed the Porta Secondaria and Via dei Sepolcri as having been created to support the intensification of the second row of tombs behind those on the road through the Porta Romana, in response to demand for burial plots.[59] But it is important to note that what made the gate quarter attractive was not the new road and gate themselves but the movement and flow which they accommodated. This in turn reflects the intensity of the traffic generated by Ostia's role as the port of Rome, which not only meant that the roads between the two were heavily used, but also that many of the vehicles moving along them were large goods wagons. The new Porta Secondaria was slightly wider than the Porta Romana, allowing it to accommodate larger vehicles, while the Via dei Sepolcri allowed traffic to leave the main road before entering the city and head directly towards destinations in south-eastern Ostia (Regio V). Although the parts of this region towards which it headed have not been excavated, the investigations of the Deutsches Archäologisches Institut Rom and American Academy in Rome showed that they were densely occupied, providing many potential destinations.[60] The construction of the new gate and road thus reflected what was already an intensive relationship between Ostia and the wider landscape and especially Rome, manifested in movement and flow between the two, and allowed that relationship to intensify further by facilitating the movement. The enhanced traffic flow also encouraged the construction of new tombs, shops, residential structures and possible inns and stables immediately outside the gate by making it attractive and profitable to build there. Breaching the walls of Ostia with a new gate thus prompted development just outside the city's boundary of a type profoundly shaped by the intensity of its relationship with its surroundings.

Private building projects

Our final form of localised breaching involves the obliteration of a section of wall by private buildings, usually housing. This is attested in plenty of cities, including Pompeii, Herculaneum, Ostia and Rome.[61] But Timgad in Africa Proconsularis (or, after 193 CE, Numidia) offers a clear example, complete with epigraphy which reveals something of the people involved. By the time Timgad was founded in 100 CE, cities in this area were not generally equipped with walls, and their presence at Timgad probably expressed its special status as a *colonia*.[62] Surviving sections show that the city's walls were made of small blocks, and only 1.05 to 1.10 m thick.[63] This is much thinner than serious defensive ancient walls: for example, the third century BCE circuits at Minturnae (7.4 m), Cosa (6.8 m) or Ferentinum (4-5 m).[64] Indeed, it is narrower than the

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[59] Heinzelmann 2000, 27.

[60] Martin, Heinzelman 2000; Martin et al. 2002.

[61] Pompeii: Carafa, D'Alessio 1995-6; Grimaldi 2010. Herculaneum: Stevens 2017, 146-50. Ostia: Heinzelmann 2001, 321. Rome: Stevens 2017, 124-5 and 140-41.

[62] Laurence, Esmonde Cleary, Sears 2011, 158-60.

[63] Ballu 1903, 10.

[64] Conventi 2004, 37, 46 and 67.

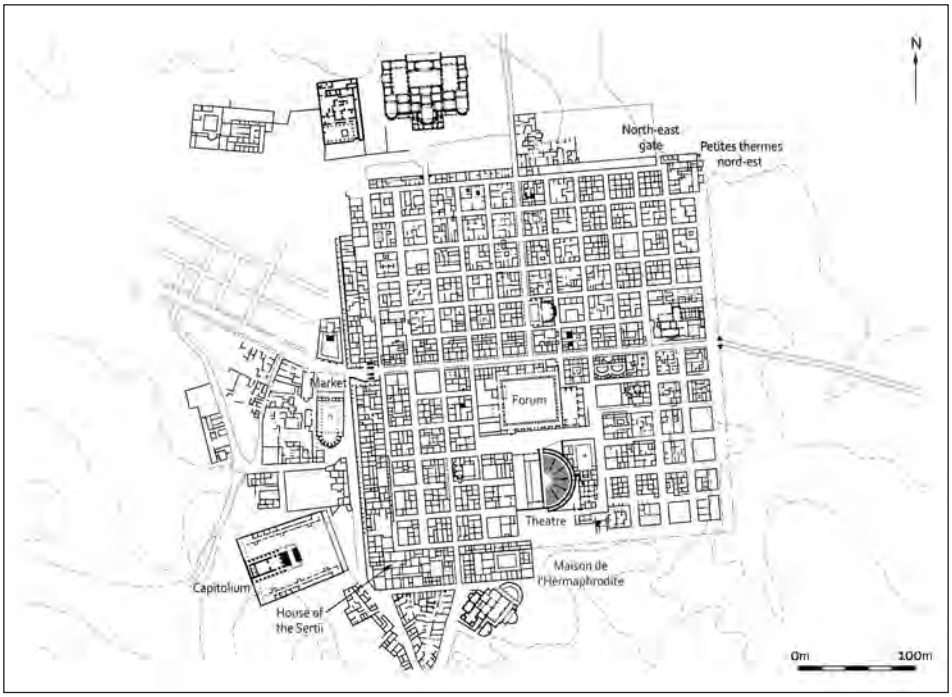

Fig. 2.5 Plan of Timgad.

slimmest of the city walls built in Augustan Italy (Tridentum at 1.25 m), a group which Pinder considers primarily symbolic rather than defensive.[65] Timgad's walls also made no use of natural slopes to enhance their height or strength: a stark contrast with Republican Corduba. In fact, in the south-western corner of the city, the walls ran along a shallow valley between two low hills supporting the city's theatre and Capitolium. It is not possible to be sure whether the alternative means of reinforcement, an interior embankment, was used at Timgad. A strip of land around 12 m wide between the edges of the orthogonal street grid and the wall could have accommodated one.[66] But if so it was removed and built over on almost all sides of the city, and the excavators did not attempt to establish any sequence of development beneath these structures. Thus either from the start, and certainly once any embankment had been removed, Timgad's walls were insubstantial. Sections could easily be dismantled, and later generations did just that (Fig. 2.5).

Without stratigraphic evidence, the modifications applied to Timgad's walled circuit cannot all be dated. Nonetheless, building inscriptions show that Timgad's original north, west and east gates were all rebuilt in a more monumental style during the mid-second century.[67] The community thus clearly remained interested in highlighting these key points of transition into

[65] Pinder 2017, 33-4.

[66] Boeswillwald, Cagnat, Ballu 1905, 346.

[67] West Gate or 'Arch of Trajan', mid- to late-second century: Boeswillwald, Cagnat, Ballu 1905, 133-50. North Gate, 149 CE: *CIL* VIII, 17852; Boeswillwald, Cagnat, Ballu 1905, 124-30. East Gate, 146-61 CE: *CIL* VIII, 2376; Cagnat 1915.

the original urban centre at this time.[68] Yet urban-style development was already underway immediately beyond the north, west and south walls of the city, and probably also the east.[69] A free-standing arch was also added around 300 m out along the road approaching the old west gate between 166 and 169 CE, and another around 200 m out to the east in 171 CE.[70] These arches seem to acknowledge the distinction between the urban over-spill and the wider agricultural landscape beyond. Meanwhile, despite the renovation of the original gates, the walls between them appear to have been deemed obsolete. Some buildings were built directly up against them, incorporating the walls into their structures: for example, the Maison de l'Hermaphrodite on the southern perimeter, or the Petites Thermes Nord-Est on the inside of the north-east corner.[71] And in the south-western corner of city, a stretch of around 200 m between the original western and southern gates was completely demolished.

Thanks to further epigraphic evidence, we can extrapolate much about what happened here. Inscriptions attest that a market outside the city's west gate, and probably also a Capitolium outside its south-west corner, were donated to the community by a couple named M. Plotius Faustus Sertius and Cornelia Valentina Tucciana Sertia.[72] Although the inscriptions do not give dedication dates, architectural and epigraphic style indicate that the projects date to the early third century.[73] The largest house in Timgad also sits directly over the demolished south-western corner of the city wall, and evidently belonged to the same couple, given the discovery in its baths of a statue-base dedicated to Hygia [*sic*] in their name.[74] This corner formed the southern extremity of the demolished section, while further housing filled the remaining space up to the western gate. Given that this section was probably all demolished in one go to allow the construction of the housing, and we know that the Sertii built the house and market at either end of it, Lassus and Fentress have argued that the housing in between was also their work.[75]

In thinking about the relationship between Timgad and its surroundings, what is interesting for us is that the houses were built in a single continuous block. When the walls were demolished, the local council could have insisted, or the developers have chosen, that the urban street grid was extended outwards, across their former course. Instead, the project was carried out in such a way as to extract the maximum possible amount of living space from the plot. Lassus argued that this reflects the behaviour of a private entrepreneur, pursuing profit from selling or renting the houses.[76] He also suggested that the Sertii secured approval for this project from the city council by building and donating the market first.[77] Fentress further noted that this type of property speculation was a major source of wealth for Timgad's elite, supporting their public building projects without necessarily being their sole source of finance.[78]

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[68] Lamare 2022, 3-8.

[69] Dufton, Fentress 2022, 186-7; Lamare 2022, 3.

[70] Western arch: *CIL* VIII, 2364; Boeswillwald, Cagnat, Ballu 1905, 130-33. Eastern arch: Ballu 1911, 10-13.

[71] Ballu 1903, 90-94; Ballu 1911, 109-11.

[72] Market: *CIL* VIII, 2393-9 and 17904-5. Capitolium: Pavis d'Escurac 1980, 198-9; *AÉpigr* 1980, 956.

[73] Boeswillwald, Cagnat, Ballu 1905, 188-9; Quinn, Wilson 2013, 151 (n. 195). Some date the Capitolium to the mid- or late second century (cf Morton 2016, 287-91), but this does not affect my argument.

[74] Ballu 1903, 81-9; Boeswillwald, Cagnat, Ballu 1905, 326-33.

[75] Lassus 1966; Fentress 1981.

[76] Lassus 1966, esp. 1225 and 1230.

[77] Lassus was unaware that the Sertii had also paid for the Capitolium, since the inscription recording this was only reconstructed and published in Pavis d'Escurac 1980.

[78] Fentress 1981, 406-7.

Whatever the precise circumstances, the consequence of the building project was that although a section of Timgad's wall had been demolished, movement and intervisibility between the original urban centre and the development outside it were not enhanced. The new houses replicated the demolished wall's function as a barrier, so that residents living just inside or outside this corner of the city would still need to go around its former line and through a gate to enter or exit the original urban centre. Nonetheless, something had changed. What separated the original core of the city from buildings such as the market or Capitolium was no longer a city wall, with all its symbolic and administrative weight as an urban boundary. Instead, it was a line of domestic buildings with none of the same connotations. It might be helpful here to remember the concept of the *continentia aedificia*, used by lawyers, urban administrators and others to define the true extent of a city which had overspilt its walls. The development in the south-western corner of Timgad created exactly the scenario which the *continentia aedificia* encapsulates: uninterrupted buildings extending from the core of the city, across a former urban boundary, and beyond.

This leaves us with an important question. What is it that knits urban space together: movement and flow, or built structures? Our experience of a mobile world which places high premiums on enhancing pedestrian and traffic circulation might encourage us to choose the former. Certainly, studies of movement around ancient urban landscapes implicitly assign to it a role in creating urban cohesion by identifying parts of cities which were strongly or weakly interconnected.[79] Lamare has also argued that at Timgad, the old line of the city walls may have been preserved deliberately in order to commemorate the city's original foundation.[80] But it seems unlikely that the Sertii would have wanted to think of the market and Capitolium which they had paid for as being fundamentally separated from Timgad's interior by housing which they had probably also built. The Capitolium especially was both metaphorically central to the religious landscape of city and oriented for intervisibility with the forum and theatre at its literal centre.[81] It seems more likely that they conceived the houses over the city wall less as a barrier than as part of a continuous built fabric stretching between and *connecting* the Capitolium and civic centre. This impression may have been heightened for them by the fact that their own house had multiple entrances, allowing them to go out towards either the Capitolium or the old centre without impediment. Indeed, the same was true for several other houses in the south-western corner: a contrast with the north-west and north-east corners where the wall was engulfed rather than demolished, preventing through movement.[82] The dual entrances of the south-western houses further support the idea that their developers conceived of this strip as connecting rather than dividing Timgad's *continentia aedificia*.

Conclusion

The examples discussed in this chapter all involved localised breaches of the city walls. As major projects which could hardly have escaped public attention, they must have been approved by their local councils. They also occurred in cases where the relationships between the cities

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[79] E.g. Poehler 2006; Kaiser 2011.
[80] Lamare 2022, 8.
[81] Morton 2016, 290-91.
[82] Lassus 1966, 1225.

and their surroundings were already intense. The breaches responded to that situation, intensifying it further. But the motivations behind the projects and their impact on the city-country interface in each case were different.

At Corduba, the design of the temple-forum-circus complex suggests close attention to the metropolitan model of Rome. The entire complex recalls the relationship between the Palatine hill and Circus Maximus, and the local elite may have been seeking to replicate Rome's celebrated extension into its surroundings by building a monument which deliberately breached the boundary between the two. They may also have been trying to demonstrate their trust in the emperors whom the temple almost certainly honoured, rather than the walls which it breached, to guarantee their safety. In these respects, the motivations behind the project were primarily ideological and political, and its pointed linking of city and country served the same ends: for example demonstrating Corduba's status as a leading city of the empire and the importance of its cult activities to an extended community beyond the city.

The other two projects discussed here seem more likely to have been motivated by interests in profit and urban amenity. The supplementary gate at Ostia maximised the value of the land outside it while easing the flow of traffic between the city and Rome. The demolition of the walls at Timgad freed up valuable space for property development while allowing the Sertii to build a substantial private house. But the details of these two projects were different, and so were their effects on the relationship between city and country. That in Ostia increased movement across the city walls by creating a new gate, while still retaining a clear urban façade. That in Timgad entirely obliterated the walls themselves, but perpetuated the barrier to movement which they had presented.

It is possible to make a case for either approach intensifying the relationship between the city and its surroundings: one on the basis of enhanced movement and flow; the other on the basis of a continuous built fabric. But different aspects of the relationship were intensified in each case. At Ostia, the creation of a supplementary gate which enhanced traffic flow was a response to an already intensive economic relationship with Rome and presumably boosted it further. But the project of the Sertii, though doubtless partly economically motivated, does not seem to have been designed to enhance the economic relationship between Timgad and its surroundings. Rather, the intensification which they sought seems more conceptual, involving the perceived status of the city's immediate periphery in relation to its original centre. Obliterating the wall and replacing it with a continuous line of buildings blurred what most would have recognised as Timgad's urban boundary in this area, helping to create the impression that their market and Capitolium belonged fully to the city's core.

Even if led by specific individuals, the priorities reflected in these projects must have aligned with those of their local elites, since they could not have gone ahead without council approval. But the choices which these groups made also varied not only between cities but in relation to different parts of their walled circuits. As far as we know, no other parts of the second-century BCE walls at Corduba had been breached at the time when the temple-forum-circus complex was built; indeed the community extended their circuit around the same time. Seemingly, they remained invested in walls as symbols of urban status, choosing to breach theirs only in one concentrated, spectacular show which allowed them to have it both ways. At Ostia, the city walls were neglected or built over in the south-western Porta Marina area even while they were retained and repaired along the south and east sides. This seems to reflect different choices in a delicately balanced equation between economic pressure on space, the reality of marine flooding and the desire to present an impressive façade towards Rome. And at

Timgad, while the walls were demolished and built over but not pierced by any new openings in the south-western corner of the city, on the north-eastern side they were merely engulfed and a supplementary gate *was* inserted.[83] Close attention to these different choices is an essential tool in understanding how communities responded to and sought to develop the relationships between their cities and their surroundings.

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[83] Ballu 1903, 13.

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Chapter 3

The countryside within the walls: considering rural, urban and suburban agriculture, viniculture and oleiculture in Roman antiquity

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Abstract
This chapter examines how the study of ancient vineyards, olive groves and wine and olive oil production can melt away divisions between city, country and myriad intermediary spaces. Archaeological evidence from production installations enables the exploration of trends in technology, scale and investment across a range of contexts, including comparison to past theories that argue for distinct preferences between urban and rural infrastructure and equipment. The possibility of 'agro-zoning' or clustering of production facilities in the urban landscape is considered along with their positioning in liminal intramural zones influenced by aspects of topography, geology or networks of movement into and around Roman towns. Many urban facilities illustrate longer-term trends in spatial (re)development, and the seasonal nature of viniculture and oleiculture creates an opportunity to assess medium-term change in place and experience. The material residues of agricultural production can also be exceptionally ephemeral, establishing a need to consider how to approach the vagaries of this evidence with appropriately comparative or multidisciplinary methods. Empty urban areas should be investigated with robust methodologies that can build our understanding of urban development and agriculture in new ways. Finally, the particular characteristics of peri-urban spaces are suggested to drive innovation and foster unique iterations of what were normally mundane activities of production.

Keywords
Urban; wine; olive oil; rural; agriculture; production

Introduction

Wine and olive oil permeated ancient Mediterranean societies. They were consumed and used by people from the largest metropolises to isolated farms and almost everywhere in between. As multi-purpose products of daily life, forming key parts of the economy, culture and religion, they serve as a promising lens through which we can reunite city and countryside. In contrast to other archaeological research that takes the urban as a normative baseline and

focal point,[1] the study of vinicultural and oleicultural production has long privileged a rural perspective, prioritising the investigation of villas, farms and estates with visible remains of processing infrastructure and agricultural activity. Our embryonic understanding of urban or intramural production was until recently based only on a handful of case studies at several Greek and Roman towns and cities.[2] There is now a robust case to be made for the production of these 'rural commodities' in urban spaces. This stretches beyond wine and olive oil to include urban pottery or perfume production, metalworking, glassmaking, animal bone processing, and agricultural practice more broadly, including the cultivation of orchards, vegetable gardens, and groves within town spaces.[3]

Our knowledge of viniculture and oleiculture in urban spaces has suffered due to the ephemeral nature of their remains and the challenges that accompany detection in deeply complex, often still inhabited, urban environments. Archaeological attention was also traditionally lured towards the analysis of more monumental and elite material, creating an imbalance in our understanding of urban landscapes and overshadowing this crucial aspect of daily life. While this chapter seeks to build discussion around relationships between urban and rural production, it also suggests several methodological approaches that can deepen and extend our understanding of urban viniculture and oleiculture.

Recent research highlights that facilities for the production of these commodities were widespread, deeply embedded and even prioritised in the fabric of ancient Mediterranean towns and cities, fundamentally influencing space and place.[4] Activity can be seen across a broad chronological and geographical range, from the well-preserved urban wineries of Pompeii, to dense intramural networks of oileries in the towns of North Africa (e.g., 58 at Volubilis, or 48 at Thugga and nearby sites) and the remarkable 43 olive millstones and 25 press counterweights in the Classical Agora of Athens.[5] Rather than repeating overtures of archaeological evidence, this chapter considers how such a corpus can help us to think away divisions between city, country and myriad intermediary spaces. It is important to acknowledge that there are significant geographical, environmental and cultural variables across sites, however I argue that, despite such differences, broad comparison can lead to a more nuanced understanding of the relationships and boundaries between urban and rural areas and activities.

Urban, peri-urban, and rural agricultural relationships

Interdependency and the interwoven nature of town and country has been proposed for some time, illustrated, for example, by the spatial incoherence of wealthy households, many of whom owned properties, resources, agricultural landholdings and undertook activities spread across the urban and rural.[6] Cities and towns were frequently also economically dependent on

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[1] Discussed by Witcher, this volume.

[2] E.g., Pompeii (Jashemski 1973), Athens (Papi, Bigi 2015) or Volubilis (Bigi 2018; Id. 2019).

[3] See Stevens 2025, 212.

[4] See the pan-Mediterranean synthesis and mapping of urban Graeco-Roman wine and olive oil production evidence in Dodd, Van Limbergen 2024a.

[5] De Vos 2013, 153-5; Papi, Bigi 2015; Bigi 2019; Dodd, Van Limbergen 2024a, 86-7.

[6] See Osborne 1987; Smith 2020. See Foxhall 2007, 54 for this concept in Classical Athens.

agricultural surplus from their hinterland.[7] Administrative and political evidence contrasts with descriptions in ancient literature to suggest that there was no distinction at all between a city and its broader territory.[8] The urban margins or liminal areas that bridge the gap between city and country became increasingly blurred over time, to the extent that extra-urban buildings and activities were woven into urban settings, and vice versa.[9] More recently, the notion and relationship of *rus et urbs* has been discussed through the lens of gardens, economic activities, spatial modelling, agricultural practice, and artistic media.[10]

Continuity between city and country is evident at the highest level through the presence within and beyond city walls of grapevine and olive tree cultivation, along with wineries and oileries to process crops. Agriculture, processing, storage and redistribution occurred across urban, suburban, and rural landscapes from the Republican period in Italy on the outskirts of towns (e.g., press facilities at Sena Gallica, Marche) or inside urban spaces (e.g., the second century BCE winery at Cosa) through the Empire and into Late Antiquity.[11] Dependent connections also existed based on labour, including the continuity of craftsmanship between city and countryside.[12] For example, the craftspeople who carved stone in cities perhaps also created rural stone olive mills or press beds, and seasonal labourers could live in towns but move temporarily into rural spaces during the harvest (or, for that matter, move from town to town or between rural locations).[13] The mobility of agricultural labourers is, however, challenging for us to detect and they remain underrepresented in datasets, especially in contrast to skilled workers.[14]

Despite such continuity and homogeneity, contrasts were also present. Processing infrastructure could be different between urban and rural facilities, either technologically (e.g., the type of press used, perhaps due to spatial constraints or safety considerations) or in terms of scale (e.g., press size, cellar capacity).[15] One only needs to compare the comparatively small urban Insula II.5 cellar at Pompeii with its 10 *dolia* (Fig. 3.1) to much larger rural villa production facilities in Italy with ca. 70 *dolia* (e.g., Villa della Pisanella), or the enormous examples from Gaul and Spain where cellars exceeding 300 *dolia* can be found (Fig. 3.2).[16] Ancient literary sources supplement this archaeological evidence. Pliny the Elder (*nat.* 18.74), for example, provides a detailed description of a small direct-pressure screw press mechanism, indicating that the presses themselves are not just smaller but so, too, are the buildings in which

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[7] Zuiderhoek 2017, 43; De Haas 2025, 321. Though note the flexibility in definition of 'hinterland' and potential differences between an economic hinterland, which could span a far wider and even non-contiguous area, and a geographical hinterland (see Zuiderhoek 2017, 49-50).

[8] Zuiderhoek 2017, 37-41.

[9] Stevens 2025, 202.

[10] E.g., Goodson 2021; Austen 2023; Fox 2023; De Haas 2025.

[11] Dodd, Van Limbergen 2024a; Van Limbergen, Dodd, Busana 2025. For the facility at Cosa, see Rönnburg, forthcoming.

[12] A growing body of work exists on labour mobility, including symbiotic labour relationships between city and countryside, though with greater focus on movement from rural to urban in search of opportunities in cities: for example, Erdkamp 2016; Hawkins 2016; Holleran 2016; Groen-Vallinga 2022; Leibundgut 2024.

[13] E.g., Chronicle of Pseudo-Joshua the Stylite, 52. See also Hawkins 2016, 40-47; Akrigg 2019, 114-15, 124-5.

[14] Woolf 2016, 454.

[15] On the intersection of press innovation, technological change and safety, see Lewit 2020, 335-9.

[16] Dodd 2022, 469-71; Cheung 2024, 112-16; Peña Cervantes 2025, 233; Poux, Mauné 2025, 157-9.

Fig. 3.1 The small *cella vinaria* with 10 *dolia* at Region II Insula 5, Pompeii.

they are housed, and in doing so he highlights a production technology highly suitable for urban environments. Scalar difference even maps a step backwards in the *chaîne opératoire* to cultivation. Archaeological evidence suggests that vine and olive tree growing was smaller scale inside town walls, probably due to spatial limitations and increased competition for urban space, with intramural land holding a premium compared to rural fields.[17]

While in some ways, therefore, connectivity, replication, and continuity are visible between city and countryside, a comparative approach reveals adjustment, evolution, and perhaps innovation. Catering to different production economies and spatial constraints set them apart, as Pliny might imply (above). Such differences also provide insight into the organisation of production: were urban, suburban and rural facilities producing for different purposes or markets? The comparatively small-scale vintners inside Pompeii (e.g., Insulae II.5 or I.20) likely sold their wine directly to townspeople, perhaps from street-side shops in their properties suggested by the existence of tabernae, and therefore generated direct income for their own household. Production could be supplemented by additional crops to be processed entering the town from surrounding villas. It is unlikely that the urban wineries of Pompeii ever produced any degree of surplus for export, suggested by archaeological indications of scale provided by the dimensions of treading areas, number and size of presses, and quantity of *dolia* for fermentation and storage (or lack of these features in several instances).[18]

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[17] Morvillez (2018, 65-6) discusses urban and demographic pressures on garden space and its cost.
[18] Dodd 2022, 457; Dodd, Van Limbergen 2024a, 86-8, 95.

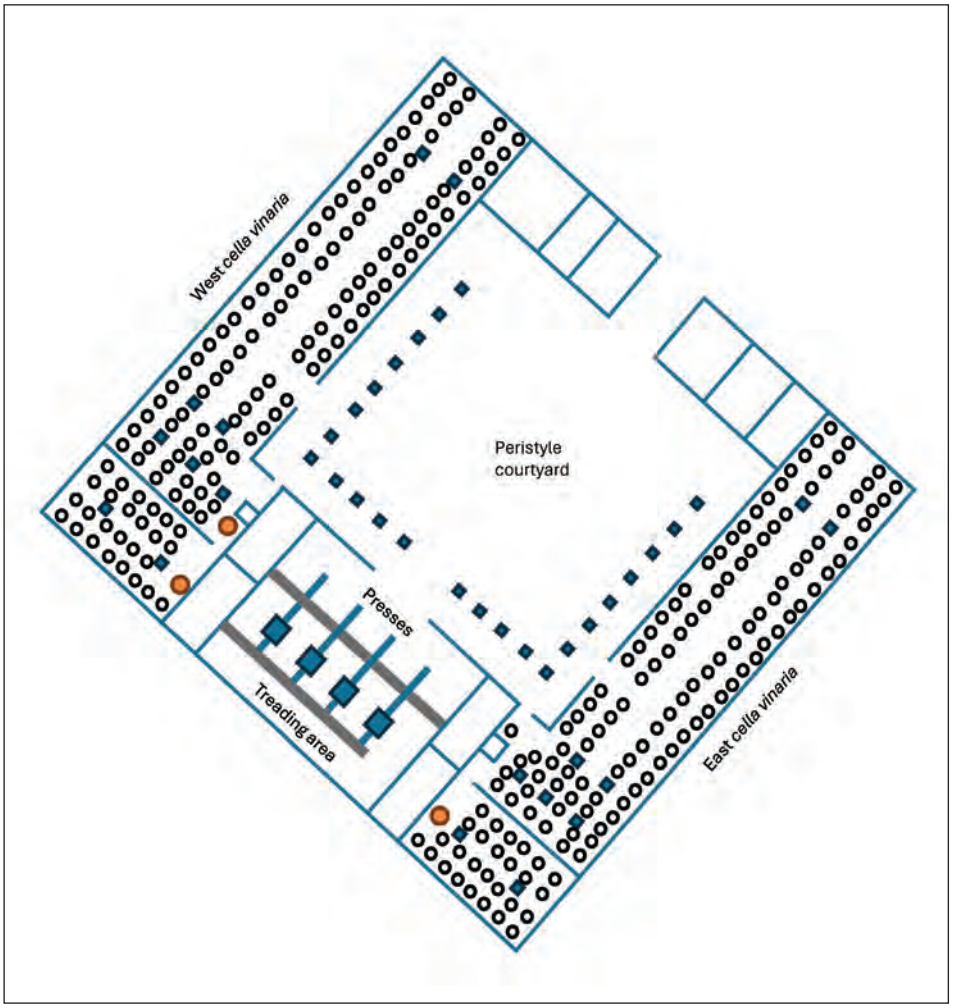

Fig. 3.2 Simplified plan of the villa of Saint-Bézard, France, with eastern and western wings dedicated to large *cellae vinariae* and wine production spaces in between. Black and red circles indicate the positions of over 300 *dolia.*

Differences between intra- and extramural facilities also provide insight into comparative investment in production between city and country. Various types of technologies and infrastructure required different degrees of social and economic capital, as well as connections into specific knowledge networks to source expert craftsmanship (e.g., for the construction of wooden screws for presses or carving millstones for olive mills). Perhaps interconnected urban sites or *emporia* that saw a consistent flow of merchants and artisans tapped more easily into networks of expertise and could therefore take on new technologies in a more responsive manner. This is at odds with the largely homogenous nature of wine and oil production technologies found in cities and isolated farmsteads; for example, screw presses existed across a wide range of contexts from the first century CE, though they might predominate in villas

Fig. 3.3 Attic column krater with a depiction of wine production attributed to the Cleveland Painter, ca. 460-450 BCE New York, MMA inv. 41.162.10, Rogers Fund, 1941. At centre, a satyr treads grapes in a skin or sack while standing on a portable wooden trestle table with grape must flowing into a sunken storage jar.

and villages where landowners were present.[19] It seems reasonable to suggest that decisions around investment and equipment were made in line with the needs, capacity, and individual context of a producer, rather than their urban or rural setting.[20]

Earlier Athenian culture might have preferred portable wine- and oil-making equipment constructed from materials that left little archaeological trace.[21] Athenian painted ceramics from the sixth and fifth centuries BCE depict wooden trestle tables with characters, often satyrs, treading grapes to produce wine, illustrating a mode of production that has not yet otherwise been detected (Fig. 3.3). There is no reason why similar production tools and processes did not continue into the Roman era for winemaking at certain scales or by lower socioeconomic levels of society that did not want to (or could not) invest in permanent masonry-built infrastructure. This sort of invisible production has significant implications for our understanding of the nature and scale of Roman winemaking across all landscapes. Not only does it add a pervasive layer of low-scale, rudimentary viniculture, highlighting bias in past calculations of trade and the economy,[22] it also provides a new angle into permanent vs temporary, or seasonal vs year-round, production spaces and further relationships between the urban and rural. Workers could have transported portable equipment like this into rural areas from towns, or vice versa, to process grapes or olives in more convenient settings.

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[19] Lewit (2008, 135-6) discusses the increased ability of resident landowners to take up technical innovations as well as their safety concerns, whereas the estates of absentee landlords (e.g., industrial-scale olive oil complexes in North Africa) focused largely on productivity through massive, often centuries-old machinery.

[20] See Lewit 2008; Id. 2020.

[21] Sparkes 1976; Immerwahr 1992; Pratt 2021.

[22] In a similar manner to past work on the wine and olive oil supply to the city of Rome and the use of transport containers made from ephemeral materials (e.g. De Sena 2005).

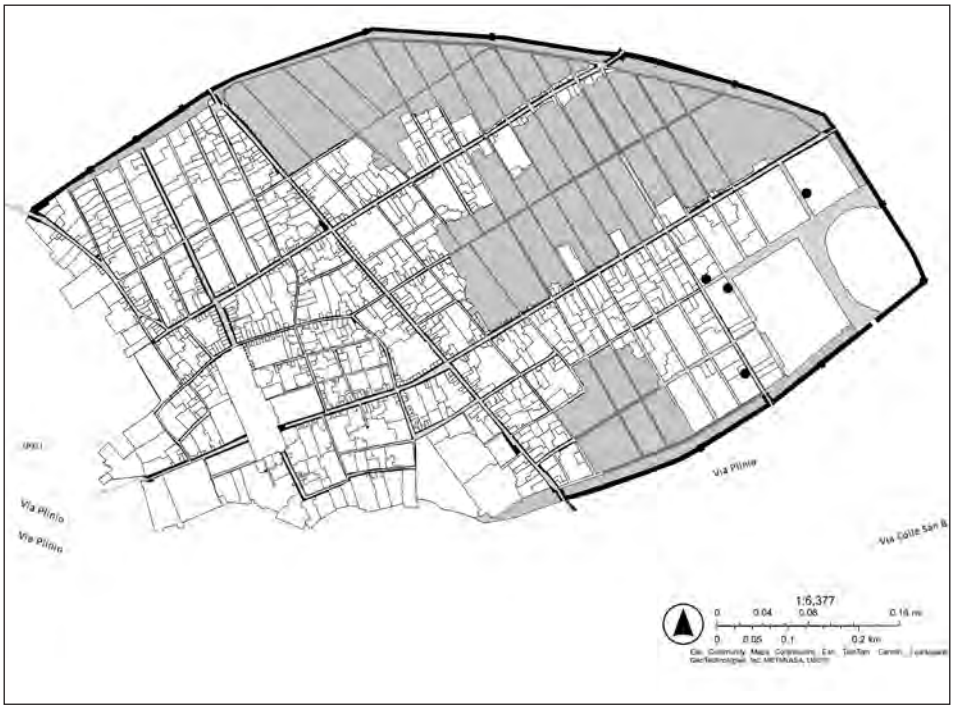

Fig. 3.4 Map of Pompeii showing the locations of intramural wineries clustered in the southeastern quarter. Dot: wineries; light shading: excavated areas; dark shading: unexcavated areas.

Agro-zoning in townscapes

What could be termed 'agro-zoning' has been argued for various towns, including Pompeii, where market gardens, vineyards and orchards, with associated production facilities, cluster almost exclusively in the south-eastern quarter of the intramural area (Fig. 3.4).[23] At other sites, production facilities are distributed more evenly across the urban fabric with patterns of zoning or clustering less present. Volubilis illustrates a dispersed pattern of oileries in its intramural zone, with installations found in most insulae of the site and only two or three more densely clustered groups in central areas (Fig. 3.5).[24] Differences in zoning or the density of agricultural facilities are likely related to types of property ownership as well as priorities in production organisation, flow and movement. By clustering facilities closer together in quasi industrial neighbourhoods, producers created communities of practice in close contact with each other and perhaps facilitated the existence of cooperative arrangements for those that required crops to be processed. Favourable topographical or geological aspects (e.g., beneficial slopes, drainage, water supply or soils) might also have led to the creation of urban agro-zones, whether deliberate or naturally occurring over an extended period of time.

[23] Kastenmeier 2023; Venner, forthcoming.
[24] Bigi 2018, 168.

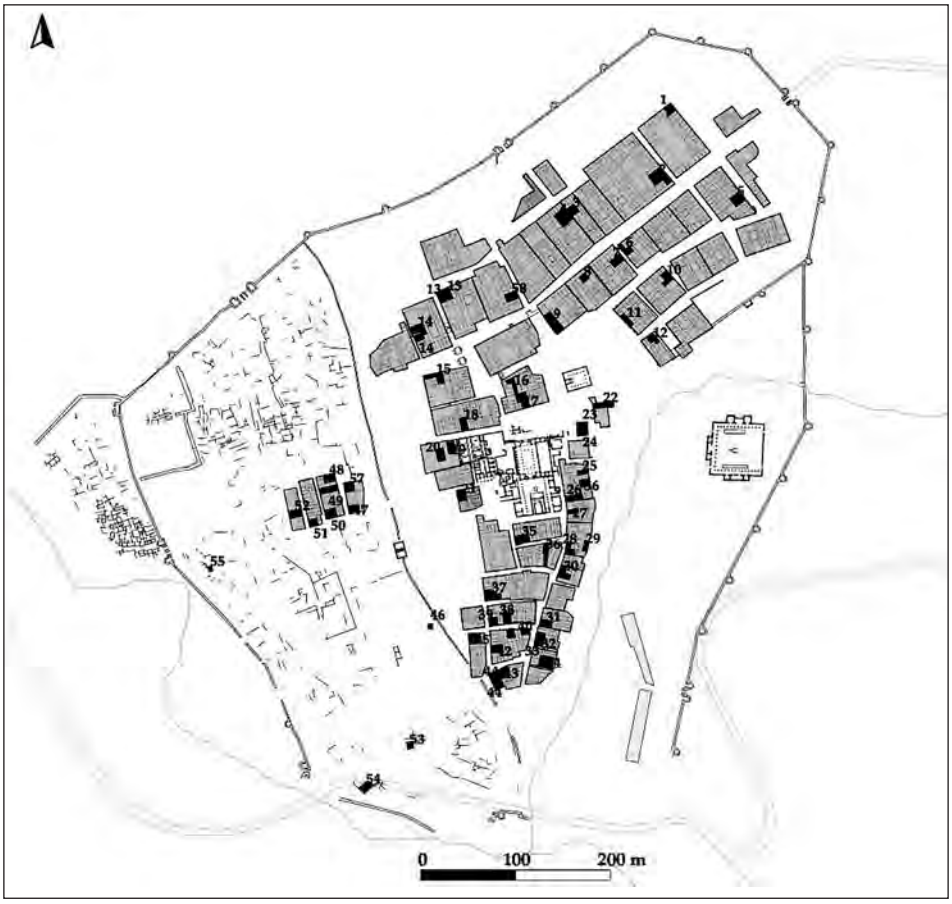

Fig. 3.5 Map of Volubilis showing the dispersed locations of oileries across the town. Each olive oil production facility is numbered and indicated in dark grey shading.

Wineries and oileries are also regularly positioned near the edges of the intramural zone. This is often explained through arguments of security, especially in late antique contexts, when rural activities were brought inside towns to protect valuable production facilities and crop stores in particularly tumultuous and unstable periods.[25] Other perspectives, however, provide fruitful alternatives and might apply more broadly to earlier chronologies. Positioning processing infrastructure on the urban fringe prioritised and facilitated increased connectivity between spaces of cultivation, production and consumption, melting town and countryside together into a continuous productive landscape. Vineyards and wineries in the south-eastern district of Pompeii were closely linked to routes in and out of the town, but also to intramural spaces of commerce or consumption, for example tabernae and triclinia. Furthermore,

[25] For this phenomenon on Delos in Late Antiquity, along with arguments against, see Dodd 2020b, 119-20.

the south-facing aspect and beneficial slope of this area aligns with recommendations in several literary sources for the production of good quality wine, which may have encouraged the planting of vineyards.[26] Data from GIS modelling also supports a preference for vineyards to be planted on hill slopes with a southern exposure in Italy, especially across southern Etruria.[27] Deciding where to locate intramural vineyards was, therefore, an intricate matter. A combination of local urban topography, connectivity, and socio-historical and political factors (e.g., the possible redevelopment of Pompeii's south-eastern quarter following the earthquake of 62 CE)[28] probably informed decision making around the place of urban agriculture and production.

Aspects of spatial organisation also encourage consideration of economic function and operation. At Pompeii or Baetulo in Spain, modest winemaking installations were located within domus or in their gardens, often with an adjoining street-side taberna.[29] This sort of small-scale operation frequently also included vineyards or olive groves within the property to provide grapes and olives for processing, with the resulting products (e.g., wine and olive oil) sold directly on the street as an intra-household economy. Many of the vineyards in the south-eastern quarter of Pompeii also contain triclinia, illustrating private or even public *in situ, al fresco* consumption.[30] These facilities could also form part of larger cooperative networks. Despite their small scale, urban facilities might serve as processing hubs for multiple intramural or peri-urban cultivators, taking in crops for processing and sale inside the town. Such contrasting modes and networks of production would generate quite different urban experiences. Compare, for example, a production chain contained largely within a domus and its garden, to a wider cooperative network that involved cartloads of grapes or olives entering the town to be processed at centralised facilities. The latter arguably took place at the many Late Roman villages, or 'agro-towns', in North Syria where wineries were often located at the limits of settlement, closer to the vineyards.[31]

Methodological approaches to urban and peri-urban agricultural production

Studies in urban development and armature regularly focus on the built environment of towns: the roads, buildings, monuments, and other pieces of infrastructure that characterise towns and cities. However, this perspective is less ideal to detect and analyse urban viniculture, oleiculture or agriculture more generally. While processing facilities were often – though not always – constructed from durable materials and formed part of the built environment, vineyards, olive groves, and intermediary spaces of agriculture and production are much less archaeologically visible and demand a different perspective and methodological approach. Although focused attempts at detecting urban agricultural practice have occurred to some extent since the mid-20th century, for example in the work of Jashemski at Pompeii,[32]

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[26] E.g., Cato *Agr.* 1.3; Colum. 3.2.6. Although much later but drawing on earlier sources, see the *Gp.* 5.2.

[27] Goodchild 2013, 63–6. Other analyses suggest that aspect might have been comparatively less important in the Adriatic region for grapevine cultivation (McLean 2024, 241-3).

[28] Kastenmeier 2023, 146-7; Venner, forthcoming.

[29] Dodd 2017; Id. 2022, 457; Forn 2024.

[30] Kastenmeier 2023, 148-9.

[31] Callot 2017.

[32] Jashemski 1973; Id. 1975.

it was not until the last few decades that environmental archaeology, micro-excavation, and other scientific methods have been integrated more consistently to identify and document traces of urban agriculture.[33]

Along with the implementation of more robust methodological approaches, advancing understanding of urban agriculture also depends upon a willingness to investigate spaces that were traditionally perceived as less interesting. Better evidence of urban viticulture and oleiculture might be found by flipping our traditional focus on the built environment and instead prioritising investigation of 'negative' urban space: open areas where no monumental or permanent structures are found. Although it may seem counterintuitive, focus on these intramural spaces can also tie into broader discussions around urban development and change over time. For example, the central Italian towns of Falerii Novi, Lucus Feroniae, Gabii, and Interamna Lirenas all present to different degrees open areas within the walls where no apparent building activity took place, visible through excavation and geophysical data.[34] Such spaces were undoubtedly used for a variety of purposes over the lengthy occupation histories of these sites, including for animal husbandry, welcoming or corralling people, hosting festivals, meetings, or the erection of structures at certain times for seasonal or temporary activities. They were, however, equally well suited for use in agriculture, as gardens, or other means of landscape exploitation. Negative urban space of this nature can be centrally positioned, but is more often found in liminal intramural areas, on the boundaries of towns or near city limits; visible, for example, inside the north-eastern flank of the circuit wall at Falerii Novi in Insula LXII or at Interamna Lirenas in Insula XXXIV. They can also reach from within to beyond walls or urban limits, further blurring the boundary between urban, peri-urban and rural and embedding notions of a connected city and hinterland (above).

Evolutions in spatial use extend to the ebb and flow of the urban fabric itself, with the built environment sporadically expanding into or contracting away from these negative spaces. Deploying our modern environmental and scientific toolkit into analyses of these seemingly open and empty spaces that were being expanded *into* or contracted *away from*, rather than focusing on the structures doing the expanding and contracting, will enable new visions of the place of urban agriculture in Roman towns and cities. This also lends agency not just to the more permanent, visible remains of ancient urbanism, but also to the natural environment that encircled and underpinned it. Elements of nature were, after all, interwoven and coexisted with the Roman built environment, whether through grapevines trained across porticoes, orchards and vineyards planted behind the houses of an insula, market gardens that peppered the roadside, or sacred groves surrounding a temple.[35]

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[33] See Lodwick, Rowan 2022; Dodd, Van Limbergen 2024b; Id. 2025. For a recent attempt at using palynology to discern urban and suburban agricultural practice at Pompeii, see Vignola et al. 2022.

[34] For Falerii Novi (e.g., Insula LXII), see Keay et al. 2000; Millett et al. 2025. For Lucus Feroniae, see Kay et al. 2023. For Gabii, see Mogetta, Johnston 2024. For Interamna Lirenas (e.g., Insulae VII, XIV, XXI, XXXIV), see Launaro, Millett 2023 and Launaro, Leone, Verdonck this volume..

[35] Plin. *nat*. 14.11 describes an enormous single grapevine trained across the Portico of Livia in Rome that provided shade and produced 12 *amphorae* of wine each year. For green spaces and market gardens at Pompeii, see Jashemski 1993; Venner, forthcoming. Geophysical prospection has revealed the presence of what might be an intercropped olive grove or orchard and vineyard around the sanctuary at Lucus Feroniae (Kay et al. 2023, 132-4; Dodd 2026), and Carroll (2018) discusses the literary and archaeological evidence for temple gardens and sacred groves. More broadly, see, for example, Grimal 1943; Jashemski et al. 2018.

Certain parts of the evidentiary puzzle will nonetheless continue to evade detection and in these cases ethnographic or comparative historical approaches can supplement our understanding of practice, processes, or habits. While these methods should be used cautiously, with an understanding of the dangers present when assuming common or interrelated practices across wide timespans and cultural differences, when done effectively and with robust justification they are particularly helpful at elucidating the daily practicalities of urban production. This is especially true for viniculture and oleiculture. Wooden components of ancient presses, for example, are rarely preserved and therefore similar early modern examples that remain intact enable visualisation of mechanics and operation.

Theoretical developments in sensory analysis also hold potential to build our understanding and appreciation of production in new, often unexpected ways. Wine and olive oil were commodities with deep cultural, religious, social and economic significance and therefore act as a lens through which we can explore experience across a range of urban, suburban or rural spaces by considering, for example, aspects of sight, sound and smell. By using literary, archaeological and visual sources, it is possible to 'mobilise our imagination' in an informed manner to explore at a deeper level the experience of those working or otherwise involved in wine and oil production facilities.[36] Pliny's (*nat.* 18.74) description of a direct-pressure screw press conjures images of production in smaller, perhaps more cramped conditions, with infrastructure and facilities built to cope with spatial restrictions. In doing so, he conveys a distinctly different feel to agricultural processing than, for example, that in the larger-scale operations of many rural villas – one that we might reasonably expect to find in urban contexts.[37]

Change over time

In a similar manner to sensory approaches, the study of wine and olive oil production is also particularly well suited to temporal analysis, from short-term (daily) through medium (seasonal) and longer-term (years or centuries). Most obviously, agricultural activities and associated processing were intimately intertwined with the seasons. Facilities saw an influx of labour during the harvest with exponentially greater numbers of people interacting with and using these spaces as grapes or olives were picked, processed, and resulting products stored. Increased activity could also extend beyond the harvest in peaks and troughs, especially for products that, by their very nature, underwent particular transformative processes; for example, fermentation for wine, which required regular monitoring and adjustment dependent on conditions and progress. Such activity spread beyond the facilities themselves, especially in urban or peri-urban contexts, with greater movement between vineyards or olive groves and production facilities, including carting the harvest into centralised facilities and, if necessary, using temporary storage spaces while awaiting processing. Glimpses of these activities can be seen archaeologically (e.g., vats at the Villa dell'Acquarella in Camaiore, Tuscany, thought to be for olive storage and washing prior to processing) or in artistic sources (e.g., the ambulatory mosaic at Santa Costanza in Rome, which shows carts loaded with grapes moving towards production installations).[38]

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[36] Zanker 2000, 13. See contributions in Toner (2014) for a discussion of the sensory experience in ancient cities.

[37] E.g., within the same region and time period, compare the press room and cellar at the Pompeii II.5 facility with those found at the Villa della Pisanella not far away at Boscoreale, or even just outside Pompeii's walls at the Villa dei Misteri.

[38] Fabiani, Paribeni 2012; Dodd 2022; Id. 2026.

However, increases in movement and activity associated with production only occurred for a relatively brief period in the annual cycle. Wineries and oileries potentially lay for much of the year untouched – ready or being prepared for use, but less actively involved in life, sound or movement. This had the potential to render entire town neighbourhoods or whole wings of a villa complex (cf. Fig. 3.2) silent for extended periods, illustrating a powerful seasonal impact on the people, life and spaces of urban, suburban and rural areas, especially those involved in viniculture and oleiculture. It is possible that certain pieces of production equipment were multi-purpose, which may have lessened this impact. Mortars or stone rollers used to crush olives or sun-dried grapes have, for example, been suggested to play a role in the processing of nuts or dates in the eastern Mediterranean.[39] Large vats designed to collect grape must or olive oil and vegetable water could have been used in the off-season as cisterns to collect rainwater. Presses in *fullonicae* (fuller's workshops) are depicted in Roman art as analogous to those used in wine or oil production and we might therefore expect that these were interchangeable in the activities of a laundry to wash and press dry clothes.[40]

The loaded religious connotations of wine meant that wineries and vineyards became focal points at certain times in the religious calendar. Festivals that celebrated viniculture or the grape harvest were held in spaces of agriculture and production, including picking the first bunch of grapes (the *Vinalia Rustica* on the 19 August) or the opening of the vats to taste the first wine from the previous vintage (the *Vinalia Priora* on the 23 April).[41] It is likely that such events took place at Villa Magna, near Anagni, where the future emperor, Marcus Aurelius, records in a letter to Fronto his participation in the grape harvest and observation of winemaking.[42] The discovery of parts of the villa and a winery dating to the Trajanic-Hadrianic period, possibly associated with the events described in this literary source, have led to convincing arguments for the *in situ* participation of the imperial family in vintage and harvest rituals.[43]

Surrounding all these activities and evolutions over time was the unique soundscape that accompanied wine and olive oil production. This spanned the operational noises of often enormous wooden, metal and stone machinery, and the labour of workers in humid rooms, but could also include musical accompaniment that permeated urban, peri-urban and rural space at particular moments of the year. Ancient texts across a wide chronological period, from at least the sixth century BCE through sixth century CE, describe the use of the *aulos* (a type of flute), *syrinx* (a pan-flute) or stringed instruments, along with specific 'presser songs', all of which created rhythmic music to ease the fatigue of repetitive labour during the vintage and extended from processing facilities into the fields.[44] Many of these literary descriptions are supported by details in ancient art (Fig. 3.6).

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[39] Dar 1999; Netzer 2002.

[40] E.g., the depiction of a direct-pressure double screw press in a fresco at Pompeii from the Fullonica of L. Veranius Hypsaeus (VI.8.20), now in the Museo Archeologico Nazionale di Napoli.

[41] Moser 2024, 458.

[42] Avr. *Fronto* 4.4-6; see translation by M. Andrews in Fentress et al. 2016, 29-31.

[43] Fentress et al. 2016, 203-8. See Dodd, Galli, Frontoni 2023 for similar suggestions at the Villa dei Quintili, just outside Rome.

[44] E.g. *AP* 11.64; Ath. 4.174e-f; Callix. 627 F 2; *Anacreont.* 59.7-8; Hom. *Ilias* 18.566-71; Longus 2.36.1; Poll. 4.55. See also Cerqueira 2016, 188-91.

(a)

(b)

(c)

Fig. 3.6 Examples of musical accompaniment during wine production: (a) satyr playing the double *aulos* while others tread grapes and decant must on an Attic amphora painted by the Amasis Painter, ca. 540–520 BCE; Würzburg, Martin-von-Wagner-Museum inv. L 265; (b) relief showing a person playing a single *aulos* and horn (left) while two others tread grapes in a basin on a Campana plaque from the first half of the first century CE; Moscow, Pushkin Museum inv. II 1a 212; (c) mosaic showing two people treading grapes next to a single screw press (left) while a musician plays an *aulos*-like instrument (right) and another person harvests grapes using a billhook and places them in a basket, from the sixth century CE Church of the Holy Martyrs Lot and Procopius, Khirbat al-Mukhayyat, Jordan.

These features of wine and olive oil production colour our understanding of ancient urban and rural spaces, providing a more granular vision of how sensory and temporal aspects not only changed and fluctuated over time but also contributed to bridging the divide between city and country. Facilities and processes were a product of the society, culture and people that created, used and inhabited them, deeply intertwined with social and economic motivations yet simultaneously moveable and fluid. Along with the possible range of periodic primary and diverse secondary uses, this shows how viniculture and oleiculture ebbed and flowed with seasons, markets, political events, regional connectivity, and festivals.

Conclusion

The range of evidence and methodological and theoretical approaches outlined in this chapter – from archaeological and literary material through comparative ethnography, and sensory and multidisciplinary analysis – when used thoughtfully, facilitate our progression from archaeological maps and data to a richer description of lived-in environments. Alongside differences in wine and olive oil production between city and countryside, many similarities in behaviour, experience, and equipment are also visible.

While much of this chapter has focused on urban or rural production, the importance of peri-urban space should also be underlined. It can bridge the divide between agricultural practices of different scales and forms in urban and rural contexts. Liminal urban space acted as a hotspot to host certain forms of agricultural production, not just fields for the cultivation of crops that could be processed inside town walls but also warehouse infrastructure to enable greater storage and mediate between external and internal access.[45] One might argue that peri-urban production takes a middle ground and exhibits a fusion of urban-rural characteristics;[46] or, on the other hand, with the greater space afforded by suburban areas, it tends to display characteristics that lean towards the rural. The latter could be supported by the regular occurrence of suburban villas just outside town walls with distinctly similar agricultural production facilities in scale and nature to more isolated *villae rusticae* (e.g., the Villa dei Misteri at Pompeii, or the Villa dei Volusii at Lucus Feroniae).[47]

I contend, however, that peri-urban spaces bear particular characteristics. They are within easy reach of the safety of town or city walls as well as proximity to civic or administrative centres, are often tightly connected to key transport arteries and broader regional networks, and offer comparatively more expansive space (whether for agriculture, the construction of buildings, leisure activities, or temporarily housing large numbers of people).[48] They can also possess particular religious or cultural meaning and usage as liminal spaces. Different combinations of these characteristics meant that peri-urban contexts could drive innovation and foster unique iterations of what were normally fairly mundane activities of production.[49]

The winery at the Villa dei Quintili, for example, was set in a strategic peri-urban location within easy reach of Rome's intramural environment (just 3.9 miles outside the Aurelian walls), on a key transport network in case of the need to travel quickly (the Via Appia), and had plentiful space for people to gather for religious events, festivals, or to house a military detachment that could provide safety in a particularly tumultuous period (the early/mid-third century CE).[50] The unique wine production that occurred in this opulent space, with lavish features that contrast the majority of plainer urban or rural production facilities, was set more broadly in a place that possessed several other characteristics beneficial for reasons of safety, movement and celebration, enabled by its peri-urban context. This means that we should think about peri-urban spaces of production more carefully, without necessarily interpreting them through identical frameworks or rationales as urban or rural facilities. They act as an interface

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[45] For suburban warehouses at Pompeii, see the chapter by Emmerson in this volume.
[46] More generally, see Stevens 2025, 204.
[47] Feige 2022, 270, 417.
[48] See Stevens 2025.
[49] Goodman (2007) highlights how urban margins could act as catalysts.
[50] Dodd, Galli, Frontoni 2023.

between urban and rural, simultaneously central in both uniting but also establishing unique space between city and countryside.

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Chapter 4

Setting boundaries: assessing limits and limitations at Pergamon's (intra)urban periphery

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Abstract
Throughout its centuries-long history, the ancient city of Pergamon has undergone numerous processes of expansion and shrinkage that are often obscured by the nature of urban archaeology. An exceptionally promising case study when investigating these processes is the area of the northern East Slope, which experienced a short-lived transformation as it changed from an extramural area to the so-called Philetaerian city from the late fourth century BCE, then on into a well-connected and frequented intramural periphery of the Eumenid city expansion, from the early second century BCE. The peak of activity only lasted around a hundred years, before the area directly adjacent to the Eumenid city wall was gradually abandoned and partially turned into a refuse dump and subsequently into a possible space for the burial of neonates and infants in the Roman Imperial period.
By analysing multi-scalar data sets, shifts of permeable and impermeable, visible and invisible boundaries of the Hellenistic and Roman Imperial city will be used to reconstruct the dynamic urban character of the northern East Slope of the Pergamene city hill. This paper demonstrates that integrating data from the intraurban periphery into legacy data can reveal not only the functions of the studied urban area, but also (trans-)urban connections.

Keywords
Pergamon; urban borderscape; multi-scalar data; refuse management; neonate burial

Introduction: urban peripheries and borderscapes

When approaching ancient cities in the Mediterranean, visitors – both in antiquity and today – will often first notice the monumental remains of city walls. As a rigid boundary meant to be crossed only at selected points, they form one example of cities' numerous permeable and impermeable, visible and invisible boundaries.[1] Yet, although research on cities has focused on definitions and boundaries of the urban, the boundaries other than city walls and the areas around them are often – like their spatial position – neglected.

[1] For a general overview of urban boundaries, see Stevens 2017; Claeys 2016, 36-47; Goodman 2007, 59-68.

The flexibility and permeability of urban boundaries are well documented and accepted in archaeological research;[2] yet, not all boundaries can be defined archaeologically, especially those of dynamically expanding and contracting cities. The boundaries and therefore the *suburbium* of the city of Rome pose a striking example, which has long dominated the discussion on peripheral urban areas, with life and death on the periphery of the metropolis and other cities of Roman Italy particularly well-documented in written sources.[3] The discussion has expanded outside the metropolis of Rome in recent decades, with a number of studies on urban peripheral areas extending the foci westwards to Gaul, but also to the east, in particular Greece and Asia Minor.[4]

In contrast to this marginal research status, the areas along city boundaries offer a treasure trove of insights into life in antiquity. Activities that are less often encountered in city centres are woven into the periurban fabric, as shown by the existence of large-scale production facilities, extensive refuse management sites, necropoleis and sanctuaries, amongst other features.[5] Furthermore, periurban areas are particularly indicative of urban development in long-lived cities: urban growth and decline are an integral dimension of urbanism,[6] and both can be observed particularly well on the fringes of cities. Relatively short-lived transformation processes observable at urban boundaries come close to historical snapshots compared to the often centuries-long continuity of settlement activities in city centres. Periurban areas not only provide information about urban developments, but, as a transition zone, they also tell us about their integration into the rural landscape.

The scarcity of written sources on *proasteia* and *suburbia* outside of Rome obscures the picture for pre-Roman contexts and the Roman East, where the term *proasteion* is often used for periurban areas.[7] It is also attested for Hellenistic and Roman Asia Minor. In the written sources, the city wall, if present, marks the point of transition from the inner-city centre, *asty*, to the *proasteion*.[8] However, a *proasteion* was not only reserved for poleis; *proasteia* are also documented in inscriptions for smaller rural settlements.[9] Although the written sources give insights into the ancient perception of urban boundaries and the respective areas, in research, terms such as *suburbium* may also be charged by modern assumptions and ambiguity in ancient sources. The term *suburbium* refers to two phenomena: 1) built-up areas directly adjacent to the city walls with the above-mentioned characteristics and 2) villas in the *chora*.[10] This ambiguity is also sporadically preserved in Greek sources referring to the *proasteion*.[11]

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[2] E.g. Stevens 2017, esp. 255; Goodman 2007, 13.

[3] Emmerson 2020; Witcher 2013; Annibaletto 2010; Goodman 2007.

[4] See for example the edited volume Darcque, Étienne, Guimer-Sorbets 2013.

[5] Emmerson 2020, 3 with references; Claeys 2016, 20-21.

[6] Smith 2020, 18.

[7] For etymology and paraphrases in Greek written sources, see Étienne 2013. For a comprehensive discussion, see Claeys 2016, 2-3, 7-11. In Asia Minor and bordering landscapes, a *proasteion* is attested for example for Sardis, Ephesos, Miletos and Samos as early as Archaic times, Audring 1981, 219-27.

[8] Schuler 1998, 105-8 with an extensive discussion of terminologies preserved in written sources from Asia Minor.

[9] The term *proasteion* was used in an inscription regarding a military settlement in central Lydia during the reign of Eumenes II in the first half of the second century BCE, see Thonemann 2013, 20-21 with further references. However, there seems to have been wide variability in the appearance of *proasteia*, Schuler 1998, 105 with n. 16.

[10] Claeys 2016, 2-3.

[11] Schuler 1998, 106, n. 17.

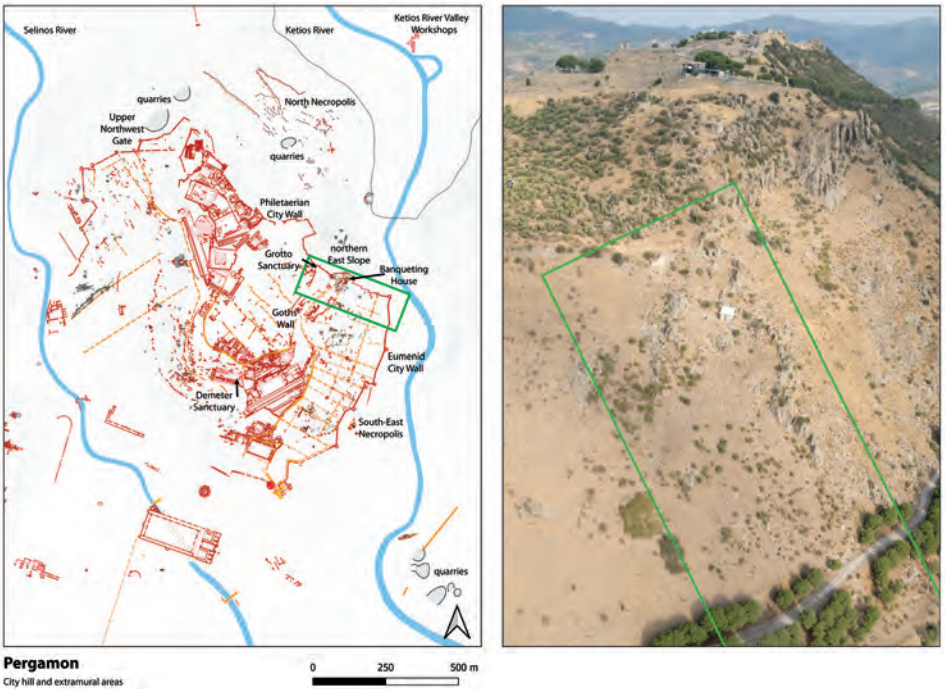

Fig. 4.1 Pergamon, map of the city hill with photo of the northern East Slope. Location of study area marked in green.

Faced with these challenges – identifying boundaries within fragmentary archaeological evidence and the difficulty of applying the surviving ancient terminology – the concept of urban borderscapes may help to describe the areas that lay both in front of and behind the city wall, functioning as 'zones of interaction, of negotiation and transition' and as an 'interface, where urban elements converged with non-urban elements'. The concept of borderscapes, which Saskia Stevens has convincingly applied to the area along city walls, appears to be particularly beneficial in the context of comparative, epoch-spanning studies.[12]

Comprehensive studies on urban peripheral areas in the eastern provinces of the Roman Empire, especially cities with pre-Roman predecessors, have remained rare.[13] This is unfortunate, as site-specific topography, existing pre-Roman structures and the negotiation processes of local elites make an examination of the late Hellenistic and Imperial urban peripheral areas particularly illuminating from a chronological perspective. This paper is one attempt to address this scarcity by turning to the city boundaries of the Hellenistic-Roman city of Pergamon;

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[12] Stevens 2020; Ead. 2017, 8-10, 251, citation pp. 9, 251. In urban archaeology, borderscapes may be understood as a theoretical term, see Smith 2020, esp. 15-17.

[13] An exemplary study is the so-called 'Eastern Suburbium' Proasteion of Sagalassos, Claeys 2016. For other sites, single aspects of periurban landscapes are presented, e.g. Martini 2010 for the city walls of Perge with a brief discussion of periurban spaces in Roman cities in Asia Minor, or several in a topographical context, e.g. Scardozzi 2015 for Hierapolis (Phrygia) or Filges 2020 for Priene's steep north slope.

specifically, its northern East Slope (Fig. 4.1). In this case study, multi-scalar datasets will be used to trace the transformation of a well-developed urban area into a waste dump and subsequently a potential necropolis for neonates and infants.

Pergamene borderscapes

Situated in western Turkey, in the ancient city of Pergamon, human activities can be traced back to prehistoric times, while evidence for the earliest settlement activities dates to the Bronze Age.[14] Meeting all criteria for a *polis* already in the late Classical period, Pergamon became the capital of the Attalid Kingdom in the Hellenistic period. After being incorporated into the Roman province of Asia in 133 BCE and enduring turbulent times in the first century BCE, the metropolis of Pergamon flourished during the Roman Imperial period.

As yet, however, there is no chronologically distinguished definition of where the periurban areas of Pergamon begin and end,[15] with the city's centuries-long development harbouring challenges. To simplify the matter, a distinction can be made between three periurban areas, which are roughly related to the walled enclosures and their dismantling: the periurban areas around the so-called Philetaerian city wall (late fourth and third centuries BCE[16]), the Eumenid city wall (second and first centuries BCE[17]) and the Roman city (first century CE until the erection of the so-called Goths' Wall in the mid-third century[18]). Throughout the city's history, the study area's position in relation to the city walls changed. During the settlement of the fourth and third centuries BCE, the northern East Slope lay directly outside the so-called Philetaerian city walls; by the early second century BCE, it was incorporated into the Eumenid city wall (Figs 4.1, 4.5); and it was fully developed in the late second and early first centuries BCE. Only a hundred years later, in the late first century BCE to early first century CE, the northern East Slope was abandoned,[19] revealing one of many complex and small-scale transformations of the urban fabric of the early Imperial period.[20]

Although the city walls were at the centre of early research on Pergamon, which also identified adjacent structures, such as water channels and graves,[21] it is mostly the individual studies on thematic areas and coincidental discoveries that have shed light on the city's urban peripheries. Planned investigations were primarily concerned with the search for extramural sanctuaries mentioned in written sources[22] and well-preserved monumental sanctuaries, such as the Demeter sanctuary (Fig. 4.1) in front of the so-called Philetaerian city wall.[23]

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[14] For a comprehensive overview of the settlement history, see Pirson 2017.

[15] A coherent designation of areas around the urban centre of Pergamon in the context of its micro-region is currently being established with the TransPergMicro-project, see n. 35.

[16] Pirson 2017, 65-6.

[17] See Lorentzen 2016 for the Eumenid city wall; Pirson 2017, 65-6.

[18] Pirson et al. 2022, 305-10.

[19] E.g. Engels 2022 for the Grotto Sanctuary; Pirson et al. 2016, 139-41, for the so-called Banqueting House.

[20] Pirson 2017, 125.

[21] Conze 1913.

[22] Ancient authors describe the destruction of periurban sanctuaries in 201 BCE by Philip V of Macedonia, and 155 BCE by Prusias II of Bithynia; Pirson 2017, 66-7 with references. Phrases such as πρὸ τῆς πόλεως were used in most cases, i.e. D.S. 31,35,1; cf. Étienne 2013, 18-19, tab. 1-2.

[23] Radt 2016, 180-86.

Among the many studies addressing individual elements of Pergamon's urban peripheries are those on necropoleis, some of which were only discovered as a result of modern building activities; for example, the South-East Necropolis (Fig. 4.1). The only very fragmentarily preserved, possibly Hellenistic buildings of unknown function, which were obscured by graves and tombs dating to the late first century BCE to fourth century CE, show the areas' dynamic development, but they also highlight an inherent problem of urban archaeology: the destruction of older structures.[24] Another example of ancient periurban areas affected by modern infrastructural measures are the pottery production sites in the Ketios River Valley, today submerged in a dam. The workshop area (Fig. 4.1) was located by a river, a prominent urban boundary, and was also used as burial grounds.[25]

The utilisation of natural features in the development of ancient cities complicates archaeological investigations on the northern East Slope too. The steep slope poses a challenge to archaeological fieldwork, but since modern urban development is limited to the lower section, the northern East Slope is largely accessible. While the Pergamene city hill is flanked by two rivers to the east (Ketios River) and west (Selinos River) (Fig. 4.1), the study area lies above the level of the flowing waters. Often eroding archaeological features elsewhere, they are not a limiting factor to this study, so that a variety of archaeological fieldwork in various scales could be carried out.

A key written source for this study is the well-known Astynomoi Law inscription,[26] dating to the second century BCE and re-inscribed in the second century CE. It records urban divisions around the city; not only are regulations laid out for roads in the countryside (*chora*), but the responsibility of the city magistrates (*astynomoi*) for fountains both in the city and in the periurban area (*proasteion*) is specified.[27] Though there are no further site-specific sources, Felix Pirson has attempted to apply the concept of *proasteion* to the Hellenistic funerary borderscapes of Pergamon based on legal texts.[28]

Building on the concept of the northern East Slope as a borderscape, in this paper, I would like to discuss limits and limitations: on the one hand, those derived from archaeological evidence and relating to topography and functional zoning, and on the other hand, the limits of what is feasible, especially concerning archaeological fieldwork and data collection and quality. Inherently patchy archaeological and legacy data will be brought together to illustrate the challenges of and possibilities for researching urban peripheries, showing that the northern East Slope (Fig. 4.1), which was part of the Eumenid city expansion and may be considered a part of the city's *proasteion*, elucidates transformational and adaptive processes during the Hellenistic and Roman Imperial periods, and reflects the changing borderscapes of the city.

Beginning with a note on combining multi-scalar data sets with legacy data,[29] the first section establishes the three categories that provide the paper's overall structure. The main part of the paper is then devoted to addressing these three data categories: large-scale studies, meso-scale studies (including refuse management and funerary borderscapes) and micro-scale

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[24] Pirson 2017, 98; Pirson et al. 2015, 114.

[25] Poblome et al. 2001. A similar setting can be observed in Hierapolis (Phrygia), Scardozzi 2015, 21-2.

[26] Most recently Saba 2012.

[27] Saba 2012, 15-18, 20 col. I,24. 24 col. IV,173 (τοῖς προαστίοις). Regarding legal responsibilities for the *proasteion*, see also Schuler 1998, 106, n. 21.

[28] Pirson 2025, 133-8.

[29] Rouillard 2013 stresses the need for integrated, multi-scalar archaeological studies on periurban areas.

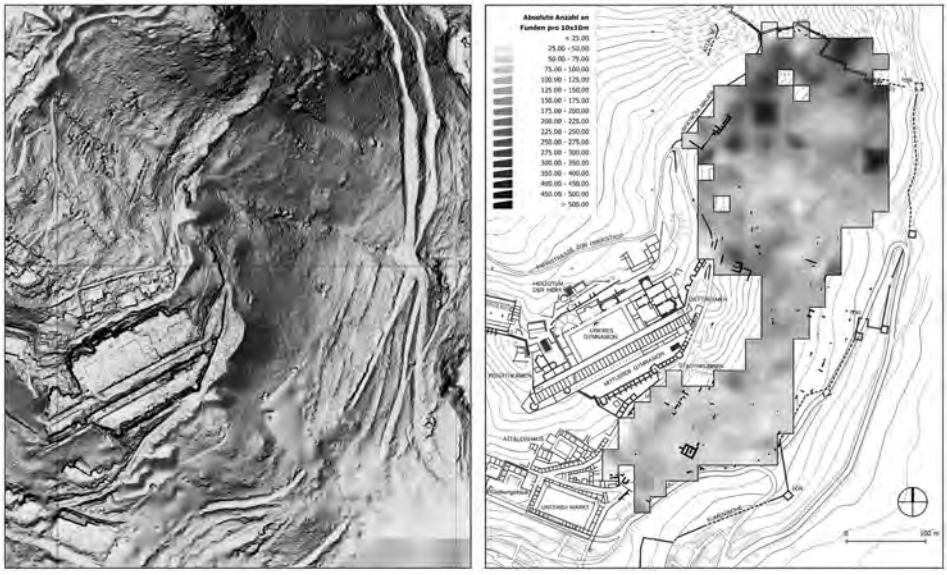

Fig. 4.2 Pergamon, northern East Slope, LiDAR surface model and finds survey density map.

studies, respectively. Finally, a conclusion sketches the transformation of Pergamon's northern East Slope and outlines the limits and limitations in studies on urban peripheries.

Multi-scalar data sets and legacy data

One challenge of long-term excavations such as the Pergamon project is the varying level of detail, focus and collection methods, which leads to an almost unmanageable heterogeneity of research data. Despite this challenge, the use of legacy data is of paramount importance to obtain as complete a picture as possible.[30] This is given further impetus in the case of Pergamon by the fact that some targeted excavations and architectural documentation from the late 19th and early 20th century provide information on structures that are no longer preserved.

To help navigate the wide range of data collected over the last 150 years on the area under investigation, the studies can be divided into three categories and potential use cases:

- Large-Scale Studies: GPS and LiDAR-based surface models, and survey data, and their significance for a rough identification of urban borderscapes,
- Meso-Scale Studies: individual trenches and how they confirm, refute and clarify large-scale studies and raise new questions altogether, and
- Micro-Scale Studies: micro-archaeological studies and how they can help refine specific assumptions or open new discussions.

The data for these studies has primarily been collected since 2005 as part of a project on the early second century BCE Eumenid city expansion.[31]

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[30] Raja 2024.

[31] Pirson 2006, 56-62.

Legacy data, however, not only comprises first-hand data collected by researchers, but also written sources, including those of ancient authors.[32] Inscriptions that explicitly refer to the transition between city and micro-region, such as the previously mentioned Astynomoi Law, offer valuable information when transferred to the digital age.[33] The history of research on the city of Pergamon is complex,[34] so that numerous archives in various countries hold the physical archival records. In order to conduct modern archaeological research, some legacy data has now been digitised.

Simultaneously, the rapid development of digital tools and documentation standards has led to a heterogeneous mass of data, already detectable in datasets created in the past 20 years. In addition to the practical transformation of digital data according to FAIR Data Principles, there is a need to standardise the content of archaeological data; for example, the way objects are addressed. This is particularly important for enabling data to be used by and compared with other projects; in the case of the Pergamene borderscapes, the intersection of the city and the micro-region, this is essential for an integration into overarching projects, such as 'TransPergMicro'.[35]

Having outlined the three scales of the available data, the focus is now placed on the case study of the northern East Slope of the Pergamene city hill.

Large-scale studies

A large-scale terrain model of the city hill was created based on terrain measurements from 2005 to 2010[36] and was refined by LiDAR scans of the city hill and selected stretches of the Pergamon micro-region in 2022.[37] The model gives a clear impression of not only the topography, but also archaeological features and various natural and human-made alterations.

The LiDAR model (Fig. 4.2) can be used to recognise topographical features that also act as spatial boundaries or visible transitional elements.[38] On the northern East Slope, these are the overall increase in steepness and distinct rock formations that run down the slope. The latter were also used as a foundation for the so-called Philetaerian and Eumenid city walls, and the so-called Goths' wall. Other architectural and infrastructural features may be recognised: roads leading through the city gates and modern paths used by shepherds, as well as water channels and stone quarries. Based on these observations, the following initial ideas on the integration of this area into the city and on connections with other periurban structures may be developed.

While recently excavated structures may be identified clearly in the model, in comparison with archival research and legacy data, individual alterations of the last few centuries may

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[32] Allison 2008.

[33] For an integrated approach to the ancient route network in the Pergamon micro-region, see Ludwig 2020.

[34] Kästner 2014; Pirson 2014; Radt 2014.

[35] For information on the project 'The Transformation of the Pergamon Micro-Region between Hellenism and Roman Imperial Period (TransPergMicro)', see Pirson, Schütt, Schulz 2024; Pirson et al. 2020, 156-9, and the blog www.dainst.blog/transpergmikro/ for updates and further reading.

[36] Pirson et al. 2011, 81, 83, 85-6 with fig. 5. For the East Slope, see Pirson et al. 2009, 129-32 with fig. 3.

[37] Pirson et al. 2023, 237-8 with fig. 40.

[38] Hierapolis (Phrygia) is a striking example of a city in Asia Minor where the surrounding hills form boundaries and no city walls were built during Hellenistic and Roman times, Scardozzi 2015, 21.

also be observed: cones that consist of the spoil heaps from late 19th and early 20th century excavations are easily visible and thus influence the surface appearance.[39] Although the LiDAR model was created after the completion of field work, a comparison of the surface model and archaeological observations means that features can be easily categorised and this knowledge applied to other areas of the city hill more efficiently. A fine-grained categorisation of single areas holds great potential for site-specific machine learning, which may then enable an automated analysis of the whole archaeological site in the future.

Besides the above-mentioned initial observations, comparisons with the archaeological survey provide further insights. The survey was carried out between 2005 and 2012 in almost the entire area of the Eumenid city expansion. All architectural structures visible on the surface were documented before an intensive finds survey was carried out.[40] Urban surveys at sites that were inhabited for centuries or even millennia, and are sometimes still inhabited today, as well as at sites with steep terrain, are notoriously difficult to carry out and interpret and are subject to some basic assumptions. These include the assumption that only the most recent activities are visible on the surface and the objects found belong to zones of higher elevations.[41]

Regarding the urban borderscape, comparison of the LiDAR model and the survey data shows both matching and differing boundaries: the city walls, streets and water channels documented during the survey are consistent with the observed superficial structures of the LiDAR model, and some architectural features visible on the surface can be added to the picture. These include single rock-cut rooms adjacent to a vehicular road as well as natural sanctuaries.[42]

The intensive finds survey, however, blurs the supposedly rigid border of the Eumenid city wall in the sense of Stevens's urban borderscape.[43] The areas on both sides of the Eumenid city wall and along the vehicular road show a significantly higher density of finds.[44] In addition to the numerical density, the pottery also differs regarding taphonomic parameters. In these areas, the degree of fragmentation is lower, the breaks are sharper and the surface preservation better. These observations correspond to pottery that has only been deposited once or at least not redeposited repeatedly; for example, the intentional deposition of a cultic inventory in the nearby Grotto Sanctuary (Figs 4.1, 4.5).[45] The combination of the state of preservation and the location along a vehicular road, and both inside and outside of the city wall, suggests that the upper northern East Slope was used as a refuse dump[46] with material dating from the third century BCE to the mid-first century CE. The state of preservation also suggests that the pottery had not been exposed to recent post-depositional processes for long, meaning that the material had not been on the surface for long. This indicates a high degree of topographical and weather-related material redeposition and a wide dispersion of the material down the slope.[47]

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[39] The best visible here is the spoil heap below the Hellenistic gymnasium, which originates from the excavation of the complex in the 19th and early 20th century, Pirson et al. 2007, 19-20.

[40] Pirson et al. 2009, 150-60 with further references.

[41] Attema et al. 2020, 26-7.

[42] Pirson et al. 2009, 150-56.

[43] Stevens 2016, 291-4.

[44] Pirson et al. 2009, 156-60.

[45] Engels 2022, 28, 31-2.

[46] See Peña 2020, 10-12 for an overview of basic concepts and terms regarding waste and refuse management.

[47] See Attema et al. 2020, 11-12, 15-17, 24-7 for depositional processes at borderscapes of sites, settlements and cities in archaeological surveys and indicators for boundaries termed 'halo'.

The spectrum of find material mainly comprises pottery, although this does not allow any conclusions to be drawn about the primary use context. The picture may differ for a variety of production waste: a fragment of a presumed kiln lining, iron slags and a crucible for non-ferrous metals indicate that various workshops unloaded their waste here.[48]

The positioning of the refuse dump along both sides of the Eumenid city wall suggests that the wall no longer served as a rigid boundary as early as the mid-first century CE. This seems plausible when compared with written sources that describe the dismantling of city walls after the Mithridatic Wars in cities in Asia Minor[49] and the following *pax romana*. However, the wall was still physically preserved to some – unknown – extent and both gates in the study area continued to be used to reach the necropolis on the North Slope and the Ketios River Valley (Fig. 4.1).

Meso-scale studies

To understand the waste discarding process as well as the composition of the refuse,[50] and to reveal the surface remains documented in the scope of the survey, spatially limited excavations were carried out at selected sites. The excavated structures below the vehicular road reveal a common feature: they were gradually filled with waste from the city during the first century CE.

Among these, the most extensively researched structure was found underneath a sequence of refuse layers and collapsed walls (5-8 m in height), which revealed a two-storeyed building (45 m long, 16 m wide), initially identified as a Banqueting House (Figs 4.1, 4.5) based on the preliminarily reconstructed floor plan.[51] The building included large artificial terraces, which, in this challenging terrain, suggests that a great deal of effort went into its construction in the late second or early first century BCE, while the wall decoration in the incrustation style indicates rich interior furnishing.[52] The marginal location, only 10 m from the Eumenid city wall, was therefore by no means reserved for an economically marginal group of people in the first century BCE.

In the building itself, however, only a few finds could be identified that were unambiguously linked to the use of the building. This is mainly due to the abandonment processes that often occur in ancient cities. In the building's only fully excavated room, only a few tiles (roughly collected in one place) and a bathtub were found on the floor. The room thus appears to have been strategically cleared of most movable objects and furnishings in the late first century BCE or early first century CE. The door thresholds, which had been pulled out of their original positions, may also indicate that the building was looted after it was abandoned.

The deposition of the refuse layers' find material can be dated to the first century CE. Taphonomic observations on pottery and animal bones from the landfill suggest that the material

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[48] Felix Schäfer in Pirson et al. 2009, 160, already suggested pottery workshops on the northern East Slope.

[49] Lorentzen 2014, 103-4 with reference to App. *Mith*. 9.61.

[50] For a more detailed study of refuse in the urban borderscapes of Pergamon and thoughts on potential ties with the micro-region, see Neuenfeld in prep.

[51] Pirson et al. 2020, 162-70 with further references. The floor plan assumed on the basis of the initial excavations has since been disputed and does not correspond to canonical banquet buildings. Other well-researched examples are the building below the Banqueting House and a rock-cut structure to the west, Pirson et al. 2011, 93-7.

[52] Schwarz 2018.

was not exposed on the surface for long.[53] While there is much to learn about refuse management from the material, the sheer volume of finds from small trenches is immense. On the one hand, the large quantity of finds causes a great deal of work both during the excavation and in their processing; on the other hand, the storage of the material is a challenge for projects dealing with urban borderscapes.

While the exact origin of the refuse cannot be determined, it may have been carried from urban areas close by or easily accessible by cart. Though the material of the refuse layers was highly heterogeneous, through careful processing, isolated groups of objects could be identified, indicating the use of the neighbouring areas and enabling assumptions on the integration of this peripheral area into the urban fabric.

Refuse management, innovation and cross-industry practices

One of these object groups is the production waste of the so-called late Hellenistic and early Imperial lead-glazed pottery, which was produced between 50 BCE and 50 CE.[54] The waste included saucers, stacking devices and misfired pieces (Fig. 4.3), spread over a length of 16 m in the uppermost preserved refuse layers in the so-called Banqueting House.[55] Among the production waste are unique pieces that combine the lead-glazed surface treatment with different local clay fabrics. A particularly striking example are locally produced thin-walled vessels,[56] which were covered in lead-glaze on the exterior and partially on the interior. Both lead-glazed and thin-walled pottery emerged in Pergamon in late Hellenistic times,[57] but so far, no other vessels have been documented in this combination. The simultaneous emergence of both wares as well as the partial use of the same fabric, forms and decoration technique (barbotine), points to a synergy effect,[58] which might have accelerated innovation and production. These objects not only tell us that lead-glazed pottery was produced close-by within the city wall, but that the peripheral urban fabric served as fertile ground for innovative creations and trial-and-error processes.[59]

These innovative processes also build on the knowledge of existing pottery production sites. To date, one small Hellenistic pottery workshop on a main road leading to the Hellenistic gymnasium has been documented that must have been supplied with ready-levigated and tempered clay due to the lack of space.[60] The road leading from the small workshop to the main pottery production site in the Ketios River Valley (Fig. 4.1)[61] passes through the northern East Slope. Several studies have shown that new workshops are more likely to be set up along

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[53] Pirson et al. 2011, 198.

[54] Most recently: Liard, Versluys, Amara 2024. For an extensive discussion of lead-glazed pottery in Asia Minor, see Hochuli-Gysel 1977. For Pergamene lead-glazed pottery, see de Luca 2000; Pinkwart 1972.

[55] Neuenfeld 2024.

[56] Japp 2003.

[57] Sarah Japp suggests the production of thin-walled ware started in Pergamon in the mid-first century BCE, Japp 2003, 245-6; Ead. 1999, 307.

[58] Similar connections between lead-glazed and thin-walled pottery have been proposed for Italy, Giannossa et al. 2015, 1039, 1042, and Spain, Bustamante Álvarez, Sabio González 2016.

[59] Stevens 2020, 268-9.

[60] Hepding 1952.

[61] See Japp 2013 for an overview of Pergamene pottery production.

Fig. 4.3 Production waste of late Hellenistic and early Imperial lead-glazed pottery from the refuse dump on the northern East Slope of the Pergamene city hill.

established supply routes,[62] so this may be assumed for the Pergamene urban and periurban pottery production networks as well.[63] Mapping refuse and production sites may therefore provide new insights into production networks.

Finds from the archaeological survey and excavations allow further ideas to be explored: clay and iron slags were documented in the survey and in lower refuse layers of the excavations in the so-called Banqueting House.[64] Though the dates of the survey finds remain unclear, evidence of metalworking was also discovered; specifically, a crucible used for bronze and lead, as well as slags with a high iron content. Used as colouring agents, metal shavings from production sites might have been part of the supply chain, with bronze and copper for green, iron oxide for yellow-brownish.[65] Studies in local cross-craft relations have demonstrated the potential for understanding economic organisation,[66] and for Pergamon, further investigations into the ties between metal and glass workshops and the production sites of lead-glazed ceramics seem promising.[67]

In summary, these considerations demonstrate that the urban periphery, with its landfills, was important, first, as part of urban refuse management; second, for the significance it holds when reconstructing economic networks in general; and third, for disproving the still widespread misconception that pottery was only produced outside the city walls.

Funerary borderscape

As with landfills, necropoleis are another traditional marker of the transition between city and the urban periphery, forming an integral part of the extramural borderscape.[68] Allison Emmerson,

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[62] E.g. Goodmann 2013 on Terra Sigillata workshops.

[63] For the integration of urban and peri-urban pottery production networks in the Pergamon micro-region, see Bes, Keweloh-Kaletta 2024.

[64] Pirson et al. 2016, 140.

[65] Liard, Versluys, Amara 2024, 489.

[66] E.g. Murphy, Poblome 2021.

[67] See Völkel 2024 for an overview of the economic topography of Pergamon and its micro-region. For archaeometric analyses confirming local glass production, see Rehren et al. 2015.

[68] E.g. Emmerson 2020, 56-91; Stevens 2017, 161–213. For a collection of recent case studies on necropoleis in Asia Minor, see Brandt et al. 2017.

amongst others, has pointed out that in Roman Italy expanding cities often led to 'tombs of the dead st[anding] alongside buildings for the living'.[69] This proves true for Roman cities in Asia Minor[70] as well as some regions of the Pergamene borderscapes; specifically, the Ketios River Valley was not only used for pottery production, but also as a contemporaneous necropolis. This is shown by the late Hellenistic to early Imperial burials, spatially intertwined with workshop spaces and dating to the same time as the pottery production.[71] Moreover, Pirson has argued for a simultaneous usage of the extramural borderscape as burial grounds and for agriculture.[72]

The incorporation of funerary monuments existing before the time of the Eumenid city expansion and their integration into the urban fabric and the funerary landscape of the Hellenistic metropolis have been examined by Ute Kelp.[73] In Pergamon, we know of several Hellenistic and Roman necropoleis in proximity to the city hill – all outside the city walls.[74] Due to the fragmentary research and, above all, the modern development of formerly periurban areas, similar conclusions can only be based on isolated and anecdotal evidence.

In the study area, the gate in the city wall (Fig. 4.5), slightly northeast of the so-called Banqueting House, leads to the quarries and necropolis on the North Slope. Until recently, no funerary activities had been observed anywhere close to the city wall on the northern East Slope. In other parts of the city, necropoleis are immediately adjacent to the city wall; for example, the South-East Necropolis[75] and Upper Northwest Gate[76] (Fig. 4.1). In terms of urban development, the South-East Necropolis brought burials close to the Eumenid city wall on the lower East Slope as early as the second half of the first century BCE.[77] Preliminary observations suggest that waste was also dumped here before the necropolis was established or that the site was first turned into a usable location for a necropolis by relocating refuse.[78]

On the northern East Slope, the abandonment of the area within the city wall allowed this borderscape to be used for more than landfill. During the finds processing of the excavation of the so-called Banqueting House, human bones were identified in the uppermost layers heavily affected by erosion processes,[79] including numerous bones of a neonate and the skullcap of a one- to three-year-old child.[80] The first of these were recovered contextualised with a Pergamene

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[69] Emmerson 2020, 56.

[70] In some Roman cities of Asia Minor, a simultaneous adherence to boundaries in some areas and a shifting of boundaries in other areas can be observed, e.g. in Perge, Martini 2010, 25-7, with further references.

[71] Poblome et al. 2001, 165. The excavations in the area of the workshops have not yet been published.

[72] Pirson 2025, 129-30, 138-9.

[73] Kelp 2022.

[74] For an overview, see Pirson 2017, 67-9, 89, 98, 100; Kelp 2014. For a comprehensive overview of the Pergamene funerary landscape, see Pirson, Verger forthcoming.

[75] See Pirson 2017, 98 with n. 177 for further references; Pirson et al. 2015, 111.

[76] Conze 1913, 203.

[77] According to radiocarbon dating, the South-East Necropolis was used between approximately 40 BCE to 415 CE, Pirson 2017, 98, n. 177 with further references.

[78] Pirson et al. 2014, 139.

[79] The bones were identified among animal bones during archaeozoological investigations by Peggy Morgenstern and Michael Hochmuth (both Berlin). The human bones were examined by Wolf-Rüdiger Teegen (Munich/Trier). For a first report, see Teegen, Neuenfeld 2023; Pirson et al. 2023, 269.

[80] A tooth of a five- to seven-year-old child was recovered in a lower refuse layer. It does not necessarily hint at funerary activities but may be explained by the natural process of losing one's primary teeth.

Fig. 4.4 Bones of a neonate and a contextualised Pergamene Micaceous Waterjar.

Micaceous Waterjar (Fig. 4.4) dating to the second to early fourth century CE,[81] when the type would have been regularly used as burial vessel.[82] The jar's rim and neck were broken off intentionally so that the vessel could accommodate a newborn infant. The vessel was carefully placed on the remains of a wall of the so-called Banqueting House in front of a protruding rock-cut wall. The placement protected the vessel from erosion, thus preserving it exceptionally well. The second find, a fragment of an infant's skull cap, was recovered in the surface layer of the excavation at the Banqueting House.

The early deaths of the deceased may be particularly significant in understanding the development of the borderscape; specifically, it is worth considering whether the area on the northern East Slope was turned into a burial site and even a special burial site for infants who had not been recognised as formal members of society. In the Hellenistic and Roman periods, special resting places for infants are attested at several sites, with the most extensive example being the Kylindra cemetery on the island of Astypalaia, a burial ground for neonates to three-year-olds that was in use from the Archaic to the Roman period.[83] In isolated cases, infants were also buried within the city walls, most famously in an abandoned well at the Athenian Agora in the second century BCE.[84] These extraordinary archaeological findings seem to confirm the written sources: the age of formal recognition was three years.[85] As newborns and infants have been underrepresented in the Pergamene necropoleis thus far, Wolf-Rüdiger Teegen suggests that a

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[81] Japp 2019, 103-4, type 3. Whether the neonate was buried in the vessel cannot be conclusively answered. In the future, radiocarbon dating may provide more information on the dating of the bones.

[82] Pirson et al. 2016, 193; Pirson et al. 2012, 256.

[83] Michalaki-Kollia 2010. See Dimakis 2020 for further examples.

[84] Liston, Rotroff, Snyder 2018.

[85] Dimakis 2020, 509-11; Lindsay 2020, 528. See Carroll 2011, 100-102 for a critical discussion of literary sources and visual representation of infants, along with differences between law and the private sphere.

separate location accommodated neonates and infants.[86] Due to erosion processes, it is not clear whether the bones belong to singular burials or whether it was a larger burial site.[87] The ambiguous character of the northern East Slope, a long-abandoned area within the former boundaries of the city, seems to be well-suited to those who were not yet members of society.

Another factor to be considered is the social status of the deceased. At other Roman necropoleis and grave monuments in Pergamon, infants are buried alongside their relatives, sometimes with rich grave goods.[88] The vast majority of the burials in the South-East Necropolis are attributed to the social middle stratum of Roman Imperial society. As this necropolis was in use while the supposed burials were carried out on the northern East Slope, a differentiation in social strata may be considered here. Nevertheless, further discoveries and studies may shed light on whether infants of the lower social strata may have been allocated a marginal burial place.[89]

In Roman Asia Minor, while shifting boundaries as a result of urban sprawl were often demarcated by arch monuments on streets,[90] the approach to abandoned urban areas is less clear. A further, possibly dramatic, change to the appearance of the physical border of the Eumenid city wall may have further altered its perception when, in the early second century CE, it was dismantled further to obtain building material for the erection of long-distance water supply systems,[91] although the exact sections of extraction are unclear. While the dismantling of the city wall may have diminished its perception as a physical boundary, it would still have been recognisable as such.[92] The demarcation of the world of the dead by city walls was not only physical but also symbolic, as depictions in funerary monuments illustrate.[93] In the case of intramural burials, the partially dismantled city wall may have served as a symbolic boundary, while simultaneously creating a grey area for funerary conventions.[94] A supporting indicator for the change in perception of the northern East Slope is the course of the so-called Goths' Wall (Fig. 4.1), which was built in the mid-third century CE and excluded this area.[95] Due to the patchy excavations and data sets, however, these thoughts must stay assumptions for now.

Micro-scale studies

The previous analyses have already taken micro-scale data into account, such as the clay fabrics, and thus led to further considerations. Since abandoned urban borderscapes are often stripped of their movable inventory, micro-scale methods are particularly fruitful in these areas.

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[86] Teegen, Neuenfeld 2023; Pirson et al. 2015, 161. See also Carroll 2011, esp. 108-11, for a discussion of the discrepancy between infant mortality rates and the number of infants identified during excavations.

[87] For effects of similar erosion processes on the North Slope necropolis, see Pirson 2025, 128, 155-6.

[88] Most recently in a Roman tomb at Teke Bair, Pirson et al. 2022, 328-33.

[89] See Dimakis 2020, 510, for examples of this distinction.

[90] Martini 2010, 27, 31.

[91] Lorentzen 2016, 13.

[92] See Pirson 2012, 204 for the practical and symbolic function of the so-called Philetaerian Wall in the Eumenid city, and Stevens 2017, 60, for Rome and Ostia.

[93] Stevens 2017, 74-5. Depicted in funerary monuments, city walls and gates represent the passing into the world of the dead.

[94] Stevens 2017, 213 argues for a more nuanced picture when examining necropoleis as implicit boundaries.

[95] See n. 18.

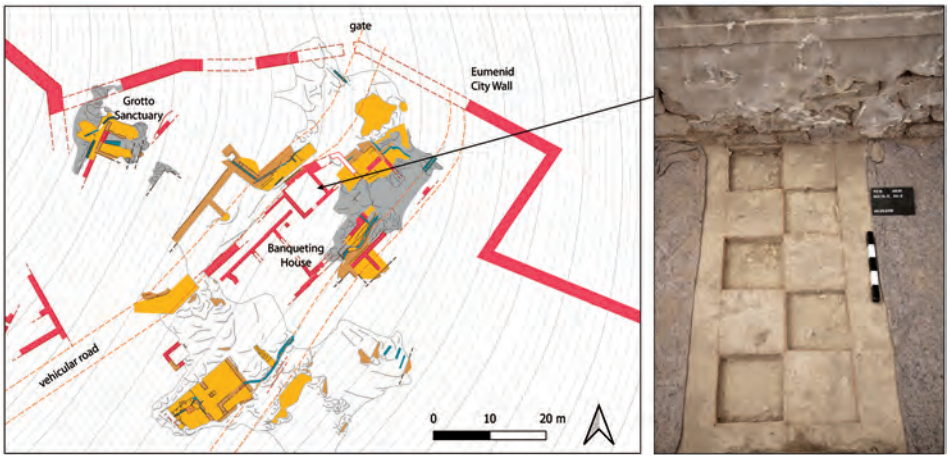

Fig. 4.5 Pergamon, northern East Slope, so-called Banqueting House. Micro-archaeological excavation of the beaten-earth floor.

Widely used in Hellenistic Pergamon, beaten-earth floors are permeable and therefore serve as a valuable archive for human activities. By carrying out a micro-archaeological excavation at the only fully excavated room of the so-called Banqueting House (Fig. 4.5)[96] – that is, recording and measuring finds over 0.5 cm in size and floating soil samples – not only parts of the interior fittings and furnishings, but also specific reoccurring activities have been traced. This includes the identification of concentrations of eating-related waste found 50 to 80 cm from the walls. Through archaeobotanical and archaeozoological research, the food remains may tell us more about eating habits and the social strata of this building. In the small sample of the floor, several sherds of Eastern Sigillata A plates were documented, which are rare in Pergamene contexts. This may also indicate an upscale clientele. Moreover, the micro-archaeological excavations beneath the bathtub have shown that it was not part of the building's original fittings. After the space was used for dining, the bathtub was built into the floor at a later date, suggesting the use as a multifunctional hospitality establishment, for example.

In addition to glass beads only a few millimetres in size, an unusually large number of glass fragments were also recovered in the heavy residue of the micro-archaeological excavation. Compared to conventional excavations, this forms a promising database for late Hellenistic consumption practices but also for further consideration of urban borderscapes. As a starting point for large-scale data collection, comparisons between the use of glass and the quantity of glass in contemporaneous landfills could be leveraged to study recycling processes.[97]

Further micro-scale studies, such as taphonomic observations, may shed some light on broader urban developments as well. Due to the nature of urban archaeology – specifically, the superimposition and destruction of earlier archaeological evidence – few insights can be gained into the northern East Slope outside the so-called Philetaerian city wall in the fourth and third century BCE, before the study area was incorporated into the Eumenid city expansion.

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[96] Pirson et al. 2020, 163-5 with information on methodology.
[97] Neuenfeld in prep.

Taphonomic observations on animal bones used in terracing fills in lower parts of the Eumenid city expansion imply that they lay exposed on the surface for 80 years before they were utilised, thus possibly indicating the then extra-mural East Slope was used for the (provisional) discarding of refuse.[98]

While a single trench in combination with micro-archaeological studies cannot give a full picture, they do suggest that in the first century BCE the northern East Slope was anything but marginal. As the topography of urban borderscapes often restrict extensive fieldwork due to work safety and cost-efficiency concerns, employing fine-grained methods proved fruitful, not only for determining the building's function but also when collecting data for broader research questions.

Conclusion

The northern East Slope of Pergamon illustrates the dynamic character of ancient urban borderscapes. Once incorporated into the Hellenistic city's intramural terrain, the area underwent a series of transformations, from a developed urban quarter to a landfill site, and ultimately to a potential necropolis for neonates and infants. These shifts highlight how periurban spaces reflected broader processes of urban growth, contraction and adaptation.

The case study demonstrates the potential of combining large-, meso- and micro-scale data with legacy records to reconstruct such complex transformations. Large-scale surveys and digital terrain models establish the broader topographical and infrastructural framework; meso-scale excavations situate these observations within concrete practices of refuse management, craft production and funerary activity; while micro-archaeological approaches make visible otherwise imperceptible traces of consumption and reuse. In combination, these scales of analysis underscore the interpretive value of borderscapes, even where the archaeological record is fragmented.

At the same time, the East Slope brings to light the social and symbolic dimensions of urban boundaries. The decreasing yet persistent presence of city walls shaped changing perceptions of inclusion and exclusion, while the reuse of abandoned structures for infant burials points to pragmatic adaptations of liminal spaces and to shifting negotiations of funerary norms. Walls and graves, in this sense, functioned not only as physical markers but also as symbolic interfaces between life and death, city and countryside.

When approaching the dynamic shift of permeable and impermeable, visible and invisible boundaries of the Hellenistic and Roman Imperial city, it is worth considering that during the first century BCE, settlements in the Pergamon micro-region were abandoned and the population of the city increased significantly alongside the intramural built-up space.[99] Urban phenomena that primarily take place at urban borderscapes, such as urban sprawl,[100] are therefore particularly well observable in the archaeological record.

By tracing the transformations of the northern East Slope across several centuries, this study underscores the heuristic value of the concept of borderscapes in approaching ancient cities.

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[98] Michael MacKinnon's observations on the archaeozoological remains will be discussed in Anneke Keweloh-Kaletta's ongoing PhD project on pottery from the East Slope at Pergamon (Humboldt University of Berlin).

[99] Pirson 2024, 134-5; Pirson et al. 2024, 159-63; Pirson 2017, 95, 124-5.

[100] Smith 2010.

Rather than viewing urban peripheries as static, they emerge as dynamic zones of interaction and negotiation, where urban transformation on a non-monumental level may be traced particularly well. This is especially evident for borderscape-specific activities: The analysis of urban waste and its management allows valuable conclusions to be drawn about urban activities and trans-urban networks. For Pergamon, as for other long-lived centres in Asia Minor and the wider Mediterranean, the study of borderscapes thus offers critical perspectives on the entanglement of infrastructure, economy, symbolism and social negotiation in the making and remaking of the ancient city.

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Chapter 5

Rural landscapes and their suburbs: a view of the urban periphery from the countryside

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Abstract
This chapter re-evaluates the function and significance of Roman suburbs by taking a rural perspective on the urban periphery. Recent research has sought to blur the long-standing urban-rural dichotomy that frames the study of Roman urbanism by drawing attention to the ambiguous status of suburban landscapes. However, this narrowing of focus onto the zone immediately outside the city has inadvertently revived the old dichotomy in a new guise (urban-suburban) and marginalised consideration of the rural in the study of Roman urbanism. Challenging these developments, this chapter asks, what did suburbs 'do' for rural populations? To answer this question requires a reorientation of perspective. Instead of viewing suburbs as the product of an urban centrifugal force, the chapter deploys a parallel centripetal model to consider how suburbs drew in the rural landscape. Focusing on urban, suburban and rural contexts around the city of Rome and central Italy during the late republican and imperial periods, the chapter uses case studies of entertainment, burial and marketing to demonstrate both how rural populations have been excluded from analyses of Roman suburbs and how they might be re-integrated. This leads to the provocation that suburbs can be usefully considered as central places generated by the need of increasingly dispersed rural populations to gather as communities in their own right as well as to engage socially, politically and economically with the city.

Keywords
Roman Italy; imperial Rome; suburbs; rural landscapes; Roman economy

Introduction

The relationship between town and territory constitutes a foundational concept in scholarship on the Roman world. This engrained urban-rural dichotomy reflects emic Roman categories – *urbs* and *ager* – which possessed deep moral, social and legal significance within Roman society;[1] it also strongly resonates with archaeological studies of other historical periods as well

[1] For a classic collection, see Rich, Wallace-Hadrill 1991.

as modern-day perceptions of city versus countryside.[2] At the same time, scholars have recently directed their attention towards an intermediate space – the Roman suburbs – as a means of blurring and advancing beyond the urban-rural dichotomy.[3] Yet, despite the development of novel theoretical approaches to these suburban spaces, much of this work, and its terminology and case studies, remains constrained by binary thinking. In effect, the urban-rural framework has been replaced with a new urban–suburban dichotomy. This situation underscores the enduring hegemony of the city and its ability to find ways to assert its dominance by defining a subordinate 'not-city' – an inferior 'other' against which to demonstrate the distinct and higher qualities of the urban. This chapter argues that by positioning the suburbs as the city's new essential other, recent scholarship has inadvertently marginalised the significance of the rural world in the study of Roman urbanism. Paradoxically, as the archaeological evidence of rural landscapes has proliferated, the visibility of the countryside in analyses of the ancient city has receded.[4] My aim here is to initiate a reintegration of the rural into the study of Roman urbanism, and by extension, into the broader interpretation of Roman society. To this end, here I reorientate the focus from the relationship between city and suburbs to that between suburbs and countryside, asking: what did suburbs 'do' for rural populations?

The city and the city

The general trajectory of research on ancient urbanism outlined above, including the dominance of the city and its need for a non-urban other, parallels the scholarship on contemporary cities. Today, for the first time in human history, more than half the global population resides in urban areas, a result of rapid urbanisation driven by economic globalisation and unprecedented rural-urban migration. Unsurprisingly, studies of the contemporary world exhibit a pronounced fascination with the urban, hailing cities as engines of economic growth and cultural innovation. It has even been argued that the urban no longer requires the 'not-city', the latter rendered redundant by a state of 'planetary urbanisation'.[5] Yet, contemporary rural and suburban landscapes have not vanished; rather they have been marginalised by an increasingly powerful urban bias. For example, it has been shown that standard statistical methods used to measure the world's population systematically underestimate rural communities;[6] more accurate assessments would likely increase the global rural population by hundreds of millions, thereby reducing the scale of rural-urban migration and lowering the overall urban-rural ratio. Simultaneously, if rural populations have been artificially depressed, urban populations may have been overestimated. For instance, the geographer Roger Keil contends that most of the

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[2] See Smith 2023, 11-12 for overview of the archaeological study of urbanism, including functionalist definitions based on cities offering central-place services for regional hinterlands.

[3] Much influenced by D.H. 4.13.4. Recent edited collections include Finocchietti, Lubtchansky, Pouzadoux 2023; Quilici Gigli, Quilici 2023. Key earlier contributions are discussed below.

[4] See Dufton 2022, for review of recent research on Roman urbanism indicating limited attention to rural contexts; overviews of ancient urbanism often feature a dedicated treatment of 'city and country' (e.g. Zuiderhoek 2016), though such compartmentalisation can render the rural as a somewhat separate concern, and attention often focuses on economic matters at the expense of wider sociological considerations; for an overview of recent rural archaeology in Roman Italy, see Witcher in press 2026.

[5] Brenner 2013, 15 with the meaning of urbanism 'without an outside'.

[6] Láng-Ritter, Keskinen, Tenkanen 2025. See also Brenner 2013, 20.

billions of rural-urban migrants of the past five decades have not settled in cities but rather in suburbs.[7] In effect, the city has systematically diverted attention from rural and suburban landscapes to reinforce its teleological and self-legitimising narrative of urban primacy. These examples illustrate what the sociologist Hillary Angelo calls the 'city lens' and what the urban geographer Neil Brenner identifies as 'methodological cityism' – that is, the 'analytical privileging, isolation and naturalization of the city in studies of urban processes where the non-city may also be significant'.[8] Angelo locates the origins of this urban-centric mindset in the emergence of the nineteenth-century metropolis. Yet its roots undoubtedly extend back much further, clearly evident in the Roman world under discussion here, as well as other ancient urban societies such as Han China and the earliest cities of Mesopotamia.[9] By developing a deeper chronological appreciation of this phenomenon, it is possible to more clearly understand the extent to which perceptions of ancient and modern cities, suburbs and rural landscapes overlap and how they can be more critically teased apart or intentionally integrated.

Several interrelated challenges therefore characterise the study of both ancient and modern cities and their relationships with associated suburbs and rural territories. First, the dichotomy of city versus not-city is stubborn and intractable, reinforced as it is by a 'city lens' that persistently privileges the urban. Second, conceptual confusion arises because the ancient categories of *urbs* and *ager* bleed into contemporary concepts of city and countryside but do not neatly align with them.[10] Third, in an increasingly urbanised world, there is ever less direct societal familiarity with agriculture and country life, particularly in the global north; present-day archaeologists and classicists are therefore doubly removed – by both time and culture – from the rural pasts they study.[11] In this context, Astrid Van Oyen has called for a 'decolonisation' of the Roman countryside, through the recognition and rejection of both ancient and modern urban values imposed upon Roman rural populations.[12] In a similar spirit, the aim here is to decentre the urban and foreground the rural; at the interface between town and country, the suburbs provide a critical starting point for this endeavour. The following section samples some of the Roman suburbs literature dealing with Rome and several other smaller cities of central Italy. By emphasising suburban spaces, these contributions either explicitly or implicitly seek to challenge the urban-rural dichotomy. Yet, their varied theoretical and methodological approaches notwithstanding, most of these studies focus on the relationship between the city and suburbs, neglecting the rural and hence reproducing the old dichotomy in a new guise: urban-suburban. Following Van Oyen's argument, if we need to decolonise the Roman countryside, then we also need to decolonise the Roman suburbs.

The city and its uncertain walls

The founding of Rome by Romulus was marked by the solemn delineation of the *pomerium*, a ritual act imbued with profound ideological significance that retained potency for more than

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[7] Keil 2017.

[8] Angelo 2017; Brenner 2013, 15.

[9] For China, see Yao, Lam 2024, 27-58.

[10] Bettini, Short 2018.

[11] This is not to say that rural archaeological landscapes are no longer studied (see n. 4) but simply that as scholars become more urban, the rural is more easily forgotten unless it is the primary focus of research.

[12] Van Oyen 2019.

a millennium.[13] Through this ritual boundary, the city defined itself by carving out a space of law and ritual order from the undifferentiated wilderness beyond, establishing the enduring dichotomy of *urbs-ager*.[14] Over time, Rome became encircled by a multiplicity of other boundaries – legal, administrative, fiscal and defensive. This proliferation of urban limits and the resultant classificatory ambiguities have generated considerable scholarly debate.[15] Yet, as Penelope Goodman observes, there is little evidence that the inhabitants of ancient Rome were troubled by the many different definitions of the city on offer.[16] What much of this modern 'boundary' literature and its assumption of the primacy of urban limits in the definition of the city shares, however, is the implicit or explicit assumption that the not-city was a *sub*urban space. In analyses of ancient urbanism, the not-city has narrowed to focus on the zone immediately outside the city's various boundaries rather than the broader physical and conceptual space of the *ager*.[17] This refocusing on suburban landscapes reflects a wider scholarly concern with marginal and overlooked spaces in both historical and contemporary contexts; in the case of Rome specifically, it has also been facilitated by the wealth of evidence generated by *archeologia preventiva* in advance of the construction of housing and infrastructure in areas which once formed the suburbs of the ancient city.[18]

This scholarship has effectively highlighted suburban landscapes as a critical space for the functioning of ancient urban centres.[19] Nevertheless, the city remains the primary point of reference. Indeed, the new urban-suburban dichotomy entrenches the primacy of the urban by promoting a not-city that is simply a spatial and etymological extension of the urban landscape; it is sub- or peri-urban; located on the fringes, margins or edges of the city; or defined by urban overspill or sprawl. Conceived thus, the suburbs were a space to host what was excluded from the city or what was destined to become part of it, either ingested by urban expansion or simply reproducing the form and function of the city beyond the *pomerium*.[20]

The implicit urban-centrism of many of these studies becomes clear if we refocus on the relationship between suburban and rural and the question of where the suburbs ended and the countryside began. The ancient discourse on suburbs was far less developed than that on town and country,[21] and consequently the relationship of suburbs with both *urbs* and *ager* has generated much less modern scholarly debate. Moreover, whereas studies of the city can (and often do) fall back on walls to draw a line around their remit, there is no equivalent shorthand

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[13] Annibaletto 2010, 31-41; Stevens 2017a, 13-60.

[14] The literature on this topic is vast; for a recent selection, see contributions in Dubbini 2019.

[15] E.g. Guilhembet 2006; Annibaletto 2010.

[16] Goodman 2018, 84-5 counts at least ten by the time of Aurelian.

[17] An important exception concerns the archaic city and debate about the relationship between the *pomerium* and the extent of the *ager romanus antiquus*. For a recent review, see Smith 2017. Stevens 2017a advances the valuable concept of the urban 'borderscape' which explicitly incorporates activities either side of urban boundaries; Annibaletto 2010, 66-8 and table 2 traces the philological development of, and differences between, key terms including *pomerium, extra urbem* and *sub urbe*.

[18] On general interest in suburbs, see Keil 2017; for archaeological evidence at Rome, see www.archeositarproject.it and http://gna.cultura.gov.it/ (accessed 1 August 2025).

[19] E.g. Goodman 2007; Stevens 2017a.

[20] E.g. Patterson 2000 argues that the area around Porta Capena on the Via Appia was monumentalised in the same way and for the same purpose as in the city centre. For a similar argument regarding small towns around Rome, see Emmerson 2020a, 184-94; Notarian 2024.

[21] Though no less complex, see Champlin 1982 on the terms *suburbanus, suburbium*, etc. See also n. 15.

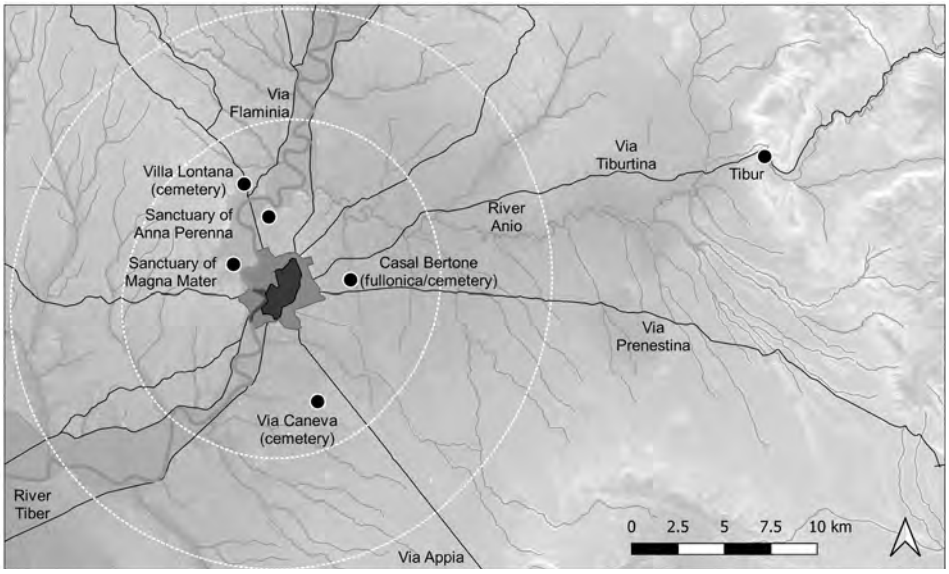

Fig. 5.1 Map of Rome with sites and features mentioned in the text. Dark grey: area within the Servian Wall; light grey: area within third-century CE Aurelian Wall; dotted lines showing the areas within 7.5km and 13.5km of the Servian Wall.

for delimiting the outer limits of suburban spaces, which therefore demand some form of user-defined criterion, often opting for a straightforward set distance. For example, the *Lexicon Topographicum Urbis Romae Suburbium* (*LTURS*) observes a distinction between 'una prima cintura di densissime *villae rusticae*', extending for 7-8 km from the walls, and then 'una fascia maggiormente "diluita" con proprietà più estese e aggregati rustici che prosegue senza soluzione di continuità, ben oltre il confine dell'*ager Romanus*'.[22] But the latter does not provide a means to determine the outer edge of the coverage of the corpus, which consequently opts for the pragmatic adoption of the limits used by *CIL* VI, with a limit at approximately 13.5 km from the republican-period Servian Wall (Fig. 5.1).[23]

Studies of other Roman towns also default to user-defined distances from urban walls. The 'area suburbana' of the *municipium* of Vulci is delimited as a 5×6 km block, or approximately 2-3 km from the walls. Within this area, isolated scatters of surface material are identified as '*fattorie*'.[24] A similar approach is deployed at the *colonia* of Potentia, where a distance of 6 km from the walls is suggested, somewhat elongated by the colony's coastal location and the narrowness of the Potenza river valley.[25] This suburban zone also encompasses dispersed sites

[22] '… a first, very dense belt of *villa rusticae*' and 'a more thinly settled area with larger properties and rural aggregations which continues without interruption, well beyond the border of the *ager Romanus*', La Regina 2001-2008, 2.

[23] For comments on the challenge of defining limits and the *LTURS*, see Panciera 1999. Purcell 1987, 189 argues that the question of where the *continentia aedificia*, or built-up area, ended and the *rus* began would not have occurred to the Roman observer.

[24] Pocobelli 2024.

[25] Corsi, Vermeulen 2021, 30.

labelled as 'farms'. At both Vulci and Potentia therefore, small agricultural sites (*fattorie,* farms) take on a suburban identity, without clearly establishing what distinguishes them from the 'rural' settlements beyond.

Underlying these examples is the problematic desire to neatly delineate the urban, suburban and rural in spatial terms. It is an approach that presents similar challenges in the modern world. For example, in the USA, the administrative reclassification of suburban and rural areas as part of urban districts has boosted the size and population of many cities; in turn this urban expansion underwrites narratives of cities as the drivers of growth and, conversely, of the economic marginality of rural areas. However, much of this apparent urban growth and rural stagnation is simply the product of recategorising suburbs and countryside as part of the city.[26] In seeking to separate urban from suburban and rural in this way, there is clearly potential for similar confusion in the evaluation of ancient urbanism, for example when seeking the drivers of the Roman economy.

Administrative necessity aside, the concepts of urban, suburban and rural are too complex and multifaceted to be reduced to purely spatial forms – urban = city, suburban = suburbs, rural = countryside. Urbanism was, and is, always more than simply a city that can be defined on a map; in the Roman world, for example, other expressions of urbanism included cultural values (*urbanitas*) and palatial country villas (*urbe in rus*). Champlin's foundational article on the *suburbium* isolates exactly this issue: the bundle of elite values including *amoenitas, otium* and *salubritas* practised on suburban villa estates should not be conflated with the geographical concept of suburbs. The *suburbium* was a cultural mindset not a physical reality such as 'the suburb of the tenacious smallholder and the tenant farmer… [or] … the suburb of the dead'.[27] The *suburbium* was an elite discourse that played on the urban-rural dichotomy to allow the wealthy urban citizen to escape from the city without becoming rustic. This definition illustrates how the categories of urban and rural could remain meaningful at the very moment they were spatially transgressed. Hence, rather than seeking to blur the urban-rural dichotomy, merging the binary into a single 'rurban' entity that neglects the evident valence of these emic concepts,[28] we must examine how the urban, suburban and rural were constantly renegotiated in relation to one another. In short, urban, suburban and rural were not characterised by unique and mutually exclusive activities (e.g. culture, burial, farming) that can be reduced to easily mapped spatial expressions (city, suburbs, countryside). Rather, these concepts encompassed mentalities, things and practices that came together in unique combinations at different times and places with varied meanings and significance.

Another reason that neat and stable definitions of urban and rural have proven problematic is that the suburban interface was highly mobile. Suburbs were constantly shifting in both time and space. Two very different, though potentially complementary, approaches to this mobility have been advanced in accounts of Roman suburbs: economic modelling and embodied encounters. Several scholars have looked to classic economic models of urban development to

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[26] Johnson, Lichter 2020.

[27] Champlin 1982, 110. Notably, Champlin's account starts with an extended discussion of the outer limit of the *suburbium,* arguing it coincided with the historical *Campagna* (with 'irregular and uncertain' if natural topographical limits), before noting briefly that the inner boundary with the city was formed by *horti*. See also Guilhembet 2006, who asks 'Où commence la Ville?' This 'outside-in' approach contrasts with most recent accounts which begin with (or focus entirely on) the urban-suburban interface reinforcing the impression that the immediate suburbs rather than the *ager* have become the primary not-city.

[28] Hoffmann et al. 2023.

examine the use of land around ancient Rome; von Thünen's *Der isolierte Staat* has proven particularly attractive.[29] However, the latter is a static model and Matthew Mandich has therefore turned to bid-rent theory and the concept of the fringe-belt to model how the expansion of Rome impacted the form and location of periurban landscapes.[30] Bid-rent theory explains the organisation of activities around cities in relation to the price of land (expressed as rent), with higher rents closer to the centre and lower rents further away; these variable rents organise the use of land for different activities. As urban demand for land increases, rents rise in periurban areas leading to changes in land use, pushing the fringe-belt further from the centre. The application of the model to ancient Rome is inevitably complicated by the fragmentary evidence – we cannot track the 'leading edge' of any specific fringe-belt as it moves, being restricted instead to static windows on specific places, watching the suburban wave pass through.[31] Nonetheless, the model is compatible with the available archaeological and textual evidence and offers a coherent explanatory framework that captures the spatial and temporal mobility of suburbs. Yet, it is an approach that remains entirely urban-centric.[32] The process is driven by and experienced as an urban process, where the rural is something to be ingested and made (sub)urban. It models the urban economic pressures exerted on the rural but does not aid understanding of what suburbs may have offered rural populations.

A very different approach starts not with the mobility of suburbs but rather the mobility of people, animals and goods within and through suburban spaces. Typically, these accounts focus on urban populations, heading out of the city to bury the dead or as part of religious processions to suburban sanctuaries.[33] An exception to these city-based perspectives is Dyson's monograph on community in Roman Italy, which begins with the rural landscape and proceeds towards the urban centre, with a chapter entitled 'Arrival in town'.[34] Also attentive to the rural, Simon Malmberg and Hans Bjur emphasise the two-way flows through periurban areas around the Porta Esquilina, connecting the city and its eastern hinterland through a 'movement economy'.[35] A sub-genre of Roman suburbs research uses experiential and/or imagined narratives of moving through the city's suburbs. These accounts seek to illuminate the ambiguous character of suburban spaces by evoking the lived experience, connecting sensory archaeologies with grounded micro-historical details. Again, however, these narratives either explicitly choose to walk in the shoes of city folk, or the direction of their itineraries, travelling out of town, implicitly assumes an urban perspective.[36] Even when consideration is given to those arriving in Rome, the emphasis on awe and wonderment at the monumentality of suburban landscapes seems to imply the experience of the long-distance or occasional traveller rather than that of suburban and rural populations for whom such sights were likely a more frequent and perhaps mundane experience.[37]

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[29] E.g. Morley 1996.

[30] Mandich 2015; 2019.

[31] For case studies, see Emmerson 2020a; Liverani, Haynes 2023.

[32] See Morley 1996, esp. 55-82 for an earlier exploration of some of these methods, with a stronger focus on the effects on agricultural production in the hinterland.

[33] Stevens 2017b; Emmerson 2020a, 222-3.

[34] Dyson 1992.

[35] Malmberg, Bjur 2011, 384.

[36] Purcell 1987; Favro 1995; Witcher 2013.

[37] Patterson 2000; Malmberg, Bjur 2011, 374; Liverani, Haynes 2023. Corsi, Vermeulen 2021, 29 note that those moving through suburbs were 'more likely to be a small farmer offering his [*sic*] produce

In summary, this selective review of approaches to Roman suburbs illustrates a rich literature, often explicitly motivated by the intention to break down the urban-rural dichotomy, but which frequently reproduces this binary thinking in spatial terms, replacing the city's traditional rural other with a new not-city in the suburbs. The effects of this are two-fold. First, the city now asserts its hegemony even more powerfully than before: suburbs are conceived as spaces wholly created by cities in the service of urban needs alone. Second, the significance of the rural for understanding ancient urbanism, and hence Roman society more generally, has been marginalised. How then can we reintegrate the rural into analyses of the urban and how do suburbs help?

Breaking the (sub)urban spell

The urban-centric examples discussed in the previous section exemplify a centrifugal impulse: suburbs were created and ingested by the expansion of the city pushing outwards and encroaching on the rural. The not-city is therefore both inferior and passive. The following sections seek to reverse this centrifugal mindset by adopting a centripetal perspective (Fig. 5.2). Rather than viewing suburbs as places that accommodate what has been pushed out of the city to allow urban expansion (e.g. the poor, the dead, polluting industries, waste), the intention is to think of suburbs as places that gathered people, goods and activities from the surrounding countryside. Hence, instead of a kind of urban decompression, we might consider suburbs as a densification or concentration of the rural landscape. In taking this alternative perspective, the intention is not to remove the city as a meaningful category, or even as the primary driver of suburban development, but simply to reintroduce the rural into the equation. As discussed above, urban and rural were contextually meaningful, if mutable, concepts and the approach adopted here therefore seeks to retain their interpretative significance whilst avoiding their reduction to narrow, static spatial expressions. Hence, in a way that parallels how wealthy Romans used their *rural* estates to express a particular form of *urban* identity (*urbe in rus*), below it will be argued that countryfolk might have expressed their rurality by heading into the suburbs.

An important motivation for the adoption of a rural perspective is the need to acknowledge the demographic and economic significance of the density of activity in the Roman countryside as revealed by archaeological field survey. While there is debate about exactly how this wealth of evidence relates to numbers of people, undoubtedly rural populations were substantial and outnumbered their urban counterparts.[38] However, rural populations were not uniform; they included free peasants, labourers and tenants of varied socio-economic statuses, as well as enslaved persons. Archaeologically, it is all but impossible to differentiate these groups and recent research has treated them collectively as the 'rural poor'.[39] Much of what follows

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at the local market than a landowner returning to his villa estate'; Guilhembet 2006 discusses the diversity of those arriving in the city, including local rural residents, noting that despite the lack of written accounts: 'L'on peut se plaire toutefois à imaginer, dans la quotidienneté, la figure du représentant des fermiers de l'*ansarium* en train de compter les anses des amphores transportées par un charroi pour déterminer le montant de la taxe à acquitter.'

[38] E.g. Witcher 2005; Bowes 2020, 619-20.

[39] Bowes 2020.

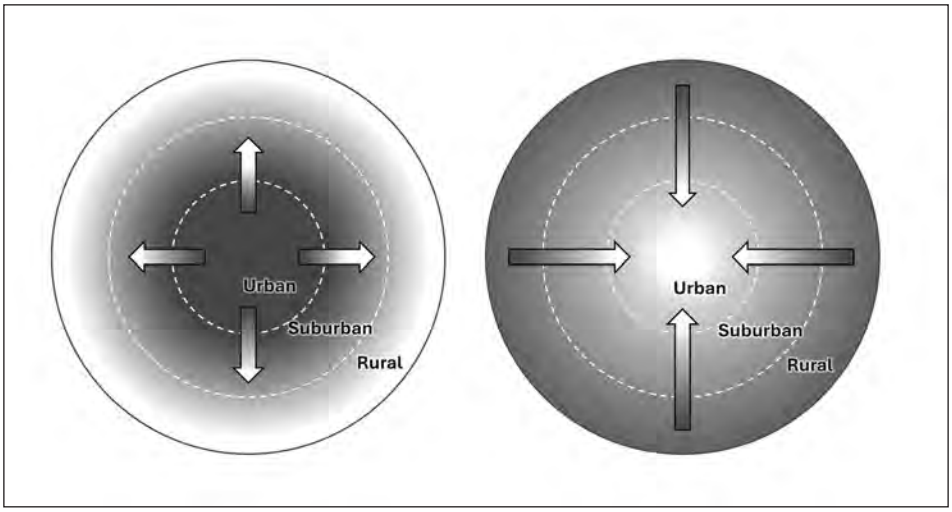

Fig. 5.2 Diagram of centrifugal and centripetal forces of urban-suburban-rural interaction.

presupposes the actions of free people and their participation in urban and suburban life. In the early-imperial hinterland of Rome, I assume that tenancy rather than the slave mode of production was the dominant means of organising agriculture.[40] Enslaved individuals were undoubtedly present, and tenants almost certainly used enslaved people on their estates, but I assume that free labour formed a larger proportion of the agricultural workforce in this region compared with other parts of the peninsula. Either way, the enslaved constituted a significant element of the population that supported the metropolis and the local communities of Roman Italy, effectively creating the social and economic basis on which many of the activities discussed below played out. The following sections explore the involvement of rural communities in suburban landscapes in relation to three topics: assembly and entertainment, burial and ritual, and marketing and labour.

Assembly and entertainment

One category of building consistently linked in scholarly accounts with suburban landscapes is the amphitheatre. These major investments in public spectacle provide an example both of urban-centrism in the study of Roman suburbs and of the possibilities of integrating rural populations into their interpretation. While Pompeii's amphitheatre dates to the early first century BCE or earlier, most arenas in Italy were constructed in the late first and early second centuries CE, taking inspiration from the Amphitheatrum Flavium at Rome. Unlike the Colosseum, however, these structures were typically located in suburban contexts.[41] Widely cited explanations for this locational preference include the availability of the extensive space

[40] Witcher 2006, 115-18; Goodchild, Witcher 2009, 215-16.

[41] Emmerson 2020a, 164. This locational choice is emphasised by comparison with theatres, which are nearly all intramural.

needed for construction, especially as intramural land was limited by this date; keeping large and potentially dangerous gatherings out of the city; and an association with 'death pollution'.[42] Another explanation is that suburban locations made amphitheatres visible beyond the city, signalling participation in civic competition with neighbouring communities.[43] Indeed, as the capacity of many amphitheatres exceeded the estimated populations of the cities that built them, it is suggested these structures were partly intended to attract audiences from further afield; where specified, these visitors are always urban.[44]

These various explanations share the assumption that urban motives alone account for the suburban location of amphitheatres. The potential significance of rural communities in determining this choice of location or making use of these suburban buildings is neglected. While direct archaeological evidence of such rural involvement is lacking, there are glimpses in the ancient textual sources; for example, Calpurnius Siculus provides a poetic account of a peasant describing his experience of an animal show in Rome, possibly to be identified with Nero's wooden amphitheatre or the Colosseum.[45] Moreover, a couple of older archaeological accounts also hint at the potential significance of the periurban locations of spectacle buildings for hosting rural audiences: Giorgio Bejor suggested that the direct entrance through the city wall into the theatre at Saepinum would have allowed 'gli abitanti del contado o dei paesi vicini' to gather there on market days,[46] and, in a passing comment, Stephen Dyson noted the gathering of countryfolk for amphitheatre games.[47] Neither suggestion appears to have gained traction in the following decades, however, two recent studies may signal a new attentiveness to the potential significance of rural communities for the suburban location of amphitheatres.

The first uses viewshed analysis to examine the location of Tibur's amphitheatre. Reconstructing its prominent position and wide visibility, Matthew Notarian argues this amphitheatre was positioned to project the urban image of the city to external audiences. The high density of settlement around Tibur meant that 'cities needed to visually reify their urban status or risk being absorbed into [the] sprawl'.[48] Here, Notarian appears to acknowledge the potential agency of rural populations by observing that the amphitheatre's visibility ensured the 'city's urban status was reinforced for external audiences – including the emperor and the imperial elite in the region's villas, and the thousands of inhabitants in Rome *and the suburbium*'.[49] Jack Hanson and Scott Ortman take this further by factoring rural audiences into their quantitative analysis of amphitheatres.[50] For each arena, the authors estimate the size of the host city's population and then add the populations of neighbouring cities within one-day's travel on foot; finally, and significantly, they add rural populations calculated on the basis of the carrying capacity of land within a 40 km-radius of each amphitheatre. For many of the small

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[42] E.g. Dyson 1992, 170; Stevens 2020, 272. For a critical review of the wider concept of death pollution, see Emmerson 2020b.

[43] Emmerson 2020a, 164; Stevens 2020, 274.

[44] E.g. Emmerson 2020a, 179 specifies 'the residents of neighboring *cities*' (emphasis added); while 'city' may be used to denote the wider civic community regardless of residence (see Zuiderhoek 2016, 37), it is notable that terms such as 'rural' and 'countryside' are all but absent in accounts of amphitheatres.

[45] Calp. *ecl*. 7; Neudecker 2017.

[46] 'the inhabitants of the countryside or of the nearby towns', Bejor 1979, 133.

[47] Dyson 1992, 170.

[48] Notarian 2024, 60.

[49] Id., emphasis added.

[50] Hanson, Ortman 2020.

towns around Rome, a 40 km-radius would take in both the population of the metropolis and vast swathes of its densely settled hinterland, leading to a significant mismatch between amphitheatre capacity and potential audiences (e.g. at Tibur, a capacity of approximately 7500 and an estimated population catchment of over one million). For current purposes, however, the value of this exercise lies in its explicit recognition of rural populations as potential amphitheatre audiences – and in numbers that far exceeded local urban residents.

The evidence of field survey and geophysical prospection allow us to take the next step. The rural territory around Rome was densely populated with farms, villas and villages, with numbers sharply increasing through the late republican period, rising to a peak during the early- or mid-Imperial period.[51] Simultaneously, however, many of the towns in the vicinity of Rome contracted in size; places such as Capena and Veii were reduced to 'suburban' towns, home to a few thousand residents at most.[52] The relationship between urban, suburban and rural landscapes – and their populations – consequently changed significantly: as the metropolis of Rome expanded rapidly through suburban growth, nearby small towns contracted (even as some developed distinctive suburban spaces of their own) and the density of dispersed rural settlement increased. Economically, small towns were undermined as Rome captured their central-place functions and, demographically, they were squeezed as populations either concentrated at the metropolis or dispersed into the countryside, fundamentally shifting the ratio of urban to rural residents. Given the proximity of these towns to one another, and to the metropolis, their social and political survival therefore depended on maintaining the civic loyalty and participation of rural populations who could now potentially choose where to sell produce and where to seek out patrons or clients.

The question therefore arises of whether such a situation might even partially explain the suburban location of amphitheatres. Typically located alongside a major road from the territory, close to a city gate, such locations would have been very accessible for rural populations (or at least for those resident on one side of town). Perhaps more significant was the potential symbolism of a suburban location for rural communities, offering a gathering place that was in town but not in town. At the interface between urban and rural, a major public building in the suburbs offered a place for dispersed countryfolk to assemble, both as a rural community and as part of the wider civic body.

Finally, it should be recalled that while most amphitheatres of Roman Italy were suburban, the Colosseum was situated in the centre of Rome. Moreover, whereas other amphitheatres often had capacities in excess of the size of their urban community, the Flavian amphitheatre (even when combined with all of Rome's other entertainment venues) could host only a fraction of the city's population. Hence, though the Colosseum offered architectural inspiration for the towns of Roman Italy, their locations and possible uses of the resulting amphitheatres were distinct from the metropolitan model. One explanation may be the different urban-rural relations at Rome compared with those around other Italian towns. For example, whether or not rural citizens travelled into the republican city to vote, by the early principate there was no political need or desire to attract these non-urban citizens into Rome to participate in elections;[53] for the other towns of Roman Italy, however, the integration of dispersed rural populations arguably grew in importance. These towns not only needed to periodically gather the wider civic community to choose magistrates but likely also found themselves in active competition with other nearby

[51] Witcher 2006.
[52] Morley 1996; Witcher 2005; Patterson, Witcher, Di Giuseppe 2020, 172-6.
[53] See Rafferty 2021.

towns to attract patronage and general economic activity. The suburban location of amphitheatres and other facilities may therefore have signalled competition not only for civic status with neighbouring towns but also for the attention of rural populations. Either way, the association of amphitheatres with suburban locations was a point of difference between Rome and many other Italian cities and one that may be partly explained by the differing relationships between urban and local rural communities.

Burial and ritual: disguised suburban graves

A defining characteristic of Roman suburban landscapes was the presence of the dead. The suburbs of Rome hosted countless cemeteries, tombs and funerary monuments, lining the roads for kilometres beyond the *pomerium* and densely scattered in between. Given the early and enduring legal prohibition on burial within the city, it is understandable that suburban cemeteries are almost exclusively perceived as housing the urban dead. Certainly funerals took urban communities out into the suburbs and commemorative festivals such as the Parentalia brought them back repeatedly to these cemeteries.[54] The expulsion of the dead and associated ritual from the urban centre reflects the notion of the urban periphery as a necessary space to accommodate those activities deemed dangerous or polluting.[55] But what about the rural dead – where were they buried?

Wealthy villa owners, with one foot in the city and the other in the countryside, might either opt for a mausoleum in the suburbs or choose to be buried on their rural estate, the latter forging connections between ancestors and property.[56] What about the rest of the rural population? Burial on the family farm was always a possibility, and isolated rural burials are attested, but the dispersal of rural populations across the landscape in life need not imply they were similarly dispersed in death. Indeed, in a landscape where tenancy was likely prevalent,[57] burial on a rented farm may have been neither possible nor desirable.[58] The resulting need to find permanent and accessible homes for the deceased may therefore have encouraged the clustering of burials in cemeteries. The possibility that some of the rural dead were brought into the suburbs for burial in extramural cemeteries alongside their urban cousins should not be automatically excluded. But there were also many other cemeteries dispersed between the villas and farms that surrounded Rome, located well within any limit used to define the suburban zone.[59] A couple of examples, little more than an hour's walk from the Servian Wall, give a sense of the size and character of these cemeteries.

Five and a half kilometres north of the Servian Wall and 500 m west of the Via Cassia, partial excavation of a large cemetery at *località* Villa Lontana has recovered 152 burials of the first century CE. An initial phase includes inhumations in *cappuccina* and simple pit graves, some furnished with glass and ceramic vessels; the excavators suggest these were the graves of 'liberti e forse di schiavi'.[60] A second phase of the later first century features

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[54] E.g. Stevens 2017b; Campbell 2021.

[55] E.g. Lindsay 2000; Emmerson 2020a, 11-13.

[56] Bodel 1997.

[57] See n. 40.

[58] See Snodgrass 1998, 37-8; Watson 2009, Dig. 1.8.6.4.

[59] E.g. Mandich 2015, 94 on the 'daily zone' extending 1-7 km or 1-2 hours' walk from walls. See also n. 22.

[60] 'freedmen and perhaps slaves', Calì, Catalano, Di Giannantonio 2009, 180.

further inhumations, including some in sarcophagi, as well as cremations, and the construction of funerary enclosures. The excavators do not comment on the possible identity of the deceased in this later phase, though the standard of burial while still modest appears somewhat higher than in the first. Also approximately 5.5 km from the Servian Wall, this time south of Rome, 1 km west of the Via Appia, excavations at Via G. Caneva have recovered 165 burials of mid first-century CE date.[61] Again, the cemetery features *cappuccina* and simple pit graves, with only one-quarter of burials incorporating grave goods. The excavators do not comment on the possible identity of the deceased; contemporaneous with the Villa Lontana cemetery, and clearly part of the same funerary tradition, the Via Caneva cemetery seems to have hosted a slightly poorer community.

Who was buried in these cemeteries? While it is conceivable they were the urban poor, it is more likely they were from the communities resident in the immediate environs.[62] Certainly the funerary monuments of some wealthy urban residents are found along the consular roads at even greater distances from the city; conversely, similar small cemeteries from firmly rural contexts are known from across Italy.[63] Particularly noteworthy is the fact that these relatively low-status cemeteries were established at a time when the burgeoning imperial city exerted greater pressure than ever on this territory, leading to rising property prices and changes in land use on the fringe-belt.[64] Indeed, at Via Caneva, the cemetery was laid out on land that had been under cultivation, probably for viticulture, in the immediately preceding republican period. While wealthy estate owners could easily afford to decommission vineyards to make way for a grand residential villa,[65] the process by which agricultural land of rising value was secured for the burial of a relatively low-status community is less clear, but speaks to the growing importance attached to a decent burial and the collective socio-economic capacity of these groups to secure land for this purpose.[66] These considerations seem to argue against the suggestion that the deceased at Villa Lontana and Via Caneva were enslaved persons, and *liberti* might have been expected to have left more overt statements about their social status. More likely, therefore, these cemeteries hosted peasants, tenants and other free labourers. Given the numbers of burials, these cemeteries surely served more than individual estates, especially in this densely settled landscape where property sizes were commensurately smaller. They may therefore have served the communities of small rural districts, acting collectively to gather the deceased of several estates at a central place on land secured at some cost just a short distance from the metropolis.

Whether the rural and urban dead mixed in the same cemeteries is therefore unclear, however, the suburbs of Rome hosted both burial communities. In the same way that urban folk headed into the suburbs to bury and commemorate their dead, dispersed rural populations likely also gathered for funerals in suburban cemeteries, which offered a shared place through which to reinforce community relations.[67]

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[61] Mazzotta 2019. The site is located in the territory covered by Ippoliti 2020.

[62] Bone trauma and remodelling have been used to suggest different activities, including agricultural work, e.g. Battistini et al. 2022, though the possibility of seasonal movement across rural and urban labour sectors complicates such evaluations.

[63] E.g. Botturi 2016.

[64] As Champlin 1982, 102 notes, 'suburban land was not cheap, indeed it was as expensive as any in the empire'. See also n. 30.

[65] Volpe 2007.

[66] For another example of agricultural land replaced by a suburban cemetery in the early imperial period, see Buccellato et al. 2003.

[67] For placemaking and the dead, see Botturi 2016; Lätzer-Lasar 2022.

As well as burial, suburban landscapes also hosted other ritual and religious activities. The positioning of temples and sanctuaries immediately outside the urban boundary has been linked to liminality and the exclusion of polluting influences;[68] other sacred places harked back to the earliest days of the city and the original limits of its territory.[69] These locations necessitated that urban populations travelled beyond the *pomerium* to participate in rituals at sanctuaries such as those of Anna Perenna and Magna Mater.[70] Might these suburban religious places also have served rural communities? As with amphitheatres, a suburban location would have provided a convenient venue for rural populations to participate in ritual practice. This may have helped to tie countryfolk into urban religious practices. For example, the large terraced extramural sanctuary at Hispellum has been interpreted as the 'fulcrum in a regional network of cults', which connected the population of Umbria through shared religious practices across urban, suburban and rural landscapes.[71] But can we go further and suggest that suburbs offered convenient locations for rural communities to gather and practise their *own* religious affairs? Tesse Stek has argued that the festival of Compitalia served an integrative function, physically and symbolically bringing together communities in both urban and rural contexts.[72] However, while urban *compitum*-shrines are archaeologically well attested, rural examples have proven elusive. Perhaps we are looking in the wrong place. If suburbs were places where rural populations congregated – for games, funerals and markets – they might also have provided convenient locations for the conduct of shared ritual. Might the missing rural *compitum*-shrines have been located not in the countryside but in the suburbs?

Marketing and labour

Rural folk travelling into town to sell agricultural produce are well attested in ancient literary texts[73] but are strangely absent from modern studies of Roman suburbs. A centripetal perspective on the urban economy helps to reinsert the rural into the suburban landscape. For example, the location of animal markets in suburban areas would have provided easy access for rural populations, and the space to host large herds and flocks, while also keeping the noise, smell and inconvenience away from city centres. Animal markets are attested epigraphically or otherwise postulated at several Italian cities.[74] These market sites did not require any fixed infrastructure but some may have developed formal architecture; for example, a large open area located just inside the walls of Interamna Lirenas in Latium is framed by structures on two sides and has been suggested as a possible *forum pecuarium* (Fig. 5.3).[75] Alternatively, these markets might have made use of other suburban structures, such as amphitheatres.[76] In all cases, animal markets were more than simple economic nodes in the service of urban demand.

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[68] The blanket exclusion of supposedly dangerous foreign cults beyond the *pomerium* is, however, now widely rejected, Orlin 2002.

[69] See n. 17.

[70] Piramonte 2001; Iara 2015; Emmerson 2020a, 220-25.

[71] Emmerson 2020a, 209. See also Rieger, this volume.

[72] Stek 2008.

[73] Millar 1981.

[74] Cera 2020; Basso 2021; Renda 2023.

[75] Launaro, Millett 2023, 66. See also Launaro, Leone, Verdonck, this volume.

[76] Stevens 2017a, 144.

Fig. 5.3 (a) geophysical plan of Interamna Lirenas; (b) enlarged view of insula XXXIX showing an open space at the edge of the town interpreted as a possible animal market.

De Ligt observes these gatherings 'played an important role in the dissemination of all kinds of information *to* rural areas'.[77] Like fairs and animal markets in more recent times, however, these were also occasions for countryfolk to exchange news and information with one another as much as with their urban cousins. In this context, recent archaeological research has emphasised cities as places of 'energised crowding' and the role of open urban spaces as locales for social gathering with generative potential.[78] The periodic assembly of rural populations for animal markets in Roman suburbs might be usefully considered in the same way.

Whether for rural convenience or to avoid urban inconvenience, it is logical that periodic animal markets would be located on the outskirts of Roman cities, but what of the regular markets for other products – where were the *nundinae* held? It is largely an assumption that such markets traded in central fora.[79] At Rome, pressure on space from an early date pushed these weekly gatherings into suburban areas,[80] meaning that rural populations no longer needed to spend increasing amounts of time travelling into the centre. Moreover, as Rome's supply system developed, producers increasingly sold not directly to consumers but rather to merchants and urban traders.[81] Such exchange could be more efficiently transacted at suburban markets, which also allowed producers to avoid the need to enter the city with goods that would have attracted tolls and administrative complexity.[82] Over time, therefore, rural populations around Rome may increasingly have seen the suburbs, rather than the city, as their destination. The situation at smaller towns may have been different. Here, the additional time needed to travel from the urban periphery to central facilities was minimal and producers consequently could maintain more direct contact with consumers. However, even here this need not imply that markets were held centrally; urban folk were no strangers to the suburbs, regularly visiting for games, festivals and funerals, and so presumably could just as easily access markets on the urban periphery too.

Whilst selling produce at suburban markets, rural populations will also have been able to access goods and services. Craft activities such as pottery production are widely suggested to have been pushed out to suburban locations because of their need for space that was limited and expensive within the walls, as well as to reduce nuisance caused by smoke and to mitigate fire risk – all factors defined by urban considerations.[83] Conversely, rural pull-factors might also have been at play. Suburban locations would have facilitated the efficient supply of fuel and materials from surrounding territories as well as providing producers with more direct access to rural consumers. Potential aggregate rural demand was significant, and archaeological surveys demonstrate the extent to which ceramics and other goods made their way out into the urban hinterland.[84] Much of this material was likely directly acquired by rural populations on periodic visits to suburban markets.

As well as pottery production, suburban locations hosted other craftworkers such as blacksmiths. Excluding the fire risk of such pyrotechnologies from urban centres made good sense, but these specialist suburban services were also conveniently located for rural populations

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[77] De Ligt 1993, 112, with emphasis added.
[78] Jervis et al. 2021; Smith 2023.
[79] Holleran 2012, 185.
[80] Malmberg, Bjur 2011, 366 on the Porta Esquilina area.
[81] Erdkamp 2005, 106-42.
[82] On tolls and the custom boundary, see Guilhembet 2006.
[83] Malmberg, Bjur 2011, 366; see also Laurence 1999; Poehler 2011.
[84] Witcher 2005.

with their great variety of iron tools and equipment in need of maintenance and repair. Dispersed rural communities typically cannot support full-time specialist craftworkers; in thinly settled districts, far from urban centres, itinerant blacksmiths probably serviced rural demand. In more densely settled rural landscapes, closer to urban centres, metalworkers likely established themselves in locations where rural demand was temporarily aggregated on market days. The suburban location of craftworkers may therefore indicate servicing of the significant demand generated by dispersed rural populations as much as that from physically attached but smaller urban communities.[85]

The concentration of marketing and craft production in periurban areas allowed rural populations both to sell produce and buy goods; rural communities may also have supplied the labour for some of the activities associated with this economic activity in both the suburbs and the city itself. Direct evidence for the involvement of rural labour in the urban and suburban economies is scarce, however, Paul Erdkamp has used a comparative historical approach to argue that Rome absorbed significant amounts of labour from its hinterland.[86] Due both to family structure and to peaks and troughs in the agricultural cycle, smallholder families typically have access to significant amounts of spare labour. Rural populations around Rome could therefore take advantage of employment opportunities in the city, particularly seasonal work in harbours, transporting goods into the city, and on periodic construction projects. Similarly, agricultural animal labour would have been seasonally available, and mules and oxen could be redeployed from rural estates to transport goods from suburban warehouses and storage yards into the city.[87] Suburbs may have played an important role in networking rural populations into these urban employment opportunities.[88] In more recent historical and contemporary societies, rural migrants who have semi-permanently migrated to the city often settle in suburban areas where rents are lower and where links can be maintained with rural kinspeople.[89] These suburban residents are therefore well placed to network between town and country. Seasonal rural labourers arriving in Rome may have connected into urban work opportunities through such suburban kin networks.

As well as seasonal employment bringing rural populations into the heart of the city, there were likely regular opportunities for employment in the suburbs. Animal markets attracted associated activities such as slaughterhouses and butchery,[90] tanneries and textile workshops[91] and other craft industries such as bone- and leather-working. Many of these crafts, as well as horticulture, will have been well suited for labourers familiar with rural life.[92] The site at Casal Bertone illustrates some of the possibilities. Located approximately 2.5 km from the Servian Wall, close to the Via Collatina (between the Viae Tiburtina and Praenestina), rescue excavations have revealed a cluster of features including a small residential *villa rustica*, an industrial-scale fullery (*fullonica*) for textile processing (or alternatively a tannery), and several funerary

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[85] See also Busana, Bernardi 2023.

[86] Erdkamp 2016; see also Malmberg 2023.

[87] Malmberg, Bjur 2011, 367; Erdkamp 2016.

[88] See Smith 2014 for discussion of migrants in urban landscapes including fluidity of movement between town and country and the maintenance of contacts with rural kin.

[89] E.g. Gururani 2020. Tacoma 2013 assesses the evidence for migrant quarters at Rome, finding little clustering of ethnic or religious groups; he does not address rural migrants or suburban contexts.

[90] E.g. on the Esquiline, see Malmberg, Bjur 2011.

[91] Piramonte, Ricci 2009; Flohr 2013.

[92] Morley 1996.

groups. The precise spatial and chronological relationships between these features are unclear but the excavators assume the 84 individuals excavated from a second- and third-century CE necropolis, and a further 74 from an associated mausoleum, relate to the fulling complex 180 m to the north. The nearby *villa rustica*, originally founded at the end of the republican period, is considered too small to have accommodated the dozens of labourers that would have been employed in the *fullonica*.[93] So, were these workers urban labourers who commuted out from the city or rural workers who gathered from nearby rural estates? And were they employed full- or part-time? Here, I follow the argument that, rather than sustaining high unemployment of urban labourers during the slack season, Rome instead maintained full employment of the urban workforce throughout the year and flexibly drew in additional labour from the countryside as needed for seasonal and other periodic tasks;[94] in other words, it is unlikely that urban residents needed to seek employment opportunities outside the city. I am therefore inclined to see these workers as rural residents, possibly combining work at the *fullonica* with agricultural labour, though the industrial scale of the complex and its proximity to the Rome market might also have allowed for their full-time specialist employment. The presence of women (33 per cent) and children (<12 years, 27 per cent) in the cemeteries may also support the suggestion of a workforce drawn from a locally resident community.[95]

For rural populations, the suburbs were more than just a space experienced *en route* to the city in the service of urban economic needs; rather, they may have been a destination in their own right. Periurban markets offered countryfolk convenient locations to buy and sell goods and to access services. Periodic gatherings also facilitated the social networking and community building of dispersed rural folk, as well as the exchange of information with city dwellers. Moreover, high rural populations prompt the suggestion that suburban marketing and production activities were at least partially stimulated by aggregate rural demand. Some suburban specialist crafts, such as blacksmithing, may have been orientated towards rural communities, with craftworkers basing themselves 'centrally' in locations where rural demand was periodically concentrated. Finally, rural populations may have found varied opportunities for employment on the urban periphery, as well as using the suburbs as a conduit into the seasonal labour market of the city itself.

Conclusions

By exploring how Roman rural communities engaged with suburban spaces, this chapter offers a corrective to the 'methodological cityism' that has dominated understanding of Roman society and ancient urbanism more generally. A new attentiveness to the potential agency of rural communities in creating and using suburbs exposes the implicit assumption that periurban areas were generated by cities, for the benefit of cities. To facilitate this paradigm shift requires eschewing a purely centrifugal view of suburbs as spaces created by

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[93] Flohr 2013, 211. The *villa rustica* covered an area of approximately 1800 m2; the partially excavated *fullonica*, fitted with dozens of terracotta tubs and a water supply system, extended to more than 1000 m2. The *fullonica* was set a short distance back from the Via Collatina and partially obliterated an earlier roadside cemetery, Musco et al. 2008.

[94] Erdkamp 2016, 34.

[95] Musco et al. 2008.

urban sprawl and embracing a complementary centripetal perspective that recognises suburbs as places that also drew in the rural landscape. This goes beyond simply restating that farmers came into town to sell produce; instead, it insists on a broader centralising impetus among dispersed rural communities. Recognising the urban periphery as a locus of temporary rural aggregation – for markets, festivals, funerals, employment and entertainment – allows the reconceptualisation of suburbs as places that condensed and cohered dispersed rural populations. In this sense, suburbs may have been simultaneously generated by the decompression and marginalisation of urban functions and by the densification and centralisation of rural needs. Or more provocatively stated, suburbs could form distinctive central places for dispersed rural communities, opportunistically attached to the edges of towns for the convenience of countryfolk.

Either way, the urban and rural were never totally separate worlds. Even at Rome the urban populace was not isolated from rural life; on the contrary, the rural world was ever present in the pre-modern city in ways that are difficult to grasp from the perspective of our own age of planetary urbanisation. To understand ancient Rome on its own terms requires a concerted effort to fundamentally 'ruralise' the study of Roman society. Suburbs form a critical part of this endeavour because, whether conceptualised as a simple extension of the urban or as a distinctive type of space in their own right, suburban landscapes formed the interface between town and country. Finding the rural in the suburbs is a first step towards realising a more agrarian view of Roman society and to reintegrating the countryside into studies of ancient urbanism more generally.

Advancing this agenda faces opportunities and challenges. The present chapter has concentrated on conceptual matters, illustrating some of the variety of current approaches, from the quantitative and computational through to the sensory and experiential. Importantly, all these approaches can be equally applied whether taking an urban or rural perspective on suburbs and, indeed, such variety is arguably essential for capturing the dynamic and multifaceted nature of suburban spaces and integrating the diverse types of evidence. For Rome, the volume and variety of available data are daunting. A pressing methodological question concerns the integration of stratigraphically complex but spatially circumscribed excavation data with 'thin' but extensive field survey data; likewise, it will be necessary to combine vast but uneven legacy datasets, some collected centuries ago, with the rapidly accumulating quantities of high-quality data generated by *archeologia preventiva*.[96] Away from Rome, the volume of material is less overwhelming and other methods, especially geophysical survey, may play an important role in documenting suburban landscapes.[97] Large-scale bioarchaeological studies of cemetery populations offer great potential, for example using isotope analysis to understand potential variation in diet and mobility, and the identification of palaeopathologies and biomechanical stress markers to establish similarities and differences in disease and labour in urban and rural contexts.[98] There is similar scope to compare archaeobotanical and zooarchaeological assemblages from urban, suburban and rural contexts, again including the use of isotope analysis.[99]

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[96] See https://lazioantico.datascape.dev/ (accessed 1 August 2025) and, of course, the work of the IN-ROME project.

[97] Campana 2018.

[98] Benassi et al. 2011; Killgrove, Montgomery 2016; Piccioli, Gazzaniga, Catalano 2015.

[99] Feito 2023; Schmidtova et al. 2023.

Another opportunity and challenge is the need to compare between case studies. The present chapter has focused on Rome and some of the other towns of central Italy, but how variable were suburbs across the Roman world and what role did they play in the lives of provincial rural communities? A critical question concerns scale: were the suburbs of large cities different from those of small towns? Indeed, did Rome's unparalleled size create a unique type of suburbanism? It might be hypothesised that the metropolis generated unprecedented possibilities for nearby rural populations leading to an intrinsically different periurban landscape compared to those of other cities. The very high ratio of Rome's population compared with the rural residents in its immediate hinterland may have created distinct social and economic opportunities for the latter to engage with the city; however, the relative visibility and influence of these rural communities in the ancient city likely remained limited in comparison with those of their metropolitan cousins. In contrast, the urban population of any individual 'suburban' town in the hinterland of Rome would have been vastly outnumbered by the rural residents in the surrounding territory; rural populations therefore likely played a bigger role in these small civic communities. What might this have meant for the formation and function of periurban landscapes around these smaller towns? Were suburbs *less* important as rural populations could easily access urban centres and engage directly with city life, for example, selling produce directly to urban consumers? Or, conversely, were suburbs *more* important as smaller urban communities were more reliant on the temporary gathering of rural residents to constitute the civic body and to generate aggregate economic demand, a requirement best served by the flexible nature of suburban rather than urban spaces? The investigation of such questions promises insights into the wider nature of urban, suburban and rural settlement in central Italy and across the Roman world.

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Chapter 6

Even a small town has a periphery: the case of Regina Turdulorum (Baetica)

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Abstract
Since 2021, the project *MiReg - Town and Country in the Far Roman West* has been investigating the town of Regina Turdulorum in the province of *Baetica* (now Casas de Reina, Extremadura, Spain). As a small town on the periphery of the Roman Empire, *Regina Turdulorum* differs significantly from the large cities in the centre, especially from Rome herself. This raises questions about the connection (and separation) of *urbs* and *territorium*, especially how the suburban zone functions as a transition from urban to rural space. To answer these questions, a three-step approach is taken. Firstly, the archaeological evidence for the formation and use of the peri-urban periphery of the city is presented in the light of latest research. In a second step, the urban centre of *Regina* is explored by critically examining previous ideas about the city's development. Finally, two neighbouring small towns, *Arucci-Turobriga* and *Contributa Iulia Ugultunia*, are used for comparison to come to more general conclusions regarding urban-rural relationships in the context of small towns in (south-western) Hispania.

Keywords
small towns/ciudades pequeñas; intensive survey; geophysical prospections; failed city; urban periphery

The question of how cities and their surroundings are connected is central to understanding the wider functioning of the Roman Empire. Most studies on this topic use larger Roman cities as case studies, with Rome naturally serving as the prime example.[1] In this chapter, however, attention turns to one small town, or *ciudad pequeña*, and its immediate surroundings in south-western Spain. Comparison with other small towns in the same region reveals striking differences within this category of settlement, not only in terms of the layout and buildings within the towns themselves but also in their urban peripheries. This demonstrates that the relationship between city and country could vary considerably even among one category of town within a single region and suggests that the interface between urban and rural across the Roman world merits further investigation.

[1] E.g. Morley 1996; Witcher 2005; Id. 2013; Mandich 2015.

Regina Turdulorum

The starting point for the present chapter is the 'Miróbriga – Regina Turdulorum: Town and Country in the Far Roman West' (MiReg) project. Established in 2021, this is a joint initiative of the Institute of Classical Archaeology at the University of Vienna and the Department of Prehistory at the University of Marburg, together with the relevant authorities in Portugal and Spain.[2] The project is dedicated to the study of two small towns and their hinterlands in the western part of Hispania between the late Iron Age and the late Roman period: *Regina Turdulorum*, in Extremadura, Spain, and as a comparison Miróbriga in the Alentejo region of Portugal. The towns, and especially their hinterlands, are being investigated with a wide range of archaeological landscape methods including pedestrian surveys, geophysical prospection and small-scale excavations. The present chapter deals with *Regina Turdulorum* and its surroundings, focusing on the demarcation between the urban and rural landscapes, and on the reciprocal effects of the interaction between these two spaces.[3]

Regina Turdulorum, located in the *Conventus Cordubensis* of the Roman province of Baetica, was founded during the Julio-Claudian period and promoted to the rank of *municipium* under the Flavians.[4] Since 1978, archaeological excavations have revealed various structures within the town considered typical of Roman urban centres, such as a theatre, parts of the road network, and the buildings of the forum.[5] This Imperial-period town was founded at a location with no earlier settlement, though an Iron Age and Republican-era precursor was situated on a nearby hill called Cerro de las Nieves.[6] Due to its small size of approximately 7 ha, *Regina Turdulorum* can be considered as a *ciudad pequeña*.[7] Small towns such as this are a typical phenomenon of Rome's Hispanic provinces, characterized by their limited settlement areas and populations, as well as their minor administrative functions compared to those of the provincial and conventus capitals.[8] Regina's rather modest significance is also suggested by the fact that it is mentioned only once in the written sources, even though Pliny the Elder counts the city among the *oppida non ignobilia.*[9]

As a small town on the western edge of the Roman Empire, *Regina Turdulorum* differs significantly from the larger cities of Italy and the core provinces, and especially from Rome herself. These differences of scale and location raise questions about the nature of the relationship between *urbs* and *territorium* and, especially, concerning how the suburbs function as a zone of

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[2] For MiReg: Teichner, Hermann, Schörner 2026; Schörner, in press.

[3] For Miróbriga see Teichner 2018.

[4] For details: Álvarez Martínez, Rodríguez Martín, Nogales Basarrate 2012, especially 166-7.

[5] Short excavation reports: Álvarez Martínez 1983; Álvarez Martínez, Rubio Muñoz 1988; Álvarez Martínez, Mosquera Müller 1991.

[6] See Gorges, Rodríguez Martín 2004, 84-93; Gorges, Rodríguez Martín 2023 [2025], 77-110; Ines Guth (University of Vienna) is preparing a study on the history of the settlement on Cerro de las Nieves based on the recent surveys.

[7] Houten 2021, 187 with fig. 5.7; 338. Both Teichner, Hermann 2022, 173 and Carreras Monfort 2014, 76 assume a larger settlement area of 18 and 40 ha respectively, but this is very unlikely. Gorges, Rodríguez Martín 2023 [2025] assume an urban area of 9 ha. The question of the city's extent loses some of its significance, however, given that the urban area was far from fully built up (see below).

[8] For an up-to-date definition and characterization of 'small towns' in Hispania, see the contributions in Mateos Cruz et al. 2022.

[9] Plin. *nat*. 3.14.

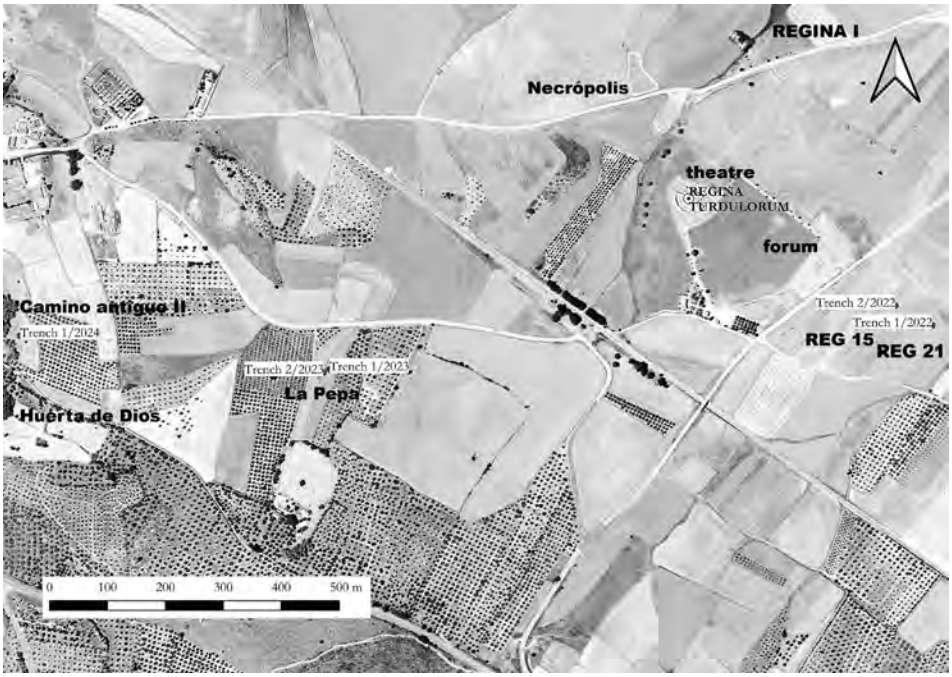

Fig. 6.1 The urban periphery of *Regina Turdulorum*: localisation of sites and excavation trenches.

transition between urban and rural spaces. To address these questions, this chapter is organised into three sections. The first presents the archaeological evidence from the immediate vicinity, or peri-urban landscape, of *Regina*. The second examines *Regina's* urban centre, taking a closer look at buildings and infrastructure to assess whether and to what extent *Regina* functioned as a centre for the immediate surroundings or a further hinterland.[10] The final section introduces two neighbouring small towns, *Arucci-Turobriga* and *Contributa Iulia Ugultunia*, which are used as points of comparison to allow the identification of some more general conclusions regarding urban-rural relations in the context of small towns in (south-western) Hispania.

The periphery of *Regina Turdulorum*: recent results

The archaeological investigations of the MiReg project provide detailed information about the immediate vicinity, or peri-urban landscape, of *Regina Turdulorum* (Fig. 6.1).

Excavations in 2023 uncovered part of a large building complex at La Pepa, featuring two interconnected water basins that may relate to metal production. Meanwhile, excavations in 2024 at Camino antiguo II revealed a bathing complex, either a standalone facility or forming

[10] The terminology itself is controversial; for a discussion: Goodman 2007, 2-3; Emmerson 2020, 8-9 (with further bibliography). Both agree that the term *suburbium* – similar to the adjective *suburbanus* – should be avoided because it has a specific meaning that only refers to Rome.

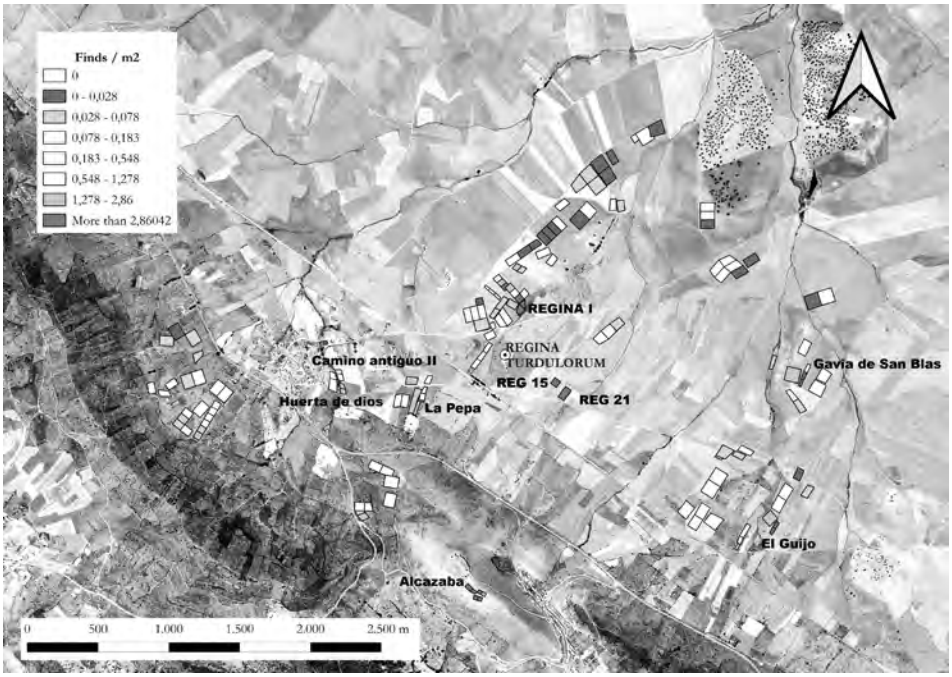

Fig. 6.2 The urban periphery of *Regina Turdulorum*: survey fields 2021-2024.

part of a well-appointed residential complex. The latter is more likely, as nearby geophysical prospection has identified a large house or villa with a number of highly magnetic features that may represent pottery kilns or furnaces for the bathhouse.[11]

The wider geophysical survey provides further important insights into the development and land-use in *Regina's* peri-urban zone. At La Pepa, in addition to the excavated water basins, the geophysical survey has identified the structures of a probable villa.[12] Another large building has been detected at Huerta de Dios; the discovery of a decorative mosaic floor in this area several decades ago suggests this building was also a villa.[13] Another important discovery is an area of 90 × 110 m to the northwest of the city characterised by numerous small anomalies interpreted as a necropolis. No other structures have been identified by the geophysical investigations in the immediate vicinity of the city. On the contrary, the results indicate extensive undeveloped areas in the zones north and south of the urban core.[14]

The results of the geophysical investigations are complemented by the findings of the pedestrian surveys:[15] the low densities of surface finds in fields at a distance of only 150 m from

[11] The results of the excavations and geophysical surveys conducted in the framework of MiReg are so far only available in unpublished reports for the Office for Antiquities of the region Extremadura.

[12] For La Pepa, see also Gorges, Rodríguez Martín 2023 [2025] 301 no. 027.

[13] Gorges, Rodríguez Martín 2023 [2025] 301 no. 028.

[14] See Álvarez Martínez et al., 2016, 170 fig. 7. For the necropolis of Regina: Gorges, Rodríguez Martín 2023 [2025] 174-6.

[15] On the survey results, see Schörner, in press.

Fig. 6.3 Survey fields REG 15 and REG 21 with indication of the ditch in the southeast of *Regina Turdulorum*.

the theatre in the town centre indicate that there was no built-up area immediately to the west of the city (Fig. 6.2). The same undeveloped situation applies to the area to the north-west, adjacent to the necropolis, where surface finds are absent. Some 600 m further north, a small (<1 ha) concentration of modest finds lacking indicators of luxury such as *tubuli, tesserae* or marble revetments suggests the presence of a small farm or minor agricultural structure (site Regina I). The situation to the south-east of the city is different. Here, two fields yielded many finds. However, a closer look reveals significant differences between the two areas, as that closer to the city shows significantly higher numbers of finds: the western field (REG 15) yielded 5.3 times more artefacts than the eastern field (REG 21).

This difference is even more pronounced with regard to the ceramic finds, with 6.7 times the amount of pottery recovered from REG 15 compared with field REG 21. Despite the proximity (<100 m) of the two fields to one another, the difference in the numbers of finds and find densities is considerable. This disparity can be explained by reference to the geophysical results, where REG 15 is located in an area of anomalies that indicate the presence of structures, while REG 21 was apparently undeveloped (Fig. 6.3). The geophysical survey also identified a linear feature, identified as a ditch, apparently delimiting the built-up and undeveloped areas.[16]

[16] The ditch is noted by Álvarez Martínez, Rodríguez Martín, Nogales Basarrate 2014, 171; Álvarez Martínez et al. 2016, 167, 169.

Since no city wall has been found surrounding the urban area of *Regina Turdulorum*, it may be assumed that this feature served to demarcate the *pomerium* separating – maybe in combination with the nearby Arroyo de San Blas – the *urbs* from the *territorium*.[17]

Finally, while the geophysical survey identified few indications of activity in the zone immediately to the east of the city, reflecting the situation to the north and south, surface finds do suggest some activity in this area, e.g. REG 21, perhaps horticulture or, more likely, waste disposal. In summary, through excavations, surface survey and geophysical prospection, the immediate surroundings of the city are now relatively well understood. It is evident that many of the functions attributed by George Fabre to urban peripheries are attested in the immediate surroundings of *Regina Turdulorum*:[18]

- residential: mostly high-status structures including villas at Huerta de Dios and Camino antiguo II, eventually La Pepa
- agricultural: site Regina I
- artisanal/industrial: La Pepa (metal-working) and Camino antiguo II (pottery production)
- burial: necropolis

Although not included on George Fabre's list, waste disposal is another archaeologically well-documented activity (e.g. Pompeii, Augustodunum, Vindonissa, Baelo Claudia),[19] likely represented here by Area REG 21. As informative as this positive evidence for the presence of suburban features at *Regina Turdulorum* is, equally telling is the lack of other structures that typically characterize the peri-urban environment elsewhere: there are no urban walls or other fortification structures, apart from the ditch, which is too narrow and shallow for any defensive purposes. Large structures for spectacles are also missing, since the theatre is located within the urban centre.[20] Indeed, there no are public buildings in the periphery of *Regina*. More generally, however, there is a complete lack of evidence for *aedificia continentia*, or a continuous aggregation of buildings directly adjacent to the city or its boundary, which often signifies a continuation of urban development and life outside the urban centre.[21]

The urban fabric of *Regina Turdulorum*

Understanding of the urban periphery of any Roman town is dependent on an accurate picture of the urban centre to which it relates, as the size, appearance and functions of suburbs depend on the city.[22] It is therefore necessary to critically examine the state of knowledge about

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[17] The Arroyo de San Pedro could have the same function in the west. The city of Bononia in Italy is bordered by two watercourses: Goodman 2016, 312; Emmerson 2020, 39-42.

[18] Fabre 2012. For economic activities in the urban periphery, see also Goodman 2016, 319-21. In this context, the concept of the urban periphery as borderscapes for social, political and cultural interaction is helpful: Stevens 2020.

[19] See e.g. Furlan 2017.

[20] Gorges, Rodríguez Martín 2023 [2025], 162 claim that the theatre would be outside the city, but without any factual basis.

[21] For *aedificia continentia* Goodman 2007, 14-15, 68; Emmerson 2020, 5-10; Buongiorno 2020; see also Buongiorno this volume.

[22] E.g. Johnson 2012, 9: 'The questions of settlement extent and urban/rural relationships are closely interlinked.' Corsi, Vermeulen 2021, 25: 'the radius of what we have to define as suburbium depends on the dimensions of the center itself.'

the *urbs Regina Turdulorum*. As noted above, *Regina* was a small town, or *ciudad pequeña*. Despite this small size, it featured most of the typical amenities expected of a Roman town, hence appearing to differ from larger cities such as *Emerita Augusta* only in its size.[23] On closer inspection, however, it is clear that *Regina Turdulorum* was a deficient city in many aspects, including the absence of one of the defining features of Roman urbanism: a city wall.[24] Looking beyond the presence of important buildings such as the theatre and the temples of the forum, investigations of the sewers and road system also point to some divergences from the expected urban form and development.[25]

Although an orthogonal street grid was planned and the *cardo maximus* and *decumanus maximus* laid out, the full street plan was only realized to a very limited extent. This is evidenced by the incomplete sewerage system cut into the bedrock beneath the streets.[26] The construction of sewers was only completed beneath the *decumanus maximus*, the south-east stretch of the *cardo maximus* and a short stretch of one of the projected *cardines minores*. The provision of connection points along these completed sewers shows that the construction of side channels was planned but mostly never realized. In the few cases where construction of these feeder channels had begun, they extend for only a few metres before terminating and therefore served no function at all. The incomplete road and sewerage systems suggest that the development of *Regina* was limited.[27] This image of an only partially built-up city is confirmed by geophysical investigations.[28] Anomalies indicating structural remains have only been detected in the southern half of the urban area, and even the district around the theatre was otherwise largely devoid of development. But it is not only the lack of buildings that is striking but also the types of structures which are present or absent. Most of the buildings identified served public functions: a theatre, temples and other public buildings on the forum, as well as at least two large bathhouses; in contrast, residential buildings are absent with the exception of two small atrium houses.[29]

It is not necessary here to examine the reasons for *Regina*'s various urban deficiencies; rather it is sufficient to observe that the limited urban development and lack of residential building had an influence on the development of the urban periphery. For example, as there was ample space available in the city centre, there was no need to build the theatre on the periphery. Hence, one of the main reasons for the development of *continentia aedificia* (i.e. a lack of space within the urban area) is not applicable at *Regina*. The concentration of development in the south-eastern quarter of the city also explains why the only two fields with abundant surface finds detected during survey are found to the south-east of the city, while elsewhere,

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[23] For the urbanism of *Emerita Augusta*: Edmondson 2011; Nogales Basarrate, Álvarez Martínez 2014; Nogales Basarrate 2021; Eger, Nogales Basarrate 2024.

[24] In general: Goodman 2007, 45–50; Stevens 2017, 61–6; ideological role of city walls: Pinder 2017; Babik 2022 (with further bibliography); walls as iconographic symbol of *urbanitas*: Lavagne 1988; the role of walls for Hispanian small towns: Ventura Villanueva 2022, 56: 'la dignitas civitatis se materializaba en las murallas, que asumían un papel simbólico más allá de su función protectora o defensive.'

[25] Álvarez Martínez, Rodríguez Martín, Saquete Chamizo 2004, especially 22-4; Gorges, Rodríguez Martín 2023 [2025], 135-44.

[26] Also observed by Romero Vera 2022, 243.

[27] This situation was noted by Álvarez Martínez, Rodríguez Martín, Saquete Chamizo 2004, 20, but no significant conclusions were drawn.

[28] See the interpretation of the results of the prospections: Álvarez Martínez et al. 2016, 170 fig. 7.

[29] For the two atrium houses: Álvarez Martínez, Rodríguez Martín, Nogales Basarrate 2014, 182-3, Gorges; Rodríguez Martín 2023 [2025], 156-7.

even in the immediate vicinity of the urban core, the scarcity of finds suggests no intensive activity, whether construction or waste disposal.

The sites detected in the urban periphery, such as Regina I, La Pepa and Huerta de Dios, are all located less than 1 km, or a maximum of 1.5 km, from the city centre (Figs 6.2, 6.3). The inhabitants of these *villae* or farms could have walked to the forum of *Regina* in less than half an hour. This restricted urban periphery contrasts with the much more extensive suburban zones of larger cities – including the extreme example of Rome – which might extend several kilometres from the city walls. At *Regina*, it is noteworthy that these suburban sites are all located within 1000 *passus* of the city and thus correspond to the definition of the *lex Irnitana* of the area directly belonging to the *municipium*.[30]

The urban peripheries of *ciudades pequeñas* in northern Baetica

To date, studies of urban peripheries or suburbs in Hispania have focused on the larger cities, especially the provincial capitals, but the suburban areas of these major urban centres cannot be compared with that of *Regina Turdulorum*.[31] Instead, to evaluate whether the urban periphery of *Regina* was typical of other *ciudades pequeñas*, comparison can be made with the two closest small towns: *Contributa Iulia Ugultunia* (Medina de la Torre; Fig. 6.4)[32] and *Arucci – Turobriga* (Aroche; Fig. 6.5),[33] both located in the *conventus Hispalensis*, some 40 and 90 km from *Regina* respectively.

Arucci covers an area of 4 ha and *Contributa Iulia Ugultunia* extends to 5 ha, both undoubtedly to be considered as *ciudades pequeñas*.[34] The first difference from *Regina* is that both *Arucci* and *Contributa* have well-documented town walls and gates.[35] Therefore, the boundary between their urban cores and peripheries is much more clearly marked than at *Regina*. Probably the most important difference from *Regina*, however, is the evidence from excavations and geophysical prospection that show the urban cores of *Arucci* and *Contributa* were much more densely and extensively built up.[36] At *Arucci*, large, elaborate houses extended over a considerable proportion of the city.[37] At *Contributa*, the evidence is not quite as clear, though buildings have been identified in all parts of the urban core.[38]

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[30] *Lex Irnitana* 91: *….denuntiandi intra it municipium et mille passus ab eo municipio….* González, Crawford 1986, 179, 235-6.

[31] Fernández Vega 1994; Garriguet Mata 2010; Vaquerizo Gil 2010; Buzón Alarcón 2011; Romero Vera 2017.

[32] Most recently: Mateos Cruz, Mayoral Herrera, Pizzo 2022.

[33] Latest: Bermejo Meléndez, Campos Carrasco 2022.

[34] *Arucci*: Bermejo Meléndez, Campos Carrasco 2022, 417; *Contributa*: Mateos Cruz, Mayoral Herrera, Pizzo 2022, 382.

[35] *Arucci*: Bermejo Meléndez 2013, 224-9; *Contributa*: Mateos Cruz, Mayoral Herrera, Pizzo 2014, 117-23.

[36] See e.g. Bermejo Meléndez, Campos Carrasco 2022, 420 fig. 3; Mateos Cruz, Mayoral Herrera, Pizzo 2022, 388 fig. 5.

[37] Bermejo Meléndez 2013, 204-24; see, most recently, for domestic architecture López Sánchez, Bermejo Meléndez 2022.

[38] Mateos Cruz et al. 2022. Interestingly, it does not matter whether an orthogonal street grid was laid out, as in *Contributa*, or not, as in *Arucci*.

Given these differences between the urban centres at *Regina* and at *Arucci* and *Contributa*, unsurprisingly, the organization of their peri-urban areas also shows fundamental differences. At *Arucci*, a large rectangular enclosure with internal buildings has been identified immediately north of the city wall. Based on convincing architectural parallels, this structure is interpreted as a *campus* – equipped with an *aedis* or *schola* – for the city's youth to meet and exercise.[39] Even if this interpretation of the *campus* as the seat of the local *collegium iuvenum* is not correct in every detail, for our purposes, what is crucial is that at *Arucci* an extensive, probably public, building complex was built directly outside the city wall. The size of the structure at almost 4,000 m^2, which is equivalent to 10% of the total intramural area, is certainly one reason for its location outside the city walls.

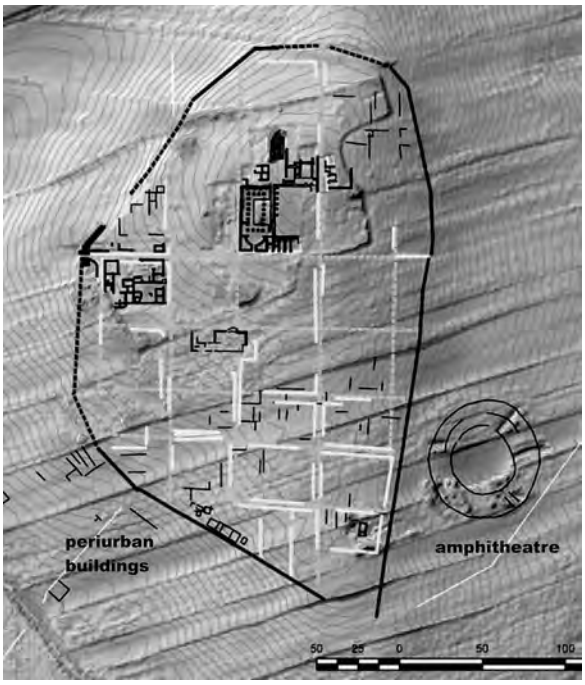

Fig. 6.4 *Contributa Iulia Ugultunia*.

At *Contributa*, the extra-urban location of the amphitheatre is noteworthy; although amphitheatres are commonly found in peri-urban areas, even in much larger cities, this location contrasts sharply with the setting of the theatre within the city at *Regina*.[40] At *Contributa,* the development of *aedificia continentia*, or buildings directly outside the city walls as commonly observed in the peripheries of larger and more populous cities, can be also observed. Geophysical prospection and remote sensing have revealed small-scale structures in the western and south-western periphery of the city.[41] This was probably a neighbourhood with simple dwellings and shops, to be explained like the amphitheatre, by the lack of space in the urban centre. The simple building methods used are also perhaps more in keeping with construction in an urban periphery rather than the centre.

In summary, comparison of *Regina* with the neighbouring small towns of *Arucci* and *Contributa* reveals differences both in their urban and peri-urban areas. The urban core at *Regina* was only partially built up compared with *Arucci* and *Contributa*. The urban boundary of *Regina* was marked by only a ditch and/or natural features such as two arroyos rather than

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[39] Bermejo Meléndez, Campos Carrasco 2004; Bermejo Meléndez, Fernández Sutilo, Campos Carrasco 2016; for the institution in the Roman Empire in general: Villetard 2021 (with older literature).

[40] Mateos Cruz, Mayoral Herrera, Pizzo 2014, 126–8. For the location of amphitheatres outside the urban core in general: Goodman 2016, 316-17; Emmerson 2020, 163-95; Stevens 2020, 272-4.

[41] Mateos Cruz, Mayoral Herrera, Pizzo 2014, 122-6; Mateos Cruz, Mayoral Herrera, Pizzo 2022, 387 ('barrio extramuros').

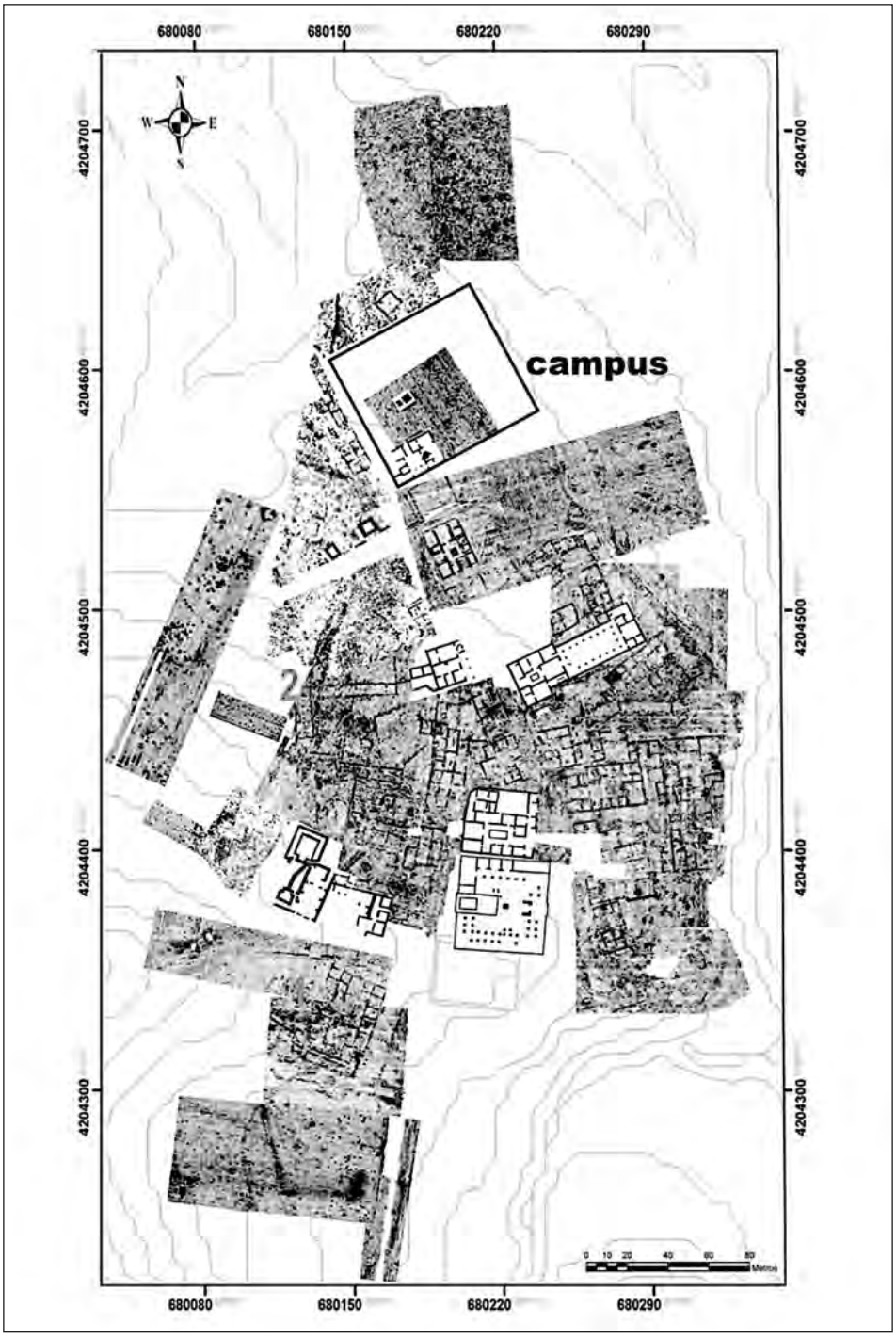

Fig. 6.5 *Arucci – Turobriga*.

town walls like its neighbours. Finally, the latter towns demonstrate evidence for peri-urban features typical of much larger cities, such as *aedificia continentia* and public buildings including a *campus* and amphitheatre. Compared even with these two small neighbouring towns, *Regina* must have seemed like an attempt to build a city that was never fully realized.

Conclusion

The *ciudades pequeñas* of Hispania show evidence of buildings and other activities in their immediate peripheries that are similar to those of much larger cities. These facilities fulfil the same functions as generally attested in urban peripheries across the western Roman Empire, in particular necropolises and agricultural and other production facilities, as well as residential buildings, often of high social status. Thus, the question of whether small towns have a periphery can be answered positively, but the intensity of their development and use varied considerably. The most important difference between the three cities under consideration here is whether *aedificia continentia* and/or public buildings were built in the peri-urban area. While such features are attested at *Contributa Iulia Ugultunia* and *Arucci-Turobriga*, they are absent in *Regina Turdulorum*. This situation is explained by the lack of development in the city centre of *Regina* that made expansion beyond the *urbs* unnecessary. Sparsely built-up urban peripheries are therefore not a characteristic of small towns in general, but rather the outcome of a lack of development in the urban centre itself. In this context, it would be of great interest to investigate whether larger cities, which have extensive empty spaces within their walls or city limits, such as *Astigi* or *Itálica*, also had comparably less developed suburbs.[42] This is not to say that there are no differences between large and small cities and their respective peripheries. There are certainly disparities in the density of structures, but the most obvious difference concerns size. In the case of *Regina*, the urban periphery may be assumed to have extended only a few hundred metres from the city, although even this zone was only sparsely built up and mostly empty.

Suburbs are often seen to have blurred the distinction between urban and rural. The thesis advanced here is that an underdeveloped urban periphery – that is, a lack of suburbs – need not therefore imply a sharper separation of city and country. Although there was a boundary between *urbs* and *territorium* at *Regina*, the ditch and arroyos which fulfilled this function were by no means as tangible and visible as the town walls at *Arucci* and *Contributa*.[43] Another important factor is demographic distribution; with only a very small number of residential buildings within the *urbs*, the vast majority of the population of the *civitas* must have lived in the *territorium*, further eroding any marked separation of urban and rural. To borrow Simon Malmberg's words, at *Regina Turdulorum* we are dealing with a low-density hinterland but an even more 'low-density' city.[44] *Regina* certainly cannot have functioned as a central purchaser of agricultural products, so that in no way was it a 'consumer city' supplied by a rural landscape of production.[45] Furthermore, although *Regina* certainly fulfilled central functions in terms of political

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[42] Romero Vera 2016; Romero Vera 2020; for non-Hispanic cases e.g. Woolf 1998, 119, 145 (Carhaix and Corseul in Northern Gaul). The number of examples could easily be increased.

[43] A typology of differently visible and penetrable boundaries between *urbs* and *territorium* established by Goodman 2007, 66-8.

[44] See the contribution of Malmberg this volume.

[45] See especially Finley 1981; general discussion: Whittaker 1990; Horden, Purcell 2000, 89-122; Erdkamp 2001; Erdkamp 2012; Zuiderhoek 2016, 11-14, 43-7.

organization and religion, it could not, due to its lack of urban development and small population, offer the lived experience of a city, which Louise Revell has emphasized as central to Roman urban life.[46] Consequently, it could be asked whether *Regina* was perceived as a fully functional city and expression of urbanity at all.

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[46] Revell 2009, 40-57.

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Chapter 7

Fields, forums and formulas. Agriculture and urbanization in ancient Mediterranean cities through the lens of mathematical modelling

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Abstract

This chapter re-examines the city–countryside nexus in the ancient Mediterranean through a compact quantitative model used as a heuristic tool for historical analysis. Rather than inferring economic performance from single proxies, the study formalizes how per-capita availability of agricultural products depends jointly on workforce composition, labour productivity, seed requirements, surplus extraction from the local economy, and factor intensification.

It is argued that, if diminishing marginal returns apply, an urbanization-led push on the agrarian sector would tend to lower per-capita output unless compensated by other forces. Conversely, if urbanization coincided with stable or rising per-capita production, some factors must have offset declining returns (e.g. sustained improvements of agricultural productivity, higher share of agricultural workers, reduction of surplus leakage, expanded trade in foodstuffs, etc.).

The broader impact is twofold. First, the result cautions against reading urbanization as a straightforward proxy for agrarian growth, and against accepting diminishing returns as an Iron Law of ancient rural economies. Second, it reorients debate toward the sequencing of change: sustained urban development typically presupposed prior or parallel transformations in agriculture, not the other way around. Formal modelling is thus shown to not only 'measure the past' but also expose hidden assumptions, sharpen historical claims, and guide future archaeological and textual research.

Keywords

Urbanisation; agriculture; agrarian economy; modelling; diminishing returns

Introduction

In the last few decades, the debate on ancient economies has gradually shifted away from assessing their relative *modernity* – whether they resembled modern developed economies – to examining their *achievements* and *structural limitations*. This change in perspective has been

particularly important in the study of ancient agrarian economies. Traditionally, preindustrial agricultural production has been characterized as static, unproductive, and constrained by technological inertia, with limited capacity for innovation and growth. In this view, economic expansion in the Greek and Roman world was often attributed to trade, craftsmanship, and urbanization, rather than to any intrinsic dynamism in the agricultural sector. However, more recent research has challenged this assumption, suggesting that agricultural productivity may have been more flexible than previously thought, driven by changes in demand, labour organization, and intensification strategies.[1]

Reconstructing agricultural output in ancient societies remains a difficult task, as direct statistical records are almost entirely absent. To address this challenge, historians and archaeologists have relied on indirect indicators and proxies such as urbanization rates, demographic estimates, stature, diet, pollen data, transport vessels (amphorae), storage infrastructure and settlement patterns. As for more quantitative models *per se*, two main approaches have prevailed: (a) a *land-based* approach, which estimates agricultural output based on available arable land, typical crop yields and soil quality;[2] (b) a *labour-based* approach, which estimates output by assessing workforce size, labour productivity and the share of the population engaged in agriculture.[3]

While useful, both approaches have significant methodological drawbacks. They often assume linear relationships between inputs (land, labour) and output, failing to account for complex interactions between economic, social and technological factors. Furthermore, many studies implicitly rely on overly simplistic, and sometimes flawed, economic models, some of which assume diminishing marginal returns as an Iron Law from which ancient agriculturalists could not escape, without critically assessing whether this assumption is valid, in what context and under what conditions.[4]

This central issue derives from the (still) predominantly Malthusian paradigm binding agrarian growth to a given 'carrying capacity' yet leaving the question of the key drivers of such growth unanswered. For the case of town-country relations which is the subject of this volume, one central question in (preindustrial and modern) economic history is the relationship between urbanization and agricultural growth. As will be discussed further, the idea that the expansion of cities generated a strong solvable demand for agricultural products, encouraging farmers to intensify and specialize production, and adopt more efficient farming methods is pervasive in ancient economic history scholarship. However, this argument is rarely accompanied by an explicit discussion of its corollary assumptions regarding the constrains set to agricultural productivity, such as diminishing marginal returns. If diminishing marginal returns apply strictly to ancient agriculture, then simply adding more labour in response to urban demand would have led to decreasing efficiency and likely to the stagnation of material standards, rather than sustained economic development. This raises a fundamental question: can urbanization drive agrarian expansion under conditions of diminishing returns? Or are these two assumptions fundamentally incompatible?

This chapter addresses these issues by critically evaluating the assumptions behind existing quantitative models and by proposing a new mathematical framework to analyse the ancient

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[1] For a historiographical review of ancient agricultural systems, see: Solonakis 2025, 307-11.
[2] Garnsey 1988.
[3] Erdkamp 2005.
[4] Cf. *infra*: sections 2.3 and 2.4.

agricultural economy, which could then be used to process field-survey data and reassess crucial problems in ancient economic history, starting with the dynamic between urbanization and agriculture. Rather than treating agricultural growth as a straightforward function of land and labour, this model accounts for interactions between population, urbanization, labour productivity and surplus extraction. As a result, in standard neoclassical conditions, with limited inter-regional trade in agricultural commodities and limited impact of technology, urban-driven agrarian growth and diminishing marginal returns are demonstrated to be contradictory assumptions – a finding that has significant implications for how we reconstruct the dynamic of ancient agrarian (and in fact preindustrial) economies. More broadly, this study highlights the importance of formal/mathematical reasoning in economic history, not only as an *instrumental technique* to elaborate quantitative estimates, but also as a *heuristic tool* allowing to uncover hidden realities and logical inconsistencies in historical models.

1. Methodology: why mathematical modelling?

Improving our knowledge of ancient societies' agricultural potential is not solely a matter of accessing new, more complete and better data; it also requires a more refined, comprehensive and logical *modelling* of the interactions between the main variables and parameters that command agricultural production (i.e. a *behavioural mechanism*[5]). As will be addressed in the next section, it is my contention that a large part of the misconceptions regarding ancient urban-rural dynamics arise from fundamental flaws in the models – whether qualitative or quantitative, implicit or explicit – involved to represent it. As will be highlighted further, these flaws have as large an impact on the outcome of the model as biased or poor-quality data. This paper is therefore not focused on evidence, but on modelling; not on an inductive, but on deductive reasoning, in a similar fashion as K. Hopkins' famous thesis on the taxes-and-trade model.[6] Therefore, as K. Hopkins himself argued, it is not sufficient to focus on a few specific unrealistic or disproven assumptions of the model to refute it: a proper refutation must show that these assumptions are *critical* to the model's validity (i.e., that changing them would significantly affect its outcome and logic), as well as propose an alternative explanation.[7]

Since agriculture is a quantifiable economic process – inputs generating an output which is distributed, transformed and consumed – it can largely be accounted for by a mathematical description that benefits from the knowledge of past and present agricultural systems. Hence, quantitative mathematical modelling is not only an instrument to obtain more precise, more reliable figures or to quantify existing qualitative reconstructions of the agricultural process; it may also reveal previously unsuspected properties and dynamics and therefore consists of yet another heuristic tool that may improve our understanding of the past. Furthermore, mathematical modelling also ensures transparency regarding the model's assumptions as well as logical internal consistency.[8]

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[5] Rodrik 2015, 32-3.
[6] Hopkins 2002, 191-5.
[7] Hopkins 2002, 195.
[8] Rodrik 2015, 31-2.

2. Theoretical debates and literature review

2.1. *Endogenous productivity? A brief critique of 'carrying capacity'*

Pervasive among past reconstructions of humans-environment dynamics is the ecological concept of 'carrying capacity' – the supposed maximum population an ecosystem can sustain – to explain how resources shaped ancient population size and spatial or functional distribution. Yet two important critiques undermine the validity of this concept. First, ecologists lack a consistent definition: estimates of carrying capacity vary widely with changing habitats and species interactions, exposing it as an abstract construct rather than an objective and tangible value.[9] Second, 'carrying capacity' downplays adaptation capabilities and fails to account for changes over time. Rather than a static ceiling, some scholars have proposed to describe human-resources interactions as a 'windfall effect', in which bursts of abundance spur growth until depletion triggers collapse,[10] while others emphasize how technology, markets, and substitution repeatedly expand resource availability,[11] a process formalized as 'multi-logistic' growth.[12]

Although carrying capacity has gained traction in Greco-Roman economic history from the late 1990s onward, critics from within the field of Classics caution that uncritical application of the concept risks underestimating peasant ingenuity – in soil improvement, irrigation and crop selection – and conflating soil properties with farmers' capacity to enhance fertility.[13]

2.2. *Urbanization as a driver of agricultural growth?*

If ancient agriculture was not fundamentally limited by intrinsic environmental constraints, then we must ask what *did* drive and constrain agricultural performance. One widespread hypothesis in ancient economic history scholarship is that urbanization operated as a key driver to agricultural growth, a direct consequence from von Thünen's theory of locational rent (Fig. 7.1).[14] Several authors have indeed argued that the development of cities[15] created sustained solvable demand for food, fostering intensification of rural production. In this view, urbanization acts as a powerful economic stimulus, improving infrastructure, connectivity and creating market incentives for specialization and increased aggregate production.[16] This hypothesis has shaped not only theoretical models but also empirical approaches: urbanization is often taken as a proxy for economic performance.[17] The logic is straightforward: larger urban

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[9] Dhondt 1988. Sayre 2008 notes that the term originated in shipping and engineering before being forced onto ecological models.

[10] Price 1999, 27.

[11] Sagoff 1995, 615.

[12] Meyer, Ausubel 1999.

[13] Ouzoulias 2014, 322.

[14] Cf. von Thünen 1910.

[15] For a definition of 'cities' and the distinction between cities and urbanization, cf. Thomas 2012, 212-15.

[16] Jongman 1988, 88; Bang 2002, 25; Erdkamp 2015, 25. Similarly on the modern and contemporary period, cf. Thomas 2008.

[17] Lo Cascio 2011.

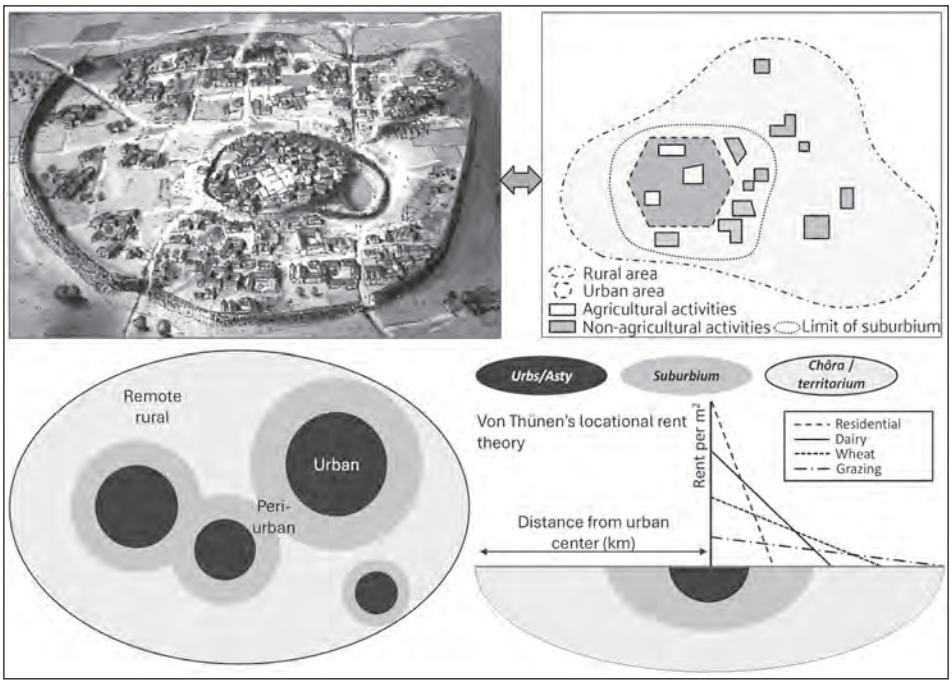

Fig. 7.1 (a) Artistic reconstruction of the Hellenistic site of Muro Tenente (Mesagne, BR) based on excavation and field survey; (b) Schematised spatial structure of an idealised city; (c) Spatial divisions within a preindustrial (ancient) city and its implication for von Thünen locational rent.

populations must be sustained by proportionally greater levels of rural surplus, either through increased productivity or more efficient extraction mechanisms.[18]

Yet this assumption raises several theoretical and empirical problems. From the point of view of sustenance, ancient Mediterranean cities could be accurately described, to a significant extent, as 'consumer cities'[19] – urban centres that mainly relied on rents, taxes, and tribute for their food supply. The acknowledgement that most ancient cities were in fact 'agro-towns', where non-negligible activities did take place within the urban core,[20] does not invalidate the fact that cities consumed overall more food than they produced, drawing their subsistence largely from their hinterlands. A. Zuiderhoek summarized the nuanced geo-economic division of labour between city and country as 'non-reciprocal relations between non-food producing sectors, which were mostly but not exclusively urban, and a food producing sector, which was mostly but not exclusively rural'.[21] If this

[18] Wilson 2014, 156; Verboven 2018, 359.

[19] For a recent re-evaluation of the city-country economic relations: Zuiderhoek 2017, 43-8, following Erdkamp's relative rehabilitation of the consumer city model (Erdkamp 2001).

[20] Jashemski 1979, 201, 251-3; Morley 2011, 151-3; Pitt 2016; Zuiderhoek 2017, 45-6. Cf. Plin. *nat.* 19.51-2; Str. 12.3.1.

[21] Zuiderhoek 2017, ch. III n. 35

model holds, then urbanization might not necessarily reflect agrarian growth so much as the ability to mobilize surplus – which may or may not correlate with increased productivity, a situation which, over the past five centuries, has been described by scholars as 'urbanization without growth'.[22]

An alternative view – articulated *inter alia* by Fernand Braudel, Robert Brenner and Paul Bairoch for the case of the Industrial Revolution – reverses the causal arrow: rather than cities being the main driver of agricultural innovation, it is the enhancement of agricultural productivity through innovation and intensification that enables sustainable urbanization (here defined from a social and demographic perspective as an increase in the relative share of residents in the urban nucleus (*urbs* or *asty*) at the detriment of the hinterland[23]). In this view, cities emerge as a consequence of rural transformation, not its cause.[24]

2.3. *Diminishing marginal returns in economic theory and their critique*

Within the bulk of studies positing urbanization as a driver of agrarian intensification, some implicitly assume or explicitly adopt the principle of diminishing marginal returns to labour as an 'iron law' of (ancient) agricultural economics.[25] The 'law of diminishing marginal returns states that as units of a variable input (e.g. labour) are added to units of one or more fixed inputs [e.g. land], after a point, each incremental unit of the variable input produces less and less additional output'.[26] This 'law' has been brought about by neoclassical theory and used to construct what economists call 'production functions', that is, equations relating output to production factors (inputs, usually capital, labour and land). In short, production functions answer questions such as: 'how much grain can be produced over a year on an estate of 3 ha employing 5 agricultural workers? How does total output vary as more workers or more land are involved?' In its most standard form, the Law of Diminishing Marginal returns (also labelled 'Law of declining marginal productivity') is best represented by the Cobb-Douglas production function (Fig. 7.2).

Diminishing marginal returns have been posited in several publications dealing with ancient agricultural production,[27] and already by ancient authors;[28] the important question therefore is how likely it is that ancient agriculture would experience diminishing marginal returns, and under what conditions. One fundamental distinction should be made *ab initio* in order to avoid any confusion between (i) the evolution of soil productivity resulting from an increase of the cultivated area, and (ii) the evolution of soil productivity resulting from an increase of the use of labour.

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[22] Jedwab, Vollrath 2015.

[23] Cf. Cowgill 2004, 527.

[24] Braudel 1979b, 482-7; Bairoch 1997, 95-106; Temin 2013, 133; see also Erdkamp 2016, 9. This paradigm tends to be confirmed by empirical studies throughout the preindustrial era revealing a strong association between early urbanization and suitability for cultivation (Motamed, Florax, Masters 2014). For the case of ancient Roman agriculture, see Temin 2013, 133; see also Erdkamp 2016, 9.

[25] Jongman 1988, 88; Bang 2001, 25; Erdkamp 2015, 25.

[26] Debertin 2012, 19.

[27] Scheidel 2007, contra Ouzoulias 2014, 308-9; Temin 2013, 23-4; Erdkamp 2015, 24, 28.

[28] X. *Oec*. 20.22-4; *Vect.* 4.5; Colvm. 2.1.3-5, 2.8, 3.11.13, 17.3.

(i) Classical economists like Adam Smith and David Ricardo famously argued that, when a process of extensive cultivation occurred, the best soils were cultivated first, resulting in decreasing marginal productivity of land.[29] Yet, already in the early 19th century, economist Henry Charles Carey argued that the order of cultivation did not always or even generally follow a decreasing gradient of fertility, pointing to other factors such as the suitability of the soil to the specific type of cultivation, and the amount of labour and energy required for rendering the land ready for agricultural operations.[30]

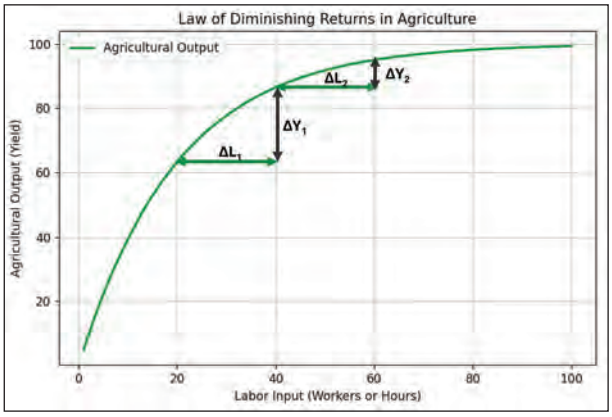

Fig. 7.2 Diminishing returns on agricultural labour.

(ii) Does marginal soil productivity decrease with the intensification of the use of labour? Piero Sraffa showed that the usual neoclassical argument for diminishing marginal returns in a broadly defined sector – say 'agriculture' – rests on two incompatible assumptions: a fixed input, and independence of supply and demand. If land is fixed while labour expands, increasing agricultural output will shift labour and capital from other industries,[31] altering relative input prices (land vs. labour), income distribution, and hence aggregate demand, undermining the required supply-demand independence.[32] Conversely, if one restricts the focus to a sub-sector (e.g. grain), price-demand independence is preserved, but inputs are no longer fixed as farmers can convert pasture, woodland or scrubland to arable land, adjust fallow or change crop mixes.[33]

To sum up, the Law of Diminishing Marginal Returns, particularly in its application to agriculture, has received sharp criticisms, from post-Keynesian economists (P. Sraffa), historians and even from agronomists.[34] Yet it is still pervasive in a considerable part of

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[29] Grantham 1999, 202-7; cf. Wrigley 1988, 128.

[30] Carey 1837, 38 n.2; Philip Wicksteed, one of the leading figures of neoclassical theory, had already argued that declining marginal returns were far less applicable to land than to other assets (Wicksteed 1914, 18-20; Sraffa 1960, 2). On the effects of labour and management as determining factors of soil productivity, see Vidonne 1977.

[31] Sraffa 1926, 539. This flexibility is clearly summarized by P. Garnsey, writing about ancient peasants' objectives and planning: 'Production totals mattered. Every year farmers measured their harvest. Every year they decided how much to put aside as seed (…). But just as regularly they decided how much land to put under cultivation, how much to assign to each crop, and how much seed to sow for a given area.' (Garnsey 2000, 708).

[32] Keen 2011, 146-7.

[33] Cf. Garnsey 2000, 708.

[34] Van der Ploeg 2010, 46: 'A second series of mystifications center on the "law of diminishing returns" as formulated by neoclassical economics. But this "law" has already for several decades been rejected in theoretical agronomy. Whenever diminishing returns emerge this is seen as a temporary exception which after correction will make way again for constant or even increasing returns.'

economic history scholarship. The articulation between this postulate of diminishing marginal returns and the idea of urban-driven agrarian growth is best showcased by P. Bang in his contribution to the 'Impact of Empire' series:

'This sets fairly narrow limits to how much production can increase, especially because growth in economies dominated by agriculture is often achieved at the price of falling marginal returns on extra added labour. Some of this may be offset by gains from making possible a greater division of labour brought about by increased urbanisation or economies of scale.'[35]

2.4. *Quantitative models of ancient agricultural production*

Using mathematical reasoning in ancient social and economic history – and in ancient agrarian history in particular – is of course not a new practice.[36] One of the earliest attempts at quantitatively analysing the interplay of the variables involved in agriculture was proposed by Keith Hopkins. He developed a model that allows assessing the effects of rents and taxes on the cultivable surface that is necessary for a household to produce the products necessary for its own consumption and for the upkeep of livestock. Re-arranging Hopkins' equation for land allows deriving an expression for *available* output per person by assimilating it to consumption per person:[37]

$$\bar{c} = q_H = \frac{a\left[(1-f)\cdot[y-(\sigma+\rho_a+\tau_a+\kappa_O+n_O)]\right]+(E-I)}{H}$$

$$= \frac{(\text{share of cultivated land}) \times \big(\text{yield} - (\text{inputs} + \text{fixed costs})\big) + \text{balance of payments}}{\text{household size}}$$

In this equation,[38] a stands for land (per household), H stands for household size (number of inhabitants), c for consumption per person, q_H for *available* output per person; f is the proportion of land left fallow (in %), y is yield per hectare,[39] σ is the amount of seed per hectare, ρ and τ_a are respectively rents and taxes per hectare, κ_O the consumption per livestock unit (usually oxen) per hectare worked, n_O the total number of animals; E represents the household's outside earnings and I the investments. The interest of Hopkins' model here is the introduction of investment and earnings, which are important when one wants to assess farmers' market connectivity.[40] It is also interesting in accounting for animal consumption, a variable too often omitted. However, it suffers from important shortcomings:

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[35] E.g. Bang 2002, 25.

[36] E.g. Hopkins 1980; Temin 2013; Bransbourg 2012; Zuiderhoek 2009; Malanima 2012.

[37] Hopkins 2000, 253-67. The distinction between 'output' and 'available output' is crucial here: Output = Consumption + Seed + Rents + Taxes. Available output is a first approximation of Consumption. This distinction mirrors the one between 'income' and 'available income' (i.e. the income after taxation and social transfers).

[38] All equations quoted from other scholars have been re-labelled to comply with the symbols used along this article.

[39] Hopkins remains imprecise as to whether his equation mentions yield per worker, per hectare, or total grow yield (for the production unit as a whole). However, for his equation to remain dimensionally correct, yields, rents and taxes have to be expressed per unit of land.

[40] On which see Erdkamp 2005.

(i) Most of the computational values of his model derive from the yield/seed ratio, here set at 4:1.[41] By assessing output largely on the basis of seed, Hopkins seems to rely only on ascribed soil properties and a given level of technology to determine the size of yields, and hence takes no account of the fact that a different use of labour, land and manure for the same technological level and same soil may well translate into very different outputs.

(ii) Hopkins' equation simultaneously takes fallowing and animals into account: while these are indeed crucial variables of agricultural production, Hopkins fails to notice that they are strongly interconnected: a greater use of animals increases available manure, hence reducing the need for (and extent of) fallowing. Therefore, the inclusion of two highly correlated variables in the same member of his equation violates the principle of (necessary) stochastic independence, adding unnecessary complexity.

(iii) The model does not account for any geographical or economic division of labour; it does not account for urbanization or for the interaction between agriculturally and non-agriculturally active populations within ancient cities.

Objection (i) requires a reassessment of the economic underpinning of production theory applied to agriculture, and in particular a discussion of production functions to allow for output flexibility according to the different combinations of labour, land and manure, which is beyond the scope of this discussion. In the following paragraphs, we shall therefore focus on objections (ii) and (iii) in order to develop a more consistent and logically satisfying model.

Other models have been proposed by scholars which put the emphasis on different aspects of agricultural production. An attempt in the direction of rendering a division of labour visible has been undertaken by Elio Lo Cascio,[42] whose model describes per capita agricultural output (q) as obeying the following equation:

$$q = \frac{P}{P - P(u + r_{NA})} = \frac{1}{1 - u - r_{NA}}$$

In this equation, u stands for urbanization rate, P is total population and r_{NA} is the share of rural workers engaged in non-agricultural activities. While trying to overcome the omission of the division of labour, this model is not exempt from flaws. First, Lo Cascio's model sticks to the demographic variables, but leaves out rents and taxes. Secondly, the model allows for rural non-agricultural production without symmetrically considering urban agricultural production and does not make it clear whether the considered division of labour is based on spatial, i.e. geographical criteria, or economic criteria. Most importantly, per capita agricultural output in this equation is solely defined on the basis of population aggregates. There is no parameter converting population or workforce in terms of output, that is, there is no mention of *productivity*. Indeed, the model is not consistent from a dimensional point of view: the left side of the equation should be expressed in units of volume (*modii* or kg); the right one is non-dimensional, since all remaining variables are *rates* expressed as percentages.

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[41] It is now increasingly acknowledged that the 4:1 yield/seed ratio derived from Columella is unrealistically low for Roman agriculture, and merely represents conditions of very poor soils, since Columella's agenda was to foster viticulture by providing a pessimistic figure of cereal productivity, cf. Erdkamp 2005, 38.

[42] Lo Cascio 2011, 93.

In addition, this model does not envisage differences in consumption levels between different groups. In economic terms, the ratio defined by Lo Cascio is what we might call a 'dependency ratio', i.e. the quotient of the consuming population by the producing population. At best, it is a proxy for the constraints lying upon the agricultural workforce, but it is certainly not per capita output.

As we can see, Lo Cascio's model introduces a rural/urban division, but at the cost of the omission of rents, taxes and the notion of productivity, and fails to account for the different levels of consumption between urban and rural dwellers. A third, although earlier, model by Peter F. Bang overcomes this latter issue, but similarly omits surplus extraction and productivity:[43]

$$(1-\alpha)\cdot q_{NA}+\alpha\cdot q_A=m\cdot\overline{q_S}$$

In this equation,[44] q_{NA} and q_A are respectively the per capita consumption levels of the non-agricultural and agricultural population, α is the proportion of population engaged in agricultural activities, q_S is subsistence consumption, and m is a constant parameter that measures the number of times subsistence represented by the considered level of per capita consumption. Here, the spatial division of labour is correctly modelled, and the equation is dimensionally consistent. However, the agronomic aspects included by Hopkins (animals, seed, crop yield, ...) as well as surplus extraction (rents and taxes) are omitted.

3. Towards a multi-factorial model

3.1. *Primary production, division of labour and surplus extraction: a generalized model*

3.1.1. *Main variables and aggregates*

We may now attempt to formulate a more general and consistent model. While no model ever fully encapsulates reality, it is nonetheless possible to attain a greater level of accuracy, realism and completeness based on our knowledge of ancient agrarian economies. In essence, what we seek is a quantitative model that relates available per capita agricultural output to the percentage of agriculturally engaged population, to productivity and to the level of rents and taxes, while considering the division of labour, the consumption gap between different segments of the population and the agronomic variables (volume of workers and manure per unit land). Let us first consider an idealized city (urban centre + countryside) in which most agriculture is concentrated in the countryside, but reckoning with some urban agriculture, as well as a certain part of rural non-agricultural activities (Fig. 7.1).[45]

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[43] Bang 2008, 118.

[44] Bang's original equation expressed per capita consumption of non-agricultural population as a multiple of per capita consumption of agricultural population: $(1-\alpha)\cdot\varepsilon\cdot q_A+\alpha\cdot q_A=m\cdot\overline{q_S}$.

[45] The relative size of each aggregate in the urban centre and countryside as displayed in the scheme are of course arbitrary; nothing allows hypothesizing *a priori* that urban agricultural population and rural non-agricultural population would balance each other (or cover each other's needs); cf. Morley 2011, 152.

3.1.2. *Consumption and surplus extraction (expenditure side)*

To assess per capita output, we first need to relate total agricultural output to population. Total agricultural output (Y) can be broken down into five main aggregates: the producers' subsistence needs (N),[46] seed (S), rents (R), taxes (T) and net benefits (B):

$$Y = N + S + R + T + B \quad (1)$$

Taxes and rents can both be split into a fraction that is *extracted* (*e*) and a fraction that remains in the local economy (*1 – e*) (e.g. grain sold on the urban market to pay for rents and taxes in money[47]):

$$\left.\begin{aligned} R &= e_R R + (1 - e_R)R \\ T &= e_T T + (1 - e_T)T \end{aligned}\right\} \quad (2)$$

Using these relations, we may then separate the extracted agricultural output from the one circulating in the local or regional economy. Acknowledging as a fundamental rule of macroeconomics that the non-extracted agricultural output (i.e. *available* output) can be equated with total agricultural consumption (C_{TOT}), we may write the following equation:

$$Y - S - e_R R - e_T T = N + (1 - e_R)R + (1 - e_T)T + B = C_{TOT} \quad (3)$$

Moreover, rents, taxes and seed can all be expressed as a share of total output[48] through the rate of rents (*r*), the taxation rate (τ) and the share of seed in total output or seed/yield ratio (*s*):

$$\left.\begin{aligned} R &= rY \\ T &= \tau Y \\ S &= sY \end{aligned}\right\} \quad (4)$$

Injecting equations (4) into (3), and assuming for the sake of simplicity that there are no outside benefits ($B = 0$) as a first approximation, we obtain: $Y(1 - s - e_R r - e_T \tau) = C_{TOT}$, which after simplification[49] yields:

$$\Rightarrow Y = \frac{C_{TOT}}{1 - s - \ell} \Rightarrow C_{TOT} = Y(1 - s - \ell) \quad (5)$$

This equation states that total agricultural consumption is a fraction of total agricultural output, from which the share of seed and the extracted share of rents and taxes have been deduced.

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[46] In economic terms, the reproductive cost of labour.

[47] Cf. Bang 2008, 119-20; see also Hopkins 2002, 209-10.

[48] For rents amounting to 20% of total output in Imperial Asia Minor, see Mitchell 1993, 254. For a wider discussion: Solonakis 2017, 97-102. Taxation on cultivated land took the form of the *decuma*, amounting to 10% of output (*EA* XIV (1989), l.72: Cf. De Ligt 2002).

[49] In order to make the equations easier to read, we label the extraction rate of surplus as: $\ell = e_R r + e_T \tau$. This variable represents the share of total agricultural output that is being extracted from the local economy

3.1.3. *Production*

We now have an equation that relates total output to total *consumption* as well as to the seed-yield ratio, taxation rate and rate of rents. But total output also needs to be related to the *production* factors, namely labour, land and manure. The transition from production factors to output is made through *production functions,* the most common of which are Cobb-Douglas production functions.[50] In the case of agricultural production, such functions need to be slightly adapted in order to better reflect the interplay of agricultural resources.[51] A three-factor (labour (L), cultivated land (A_c)[52] and manure (M)) Cobb-Douglas production function would be of the type:[53]

$$Y = \Psi \cdot L^{\beta} A_c^{1-\beta-\delta} \left(A_c^{\delta} + M^{\delta}\right) \qquad (6)$$

From this adapted production function, and after factoring in the labour-to-land and manure-to-land ratio (respectively g and m), we may derive an equation for labour productivity (π_L), defined as the ratio of output to labour:

$$\pi_L = \frac{Y}{L} = \Psi \cdot \gamma^{\beta-1}\left(1 + \mu^{\delta}\right) \qquad (7)$$

The main takeaway from this equation is that, under standard neoclassical conditions, labour productivity drops continuously as the amount of labour per unit of land increases.

3.1.4. *Macroeconomic equilibrium*

As a fundamental rule of macroeconomics, output defined from the expenditure side and output defined from the production side must equal each other: (5) = (6):

$$C_{TOT} = \Psi \cdot L^{\beta} A_c^{1-\beta-\delta} \left(A_c^{\delta} + M^{\delta}\right)(1 - s - \ell) \qquad (8)$$

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[50] Cf. for Cobb-Douglas production functions in agricultural economics Debertin 2012, 171-86.

[51] While the traditional Cobb-Douglas function is a multiplicative function of all inputs, we needed to include manure as an additive term to reflect that it is not a necessary input, contrary to labour or land.

[52] It might be objected that the model so far does not account for fallowing, contrary to Hopkins' model outlined above. However, the production function we use here depends on *cultivated* land (AC), not *arable* land (A). These two variables are connected through the relation: $Ac = A(1 - f)$, where f is the share of land left fallow.

[53] In this equation, Ψ is a parameter that captures the technological level, while L, Ac and M respectively refer to labour, cultivated land and manure. The exponents β and δ are respectively the output elasticity of labour and manure. Output-elasticity (also called 'elasticity of production') is a coefficient that answers to the question: by how much does production increase if an input factor (labour, land, capital or manure) increases by a given amount? (cf. Debertin 2012, 36-7). As a standard case we hypothesize that exponents of each production factor add up to one, implying constant returns to scale (Debertin 2012, 166, 172-3). Both the hypothesis of constant returns to scale in agriculture and the application of Cobb-Douglas production functions are controversial but it is beyond the scope of this paper to discuss them.

From here, total consumption can be broken down in two different ways: (a) from a geographical point of view, that is, by focusing on the difference in consumption per capita between urban and rural dwellers, regardless of whether they are (primarily) engaged in agricultural activities or not; (b) on an economic criterion, i.e. focusing on the difference in per capita consumption between (primarily) agricultural and non-agricultural populations, regardless of whether they live in the countryside, in the suburbs or in town. This economic criterion is the one we retain here, to better account for the reality of urban agriculture and rural non-agricultural activities. Total consumption (i.e. per capita consumption multiplied by population) can thus be expressed as a simple sum of the consumption from respectively agricultural and non-agricultural populations: $C_{TOT} = C_A + C_{NA}$.[54]

Once we factor in the share of agricultural population (α) and the activity (or employment) rate in agricultural population (k_A), and after elementary algebraic simplification, we obtain the following general equation,[55] referred to as the *equilibrium equation*:

$$q_A + q_{NA}\left(\frac{1-\alpha}{\alpha}\right) = k_A \cdot \Psi \cdot \gamma^{\beta-1}(1+\mu^{\delta})(1-s-\ell) \qquad (9)$$

The left part of this equation represents the available quantity of agricultural products per capita respectively for the agricultural and non-agricultural population; the right side of the equation displays the variables determining agricultural output per capita positively (amount of manure, share of agricultural workers in total population) and negatively (amount of seed spared, labour/land ratio, rate of surplus extraction).

3.2. *Interpretation and discussion*

3.2.1. *Available per capita output by socio-economic category*

From its generic form, the equilibrium equation (eq. 9) can be rewritten to highlight labour productivity (eq. 7), which yields the following equation:

$$\alpha q_A + (1-\alpha)q_{NA} = \alpha \cdot k_A \cdot \pi_L \cdot (1-s-\ell) \qquad (10)$$

This equation states that all other things being equal, the agricultural output captured respectively by agricultural populations and by non-agricultural populations are negatively correlated: in other words, hypothesizing stagnating (*a fortiori* declining) labour productivity implies that changes in the distribution of agricultural output between agricultural and non-agricultural populations are a zero-sum game.

3.2.2. *Aggregate available per capita output*

If we now consider consumption levels of non-agricultural populations as a multiple (ε) of that of agricultural populations, to incorporate potential disparities between socio-economic groups, we can formulate the last equation to obtain a final output equation

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[54] Where $C_A = q_A P_A$ and $C_{NA} = q_{NA} P_{NA}$.

[55] For the full process, here and in the following section, see Mathematical Appendix.

$$q_A = \frac{k_A \pi_L (1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)} = \frac{k_A \Psi \gamma^{\beta-1}\left(1+\mu^{\delta}\right)(1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)} \qquad (11)$$

Symbol	Variable	Definition
k_A	*Agricultural activity rate*	Proportion of people at work within the agricultural population (%)
p_L	*Labour productivity*	Volume of agricultural production per unit of labour (modii/worker)
s	*Share of seed in output*	Proportion of the agricultural output to be resown (%)
l	*Extraction rate of surplus*	Sum of the respective part of rents and taxes levied on agricultural output which is not reinjected in the local economy (%)
e	*Inequality factor*	Consumption gap in agricultural commodities between agricultural & non-agricultural population
a	*Share of agricultural population*	Ratio of the population primarily engaged in agricultural activities to total population (%)
γ	*Labour/land ratio*	Number of workers per hectare of cultivated land
μ	*Manure/land ratio*	Volume of manure per hectare of cultivated land

Table 1. Symbols of the general agricultural production equation.

This general equation relates per capita available agricultural output with the labour/land ratio, the manure/land ratio (and thereby the effect of livestock), the share of agricultural population, the seed-yield ratio and the rate of rents and taxes (incorporated in the extraction rate of surplus). It therefore states that per capita available agricultural output is directly proportional to labour productivity and to the share of agricultural population, and conversely proportional to the average seed-yield ratio and to the extraction rate of surplus.

The fundamental equations (7), (9) and (11) considerably refine the previous arguments: for agricultural and non-agricultural populations to simultaneously experience an increase of their available agricultural output per head, there needs to be either (a) a reduction in the rate of surplus extraction, or (b) an increase in average labour productivity. These equations also suggest that if (and only if) the level of rents/taxes and of surplus extraction is kept constant, then, a general increase in output per capita, in the absence of significant technological change, is incompatible with the assumption of declining marginal productivity. While a full parametrization of the model involving field-level data (complemented with plausible guesstimates) is out of the scope of this paper and therefore left to future archaeometric/econometric case studies, Table 2 shows the results of a simulation of eq. 11 with plausible values of per capita agricultural output as multiples of subsistence grain requirements.[56]

[56] For this simulation, we reckoned with a 'bare bones basket' set at 200 kg of wheat-equivalent per person per year (middle point of Zadok's estimate (Zadok 2013, 79). At subsistence level, it is generally

		Agricultural labour productivity (π_L | modii/worker)		
		450	600	750
α	60%	1.07	1.43	1.78
	70%	1.28	1.70	2.13
	80%	1.50	1.99	2.49
	90%	1.72	2.30	2.87

Table 2. Average agricultural output per capita as a multiple of subsistence consumption for different values of labour productivity and share of agricultural population.[57]

As can be observed from this table, the level of agricultural labour productivity required to maintain at least a 50% surplus (i.e. >1.5 times subsistence) increases as the share of agricultural population decreases.

4. Modelling the interactions of urbanization and agricultural growth

4.1. *How urbanization affects agricultural per capita output*

4.1.1. *The effect on agricultural workforce*

How can our new model help us understand the interplay of urbanization and agriculture? The first element to consider is the relationship between urbanization and agricultural workforce. How does urbanization affect the proportion of available agricultural labour force? As outlined above, in ancient cities, no strict economic separation exists between the urban centre and the countryside. We rather witness an increase of non-agricultural activities as we move closer to the urban core. But agriculture was present in ancient urban centres, while manufactures and other non-agricultural businesses were also implanted in the villages of the countryside. N. Morley has emphasized that there is no indication that the share of agricultural activities in urban centres and that of non-agricultural activities in the countryside would offset each other.[58] Nonetheless, is it not possible to produce a nuanced model of the spatial division of labour in ancient cities, representing the contamination of urban centres and rural spaces by respectively agricultural and non-agricultural activities, while also taking into account Morley's objection? We believe simple algebra could be of some help here.

agreed that around 80% of food consumption consists of cereals (Braudel 1979a,105-7), which results in a grain subsistence basket of 160 kg per person per year.

[57] The values of this table are in the same order of magnitude as the ones modelled in Bang 2008, 118.

[58] Morley 2011, 152.

Total population of an ancient city can be divided either in geographical or economic terms. Hence, total population is equal to the sum of urban (P_U) and rural population (P_R), and also equal to the sum of the population engaged in agricultural (P_A) and non-agricultural (P_{NA}) activities. Similarly, the urban and rural populations can themselves be split into their agricultural ($P_{U,A}$, $P_{R,A}$) and non-agricultural parts ($P_{U,NA}$, $P_{R,NA}$) (eq. 12a & 12b). Conversely, the agriculturally and non-agriculturally engaged population can be divided into their urban and rural components (eq. 12c & 12d). The agricultural share of urban and rural population is respectively designated by a_U and a_R. These aggregates are related by the series of equations below:

$$P = P_U + P_R = P_A + P_{NA} \quad (12)$$
$$P_U = P_{U,A} + P_{U,NA} \quad (12a)$$
$$P_R = P_{R,A} + P_{R,NA} \quad (12b)$$
$$P_A = P_{U,A} + P_{R,A} \quad (12c)$$
$$P_{NA} = P_{U,NA} + P_{R,NA} \quad (12d)$$
$$P_{U,A} = \alpha_U P_U \quad (13a)$$
$$P_{R,A} = \alpha_R P_R \quad (13b)$$

The evolution of these population aggregates in conditions of urbanization can be described by Fig. 7.3.

What matters here is the global share of agriculturally engaged population, which is equal to the total (urban + rural) agricultural population divided by total population:

$$\alpha = \frac{P_{U,A}+P_{R,A}}{P} \quad (14)$$

Factoring in the urbanization rate (i.e. the share of urban population, $u = P_u/P$), and incorporating eq. 13 a & b, we obtain:[59]

$$\alpha = \alpha_U u + \alpha_R(1-u) \Rightarrow \alpha = (\alpha_U - \alpha_R)u + \alpha_R \quad (15)$$

As can be deduced from this equation, the process of urbanization reduces linearly the share of the population that is primarily engaged in agriculture:[60] While this also is common sense, it is nevertheless interesting to notice that the quantitative relationship now at our disposal shows that the observed decrease is proportional to the difference between the respective fraction of urban and rural populations engaged in agriculture. By reformulating our general equation (eq. 11), it is possible to directly relate average agricultural output per capita to urbanization rate (Fig. 7.4),[61] showing that agricultural output per capita decreases as urbanization increases:

$$q_A = \frac{k_A \pi_L (1-s-l)}{1+(\epsilon-1)u} \quad (16)$$

---

[59] $\frac{P_{U,A}+P_{R,A}}{P} = \frac{\alpha_U P_U + \alpha_R P_R}{P} = \frac{\alpha_U P_U}{P} + \frac{\alpha_R (P-P_U)}{P} = \alpha_U \frac{P_U}{P} + \alpha_R \left(1-\frac{P_U}{P}\right) = \alpha_U u + \alpha_R (1-u)$

[60] This derives from the fact that the coefficient in front of the urbanization variable (u) is negative: the agricultural share of urban population is always smaller than the agricultural share of rural population, hence $\alpha_U - \alpha_R < 0$, which generates a line of negative slope.

[61] For the development, see: Solonakis 2017, 78-9.

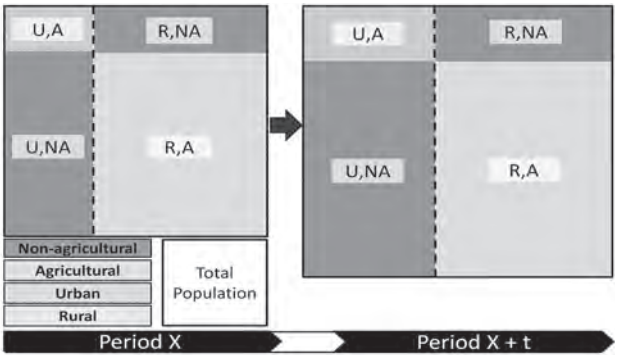

Fig. 7.3 Schematic representation of the main population aggregates under condition of urbanisation.

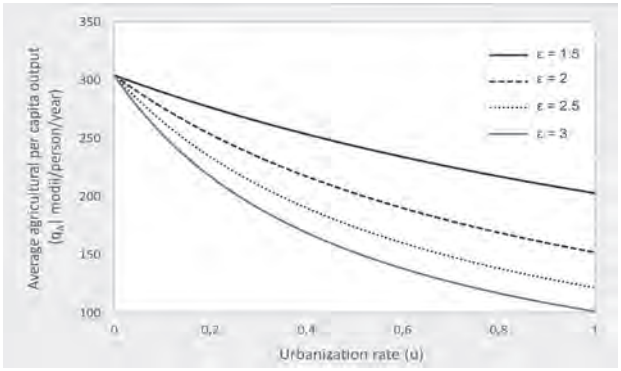

Fig. 7.4 Average agricultural *per capita* output is a negative function of urbanisation rate.

4.1.2. *Accounting for differential productivity*

Can this negative relationship be compensated by a higher productivity of urban agriculture? Output per capita as a function of the respective productivity of urban and rural agriculture is described as follows:

$$q_A = k\left(\alpha_U u\, \pi_{U,A} + \alpha_R(1-u)\pi_{R,A}\right) \Rightarrow q_A = k(\alpha_R \pi_{R,A} + (\alpha_U\, \pi_{U,A} - \alpha_R \pi_{R,A})u) \quad (17a)$$

The condition under which average per capita agricultural output would not be negatively affected by urbanization rate is therefore:[62]

$$\alpha_U\, \pi_{U,A} - \alpha_R \pi_{R,A} \geq 0 \quad \Rightarrow\ \pi_{U,A} \geq \theta\, \pi_{R,A} \qquad \text{where } \theta = {}^{\alpha_R}/_{\alpha_U} \quad (17b)$$

To offset the relative loss of agricultural workforce, the productivity of the urban agricultural labour must be superior or equal to the productivity of the rural agricultural labour by a factor equal to the ratio of the share of rural agricultural population to urban agricultural population (θ). Table 3 summarizes the different values of this factor based on plausible percentages for the agricultural share of urban and rural populations.

[62] This condition is obtained by imposing that the coefficient multiplying the urbanization rate variable (u) in equation 17b is superior of or equal to zero.

		α_R		
		0.6	*0.7*	*0.8*
α_U	*0.2*	3	3.5	4
	0.3	2	2.33	2.66
	0.4	1.5	1.75	2

Table 3. Plausible values for θ

This table shows that, for urbanization to have a neutral effect on average per capita agricultural output, the productivity of urban agriculture must exceed that of rural agriculture by 50% (x 1.5) to 300% (x 4). But how likely is it that urban agriculture would be so much more productive than rural agriculture? A quick simulation expanding Table 1 to several intermediate values, with lower and upper boundaries of urban and rural agricultural population (%) calibrated on the basis of modern low/middle-income countries[63] revealed that the gap between urban and rural agricultural productivity is more likely to take values at the lower end of the spectrum (Fig. 7.5).

Even if high levels of urban agricultural productivity could have been mainstream, however, the issue would not be entirely solved, as the additional agricultural production might not necessarily be able to completely compensate the reduced supply in rurally produced agricultural commodities. Indeed, (sub)urban agriculture is largely accounted for by horticulture[64] rather than grain or other staple food. Therefore, the products of urban agriculture can only replace those from the agricultural countryside to a certain extent; in economic terms, urban and rural agricultural commodities are *imperfect substitutes*.

Despite all that, the arguments conveyed so far do not mean that urbanization *itself* is necessarily or even generally deleterious to average agricultural per capita available output. H. Pleket, for example, has convincingly argued for sustained urbanization in Asia Minor under the Principate with no signs of decrease in per capita incomes.[65] Instead, the achievement of the above development is to underscore the conditions under which such a process could have been met. Four such conditions, not mutually exclusive, can be emphasized, which partly meet the factors of agricultural development listed by Pleket:[66]

– Change in labour productivity (either from technical improvements or by a more favourable labour/land or manure/land ratio);
– Increase of the share of agricultural population;
– Development of interregional trade;
– A reduction of the extraction rate of surplus;

For a process of urbanization to be sustainable in terms of agricultural output per capita, one or more of these changes must have taken place, either simultaneously or prior to the urbanization trend. However, each of these processes has its own impediments and drawbacks: (a) an increase in the share of agricultural population reduces the room for non-agricultural surplus; (b) for inland cities, an increase in the volume of trade is limited by infrastructure and

[63] Cf. Dorosh, Thurlow 2021, 291-2.
[64] Zuiderhoek 2017, 133. Cf. Plin. *nat*. 19.51-2: *Romae quidem per se hortus ager pauperis erat*.
[65] Pleket 2003, 87-90.
[66] Pleket 1993, 321.

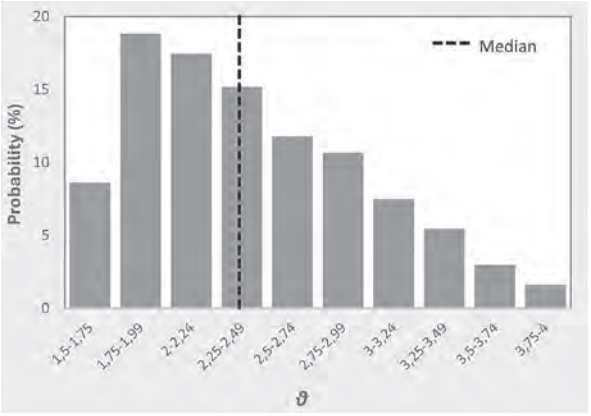

Fig. 7.5 Productivity of urban agriculture as a multiple of the productivity of rural agriculture (histogram of relative frequency).

the prohibitive cost of overland transport;[67] (c) reducing the extraction rate of surplus is limited by the predatory[68] and 'acquisitive mentality' of the landowning élite,[69] and by government tributes, requisitions or confiscations.

4.2. *How diminishing returns on agricultural labour affect per capita output*

4.2.1. *Discrete case*

The idea according to which urbanization would tend to undermine agricultural per capita output relies on the assumption that labour productivity itself cannot increase as the ratio of urban to rural population increases, which follows from the neoclassical hypothesis of monotonously diminishing marginal returns. A numerical example might well illustrate this point. Let us consider a city or region of 5,000 inhabitants, with an agricultural labour force of 3,400 workers, initial average labour productivity ($\pi_{L,0}$) being 1 ton/ worker/ year. Total gross agricultural production is thus 1 x 3,400 = 3,400 tons, and per capita output is 3,400/5,000 or 0.68 tons per head. If urbanization increases, the urban population will grow faster than the rural population, resulting in a higher ratio of non-agricultural to agricultural population. If, over the same period, total population reaches 6,500 inhabitants, of which 4,200 are now agricultural workers, assuming that average labour productivity after urbanization ($\pi_{L,1}$) remains stable, this would result in a total output of 4,200 tons, and a per capita output of 0.64 tons/head (4,200/6,500). What condition should labour productivity satisfy so that agricultural *per capita* output remains unchanged throughout the process of urbanization? We can demonstrate that this condition is:

$$\pi_{L,1} = \frac{1+\epsilon\phi_1}{1+\epsilon\phi_0} \cdot \pi_{L,0} \qquad \text{where: } \phi = \frac{1-\alpha}{\alpha}$$

Since urban population increased more than rural population, $\phi_1 > \phi_0$, and hence $1 + \epsilon\phi_1 > 1 + \epsilon\phi_0$, which thus implies that labour productivity has increased too ($\pi_{L,1} > \pi_{L,0}$).

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[67] Erdkamp 2005, 198. See also Duncan-Jones 1982, 369; Adams 2012, 220-24.
[68] On predation by the Roman élite: Bang 2008, 204-12.
[69] Finley 1973, 144.

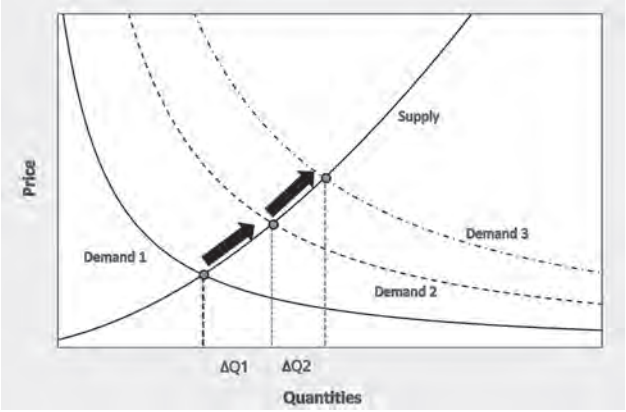

Fig. 7.6 Market for agricultural produce under condition of urbanisation.

Thus, for *per capita* agricultural output to rise in parallel with urbanization, average labour productivity needs to rise too. This result might seem obvious to the reader, but it is inconsistent with the hypothesis of diminishing marginal returns. Indeed, at the macroeconomic level, total agricultural surface may be considered approximately constant between the two periods. Hence, the increase of the rural labour force results in a higher labour/land ratio. However, as we have seen above, the Cobb-Douglas model based on diminishing marginal returns and constant returns to scale necessarily implies that an increase of the labour/land ratio causes average labour productivity to drop. A parallel increase of average labour productivity *and* of the labour/land ratio is forbidden by the assumption of diminishing marginal returns, which thus renders impossible the idea of a parallel increase of agricultural *per capita* output and of urbanization rate. This, of course, is only true without significant technological change, significant import of agricultural commodities from elsewhere or major intensification practices. Again, I do not claim that this was *actually* the case. Rather, the purpose of this section is to isolate the effect of specific variables to reveal the *underlying assumptions* and *necessary consequences* of the process of urban-driven agrarian growth. This apparent contradiction between urbanization-induced growth of agricultural output per capita and diminishing marginal returns can be illustrated with a simple supply-demand graph (Fig. 7.6).

As the urban population increases faster than the rural population, and since urbanization reduces the share of primarily agricultural labour, the demand curve is shifted towards the right relative to the supply curve.[70] As a result, the price of agricultural products is driven up, stimulating production. Total production would therefore rise too, but due to the assumption of marginal diminishing returns (represented by the upward convexity of the supply curve[71]), equal increments on the demand side will result in less than proportional increases of production ($\Delta Q2 < \Delta Q1$) and, hence, in smaller *per capita* output. In the absence of major effects of money and trade, the only way to assume that urbanization would *not* drive down agricultural output *per capita* is to assume that agricultural production faces constant or increasing marginal returns.[72]

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[70] With equal absolute displacements between phase (1) and (2) and between phase (2) and (3), relative to the supply curve.

[71] Temin 2013, 15.

[72] For a model of increasing returns in preindustrial agricultural economies, cf. Winfrey, Darity 1997.

4.2.2. *Continuous case*

An easy objection to the abovementioned example is that the presented numbers have been cherry picked with the purpose of displaying conflicting values. To confirm or refute this result, what we need is to obtain a *continuous* – i.e. valid for all possible numerical values – mathematical expression of this contradiction. To this end, we should investigate how the main equation for output per capita (eq. 11) would be changed in conditions of growth (more formally said, when its variation is positive). A powerful mathematical tool to analyse the variation of a function is the total derivative, which encapsulates how the function describing the dependent variable evolves with respect to each of its independent variables.[73] The total derivative of per capita agricultural output q (written dq) is thus given by the following equation:[74]

$$dq(\pi_L, l, \alpha) = \frac{\partial q}{\partial \pi_L} d\pi_L + \frac{\partial q}{\partial l} dl + \frac{\partial q}{\partial \alpha} d\alpha \qquad (18)$$

This total derivative equation, however, describes variation in absolute terms, while accounting for growth requires a *relative* change, measured by the growth rate (g) of per capita agricultural output. This can be obtained by simply dividing the total derivative (or total variation) by the variable itself ($g_q = dq/q$). By applying the total derivative to our general per capita output equation, one can show that the growth rates of its different variables are linked by the following relation:[75]

$$g_q = g_{\pi_L} - w_l g_l + w_\alpha g_\alpha \qquad (19)$$

This equation states that the growth rate of agricultural output per capita is a positive linear function of the growth rate of labour productivity and of the agricultural fraction of the population, and a negative linear function of the extraction rate of surplus. Now, the central question is: *how do we account for the interplay of this equation with the hypothesis of diminishing marginal returns?* Assuming a standard Cobb-Douglas function of the type: $Q = \Phi A^{1-\eta} L^{\eta}$ (where η is the output-elasticity of labour[76]), neoclassical economic theory expresses diminishing marginal returns on labour using the following second order differential equation[77] showcasing the derivative of marginal labour productivity ($\dot{\pi}_L$):[78]

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[73] Simon, Blume 2014, 205-6.

[74] The ratio of urban to rural per capita agricultural consumption ε is considered constant as a first approximation. We assume that the consumption gap between urban and rural populations throughout the process of urbanization will not be significantly affected, because this gap mostly results from a status imbalance between urban and rural dwellers, which is unlikely to change dramatically in a society with a relatively rigid class structure (cf. Brenner 1976, 31).

[75] In this equation, wl and $w\alpha$ are parameters, where: $w_l = \frac{\ell}{1-s-\ell}$ and $w_\alpha = \frac{\epsilon}{1+\epsilon\phi_0}$.

[76] $\eta = \frac{dQ}{dL}\frac{L}{Q}$.

[77] Cottrell 2019, 2.

[78] The superscript dot distinguishes the symbol of marginal labour productivity from that of average labour productivity.

$$\frac{d\pi_L}{dL} = \frac{d^2\pi_L}{dL^2} = -(1-\eta)\eta\frac{\pi_L}{L} \quad (20)$$

This equation implies that the growth rate of marginal and average labour productivity is strictly negative. As a result, we now have two expressions involving the growth rate of average labour productivity:

$$\begin{cases} g_q = g_{\pi_L} - w_l g_l + w_\alpha g_\alpha \\ g_{\pi_L} < 0 \end{cases}$$

For the sake of simplicity, let us assume as a first approximation that the extraction rate of surplus (l) was not significantly affected by the process of urbanization, and that, consequently, its growth rate is close to zero: $g_l \cong 0$. Our system of equations becomes:

$$\begin{cases} g_q = g_{\pi_L} + w_\alpha g_\alpha & (21a) \\ g_{\pi_L} < 0 & (21b) \end{cases}$$

Since the general hypothesis of the model is that we are witnessing a process of *agricultural growth*, this means that the growth rate of per capita agricultural output must be positive: $g_q > 0$. This changes the first equation of our system (eq. 21a) to:

$$g_{\pi_L} > -w_\alpha g_\alpha$$

Combining this result with the second equation of the system (eq. 21b), according to which the growth rate of average labour productivity is negative (following from diminishing marginal returns), generates a single equation:

$$-w_\alpha g_\alpha < 0 \Rightarrow w_\alpha g_\alpha > 0$$

Since the coefficient w_a is positive, this equation implies that the growth rate of the share of agricultural population must be positive: $g_\alpha > 0$.

However, the first phase of the model (cf. section 4.1) showed that the urbanization process resulted in a *decrease* (i.e. a *negative* growth rate) of the share of agricultural population. This can easily be shown more formally by expressing eq. 15 in terms of growth rates:

$$g_\alpha = \frac{u}{\alpha}(\alpha_U - \alpha_R)g_U$$

As illustrated with Fig.7.3, the share of agricultural population among the urban population is always smaller than the share of agricultural population among the rural population ($\alpha_U - \alpha_R < 0$). Since, in a context of urbanization, the growth rate of the urban population is positive ($g_U > 0$), the growth rate of the share of agricultural population must be negative ($g_\alpha < 0$). Therefore, we end up with the two following equations:

$$\begin{cases} g_\alpha > 0 \\ g_\alpha < 0 \end{cases}$$

As this system of equations has *no admissible solution* (the growth rate of the agricultural population cannot be strictly positive and strictly negative at the same time), it necessarily follows that the initial hypothesis cannot be simultaneously valid. In other words:

(A) If agricultural growth did take place and was driven (i.e. preceded) by urbanization, diminishing marginal returns on agricultural labour cannot hold;
(B) If diminishing marginal returns applied to agricultural labour, urbanization cannot have been the engine of agricultural growth;
(C) If urbanization happened prior to agrarian growth, and agricultural labour was affected by diminishing marginal returns, average per capita agricultural output must have decreased (at least temporarily);

Conclusions: perspectives towards empirical validation

It has been argued in this chapter that the relationship between urbanization and agriculture in ancient economies cannot be meaningfully assessed without first examining the architecture of the formal models used to represent, describe and evaluate agricultural production and consumption. After addressing the main flaws of the most widespread models within the scholarly literature (K. Hopkins, E. Lo Cascio, P. Bang), we proposed a multi-factorial model incorporating the most critical variables and parameters affecting agricultural output per capita and allowing one to account for the influence of urbanization thereupon.

The mathematical analysis of this new, comprehensive model, under standard neoclassical conditions (Cobb–Douglas production function with constant returns to scale and diminishing marginal returns) and under urbanization, assuming stable or rising per-capita output, leads to an unsolvable system of equations. This contradiction implies either faulty premises – namely diminishing marginal returns on agricultural labour or urban-driven agrarian growth – or their incompatibility. In the absence of new meaningful and sufficiently complete datasets, the above analysis cannot be used to refute either of these hypotheses *per se* or as valid components describing ancient agrarian economies. It leads, however, to the contention that *they cannot be held simultaneously*, at least not without eroding per-capita agricultural output – a dynamic that may help account for episodes of ruralization or de-urbanization. If diminishing marginal returns on agricultural labour are accepted as an iron law of ancient agriculture, in a (neo-) Malthusian framework, the bulk of agricultural growth cannot have been led by urbanization; on the other hand, if urbanization was the main stimulus of agricultural growth, we must abandon the hypothesis that diminishing marginal returns are an inescapable, pervasive feature of ancient agrarian production. This, of course, applies under two important conditions: (i) little interregional trade in agricultural commodities and (ii) limited technological innovation, which are the only plausible mechanisms that could offset diminishing returns and the contraction of the share of agricultural labour.

This insight opens the door to a broader rethinking of how the urban–rural dynamic in ancient economies should be interpreted. If, following standard economic theory, diminishing marginal returns are acknowledged as a more or less regular feature of ancient agrarian economies, then this analysis suggests that agricultural transformation must often precede – or at the very least accompany – urban development, rather than considering towns as a *deus ex machina* of agrarian growth, in line with the views developed by F. Braudel, P. Bairoch and R. Brenner for 18th-century Europe. This formal incompatibility naturally prompts the need for empirical validation. This was beyond the scope of the present research, yet several

indicators and archaeological proxies could provide useful insights to validate or refute the key contention of this chapter:

- Evidence of marginal land being brought under cultivation, suggesting a decline in average productivity of land (but not necessarily of labour);
- An increased reliance on servile labour, which may reflect the declining productivity of free rural labour;
- Declining real rural wages over time, which could indicate oversaturation of labour in agriculture and therefore diminishing returns;
- Conversely, if urbanization truly acted as a stimulus to agrarian growth, one might expect to observe:
  - A sequential pattern where expansion of urban material culture clearly precedes shifts in agricultural productivity, or a surge in rural material remains (which requires high-resolution chronological data), such as consumption and storage ceramics and processing instruments (presses, millstones etc.) and infrastructure;
  - Shifts in settlement patterns, possibly accompanied by the emergence of increasingly specialised agricultural production zones (reflecting market demands);

By investigating such empirical signals – through textual sources, archaeological surveys, and environmental data – future research may validate, refine, or challenge the theoretical framework outlined here, and possibly prove the (in)applicability to ancient agrarian economies of Nicholas Kaldor's statement, following which: *(…) An increase in agricultural output will not itself ensure that [industrial] development will be stimulated (…) But the main point is that no economic development which involves urbanization would be possible without it.*[79]

Appendix: mathematical developments

1. – *Formulation of the equilibrium equation*

Let us start from the macroeconomic equality between consumption and production:

$$C_{TOT} = \Psi \cdot L^{\beta} A_c^{1-\beta-\delta} \left(A_c^{\delta} + M^{\delta}\right)(1 - s - \ell)$$

In this equation we inject the breakdown of consumption between agricultural and non-agricultural population:

$$q_A P_A + q_{NA} P_{NA} = \Psi \cdot L^{\beta} A_c^{1-\beta-\delta} \left(A_c^{\delta} + M^{\delta}\right)(1 - s - \ell)$$

This yields:

$$q_A P_A + q_{NA} P_{NA} = \Psi \cdot L^{\beta} A_c^{1-\beta-\delta} \left(A_c^{\delta} + M^{\delta}\right)(1 - s - \ell)$$

Here is the important algebraic operation: to simplify the equation, we can divide both members by P_A, yielding:

[79] N. Kaldor, 'Reply letter to Sandilands', 9th May 1977.

$$q_A + q_{NA}\frac{P_{NA}}{P_A} = \Psi\frac{L^\beta}{P_A}A^{1-\beta-\delta}\left(A_c^\delta + M^\delta\right)(1-s-\ell)$$

$$\Rightarrow q_A + q_{NA}\frac{P-P_A}{P_A} = \Psi\frac{L^\beta}{P_A}A^{1-\beta-\delta}\left(A_c^\delta + M^\delta\right)(1-s-\ell)$$

Now, we factor in one parameter (the activity rate in agricultural population ($k_A = L/P_A$)) and three important variables, namely the share of agricultural population (α), the labour/land ratio (γ) and the manure/land ratio (μ):

$$\Rightarrow q_A + q_{NA}\left(\frac{1-\alpha}{\alpha}\right) = \Psi\frac{k_A\,L^\beta}{L\,A^\beta}A^1\left(\frac{A_c^\delta + M^\delta}{A^\delta}\right)(1-s-\ell)$$

$$\Rightarrow q_A + q_{NA}\left(\frac{1-\alpha}{\alpha}\right) = \Psi k_A\frac{L^\beta A}{L\,A^\beta}\left(\frac{A_c^\delta + M^\delta}{A^\delta}\right)(1-s-\ell)$$

$$\Rightarrow q_A + q_{NA}\left(\frac{1-\alpha}{\alpha}\right) = \Psi k_A\frac{L^\beta A}{L\,A^\beta}\left(1+\frac{M^\delta}{A^\delta}\right)(1-s-\ell)$$

$$q_A + q_{NA}\left(\frac{1-\alpha}{\alpha}\right) = k_A\cdot\Psi\cdot\gamma^{\beta-1}\left(1+\mu^\delta\right)(1-s-\ell)$$

Since: $\Psi\cdot\gamma^{\beta-1}\left(1+\mu^\delta\right) = \pi_L =$ labour productivity (by. eq. 7)

Then:

$$\Rightarrow q_A + q_{NA}\left(\frac{1-\alpha}{\alpha}\right) = k_A\cdot\pi_L\cdot(1-s-\ell)$$

$$\Rightarrow \alpha q_A + (1-\alpha)q_{NA} = \alpha\cdot k_A\cdot\pi_L\cdot(1-s-\ell)$$

2. – *Formulation of the general equation of per capita output*

Starting from the last equation, let us express q_A and q_{NA} as linear functions of average per capita output:

$$\begin{cases} q_A = \lambda\, q \\ q_{NA} = \nu\, q \end{cases}$$

where λ & ν are positive coefficients. Injecting them into the equilibrium equation (eq. 9) yields:

$$\lambda\, q + \left(\frac{1-\alpha}{\alpha}\right)\nu\, q = k_A\cdot\pi_L\cdot(1-s-\ell)$$

$$\Rightarrow q + \left(\frac{1-\alpha}{\alpha}\right)\frac{\nu}{\lambda}\,q = \frac{1}{\lambda}k_A\cdot\pi_L\cdot(1-s-\ell)$$

$$\Rightarrow q\left(1+\left(\frac{1-\alpha}{\alpha}\right)\frac{\nu}{\lambda}\right) = \frac{1}{\lambda}k_A\cdot\pi_L\cdot(1-s-\ell)$$

$$\Rightarrow q = \frac{k_A\cdot\pi_L\cdot(1-s-\ell)}{\lambda+\left(\frac{1-\alpha}{\alpha}\right)\nu}$$

By the two equations for q_A and $q_{NA,}$ it comes:

$$q_{NA} = \frac{\nu}{\lambda} q_A$$

We set a coefficient ε such as:

$$\epsilon = \frac{\nu}{\lambda}$$

Thus:

$$q_{NA} = \epsilon\, q_A \rightarrow \epsilon = \frac{q_{NA}}{q_A}$$

ε represents the ratio of per capita agricultural consumption within the non-agricultural population, over agricultural per capita consumption within the agricultural population. Injecting these into the equation yields:

$$\Rightarrow q = \frac{k_A \cdot \pi_L \cdot (1 - s - \ell)}{\lambda\left(1 + \epsilon\left(\frac{1-\alpha}{\alpha}\right)\right)}$$

This is the general form; for the one presented in the paper we hypothesized λ =1 for the sake of simplicity. But the algebraic form remains unchanged.

3. – *Condition on labour productivity for per capita agricultural output to be unaffected by urbanization*

For per capita output to remain unchanged between period 0 and period 1 (after the urbanization process), we may revert to the general equation for per capita agricultural output, simplifying the denominator by writing the ratio (1 – α)/α as φ for the sake of clarity. For per capita agricultural (q) output to stay unchanged, we equate the two quantities between before and after urbanization:

$$q_{A,0} = q_{A,1} \Rightarrow \frac{k_A \pi_{L,0}(1 - s - l)}{1 + \epsilon\phi_0} = \frac{k_A \pi_{L,1}(1 - s - l)}{1 + \epsilon\phi_1}$$

As the share of seed can be considered stable macroeconomically, and assuming stable extraction rate of surplus (dictated inter alia by the fixed level of taxation), we may eliminate the constants on both sides of the equation, which yields:

$$\frac{\pi_{L,0}}{1 + \epsilon\phi_0} = \frac{\pi_{L,1}}{1 + \epsilon\phi_1}$$

After reorganization, we obtain the condition on labour productivity in period 1:

$$\pi_{L,1} = \frac{1 + \epsilon\phi_1}{1 + \epsilon\phi_0}\pi_{L,0}$$

4. – *Incompatibility theorem from the derivation of the general output equation*

Let us start over from the general equation of the total differential of per capita agricultural output (eq. 9):

$$dq(\pi_L, l, \alpha) = \frac{\partial q}{\partial \pi_L} d\pi_L + \frac{\partial q}{\partial l} dl + \frac{\partial q}{\partial \alpha} d\alpha$$

Let us break this equation down into its different terms by calculating the partial derivatives:

$$\begin{cases} \dfrac{\partial q}{\partial \pi_L} d\pi_L = \dfrac{k(1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)} d\pi_L \\ \dfrac{\partial q}{\partial l}\, dl = \dfrac{-k\pi_L}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)} dl \\ \dfrac{\partial q}{\partial \alpha} d\alpha = \dfrac{\epsilon k \pi_L (1-s-l)}{\alpha^2 \left(1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)\right)^2} d\alpha \end{cases}$$

$$\Rightarrow \frac{dq}{q} = \frac{\frac{k(1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)}}{\frac{k\pi_L(1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)}} d\pi_L - \frac{\frac{k\pi_L}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)}}{\frac{k\pi_L(1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)}} dl + \frac{\frac{\epsilon k \pi_L (1-s-l)}{\alpha^2 \left(1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)\right)^2}}{\frac{k\pi_L(1-s-l)}{1+\epsilon\left(\frac{1-\alpha}{\alpha}\right)}} d\alpha$$

$$\Rightarrow \frac{dq}{q} = \frac{1}{\pi_L} d\pi_L - \frac{1}{\left(\left(\frac{1-s}{l}\right)-1\right)}\left(\frac{1}{l}\right) dl + \left(\frac{1}{\alpha\left(\frac{\epsilon+1}{\epsilon}\right)-1}\right)\frac{1}{\alpha} d\alpha$$

Since the ratio of marginal to average productivity is simply equal to elasticity $\left(\dot{\pi}_L/\pi_L = \eta\right)$, it is easy to show that a reformulation of this equation in terms of growth rates[80] will yield:

$$g_{\pi_L}\eta = -(1-\eta)\eta g_L$$

$$\Rightarrow g_{\pi_L} = -(1-\eta) g_L = (\eta - 1) g_L$$

How does this result compare to the growth rate of *average* (instead of *marginal*) productivity, which is the variable present in our main equation? This can be seen by deriving the general expression for average labour productivity. This can be done by deriving the equation of average productivity:

$$\pi_L = \frac{Q}{L} \Rightarrow \frac{d\pi_L}{dL} = \frac{L\frac{dQ}{dL} - Q\frac{dL}{dL}}{L^2} = \frac{\frac{dQ}{dL} - \frac{Q}{L}}{L} = \frac{1}{L}\left(\dot{\pi}_L - \pi_L\right) \Rightarrow \frac{d\pi_L}{\pi_L} = \frac{dL}{L}\left(\frac{\dot{\pi}_L}{\pi_L} - 1\right)$$

$$\Rightarrow g_{\pi_L} = g_L(\eta - 1)$$

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[80] Rewriting this equation in terms of growth rates yields: $\frac{d\pi_L}{\pi_L}\frac{\dot{\pi}_L}{\pi_L} = -(1-\eta)\eta\frac{dL}{L} \Rightarrow g_{\pi_L}\eta = -(1-\eta)\eta g_L$.

Hence, we see that the growth rate of the marginal productivity of labour and the growth rate of average labour productivity can be used interchangeably (eq.9 = eq.10): $g_{\pi L} = g_{\pi_L}$. This has important implications for our reasoning, because it means that the condition for diminishing marginal returns $g_{\pi_L} < 0$ also implies that $g_{\pi L} < 0$.

5 – *Relation between growth rate of agricultural fraction of the population and urbanization rate*

We start from the equation linking the share of agricultural population to urbanization rate:

$$\alpha = (\alpha_U - \alpha_R)u + \alpha_R$$

After derivation, we obtain:

$$\Rightarrow \frac{d\alpha}{du} = \alpha_U - \alpha_R \Rightarrow \frac{d\alpha}{\alpha} = \frac{u}{\alpha}(\alpha_U - \alpha_R)\frac{du}{u} \Rightarrow g_\alpha = \frac{u}{\alpha}(\alpha_U - \alpha_R)g_U$$

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Chapter 8

Borders, density and the urban character of Imperial Rome

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Abstract
The contribution discusses urban population density in the city of Rome in the early Imperial period and its impact on the urban character of the city. The first part will be a study of Rome's urban borders, which forms the basis for discussions on population density. It will present a selection of urban borders related to religion, administration, defence and legal jurisdiction. The second part will cover the different suggested population sizes of ancient Rome and present the sources for these estimates. It will also feature a discussion of the size of the area surrounded by the Aurelian walls, since these walls are often used as a convenient shorthand for the urban area of Rome. When estimates of population and urban area are combined, this allows for the approximation of urban population densities. These will then be compared to similar densities in modern cities. In the third part, the study will move beyond the Aurelian walls to explore three models for a more dynamic thinking about the urban area and density of ancient Rome. It also includes a short comparison between estimated densities of the city and hinterland of Rome.

Keywords
Urban character of Rome; urban population density; urban borders; city walls; city and hinterland

In this contribution, I will discuss urban population density (i.e. the combination of population size and urban area) in Rome in the early imperial period and its impact on the urban character of the city.[1] The aim is to highlight the possible effects of previously suggested different urban models for population, area, and density, and the uncertainty created by the limitations of our source material. The aim is *not* to suggest new estimates of population, area or density. A key factor when investigating urban density at Rome is the extent of the actual city. Scholars have long discussed how to define the urban area of Rome through different kinds of

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urban borders, such as religious, administrative, military and legal borders. This study hopes to demonstrate how these borders can be complex to define, and often difficult to locate in the physical landscape, while it is also hard to measure their impact on urban developments. Instead of letting urban borders define our study of Rome it can sometimes be useful to have a more dynamic approach. This approach becomes especially relevant when investigating a city in its totality from an urbanistic perspective, where we look beyond borders to allow for a more flexible understanding of Rome's urban development.

The investigation will be divided into three main parts. The first part will be a study of Rome's urban borders, which forms the basis for discussions on population density. The contribution will present a selection of urban borders related to the spheres of religion, administration, defence and legal jurisdiction. The second part will cover the different suggested population sizes of ancient Rome and present the sources for these estimates. It will also feature a discussion of the size of the area surrounded by the Aurelian walls, since these walls are often used as a convenient shorthand for the urban area of Rome. When estimates of population and urban area are combined, this allows for the approximation of urban population densities. These will then be compared to similar densities in modern cities. In the third part, the study will move beyond the Aurelian walls to explore three models for a more dynamic thinking about the urban area and density of ancient Rome. It also includes a short comparison between estimated densities of the city and hinterland of Rome.[2]

Part I: *Urban Borders at Rome*

Religious urban border: pomerium

The pomerium was a religious boundary of Rome, demarcating the augurally constituted city. It had several different uses, but its main effect on urban topography and the daily lives of Rome's inhabitants was probably the burial ban within it. The pomerium did not coincide with the limit of actual habitation or the city wall, although it was often conflated with the latter.

According to legend, the pomerium was created in the Regal period, and was extended during the Republic. Our first tangible evidence for its existence, or its location, only comes with the erection by the Emperor Claudius of a series of boundary stones, marking an extension of the pomerium which now included the Aventine, Esquiline, Testaccio and parts of the Campus Martius, and even areas beyond the later Aurelian walls. There was also a later extension by Vespasian marked with similar stones, later confirmed by stones put up by Hadrian. Because of the few ancient texts and just a handful of boundary stones, not all of them found in situ, it has been difficult for scholars to agree on the limits and impact of the pomerium.[3]

Of course, the pomerium was never a boundary between city and hinterland, although it has sometimes taken on that role in modern scholarship.[4] The Republican pomerium did not

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[2] For recent overviews of Rome's urban borders, see Vinci 2004; De Sanctis 2015; Goodman 2018; Royo 2023; Stevens 2024.

[3] Coarelli 1997; Andreussi 1999; Coarelli 2000; Goodman 2007, 42-3; Carlà 2015, 616-28; Goodman 2018, 75-9 and Querol 2019 provide an overview of scholarship.

[4] Emmerson 2020, 1 calls urbanised areas outside the pomerium 'urban zones outside the city proper'. See also Frézouls 1987, 378-80; Goodman 2007, 17-18.

include the densely urbanised Aventine, the harbours in Trastevere or Testaccio, or the monumental centre in the Campus Martius. The expansion of the urban area in the Late Republic and Early Empire far outside the original line of the pomerium and the Republican wall led to an intermingling of housing and tombs that can be clearly seen at, for example, the Campus Martius and Esquiline, and also in other cities in Roman Italy, like the neighbourhoods that formed in the necropoleis outside the Porta Romana at Ostia and the Porta di Ercolano at Pompeii.[5]

This development has been acknowledged by several scholars, most recently by Allison Emmerson, who in her eminent book about Roman suburbs, writes that settlements beyond the pomerium 'were integral parts of the city, but even so maintained their own character, defined by a variety of factors but above all by the presence of the dead'.[6] This assertion may be true for the Republican period, but in the Early Empire, I would argue that the pomerium in Rome was no longer an absolute boundary for burial. With whole neighbourhoods becoming established among the tombs, the traditional physical and mental segregation of the city of the living and that of the dead might have begun to dissolve. This weakening of the burial ban can be demonstrated by the first and second century CE burials that have been uncovered on the eastern side of the via Flaminia, along the via Salaria, and on the Esquiline, by then located within the pomerium as extended by Claudius. The burials on the Esquiline continued into the fourth century, well after the area was included within the Aurelian walls.[7]

Arguably, the pomerium extensions and the weakening of the burial ban visible in the first century CE would in time also weaken the difference between *urbs* and suburb. The waning importance of the pomerium in the first century CE might also be indicated by the new need to mark its line physically. In the Republic, we have no indications that the pomerium needed to be marked in a permanent manner. There is a plethora of other boundary markers in Rome, such as boundary stones for major roads, aqueducts, the customs border and the Tiber markers put up by the censors in 55/54 BCE, but no markers for the pomerium until the reign of Claudius.[8] Tellingly, it was only when the pomerium might have begun to lose its importance that the emperors felt the need to delineate its boundary with permanent stone markers, perhaps to reinforce the declining respect for an archaic practice.

Administrative urban border: urban regions

During his censorship of 7 BCE, Augustus divided Rome into 14 administrative urban regions,[9] each later led by two curators. The regions were in turn subdivided into smaller administrative units, called vici, led by vicomagistri. It seems the regions were originally only known by their number but had by the fourth century also acquired names. The knowledge of

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[5] Kockel 1983; Heinzelmann 2000; Zanella 2017; Emmerson 2020.

[6] Emmerson 2020, 2.

[7] Coates-Stephens 2004, 76-77, 106-9 for intra-pomerial burials on the Esquiline, but not accepted by Dey 2011, 211-12. However, the occurrence of intra-pomerial burial from the first century onwards in multiple locations around Rome has been conclusively demonstrated by Stevens 2017, 176-95.

[8] Stevens 2017, 305-11 on the pomerial markers. Malmberg 2021, 318-24 on the Tiber markers. Notably, in Justinian's *Digest*, there is only one mention of the pomerium: *D.* 18.7.5 (Pap. 10 *quaest.*). Querol 2019; Querzoli 2019.

[9] Svet. *Aug*. 30; Str. 5.3.8.

the regions in the Early Empire is hazy, but with the so-called *Regionary Catalogues* of the fourth century, we get a more coherent picture of the area each region covered and the major buildings each contained.[10]

In modern scholarship, the regions are often seen as the administrative boundaries of the city, coinciding with the later Aurelian walls.[11] However, it becomes clear from the locations mentioned in the Regionary Catalogues that the regions were, at least in the fourth century, not bounded by the Aurelian walls.[12] The 14th region, Transtiberim, includes locations in the Vatican, the Janiculum, and south of the Porta Portuensis, while, for instance, the Almo river and the Pons Milvius are included in other regions. That the regions extended at least partly beyond the Aurelian walls is recognized by several scholars, not least in the recent *Atlas of Ancient Rome*, but the regions' boundaries are drawn as certain lines on the map, even though we have no knowledge of their outer edges.[13]

To see the urban regions as city borders is thus problematic. They were administrative units with borders *within* the city,[14] but are elusive when it comes to the city edge. Rather, they clearly demonstrate that, at least in part, the Aurelian walls were *not* the administrative border of fourth-century Rome.

Military urban border: city walls

Rome has had several different sets of city walls. In antiquity, we might count at least three: the possibly regal Servian and fourth-century BCE Republican walls, and finally the Aurelian walls of the 270s CE. These defended increasingly large urban areas that were deemed essential to the city's survival. Arguably, however, none of them surrounded the whole urban area, or demarcated the city limit. The Republican wall never protected the monumental and increasingly urbanized area of the Campus Martius, nor the economically important harbour quarters of Testaccio and Trastevere. The Aurelian walls covered all of these, but still failed to protect the vast new harbours north and south of the city, as well as new urban and industrial districts, especially on the eastern and south-eastern outskirts.[15] This was of course related to practical issues: the wall had to use defensive terrain, be possible to man, and not too expensive to build.

The problem occurs when we begin to view the walls as city borders.[16] They were no doubt a massive and imposing barrier to movement, and could be seen as important symbolic, economic

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[10] Palombi 1999; Goodman 2007, 44-5; Goodman 2020. For an in-depth discussion of the *Regionary Catalogues*, see Nordh 1949; Hermansen 1978; Behrwald 2006; Malmberg, forthcoming.

[11] Most often displayed as such on maps of ancient Rome, without further comment, e.g. Frézouls 1987; Palombi 1999; Storey 2002; Coarelli 2014; Goodman 2020.

[12] Goodman 2020, 126.

[13] E.g. Carandini, Carafa 2017, tab. 2.

[14] The red paint on a fragment of the Marble Plan could be interpreted as marking the border between two urban regions: Ciancio Rossetto 2006. However, the Marble Plan does not have known indicators of any borders for the city as a whole. Goodman 2020, 126-7 notes that no certain physical boundary markers for the regions have been found in Rome.

[15] Malmberg, Bjur 2011; Malmberg 2015; Id. 2021. For the Aurelian Walls, see Pisani Sartorio 1996; Mancini 2001; Dey 2011; Esposito et al. 2017.

[16] Hermansen 1978; Steinby 1993; Patterson 2000; Volpe 2019; Royo 2023.

and religious boundaries in addition to their defensive use. But they never marked the edge of the built-up area.[17] Most importantly, for approximately three centuries, from the late first century BCE to the 270s CE, Rome did not have any functional city walls at all. This has most famously been described by Dionysius of Halicarnassus:

> …all the inhabited places round it [Rome], which are many and large, are unprotected and without walls, and very easy to be taken by any enemies who may come. If anyone wishes to estimate the size of Rome by looking at these suburbs [before but still the city: προβαίνουσα ἔτι πόλις], he will necessarily be misled for want of a definite clue by which to determine up to what point it is still the city (πόλις) and where it ceases to be the city; so closely is the city (ἄστυ) connected with the country (χώρᾳ), giving the beholder the impression of a city (πόλις) stretching out indefinitely.[18]

It should be noted that Dionysius does not use the common word προάστεια to indicate the suburbs of Rome, but rather writes 'before but still the city', thus indicating that these districts were part of the city proper. The problem of regarding city walls as urban edges has been most clearly expressed by Monica Smith: 'Archaeological investigations suggest that there has perhaps never been a clear distinction between the urban edge and its hinterland, even when physical walls suggest a clear-cut perimeter.'[19] In the case of Imperial Rome, we do not even have these physical walls present.

Legal urban border: the *Digest*

Even if we cannot find a religious, administrative or miliary border defining the city of Rome, there might be a legal definition. Indeed, Roman lawyers had a need to define what was meant by residing or being in Rome, and there are several discussions of these definitions, mainly in the *Digest*. These have been treated in detail by previous scholars.[20] For the sake of space and simplicity, one of the more intriguing texts will be discussed here: a fragment of the *Digest* written by Ulpius Marcellus, who was active in the Antonine period:

> As Alfenus said, '*urbs*' means '*Roma*' which was surrounded by a wall, but '*Roma*' also extends as far as there are continuous buildings (*continentia aedificia*): for it can be understood from daily use that Rome is not considered to extend only as far as the wall, since we say that we are going to Rome, even if we live outside the *urbs*.[21]

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[17] Goodman 2007, 42-3.

[18] D.H. 4.13.3-4, trans. Cary 1939. …ἀλλ᾽ ἔστιν ἅπαντα τὰ περὶ τὴν πόλιν οἰκούμενα χωρία, πολλὰ ὄντα καὶ μεγάλα, γυμνὰ καὶ ἀτείχιστα. καὶ ῥᾷστα πολεμίοις ἐλθοῦσιν ὑποχείρια γενέσθαι: καὶ εἰ μὲν εἰς ταῦτά τις ὁρῶν τὸ μέγεθος ἐξετάζειν βουλήσεται τῆς Ῥώμης, πλανᾶσθαί τ᾽ ἀναγκασθήσεται καὶ οὐχ ἕξει βέβαιον σημεῖον οὐδέν, ᾧ διαγνώσεται, μέχρι ποῦ προβαίνουσα ἔτι πόλις ἐστὶ καὶ πόθεν ἄρχεται μηκέτ᾽ εἶναι πόλις, οὕτω συνύφανται τὸ ἄστυ τῇ χώρᾳ καὶ εἰς ἄπειρον ἐκμηκυνομένης πόλεως ὑπόληψιν τοῖς θεωμένοις παρέχεται.

[19] Smith 2003, 4.

[20] Catalano 1978; Robinson 1992; Casavola 1992; Vinci 2004; Goodman 2007, 13-17; De Sanctis 2015; Querzoli 2019.

[21] *D.* 50.16.87 (Marcell. 12 *dig.*), trans. Goodman 2007. *Ut Alfenus ait, 'urbs' est 'Roma', quae muro cingeretur, 'Roma' est etiam, qua continentia aedificia essent: nam Romam non muro tenus*

There are several things to unpack here. The definition 'continuous habitation/buildings' is first attested in *Tabula Heracleensis* (ca. 45 BCE), contemporary with the rapid expansion of the city at the end of the Republic.[22] By not binding the definition to any specific location, and instead referring to the urbanization of Rome's hinterland, it provided a flexible definition to the expanding city. We might also trace a development from the time of the first-century BCE jurist Alfenus, which Marcellus builds upon, but also partially corrects. In the time of Alfenus, the Republican city walls still existed and could be used to legally define the city. But in the Antonine period, when Marcellus wrote, the walls had more or less disappeared as a visible barrier in the urban landscape, and the continuous buildings definition had to be used instead. It is worth mentioning that jurists in Marcellus' time could still use the definition of the *urbs* (within the Republican walls) as separate from *Roma* (continuous buildings), but in daily speech they were by the second century CE essentially the same. It would be Marcellus' new, flexible definition that would prevail, being later embraced by both Julius Paulus and Ulpian.[23] To use a modern example, the current legal definition of the City of London only encompasses the old Roman settlement with its city walls, surrounded by boroughs, as opposed to the commonly understood view of London defined by its larger urban area of 'continuous buildings'.[24] In conclusion, when the Republican walls were in use, they might have legally defined the city. However, with the walls gradually disappearing due to urban expansion from the Augustan period onwards, jurists had to fall back on a more vague and flexible definition, following the extension of the city into its hinterland.

To sum up the first part of the contribution, which has dealt with the possible urban borders of Rome, it can be observed that Rome had a religious border in the form of the pomerium. However, it only defined ritual behaviour and burials, not the extent of urban habitation, and lost much of its importance during the Empire. As for the administrative borders, the 14 urban regions divided the city internally into administrative units, but their outer limits are unknown and did not coincide with any of the city walls. Rome had several military borders in the form of city walls, but none marked the limit of the city, and the city did not have any defensive walls at all for the first three centuries of the Imperial period. According to Roman jurisprudence, the walls could define the city in the Republican period, but their gradual disappearance led to the adoption of a more flexible definition of Rome as the term 'continuous habitation' was coined for the city as it expanded into the hinterland. Thus, Rome lacked any form of clearly defined urban border, at least during the Early and Middle Empire.

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existimari ex consuetudine cotidiana posse intellegi, cum diceremus Romam nos ire, etiamsi extra urbem habitaremus.

[22] *Tab. Heracl.* l. 20; *Roman Statutes* 24 with commentary. Another early example is from the *Lex Quinctia*, ll. 9-10 (9 BCE). On the continentia, see also Buongiorno this volume.

[23] Frézouls 1987, 381-3; Querzoli 2013; Ead. 2019, 133-5; Volpe 2019; Stevens 2019; Stevens 2024, 202-3. There is only one example from the second century onwards of the 'old school' jurists that clung to the notion of the foundation plough line as defining the *urbs*: Sextus Pomponius in *D.* 50.16.239 (Pomp. *l.s.ench.*), contemporary with Marcellus.

[24] City of London (www.cityoflondon.gov.uk/about-us/about-the-city-of-london-corporation/our-role-in-london)

Part II: *Population Density at Rome*

The size of Rome: population

If one is to estimate the population density in ancient Rome, two numbers are needed. The first is how many people lived in the city, the second is the area within which they lived. This part will look at the different sources for estimating the size of the urban population in Rome.

Scholarship on Rome enjoys an enviable amount of literary, administrative and legal texts as well as a plethora of archaeological and epigraphic material. Despite this, the sources are fragmentary and vague on the subject, which has led to great diversity of scholarly estimates of population size. As stated above, the aim here is not a new attempt to estimate Rome's population, nor does it dismiss previous hypotheses. Rather, it will provide an overview of the ancient sources on which modern estimates of the ancient population of Rome are based in order to highlight the limitations of the material and the uncertainty of any conclusions.

Arguably the most fruitful approach to Rome's population size is the study of the number of recipients of the grain dole. A series of so-called grain laws were introduced during the Late Republic, beginning with the *Lex Sempronia frumentaria* in 123 BCE, to provide cheap access to grain for parts of the urban population. For most of these laws, we have information only about the cost or the amount of grain provided, which has led to widely differing estimates of the number of recipients.[25] However, with the *recensus* of the grain dole by Caesar and again by Augustus, we get much more specific information, both about the number of recipients and the criteria for eligibility.

In 46 BCE, Caesar reduced the number who received grain at public expense from 320,000 to 150,000 recipients.[26] This was in 2 BCE increased by Augustus to little more than 200,000 people.[27] Caesar probably, and Augustus definitely, introduced a new system for admittance to the grain dole, whereby a new recipient could only replace an earlier one, thus creating a numerically closed system.[28] When there was a vacancy, eligible persons could gain access to the dole by lot,[29] or from the first century CE, by payment.[30] It seems this closed system was still kept up in 202 CE, when the number of recipients was approximately 200,000, the same as in the time of Augustus.[31]

Who was eligible to be admitted to the number of recipients? It is supposed that you had to be domiciled in the city of Rome to be eligible for the dole, although that is not explicitly

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[25] Brunt 1971, 377-9; Rickman 1980, 166-73; Garnsey 1988, 213; Virlouvet 1994, 21-3; Virlouvet 1995, 181-2; Rising 2019, 192-3.

[26] Svet. *Iul.* 41.3; D.C. 43.21.4. Similar numbers, although not specifically related to the grain dole, are provided by Liv. *perioch.* 115; App. *BC* 2.102; Plu. *Caes*. 55.3.

[27] R. Gest. *div. Aug.* 15; Svet. *Aug.* 40.2; D.C. 55.10.1 (Xiph.).

[28] Svet. *Iul.* 41.3; Sen. *benef.* 4.28.2; Plin. *paneg.* 25; D.C. 55.10.1 (Xiph.); Rickman 1980, 177-9; Garnsey 1988, 237; Virlouvet 1994, 19; Virlouvet 1995, 165; Lo Cascio 1997, 12.

[29] Svet. *Iul.* 41.3.

[30] Ivv. 7.171-75; *D.* 5.52.1 (Ulp. 6 *fideic.*); *D.* 31.49.1 (Paul. 5 *ad l. Iul. et Pap.*); *D.* 31.87pr (Paul. 14 *resp.*); Virlouvet 1995, 206-11.

[31] D.C. 77.1.1.

stated by the ancient sources.[32] However, both *recensus* of Caesar and Augustus counted residents district by district (*vicatim*) in the city, aided by the owners of *insulae*.[33] This suggests that only people registered in the city would be eligible, which might perhaps explain how Caesar could remove over half of the previous recipients. However, you could be domiciled in more than one city. So, even if you were domiciled in Rome, you did not necessarily have to live there. Vice versa, you could live in Rome without being domiciled in the city.[34] As for the area of the city of Rome, this would by the second century CE, if not before, include the built-up areas outside the city walls (*continentia urbis*).[35]

At least by the first century CE, admittance to the grain dole was not related to poverty or need.[36] You had to be a Roman citizen, either freeborn or a freed slave,[37] and, in the Augustan period, to be at least 11 years old.[38] Sometime in the first century CE, the age limit was dropped, since, from 99 CE onwards, we have evidence of very young boys being admitted to the dole.[39] In the second century, sources show that both women and girls were admitted to the grain dole.[40]

Even with the concrete numbers of grain dole recipients provided by the ancient sources, it is still impossible to translate them into the number of people that made up the total urban population of Rome. The closed nature of the dole, with approximately the same number of recipients over two centuries, suggests that it was more related to the resources and priorities of the imperial government, rather than mirroring fluctuations in urban population numbers. It is clear that the dole did not include slaves, or free persons who were not Roman citizens. Neither did it include all Roman citizens who lived in the city. However, it did eventually include most kinds of Roman citizens: men and women, adults and children, freeborn and freed. Although it can be presumed that most of these were adult males, the ratios between different citizen groups cannot be determined, and it is even harder to estimate the number of recipients in relation to slaves and non-Roman citizens. In addition there is the uncertainty of how many people were domiciled in Rome but not living there, or vice versa, the seasonal fluctuations in urban population, and the geographical area viewed as forming part of the city. The often-suggested number of one million inhabitants for Rome in the Early Empire cannot therefore be viewed as a verifiable hypothesis.[41]

The state-administered supplies for Rome diversified in the third and fourth century, when the grain dole was replaced by subsidized or free supplies of bread, oil, wine and pork. For the

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[32] Rickman 1980, 181-5; Virlouvet 1991; Purcell 1994; Lo Cascio 1997, 12-13 n. 28; *contra* Van Berchem 1939, 34-45; Thomas 1996, 67.

[33] Suet. *Iul*. 41.3; Suet. *Aug*. 40.2.

[34] *D*. 50.1.5 (Paul. 45 *ad ed*.); *D*. 50.1.6.2 (Ulp. 2 *opin*.); *D*. 50.1.22.6 (Paul. 1 *sent*.); *D*. 50.4.3pr (Ulp. 2 *opin*.); *Tab. Heracl*. ll. 157-58; *Roman Statutes* 24. A change of domicile did not necessarily mean that you had to change your tribe: Forni 1966, 148-9.

[35] *D*. 50.16.2pr (Paul. 1 *ad ed*.); *D*. 50.16.87 (Marcell. 12 *dig*.); *D*. 50.16.139pr (Ulp. 7 *ad l. Iul. et Pap*.); *D*. 50.16.147 (Clem. 3 *ad l. Iul. et Pap*.); *D*. 50.16.173.1 (Ulp. 39 *ad Sab*.); Lo Cascio 1997, 12-14.

[36] Sen. *benef*. 4.28.2.

[37] D. H. 4.24.5; Pers. 5.73-75; D.C. 39.24; *D*. 5.1.52.1 (Ulp. 6 *fideic*.); *CIL* VI, 10223, 10228.

[38] Svet. *Aug*. 41.

[39] Plin. *paneg*. 28; Hist.Aug. *Marc.Aur*. 7.8. Examples of boys between 1 and 6 years old who received the grain dole include *CIL* VI, 10221, 10224, 10225, 10227, 10228.

[40] Hist. Aug. *Marc. Aur*. 7.8; *CIL* VI, 10222; ILS 9275.

[41] Noy 2000, 15-26; Morley 2013, 30-31.

pork dole, the *Theodosian Code* provides us with a specific number of recipients. Two imperial rescripts, of 419 and 452, inform us that in these years 120,000 people in Rome received rations of pork from the state.[42] We do not know who was eligible for the pork dole in Rome, but it has been presumed it was the same as for the group that received bread rations from the state. In 364, bread could be bought at subsidized prices by house owners in Rome, although we do not know if this applied to all house owners or a more limited group.[43] In addition, according to an imperial rescript of 369, free bread was delivered to poor people who had no means of subsistence from any other source. Imperial officials, overseers, house owners and slaves were explicitly excluded from receiving the free rations, but not women and children.[44] The right to receive food rations from the state could also be inherited or sold.[45] When attempting to use the 120,000 recipients of the pork dole to estimate the total population of Rome, the same problems arise as for the grain dole population calculations. It is obvious that the pork dole only covered part of the population, and how large that share was of the total population is not possible to gauge with any degree of certainty.

Four other main approaches to estimate the urban population of Rome have also been attempted. Since these approaches are not based on any specific numbers of people in the source material, they will be covered only very briefly. The first is the total imports of food to the city. This entails combining a variety of import figures from widely different contexts and dates. Even if the sources would agree on import numbers (which they do not), it would still not with any certainty tell us how many people those food imports would support.[46]

The second approach is the ca. 46,500 *insulae* and ca. 1,800 *domus* that Rome contained according to the Regionary Catalogues. The problem with this approach is that an insula or domus could mean a variety of different types and sizes of buildings. It is also not possible to know how many people lived in each house.[47]

Thirdly, the houses depicted in the Marble Plan of Rome, or the excavated housing in Ostia and Pompeii, have been used to estimate population size and density in Rome. Again, it is impossible to know how many people lived in each house, especially since the upper storeys are not depicted or preserved. Moreover, the preserved fragments of the Marble Plan only show a small percentage of the city.[48]

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[42] *CTh.* 14.4.10 (419 CE); Novell. Valent. 36 (452 CE). However, the texts do not explicitly mention 120,000 recipients. The rescript of 419 says that each householder shall receive 5 pounds of meat as rations from the state for 5 months each year, and that 4,000 rations shall be distributed per day in the city. Although this can be interpreted as either 4,000, 120,000 or 600,000 recipients, most scholars agree that 120,000 recipients is the most likely interpretation. A similar number of recipients are given meat in 452, when a deduction of 20% for transport costs are subtracted. A third rescript, *CTh.* 14.4.4 (367 CE) provides more cryptic information, which has led to diverse interpretations regarding the number of recipients. Mazzarino 1951, 220-35; Chastagnol 1953; Whitehouse 1981; Hodges, Whitehouse 1983, 48-52; Barnish 1987, 162-4; Durliat 1990, 92-102; Sirks 1991, 375-80; Lo Cascio 1997, 64-76.

[43] *CTh.* 14.17.1 (364 CE).

[44] *CTh.* 14.17.5 (369 CE); Tengström 1974, 84.

[45] *CTh.* 14.17.10 (392 CE); Hist. Aug. *Aurel.* 35; Virlouvet 1995, 212; Lo Cascio 1997, 47.

[46] Hopkins 1978, 98; Rickman 1980, 10; Garnsey 1983; Garnsey 1988, 191; Giovannini 1991; Erdkamp 2005.

[47] Hermansen 1978; Storey 2004; Behrwald 2006.

[48] Packer 1967; Hermansen 1978; Storey 1997.

Finally, the amount of water supplied through the aqueducts to Rome might possibly be used to indicate urban growth but cannot provide any specifics concerning the size of the urban population.[49]

As shown above, the ancient sources provide a limited amount of information regarding specific numbers of inhabitants in Rome. It is also difficult to translate the quantity of grain imports, numbers of houses or water supply capacity into population numbers. The attempts by scholars to extrapolate the total population size based on these unsatisfactory parameters has inevitably yielded an impressive number of different results, some of which are presented in Table 1.

Estimated population	**Scholars**
14 million	Vossius 1685
4-6 million	Lipsius 1598
2.5 million	Lugli 1940
1.5 million	Frézouls 1987
1.25 million	Calza et. al. 1941, Lugli 1942
1 million	e.g. Homo 1951, Hodges, Whitehouse 1983, Stambaugh 1988, Robinson 1992, Lo Cascio 2000, Scheidel 2007, Tacoma 2016
920,000	Hanson, Ortman 2017
850,000 – 1 million	Morley 1996
800,000 – 1.2 million	Lo Cascio 2018
800,000 – 1 million	Beloch 1886, Hopkins 1978
800,000	Lanciani 1897
750,000	Brunt 1971
700,000	Gerkan 1940
650,000 – 1 million	Morley 2013
335,000 – 440,000	Storey 1997
250,000	Lot 1953
155,000	Dureau de la Malle 1840

Table 1. Estimated population of the city of Rome at the beginning of the imperial period

The estimates range from a fantastical 14 million inhabitants down to only 155,000. Even if we only look at the estimates made since 1940, they still range between 2.5 million and 250,000 inhabitants, a difference at a magnitude of ten. This demonstrates the high level of uncertainty of the source material. From the table it also becomes clear that most scholars agree on a population of around one million. This could very well be a realistic estimate of the urban

[49] Taylor 2000; Kleijn 2001, 68-74.

population, although it is not possible to verify. Since it is the most common estimate, it will be used in our study to discuss possible population densities at Rome.

The size of Rome: urban area

The first part of the contribution demonstrated the problems in calculating the size of the urban area of ancient Rome, since there is no clear definition of it. It is also hard to estimate because of our fragmentary knowledge of the built-up area, mainly due to the fact that a modern city occupies the same space. However, most scholars who have studied population density at Rome have used the Aurelian walls as their urban border.[50] Although, as shown above, this is highly problematic, it provides a simple solution to the area problem by using a well-documented, ancient border in the city. What, then, was the size of the area surrounded by the Aurelian walls? That has been surprisingly hard to find out since there is no general agreement on this either. The estimates have been summed up in Table 2.

Estimated size in square km	Scholars
12.30	Beloch 1886
12.53	Malmberg, this contribution
12.72	Carafa 2017
13.50	Pisani Sartorio 1996
13.73	Lanciani 1897
13.86	Lugli 1940
13.96	Dureau de la Malle 1840
14.90	Hermansen 1978
17.83	Homo 1951

Table 2. Estimated size of the area within the Aurelian walls.

The much larger intramural area suggested by Léon Homo should be explained. The estimate is actually not based on the area within the Aurelian walls, although some scholars who use this number refer to it as such.[51] Instead, Homo used the circumference in Roman feet for each urban region given by the *Regionary Catalogues* to calculate the total size of the area that these regions formed together.[52] Of course, this only works if the location for the borders of each region is known, and thus the form of the area for each region. Since we do not know this, the urban area suggested by Homo can only be hypothetical.

Most estimates fall within the range between 13.50 and 13.96 km^2. Of these, Rodolfo Lanciani's estimate of 13.73 and Giuseppe Lugli's of 13.86 km^2 are the most commonly used

[50] Beloch 1886; Gerkan 1940; Calza et al. 1941; Lugli 1942; Homo 1951; Hermansen 1978; Hanson, Ortman 2017.

[51] E.g. Wallace-Hadrill 2017, 56; Hanson, Ortman 2017, 319.

[52] Homo 1951.

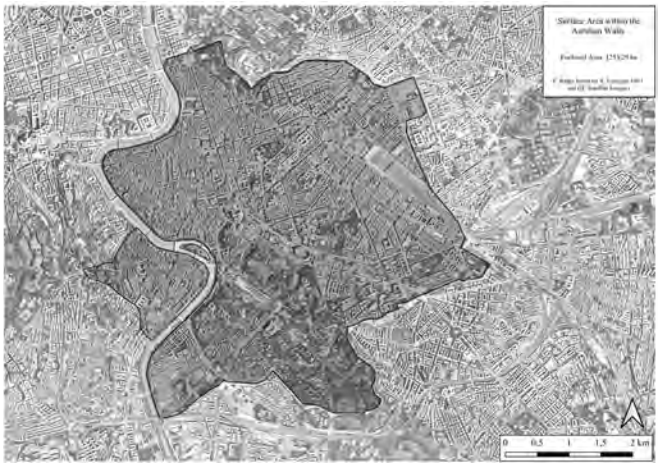

Fig. 8.1 Surface area of 12.53 km^2 within the ancient Aurelian walls, not including the Tiber.

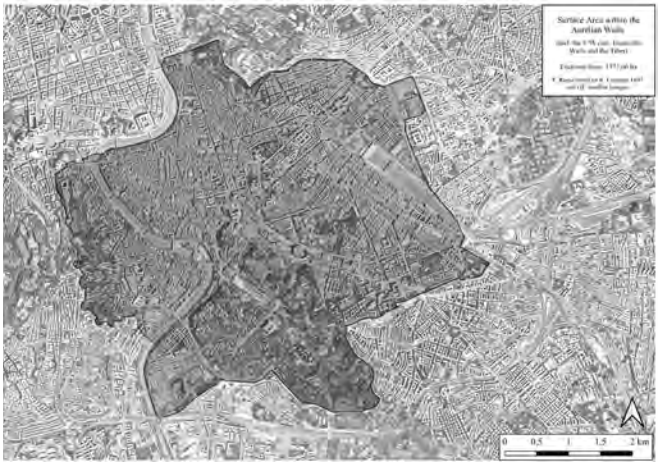

Fig. 8.2 Surface area of 13.75 km^2 within the combined ancient Aurelian walls and the 17th-century Trastevere / Gianicolo walls, including the Tiber.

today.[53] Adolphe Dureau de la Malle arrived at 13.96 km^2 because he used Nolli's map which displayed the 17th-century line of the Trastevere-Gianicolo walls.[54] This was criticized by Julius Beloch, who instead used the ancient perimeter of the walls in Trastevere, which led him to suggest an intramural area for ancient Rome of 12.30 km^2, not including the river.[55]

There does not seem to be any published estimate on the area enclosed by the Aurelian walls that explicitly uses GIS technology.[56] My colleague at the University of Bergen, Fynn Riepe, has made preliminary, approximate calculations of the ancient intramural area within QGIS based on a georeferenced version of Lanciani's archaeological map of Rome together with Google Earth satellite data.[57] The first estimate by Riepe is based on the area within the ancient Aurelian walls,

[53] Lanciani 1897; Lugli 1940.
[54] Dureau de la Malle 1840, 347.
[55] Beloch 1886, 404 n. 4, 489.
[56] Although Carafa 2017 is probably based on GIS measurements.
[57] Lanciani 1893-1901.

including the ancient Trastevere walls and the Tiber Island, but excluding the Tiber River itself. This resulted in an area of 12.53 km^2 (Fig. 8.1). The estimate is similar to the exact calculations by Paolo Carafa given as 12.72 km^2, which includes the Tiber, and is also close to Beloch's estimates.[58] The second estimate again includes the whole area within the ancient walls, to which have been added the 17th-century Gianicolo walls and the Tiber River within the walls but does not include the Vatican walls (Fig. 8.2). This provided an estimate of 13.75 km^2, within the margin of error of being almost exactly the same as that suggested by Lanciani and also close to Lugli's calculations. They never explained in detail how they arrived at these sizes, but the difference of ca. 1.2 km^2 between the actual area within the ancient walls and their suggestions is significant and can probably not be explained as simple measuring errors.

If the two most commonly accepted numbers are combined, that is, one million inhabitants living in an area of 13.86 km^2, it results in a population density of over 72,000 people per km^2. If the GIS-based area of 12.53 km^2 is used instead, that yields a density of almost 80,000 inhabitants per km^2. A large part of the area within the Aurelian walls would have been occupied by large public buildings, such as entertainment arenas, public baths and fora. It has been suggested that these buildings covered at least 40% of the area within the walls.[59] That would leave at most an estimated 7.52 km^2 available for housing, resulting in a population density of almost 133,000 people per km^2.

The character of high-density cities

This section will look at the effects the suggested high population densities outlined above could have had on the urban character of ancient Rome. What would living conditions in Rome look like with a density of 72,000-133,000 people per km^2? The densities will be compared with secure statistics from modern cities, in order to be able to visualize possible urban environments and judge the probability of these densities in an ancient city.

The highest population density in modern Rome was recorded in 1931, when the city had over 29,000 people per km^2.[60] By current standards, that is a very high density, not matched by any city today. Very few cities today have densities higher than 20,000 people per km^2, according to the Joint Research Centre (JRC) of the European Commission. Statistics gathered by the JRC show that the highest securely attested, city-wide density today can be found in Mumbai, with 26,500 people per km^2.[61] If we narrow down the area to a single district of a city we can reach higher densities. The highest secure density known in a modern city district is attested for the Mongkok District in Hong Kong, where 97,100 people are living per km^2. Mongkok is characterized by a maze of narrow streets with older high-rise tenement buildings and is noted for its overcrowding.[62] Even higher population densities can be found if slums are included, like the Kowloon Walled City in Hong Kong or Dharavi in Mumbai, but the information about these is fragmentary and unreliable, with widely fluctuating estimates of population sizes.

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[58] Carafa 2017, 85.

[59] Calza et al. 1941, 150-51. Gerkan 1940, 194-5; Homo 1951 and Hermansen 1978, 167 believed half the area was occupied by public buildings.

[60] Storey 1997, 974.

[61] European Commission, Joint Research Centre, Global Human Settlement Layer Dataset (https://human-settlement.emergency.copernicus.eu/datasets.php)

[62] Information on urban district densities obtained from Density Atlas, managed by Massachusetts Institute of Technology's Department of Urban Studies and Planning (https://densityatlas.org)

Bringing the discussion back to ancient Rome, these comparisons hopefully demonstrate that densities of between 72,000 and 133,000 inhabitants per km^2 are not plausible for an ancient city.[63] The few areas today that reach these densities are urban districts dominated by overcrowded high-rise buildings, while no securely attested city-wide densities come even close to those suggested for ancient Rome.

A city of high-rise housing?

The challenge of fitting one million people within the confines of the Aurelian walls has been discussed by several scholars. A common solution suggested is to do as the people of modern Mongkok have done, that is, to build higher. Jérôme Carcopino wrote, back in 1939, that 'the Insula of Felicles towered above the Rome of the Antonines like a sky-scraper. Even if this building remained an exception, we know from the records that all around it rose buildings of five and six stories.'[64] More recently, Amanda Claridge asserted that 'Insulas twelve storeys high are mentioned in Rome in the C1 BC.'[65] In a similar vein, John Hanson and Scott Ortman wrote that 'One would expect the largest settlements (Rome, Alexandria, Antioch, etc.) to have been dominated by blocks of apartments with multiple storeys… as well as little open space.'[66]

How common were these apartment blocks in Rome, with 5 and 6 storeys, perhaps even 12 storeys as suggested by Claridge? Archaeologically, there are a handful of houses in Rome from the Early Empire that are preserved to 3 or 4 storeys in height, and even one at the base of the Capitoline Hill, that still has as many as 6 storeys still standing. But due to the fragmentary knowledge of the ancient urban landscape in Rome, there is no way we can say how common multiple-storey housing was.[67] Building heights can also be compared to Ostia, where there are no attested houses above 4 storeys. Evidence for housing in Ostia with more than 3 storeys is very rare, which is also indicated by the wall thickness of preserved buildings.[68]

Two sources describe how the emperors wanted to lessen the risk of collapse of tall buildings at Rome by limiting their maximum height. Strabo writes that Augustus limited the height of structures to 70 Roman feet (ca. 20.7 m), while the fourth-century *Epitome de Caesaribus* says that Trajan lowered it to 60 feet (ca. 17.7 m). These heights can be interpreted as limiting housing to either 6 or 5 storeys.[69] The 6-storey apartment building at the Capitoline Hill is in fact preserved to a height of 23 m, which would violate both restrictions. The construction

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[63] Stambaugh 1988, 90: 'If we assume a population of about a million, we must conclude that Rome in the early principate was one of the most densely crowded cities the world has ever known.'

[64] Carcopino 1940, 26. Originally published in French in 1939. It is unclear to which records Carcopino refers. Robinson 1992, 34-8 also argues for many tall buildings in Rome.

[65] Claridge 2010, 58. She might refer to the Insula Felicles, but this building is not attested before the early third century CE, when it was first mentioned by Tert. *adv. Val.* 7.1-3. However, Tertullian discusses multi-storey housing as a metaphor for the multitude of pagan gods, not a physical building, and he never indicates the number of floors. The reference to the Insula Felicles, which is only otherwise mentioned in the *Regionary Catalogues*, was only inserted in Tertullian in Renaissance manuscripts: Riley 1971.

[66] Hanson, Ortman 2017, 304. That Rome would have little open space is a surprising statement in view of the many fora, arenas and public bath complexes in the city, not to mention the *horti*.

[67] Packer 1968-1969; Storey 2003; Priester 2002; Bossi 2015.

[68] Packer 1967; Packer 1971; Boersma 1985; DeLaine 1995; DeLaine in Chastagnol 1996, 195; Ulrich 2013.

[69] Str. 5.3.7; Ps. Aur. Vict. 13.13; Storey 2003, 8.

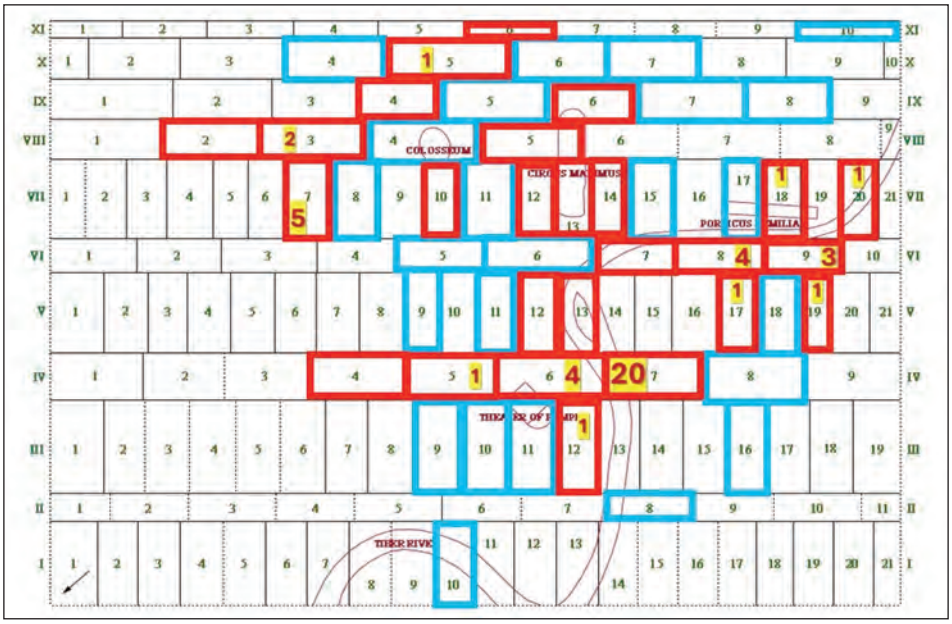

Fig. 8.3 Arrangement of marble slabs of the Marble Plan of Rome. Red slabs contain V-shapes, blue slabs do not. Unmarked slabs lack located fragments. Red numbers denote number of V-shapes on that slab with 2+ bars/3+ storeys. After Pilzecker 2018, 50, appendix 1.

of tall buildings was presumably usual enough to warrant these restrictions, although it is impossible to estimate how common they were.

However, the Marble Plan of Rome (ca. 210 CE) might give us a clue to the height of buildings in the city. It has been suggested that the V-shaped signs that can be found inside many buildings on the plan might be a symbol for stairs going up to a second floor. Several of these signs also have cross bars, which have been taken to indicate the number of storeys the building had.[70] This interpretation of the cross bars cannot be proven, since there is no overlap between preserved multi-storey buildings and the preserved fragments with V-shaped signs on the Marble Plan. It is also speculative in view of the inconsistencies and mistakes that can be found in many parts of the plan.[71] But if, for the sake of argument, this hypothesis is applied, what image does it give of building heights across the city?

There are 299 confirmed V-signs in total on the fragments of the Marble Plan. Of these, 229 (77%) have no or just one cross bar, 58 (19%) have two or three bars, 9 (3%) have four or five bars, while only 3 (1%) have six or seven bars. That would mean that only 4% of the buildings with V-signs shown on the plan would have had more than four storeys, and none would have more than eight.[72]

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[70] Ziçans 1941; Pedroni 1992; Madelaine 2008; Pilzecker 2018; Battistin 2018.

[71] Battistin 2018, 439. Reynolds 1996, 92-106 and Storey 2003, 17 n. 50, however, argue that the Marble Plan was reasonably accurate.

[72] Battistin 2018, 429.

It might also be illuminating to map the location and clustering of buildings with multiple storeys on the Marble Plan (Fig. 8.3). In this case, only those fragments that are topographically located can be used. 24 of the slabs of the plan do not have any V-signs, while the other 26 slabs have signs. Of the buildings that have V-signs, interpreted as internal staircases, most are public buildings, like the Circus Maximus. Of the buildings interpreted as having three or more storeys (i.e. V-signs with two or more cross bars), most are commercial and storage buildings along the Tiber, especially clustered in the Trastevere area. The only exception is the clustering of multiple-storey housing on slabs VIII-3 and VII-7, located in the Subura, known in antiquity for its crowded living conditions. Of the buildings with five or more storeys (i.e. with four or more cross bars) that can be spatially located, all can be found along the Tiber.[73] One piece, fragment 121abc, is the only one which displays buildings with seven and eight storeys. It cannot be precisely located, but it was probably also in the vicinity of the Tiber.[74]

From this overview, it becomes clear that if the interpretation of the V-signs and cross bars as representing storeys is accepted, a majority of structures in the city with more than one floor were public buildings. Of the buildings with multiple storeys, most were commercial and storage buildings located close to the Tiber. Housing with multiple storeys can primarily be found in two areas, the Subura and along the Tiber. This interpretation would thus give a very different image of the city than previously conceived.[75] Instead of a city dominated by multiple-storey housing, Rome emerges as a city dominated by low-level housing.[76] Most high buildings that dominated the skyline would not be apartment blocks, but rather public buildings and monuments. High-rise buildings, including housing, would be concentrated in only a few areas, such as the Subura and along the Tiber.

However, this image does not fit with our archaeological evidence. For most insulae in Rome, we only know the ground floor, but stairs to a second floor are ubiquitous. That most housing in Rome would lack a second floor according to the V-sign interpretation is thus not convincing. The V-signs could very well still be interpreted as stairs, and the cross bars as number of storeys, but they seem to have been inconsistently used when the Marble Plan was inscribed. Thus, an absence of V-signs cannot be used as evidence for a lack of upper floors. On the other hand, the V-signs cannot be used to argue for a common occurrence of multi-storey buildings in Rome either, since only 4% of the buildings marked with V-signs had more than 4 cross bars.

The second part has tried to demonstrate the implausibility of housing one million inhabitants within the area enclosed by the Aurelian walls. This has been shown through comparison with contemporary urban environments, which require modern overcrowded high-rise buildings to be able to reach similar densities, and then only for certain districts. Although Rome undoubtedly contained some multiple-storey housing, it is not plausible that the whole intramural area would be filled with houses well above the six (possibly eight) storeys that are recorded for the ancient period. On the contrary, a hypothetical interpretation of the Marble Plan shows that buildings with multiple storeys might have been rare. If Rome had around one million inhabitants, one would thus have to consider that the urban area reached far beyond the Aurelian walls.

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[73] Madeleine 2008, 307-8; Pilzecker 2018, 35-41. Slab IV-7 (north Trastevere) contains 2 V-shapes with 4 bars/5 storeys. Slabs VII-18 (Testaccio) and V-17 (south Trastevere) each contain 1 V-shape with 5 bars/6 storeys.

[74] Pilzecker 2018, 40 places it in Trastevere; Madeleine 2008, 308 in the Campus Martius.

[75] E.g. by Carcopino 1940; Claridge 2010; Hanson, Ortman 2017.

[76] Storey 2003; Pilzecker 2018, 32, 42. Battistin 2018, 439-40 argues against this interpretation.

Part III: *Population Density with No Walls*

In this part, three models will be presented which might help us think about the urban area of Rome without being hemmed in by city walls. The Aurelian walls were probably never the city border, but by using the walls as a convenient limit for handbooks, surveys and maps it has subconsciously taken on an increased importance, and forms our perception of the extent of the city.[77] Since the Aurelian walls did not exist in the Early and Middle Empire, they should not be a factor in discussions of the potential urban area of Rome in this period.[78]

When the urban area of Rome is discussed, two main scholarly approaches have been used. Both recognize the impossibility of fitting one million people within the Aurelian walls. One solution has been to lower the population estimates of the city.[79] A different approach suggested here is to instead expand the size of the urban area beyond the walls. Several scholars have proposed that Rome was only the densest settlement in a larger, more dispersed city. Nicholas Purcell called it 'a great dispersed city, of which Rome is only the nucleus', a sentiment that has been echoed by Lorenzo Quilici, Neville Morley and Robert Witcher, among others.[80] When visualising this greater, dispersed city, an intriguing suggestion by Quilici might be relevant. He suggested that the catacombs surrounding Rome are all placed between one and three Roman miles from the Aurelian walls because the intervening area was then part of the urban core.[81]

One way to think about a larger Rome is to envisage the city as an abstract model, with the inhabitants living within a certain radius of the city centre. Below, three such radiuses will be presented, with consequently different densities and urban characteristics (Fig. 8.4).

Three urban models for Rome

Here follow three ideas for habitation radius models, not to show 'how it was' but rather as a tool to help us think differently about the area and density of Rome. The first model to think about the urban area of Rome without walls was penned by Pliny the Elder. In his famous description of Rome in the time of Vespasian, he writes:

> If a straight line is drawn from the milestone standing at the head of the Roman Forum to each of the gates (*portas*), which today number thirty-seven… the result is a total of 20 miles 765 paces in a straight line. But the total length of all the ways through the districts from the same milestone to the extreme edge of the buildings (*extrema vero tectorum*), taking in the Praetorians' Camp, amounts to a little more than 70 miles.[82]

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[77] E.g. Steinby 1993, 9, 'i limiti topografici del Lexicon sono stati fissati secondo il criterio più concretamente verificabile, cioè nelle Mura Aureliane. La scelta può essere guistificata dalla coincidenza con il pomerium, mentre sorgono dubbi sulla necessità di tagliare fuori parti delle regioni augustee.'

[78] E.g. Dey 2011, 163: 'the omnipresence of the Wall tends to lead to the dangerous impression that Rome was always a compact unit shaped (exactly) like the perimeter of its Aurelianic enceinte.'

[79] As advocated by Lot 1953 and Storey 1997.

[80] Quilici 1974, 424; Purcell 1987, 36; Morley 1996, 38; Witcher 2005, 128.

[81] Quilici 1974, 435.

[82] Plin. *nat*. 3.66-7, trans. Rackham 1942: *Eiusdem spatium mensura currente a miliario in capite Romani fori statuto ad singulas portas, quae sunt hodie numero xxxvii ita ut duodecim semel numerentur praetereanturque ex veteribus vii quae esse desierunt, efficit passuum per directum xx.m.dcclxv. Ad*

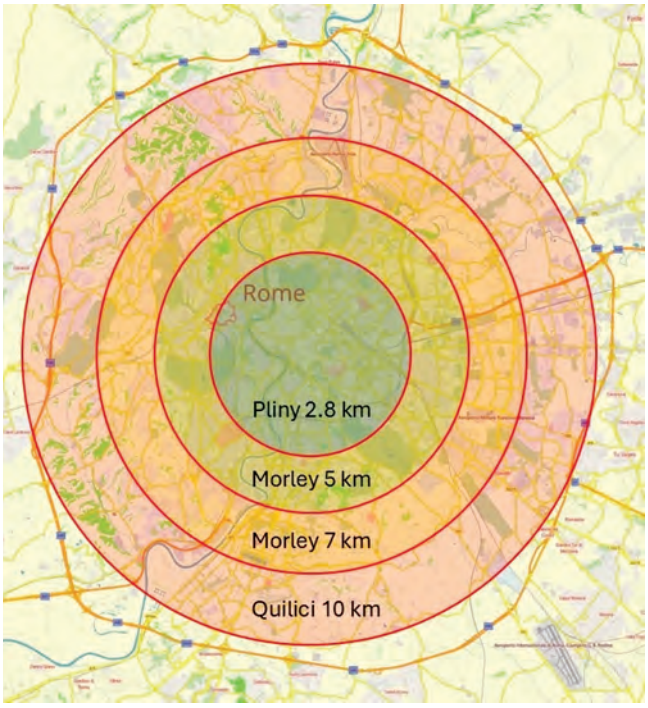

Fig. 8.4 Urban radius of ancient Rome as suggested by Pliny the Elder, N. Morley and L. Quilici.

Here, Pliny wants to impress the reader with the size of the urban area of Rome but also aims to provide specific information based on measurements taken by the censors in 73 CE. The 37 gates mentioned are surprising since the Republican wall had long fallen out of use and never had that number of gates. It has been suggested that *portas* might instead refer to the customs stations at the major roads into the city that were probably created at this time.[83] What is most interesting for the purposes of this study, however, is the last part of the text, which can be interpreted to mean the combined distance of 70 Roman miles from the Forum, beyond these 37 customs gates, to the edge of the built-up area of the city.[84] If we divide 70 miles by 37 gates, that gives us a distance of 1.89 Roman miles, equal to about 2,800 m, which would be the average distance from the Forum to the city's built-up edge. This would encompass an area far outside the later Aurelian walls, covering an area of 25 km^2. In the north it would end at Valle Giulia, in the south at the Almo. It would include the Vatican and parts of Villa Doria Pamphili to the west, and in the east the campus of La Sapienza (Fig. 8.4). If we fit one million people within these borders, that would give a population density of 40,000 people per km^2, almost double the highest recorded city-wide density attested today.[85]

The second model to think about a larger urban area for Rome has been suggested by Neville Morley. He wrote: 'Greater Rome might have included an urban core and a less densely settled penumbra, stretching 5 km or so from the city.'[86] It is not clear which area the 'urban core'

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extrema vero tectorum cum Castris Praetoriis ab eodem miliario per vicos omnium viarum mensura colligit paulo amplius septuaginta milia passuum.

[83] Palmer 1980.

[84] Emmerson 2020, 6.

[85] The modern urban comparative densities in this part are all based on the European Commission, Joint Research Centre, Global Human Settlement Layer Dataset (https://human-settlement.emergency.copernicus.eu/datasets.php)

[86] Morley 1996, 38.

refers to here, so Morley's idea will be interpreted in two different ways. If it is taken to mean a 5 km radius from the Forum, it would result in an area stretching from Pons Milvius in the north to S. Paolo fuori le mura in the south, and from the western edge of the Villa Doria Pamphili in the west, to the valley of the Anio in the northeast (Fig. 8.4). This is an area of 79 km^2 with a population density of approximately 12,700 people per km^2. This would rank ancient Rome among the highest density cities today, like Singapore and New Dehli. If Morley instead is interpreted to mean a five km radius outside the Aurelian walls, it goes from Fidenae in the north to EUR in the south, and Centocelle in the east (Fig. 8.4). The radius would cover 154 km^2 with a population density of about 6,500 people per km^2. That would be equal to the density of modern Paris, one of the most densely populated cities in Europe.

There is yet another suggestion of the extended urban area of Rome in antiquity. Lorenzo Quilici proposed that it would form a radius of 10 km from the Forum.[87] This largely coincides with the Grande Raccordo Anulare and covers an area of 314 km^2 with a population density of ca. 3,200 people per km^2 (Fig. 8.4). The density would be very close to the average population density of cities in the European Union today. It would also be well above the density definition of at least 1,500 people per km^2, used by the European Commission for cities, or its limit of 300 people per km^2 for towns and suburbs.[88]

The suggestions listed above, with expanding radiuses of area and lower densities, are of course only schematic models, which are in need of further elaboration. We need to take into consideration terrain, infrastructure, land ownership and so forth, to more correctly model urbanisation patterns around Rome in the first three centuries of the Imperial era. There is for instance a great difference in terrain between the open campagna east of Rome, that was more suited to rapid urban expansion than the more rugged terrain to the west. Major roads, and waterways such as the Tiber and the Anio, would also have worked as conduits for urbanisation, probably creating a star-formed urban area with less dense settlements in between. Aqueducts, most of which were also concentrated to the east, would be crucial infrastructure for an expanding city, providing water for habitation and industries. Imperial and aristocratic landowners might have impeded urbanisation by creating a 'green belt' of villas and gardens around the city, but landowners could also facilitate urban expansion if they were open to selling or exploiting the land.[89]

Looking into previous archaeological investigations can also contribute to overviews of whole urban areas. This has, for example, been demonstrated by this author in a series of studies, building upon the work of many eminent scholars. These have shown that there was a concentration of harbour areas in Rome, probably stretching from the Pons Milvius in the north, as far south as the modern Ponte della Magliana. Most of the harbour areas in Early and Middle Imperial Rome would thus have been built outside the later line of the Aurelian walls, including some of the largest facilities. Some of the extramural harbours continued in use also after the building of the new city walls.[90]

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[87] Quilici 1974, 424-8.

[88] European Commission, Joint Research Centre, Global Human Settlement Layer Dataset (https://human-settlement.emergency.copernicus.eu/degurbaDefinitions.php)

[89] For further discussions along these lines, see Quilici 1974; Frézouls 1987; Morley 1996; Goodman 2007; Malmberg, Bjur 2011; Coarelli 2014; Emmerson 2020; Malmberg 2023a; De Haas 2024.

[90] Malmberg 2015; Id. 2021; Id. 2023b, with references to earlier scholarship.

It will be necessary to coordinate excavation, survey and documentation efforts within a 10 km zone around Rome to get a better understanding of the actual spread and character of the built-up environment, although this is challenging due to the intensive modern urbanisation of the area. These three models should thus only be used as a starting point for further investigations and discussions about Rome's urban area and characteristics in antiquity.

Population densities beyond the city

In this final section, it might be useful to compare population densities within the suggested urban area of Rome, whether perceived as inside the Aurelian walls or within Quilici's 10 km radius, with the population densities that have been put forward for the so-called *suburbium*, or immediate hinterland of Rome, within ca. 50-100 km from the city. Three scholars have tried to translate the scatter of surface finds into settlement number and population densities for the countryside around Rome in the Early Imperial period. Julius Beloch suggested a density of 10 people per km^2, inspired by the pastoral countryside around Rome of his own time. In a comparative study, Richard Blanton argued for a much higher density of 30 people per km^2, based on the survey studies that have been undertaken around Rome.[91] Finally, Robert Witcher wanted to double that density to 60 people per km^2, in view of the unusually rich archaeological material found in Rome's hinterland dating to the Early Empire.[92] Witcher's view has received support from other colleagues working in the suburbium, arguing that their finds vindicate similar densities.[93]

Sixty people per km^2 is regarded as an unusually high rural density. Simultaneously, scholars suggest densities in the city of Rome of 72,000 inhabitants per km^2 and beyond. Even if we accept Morley's or Quilici's ideas of a population spread over a much wider area, the population density would fall off a cliff as soon as we move beyond the 5 or 10 km radius, from 6,500 or 3,200 people to 60 people per km^2, a decrease in density of either about 100 or 50 times. It becomes clear, even from this simple and superficial comparison, that the densities have to be smoothed out considerably. To better understand peri-urban phenomena like these, scholars working on the city and hinterland would benefit from an increase in knowledge exchange and in finding common ground on how to approach the study of population densities.

Conclusions

A long tradition of scholarly works has generated a variety of estimates and perceptions about the population size and extent of the city of Rome. The aim of this contribution has been to study the effects of these previous urban models, and how they relate to limitations in the source material. Urban borders have been a key factor in studies of the extent of the actual city. This study has aimed to point out problems with these borders in relation to the study of urban development. A more dynamic approach has been envisaged for the study of the urban area of

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[91] Blanton 2004, 226.
[92] Witcher 2005. Witcher 2008 discusses possible higher population densities in the hinterland.
[93] Attema, De Haas 2011, 135-6. See also De Haas 2024, 322.

Rome, which allocates less importance to these borders in an urbanistic perspective. This would allow for a more flexible understanding of Rome's urban development.

This has been done through a discussion of the urban borders of Rome, how population density in the city can be viewed, and what effects this density might have had on the urban character. Moreover, three models were presented that tried to integrate the centre and periphery of the city more dynamically when studying urban developments at Rome.

The first part presented a selection of different urban borders (religious, administrative, military, legal) and showed how they had a diminished effect on the urban landscape and development in the imperial period (pomerium), provided internal, but not external administrative boundaries (urban regions), did not exist in the Early Imperial period (city walls), or were flexible enough to follow the continued expansion of the city into the surrounding hinterland (legal definitions).

The second part discussed the different ancient sources and suggested population sizes of Imperial Rome, to show the limitations of our sources and uncertainty of suggested hypotheses. Often, the Aurelian walls are used as a simple way of delineating the urban area of the city, which is why differing views on the size of the intramural area were also discussed. Combining the most commonly accepted population size of Rome with a measurement of the intramural area, a hypothetical population density could be reached. A comparison with modern urban densities demonstrated the implausibility of fitting a million people within the Aurelian walls, even if the city consisted mainly of high-rise housing.

The third part looked at three population models for Early Imperial Rome that did away with the obstacle of the Aurelian walls. The three models offer different population densities, that can be compared with densities in modern cities for plausibility and urban character. Due to limited knowledge about the extent of the built-up area, no model can be confirmed, although they could all be deemed to have a higher plausibility of population density than using the, then non-existing, Aurelian walls as the urban border. A short comparison between the high density of the urban area and the comparably low density of the surrounding hinterland showed the need for further scholarly dialogue.

Going forward, it will be important to continue exploring the concept of Rome as a dynamic and flexible city, much in the same vein as that expressed already in the second century by Ulpius Marcellus. This can be done by developing the parameters of urban density, using models with care, and integrating them with terrain, archaeology, ancient texts, and urbanistic perspectives. Several studies have acknowledged the spread-out nature of the urban landscape in early imperial Rome. However, they often make a separation between Rome and the other city that surrounded it. Dichotomies such as centre/periphery, urbs/suburbium, urban core/suburb, and city/hinterland are fundamental to the study of ancient urbanism. However, as I have argued elsewhere, dichotomies should not limit our understanding of the city as a whole.[94] It is equally important to use a more fluid spatial concept of the urban landscape, and acknowledge *the city of Rome as a single urban area with different densities*.

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[94] Malmberg 2023a; Id. 2023b. See also Stevens 2024, 203: 'More recently, we see another relational approach in which the peripheral zone is considered inseparable from the city itself. It is seen as an extension of the city from a political, cultural, economic, and demographic point of view, very often still in a subordinate or supplementary role.'

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Part 2
Rome

Chapter 10

From SITAR data to interpretation, new methodological approaches for reading Rome's suburban settlement landscape

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Abstract

This article outlines an innovative methodological framework for assessing the archaeological potential of Rome's suburban landscape, grounded in the integration and critical reinterpretation of datasets within the SITAR (Sistema Informativo Territoriale Archeologico di Roma) platform. This research reflects the outcome of a years-long interdisciplinary collaboration between archaeologists, topographers, geologists and GIS specialists, and seeks to transcend the limitations of conventional buffer-zone models by proposing a more nuanced and stratified reading of the subsoil.

A clear distinction is drawn between quantitative and qualitative potential. The former relies on statistical analysis of core sampling data and digitised historical cartography, including the reconstruction of a detailed digital terrain model based on elevation maps dating from 1872 to 1924. The latter focuses on reconstructing functional and spatial relationships between archaeological contexts within a pilot sector in Rome's eastern *suburbium*. This involves the systematic reclassification of georeferenced evidence and the interpretative modelling of ancient roads, necropoleis, production sites, villas and associated land-use patterns. The results demonstrate a meaningful comparison between ancient and more recent land use and indicate the predictive value of this approach for future research and planning. Although the model remains under refinement, it is intended to provide an operative tool for heritage management and to facilitate future integration with historical cadastral records and medieval documentary sources.

Keywords

Archaeological potential; suburban Rome; predictive mapping; historical topography; SITAR platform

1. Introduction

In recent years, the growing availability of geospatial and stratigraphic data has significantly advanced the study of urban and suburban archaeological landscapes. Nevertheless, the exceptional complexity and density of Rome's subsurface continue to present considerable challenges for effective heritage management, risk assessment, and spatial interpretation.

The aim of this article is to define a replicable and data-driven methodology for assessing archaeological potential in Rome's suburban areas, with a focus on Municipality IV. By integrating stratigraphic, geomorphological, and historical datasets with the SITAR platform data, the study seeks to generate a model capable of guiding heritage protection, supporting urban planning, and enhancing our understanding of long-term settlement dynamics.

The Soprintendenza Speciale di Roma is currently developing an enhanced predictive mapping tool to assess the city's archaeological potential. This work builds on the extensive dataset of the SITAR platform (Sistema Informativo Territoriale Archeologico di Roma – Archaeological Territorial Information System of Rome), which has been systematically collecting and organising archaeological documentation from Rome and its surroundings within a GIS environment for over twenty years.

While traditional models of archaeological potential – largely based on static buffer zones surrounding known remains – have proved useful as preliminary tools, they too often fail to account for the deeply stratified and historically fluid character of the city's urban contexts.[1]

In the context of our 18 years of experience, examining archaeological data from all around the city of Rome, archaeological potential refers to the likelihood of encountering subsurface cultural remains in a given area, based on stratigraphic depth, historical land use, and spatial relationships between known features. It combines both quantitative indicators – such as archaeological deposit thickness and site density – and qualitative factors, including functional context and proximity to ancient structures and infrastructures. This dual approach (quantitative and qualitative) allows for a more nuanced understanding of buried heritage across complex and multilayered urban landscapes. In this study, archaeological potential serves as a predictive and planning-oriented tool for research and heritage management.

Archaeological potential should therefore be understood more broadly as an essential tool for supporting territorial planning that fully recognises the cultural values of areas subject to new urban expansion. Such a tool enables the assessment of the significance of archaeological remains, integrating them appropriately into the contemporary landscape. The system comprises the entire history of Rome, but in the present contribution, we offer a case study from the Roman period (from the origins of the city[2] to the end of the empire).[3]

The aim of our work is, first and foremost, to provide a tool suited to the settlement complexity of the area: an information system that helps to visualise the forms of ancient territorial organisation and helps prevent damage to buried remains.

Within the SITAR framework, 'archaeological risk' is understood as a composite assessment that takes into account the documented presence of archaeological remains in a given area, the classification and the consistency of the deposits, the depth at which they were encountered (as recorded in SITAR), the progressive enhancement of knowledge through bibliographic and archival research, and the potential impact that planned works may have on the underlying archaeological potential. This type of analysis is entirely and effectively entrusted to the dedicated work of the staff of the Soprintendenza, to whom these methodological tools are primarily addressed and in support of whose activity they have been developed.

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[1] Haase et al. 2025.

[2] Brilli, Carandini 2020.

[3] In the near future, the data will be integrated with post-antique data and thereafter with a full review of the dataset from prehistory.

The work presented here is the result of collective reflection and collaboration by the entire SITAR working group,[4] and seeks to propose a new methodological framework aimed at producing a more consistent and predictive assessment of the archaeological potential of Rome's suburbium, building on similar – though limited – past and recent experience. [5]

Through an interdisciplinary, data-driven approach – combining stratigraphic studies, historical cartography, geomorphological analysis and contextual interpretation – this work seeks to reconstruct the morphological and functional trajectories of the suburban landscape over time and to develop a tool that can inform both archaeological research and heritage protection policies.[6]

[M.S.]

2. Materials and methods

The present study is based on the integration of multiple archaeological, geological and cartographic datasets within the SITAR platform. The methodological framework was developed through interdisciplinary collaboration involving archaeologists, topographers, geologists and GIS specialists, with the aim of producing a dynamic model of the archaeological potential for the suburban territory of Rome. A clear distinction is made between quantitative and qualitative potential.[7] The quantitative assessment was mainly based on the stratigraphic data of the core drillings (there are now over 10,000 drillings), which provided absolute elevation values for the geological substrate shaped by human actions across the urban and suburban area of Rome. These were integrated with historical elevation cartography – in particular the IGM of Rome tablets of 1872-1894, the *General Regulatory Plan* of 1908 and the *Topographical Plan of Rome and the Suburbs* of 1924 – digitised to create a high-resolution Digital Terrain Model (DTM) of the city before the great urban expansions and the construction of the road and railway infrastructures that took place in the 19th and 20th centuries (Fig. 10.1).[8]

2.1. *The quantitative potential*

The quantitative potential was then defined as the estimated thickness of the archaeological deposits, calculated as the vertical distance between the archaeological interface and the geological interface.

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[4] I would like to express my sincere gratitude to Fabrizio Santi (SSABAP – Rome) for allowing me to develop this methodological framework in the territory under his responsibility and for consistently advancing research in his area with a truly exemplary and collaborative spirit.

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[5] Dufay, Hincker, Viand 2014; Münch 2006.

[6] Biddle, Hudson, Heighway 1973; Ciampi et al. 2025; Brienza, Fornaciari 2020.

[7] Serlorenzi et al. 2024.

[8] Demetrescu, Fontana 2009; Ciampi et al. 2025.

2.1.1. *The geological interface*

For the purposes of calculating the quantitative archaeological potential, in addition to carefully analysing the geological interface, the utility of having a terrain model capable of contextualising data from archaeological investigations was also considered. The geological interface is visible only in certain parts of the city, particularly where there are sharp changes in elevation[9] or in suburban areas historically dedicated to cereal cultivation and pasturing.[10] In other cases, it can only be reached through archaeological excavations or coring. In general, the geological interface is considered to have no archaeological potential, with a few notable exceptions that nonetheless must be reported. Among the most significant of the latter are the vast and deep alluvial deposits of the Tiber Valley, and to a lesser extent those of its tributaries, which may have buried archaeological traces from the republican, regal, protohistoric, or even prehistoric periods.[11] A second important case is represented by the *lahar* deposit from the Alban volcano, which covered much of the south-eastern suburbium of Rome in the fourth century BCE, as in the famous study in Torre Spaccata.[12] The remainder of the geological deposits is considered to have no archaeological potential.

2.1.2. *The archaeological interface*

The second fundamental interface is the so-called 'archaeological surface', which can be reconstructed through two main approaches. The first involves extending across the entire city the elevation values of the so-called 'archaeological ceiling'; however, this method suffers from significant shortcomings due to imprecise or inconsistent measurements. The second, more effective approach is based on the reconstruction of the historical elevations of the city, derived from the earliest cartographic sources that included sea-level references. This method assumes that the elevation of archaeological deposits can be assimilated to that of modern Rome before the major urban transformations of the 19th century, for the city centre, and those of 20th century, in the surrounding areas.

To this end, an extensive mapping campaign was undertaken in SITAR to compile all elevation points and contour lines represented in a broad range of historical sources, from the earliest in 1860 to the most recent in 1924.[13] This work, based on historical cartography, was carried out by SITAR across the entire municipal territory. For the specific area under analysis,

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[9] For example, on the Capitoline hill the 'Tarpeian Rock'.

[10] Where the thickness of the stratigraphy is less than one metre above the geological layers of tuff or pozzolana, and in the absence of archaeological deposits, it is entirely reasonable to consider these broad areas surrounding the city as having been continuously used for cereal cultivation since the medieval period, and likely dedicated to this specialised agricultural and pastoral use since the introduction of farming.

[11] For an interesting case study of remains from the Regal period, covered by several thousand years of natural and anthropogenic deposits (height: 4.50 m), see Arnoldus-Huyzemdveld, in Pisani Sartorio, Arnoldus-Huyzemdveld 1994-5, 281-2. On the stratigraphic excavation of the Villa dell'Auditorium, see Carandini et al. 1997; D'Alessio, Di Giuseppe 2005; Carandini, D'Alessio, Di Giuseppe 2006-2007.

[12] Cancellieri et al. 2019.

[13] The maps digitised in SITAR by Paolo Rosati are listed in chronological order, from oldest to newest: GMF 1849-1852; Partini 1870; Narducci 1884; IGM 1872-1894; Lanciani 1901; Teulada 1908-1909; Reina, Barbieri, Cassinis 1911; IGM 1907-1924.

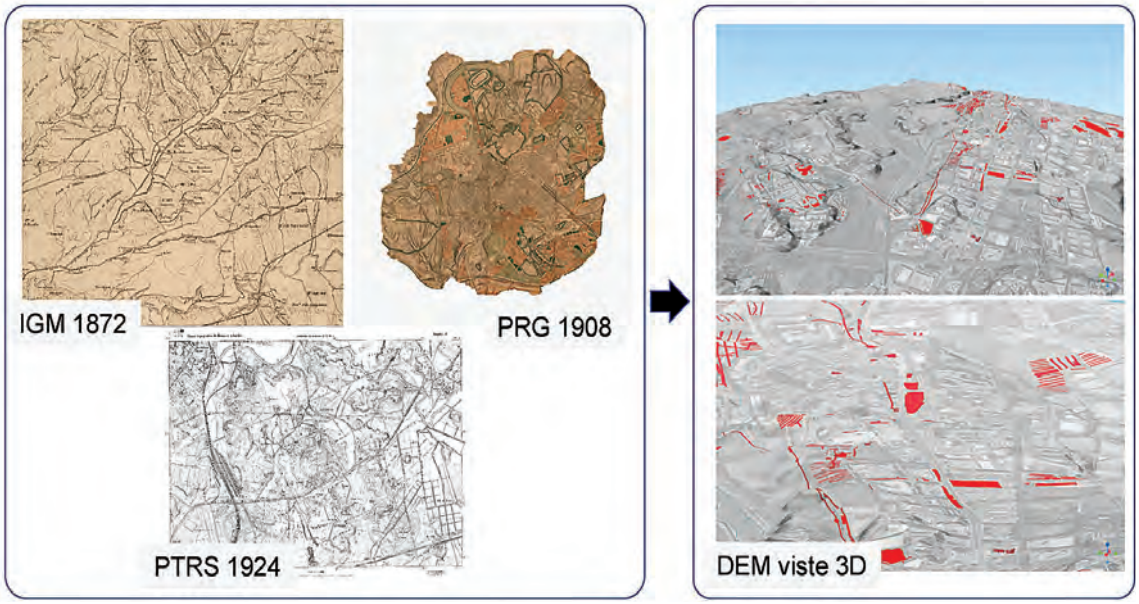

Fig. 10.1 Reconstruction of Rome's orographic landscape in the first half of the 19th century.

in particular, elevation points and one-metre contour lines were digitised from the *Piano Regolatore di Roma* (Teulada 1908-1909) for the central sector, the *Piano Topografico di Roma e Suburbio* (IGM 1924) for the adjacent peripheral areas, and maps from the *Istituto Geografico Militare* (IGM) with five-metre contour lines dated between 1872 and 1895, extending to the municipal boundaries.

Processed in GIS, the resulting historical DEM (H-DEM)[14] plays a crucial role in accurately reconstructing past orographic conditions, based on the assumption that only minimal topographic changes in small areas occurred between the end of antiquity and the 19th century in Rome. This activity constitutes one of the methodological foundations shared by both the qualitative and quantitative assessments of archaeological potential. Finally, the most recent elevation model was generated by interpolating elevation data from the 2014 *Carta Tecnica Regionale* (*CTR*) of Lazio.

This three-dimensional approach[15] was designed to overcome the limitations of traditional two-dimensional buffer-based models. Two-dimensional models as the qualitative archaeological potential, in fact, tend to flatten the complexity of Rome's archaeological stratification and do not offer answers to fundamental questions in preventive archaeology, such as the depth at which archaeological remains lie and the actual thickness of the preserved deposit.

The SITAR WebGIS will soon be equipped with a new tool designed to address precisely this aspect. The entire corpus of over 10,000 boreholes, along with the geological surface, the historical digital elevation model (H-DEM), and the current topographic surface, will be made available within the platform. This will be accompanied by a set of interactive

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[14] For an overview of H-DEM: Bewley, Crutchley, Shell 2005; Kvamme 2005; Werbrouck et al. 2011; Verhagen, Jeneson 2012. For the methodological approach, see also the British School at Rome project 'The changing landscapes of Rome's northern hinterland', which has paved the way for significant advances in the study of the relationship between geomorphology, settlements and ancient road networks in the Tiber Valley: Patterson et al. 2020.

[15] Serlorenzi et al. 2024, 288-91; Haase et al. 2025.

measurement tools and advanced querying functionalities, enabling users to explore and analyse the quantitative archaeological potential across the entire municipal territory. This development will significantly enhance both the scientific utility and the planning value of the platform (Fig. 10.1).

[P.R.]

2.2. *The qualitative archaeological potential*

In parallel, a qualitative assessment was developed through the systematic reclassification of georeferenced archaeological contexts recorded in SITAR, focusing on a selected pilot area in the eastern suburbs of Rome. The objective in this case was to understand the ancient settlement dynamics by identifying the pivotal elements that characterised the Roman-period landscape. To this end, a total of twelve archaeological context types were identified and aggregated into five functional macro-categories: road infrastructure, funerary areas, production and extraction sites, public and religious buildings, and settlement structures (Fig. 10.2).

As mentioned in the introduction, this work assessed what we define as the 'archaeological risk' through the integration of the original SITAR dataset with bibliographic sources. The classification (Fig. 10.2) drew on SITAR data together with complementary sources such as the *Lexicon Topographicum Urbis Romae* (*LTUR*), the *Carta dell'Agro Romano*,[16] and the *Bullettino della Commissione Archeologica Comunale di Roma*. The intrinsic data of the SITAR dataset makes it necessary to enrich the potential model with the above-mentioned bibliographic sources. SITAR includes the majority of unpublished archaeological excavations carried out in Rome by the Soprintendenza from the 1960s to the present day. However, the most significant findings were often published elsewhere. SITAR therefore collects comprehensible, readable and accessible analogue data from the archives of the Soprintendenza. Thus it is essential to georeference and classify information from the most extensive, informative and scholarly bibliographic sources, in order to mitigate possible gaps in the data.

The spatial distribution of these contexts was then analysed using criteria of proximity, chronology and functional coherence, producing clusters of interconnected archaeological features.[17] The study also reconstructed ancient road networks and examined their relationship to surrounding land use, funerary topography and the potential locations of *villae* and production sites. The resulting maps incorporated both known data and interpretative interpolations, the degree of reliability of which was expressed through a categorised index, following practices developed for predictive urban mapping in Germany and France.[18]

[M.S.]

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[16] *Carta stor. archeol. monument. paesist. Suburbio e Agro Romano*, 38 fg., scala 1:10.000, Comune di Roma, 1990.

[17] Maddison, Schmidt 2020.

[18] Dufaÿ, Hincker, Viand 2014; Münch 2006.

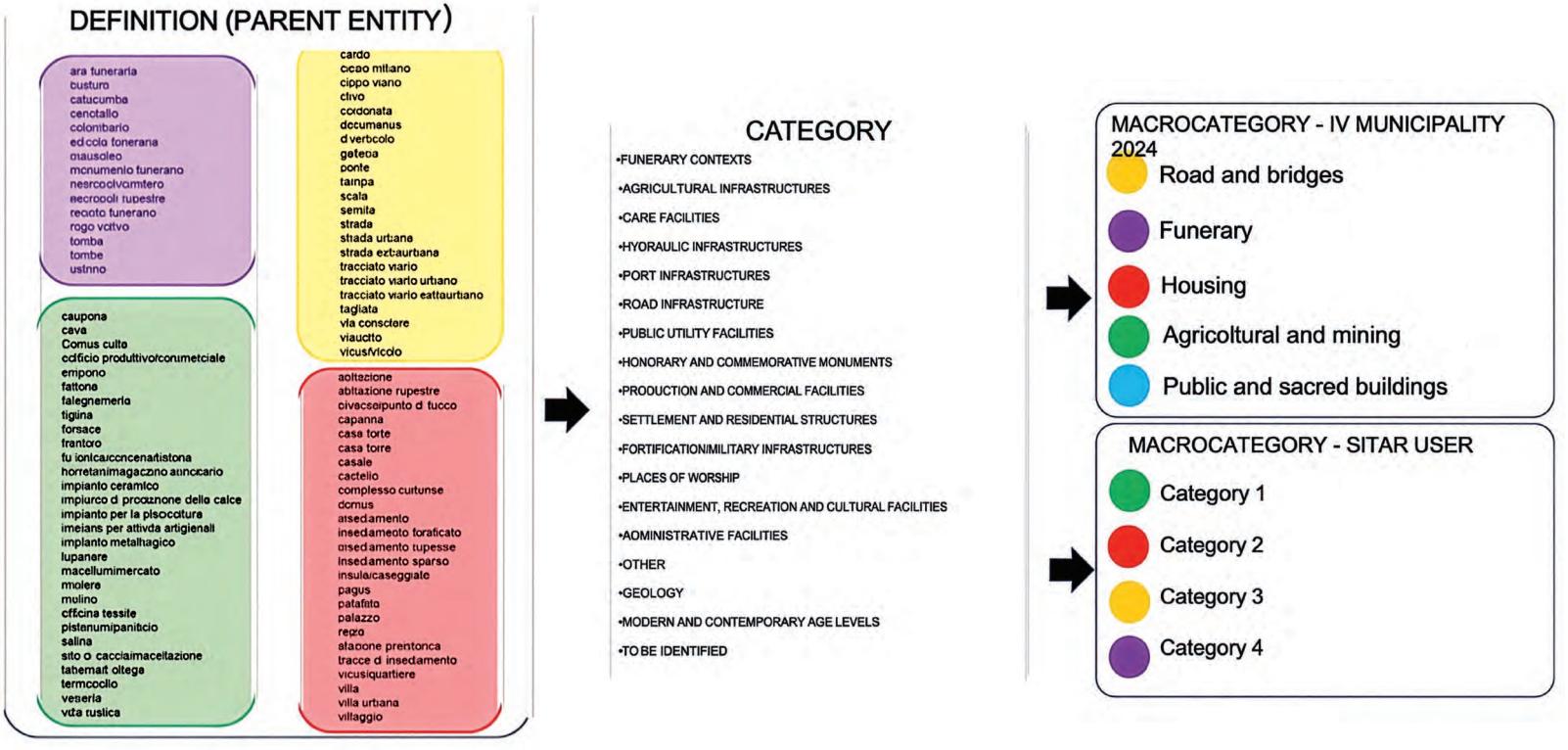

Fig. 10.2 Logical tree of definitions (in Italian/Latin) and categorisation (English) work for assessing qualitative potential.

3. The case study: the suburb of Rome

The selected case study focuses on the eastern suburbs of Rome, specifically within the administrative boundaries of Municipio IV, an area historically significant for its exceptional archaeological density along the main consular roads (Via Tiburtina, Via Nomentana, Via Collatina) and the adjacent navigable corridor of the Anio river. The presence of this infrastructure network facilitated productive, agricultural, residential and funerary activities from the Republican period through to Late Antiquity.

The area has been subject to continuous archaeological investigation, driven by large-scale urban expansion and the construction of major infrastructure, which have generated extensive new excavations in recent decades. Within the area surveyed for Municipio IV, as recorded in the SITAR platform as of October 2024, there are over 665 georeferenced Archaeological Partitions[19] and 180 interpretative contexts.[20] The methodology involved a complete revision of the SITAR 'Archaeological Partitions' as of October 2024. The data were grouped into five macro-categories – (1) road infrastructure, (2) funerary areas, (3) settlement structures (villas), (4) productive and extractive areas, and (5) public and religious buildings – and were then integrated with historical maps (*e.g. the Carta dell'Agro Romano*), geomorphological reconstructions and field survey data. The area under examination has been the focus of extensive and commendable research, as evidenced by the historical surveys,[21] by the studies recently published by Rinaldi,[22] and by the work of the official Fabrizio Santi, which enables significant progress in understanding this sector of the city.[23]

3.1. *Road network*

The spatial modelling applied category-specific criteria: For example, for roads, a three-level confidence index was applied (1 = low, 2 = medium, 3 = high), with a corresponding colour coding (1 red/2 yellow/3 green) on the maps. The model currently identifies a total of 67 km of ancient routes in this area:

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[19] In the SITAR system, the Archaeological Partition (PA) represents the analytical unit used to record each archaeological feature identified during an investigation (e.g. road segment, tomb, wall structure, room, villa, agricultural traces, quarry). Each PA is defined according to chronological and/or functional criteria:

A chronological partition refers to a phase-homogeneous set of evidence, often corresponding to a stratigraphically consistent activity or group of activities.

A functional partition is classified based on the interpreted role of the evidence within the ancient landscape (e.g. infrastructure, funerary, settlement, productive/extractive, public or religious building). For the origins of SITAR, Serlorenzi 2011; for the origin of the logical levels 'OI and PA' Serlorenzi et al. 2012, Serlorenzi et al. 2013.

[20] 'Interpretative contexts' are coherent and spatially related groupings of SITAR archaeological partitions and/or data drawn from authoritative bibliographic sources on the territory of Rome. They are aggregated based on shared chronology and function, allowing for a more comprehensive reconstruction of ancient settlement dynamics and land use patterns, as illustrated in the scheme (Fig. 10.2).

[21] Quilici, Quilici Gigli 1993; Mari 2004; Id. 2006; Id. 2008; Musco 2001; Musco 2007a; Id. 2007b; Musco et al. 2014.

[22] Rinaldi et al. 2016; Iid. 2016b

[23] Santi, Carcieri 2025; Iid forthcoming; Santi, Rubino 2025; Santi, Cerulli, Giatti 2022; Santi et al. 2023; Iid. forthcoming a; Iid. forthcoming b.

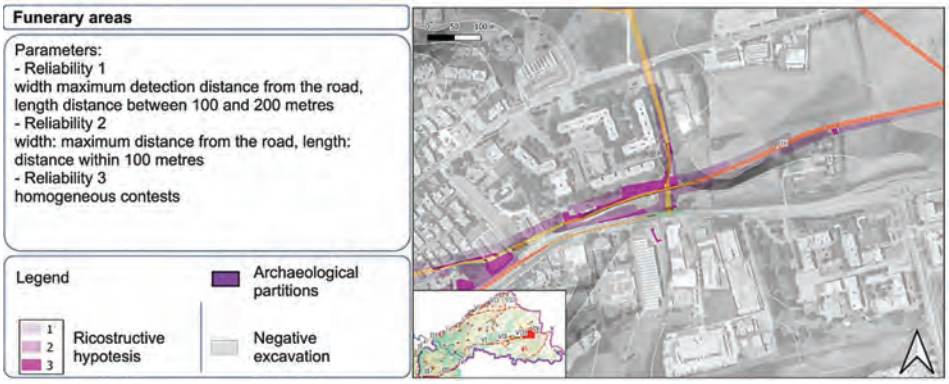

Fig. 10.3 Summary of funerary sites analysed in Rome's Municipio IV.

– 34.5 km hypothetical;
– 9 km partially supported;
– 23.5 km confirmed by excavations.

The roads are also classified with their name, if known, and their importance. The importance is classified in:

– 1 = primary, consular road (e.g. Tiburtina, Nomentana, Casilina);
– 2 = secondary, road between two consular roads (e.g. a road wich connected the Tiburtina and Nomentana)
– 3 = local road (e.g. a road wich began at a secondary road and finished in a Villa)

3.2. *The funerary areas*

The funerary areas were mapped based on the georeferenced outlines of the archaeological remains, using three longitudinal roadside buffers (length):

1. The excavated area of the burial site (*certain presence of tombs*);
2. A 100 m buffer to the left and right of the excavated area (*high probability of additional tombs*);
3. An additional 100 m buffer extending from the edges of buffer 2 (*lower probability of further tombs*).[24]

The second dimension – the transverse distance from the roadside 'in agro' (depth) – was defined according to the maximum recorded distance between the road and the outer edge of each excavated necropolis. For this specific category, an additional methodological refinement was undertaken by also considering investigations with negative results. Incorporating this information made it possible to exclude certain areas from the buffers, thereby producing a hypothesis more closely aligned with the available data (Fig. 10.3).

[24] The 100-metre buffer along the primary roads was defined on the basis of the maximum documented extension of tombs and mausolea along the main Roman road axes. An additional buffer of 100 metres was then added to account for the possibility that these funerary clusters may have extended further beyond the currently excavated or known areas. This tiered approach ensures that potentially larger or partially undocumented necropoleis are taken into consideration in predictive assessments.

The classification of the necropoleis is based on their proximity to roads[25] (1 = if the burials are near to a primary road, 2 = if they are near a secondary road, 3 = if they are near a local road). The database also indicates the size of the area in m².

3.3 *Villae*

The settlement clusters were based on the excavated and documented remains of the *villae*. These were classified into type A (up to 5,660 m²), type B (5,660 - 10,300 m²), type C (10,300 - 45,000 m²), and type D (100,000 - 145,000 m²) according to the area actually excavated and known, with statistics derived from all *villae* recorded in SITAR (Fig. 10.4).[26]

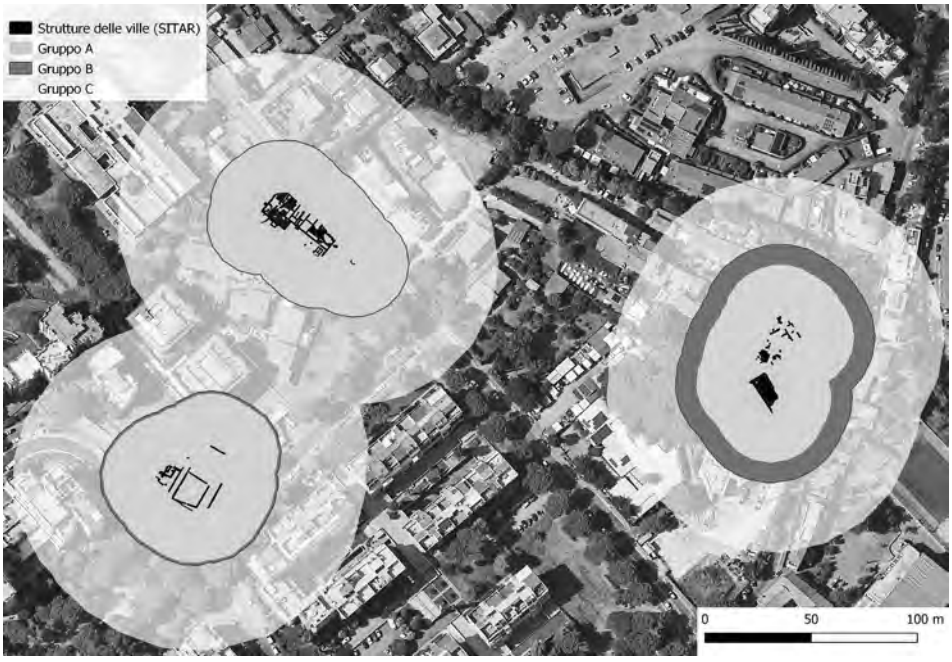

Fig. 10.4 Quality potential buffers around the villas using the SITAR system.

3.4 *Production and extraction areas*

The areas of production and extraction were identified and interpreted in relation to the geomorphological characteristics of the area and evidence of agricultural traces. Through geomorphological analysis, it was possible to calculate zones of sun exposure, which in turn made it possible to hypothesise plots of land suitable for crops of the same type and with similar light requirements.[27] As for quarry exploitation systems, the orographic model of the

[25] Giatti, forthcoming.

[26] Rosati et al. forthcoming.

[27] To further refine the assessment of cultivation potential, a solar radiation analysis was performed on the entire area using the historical digital elevation model (H-DEM). This allowed for the calculation

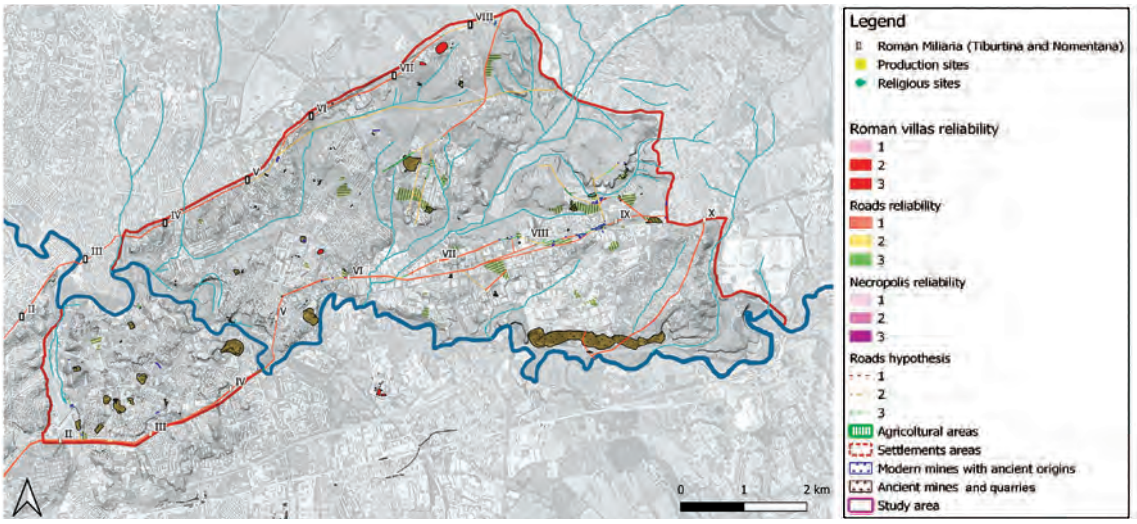

Fig. 10.5 Quality potential general map of the sample area, Rome, IV Municipio, North side.

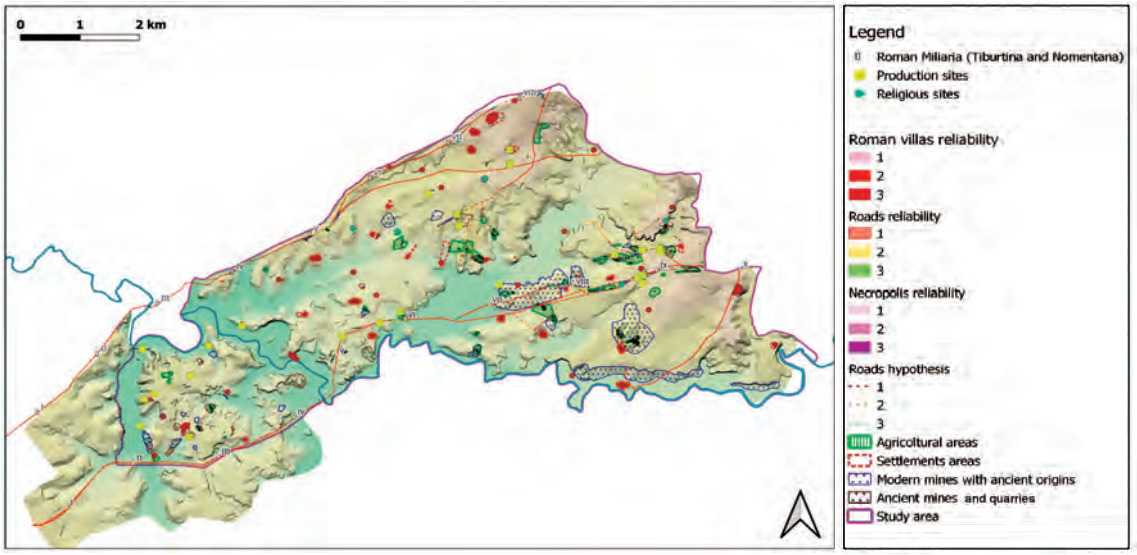

Fig. 10.6 Merged qualitative and quantitative potential models. The qualitative model is the vector characterization specified in the legend, the quantitative is the physical geographical background obtained from the 1872 and 1924 contour lines digitised.

territory used for the purposes of the Quantitative Archaeological Potential allowed for the mapping of ancient and modern quarries in SITAR, supplemented by those documented for the contemporary period in the historical maps of 1924 and 1872. The juxtaposition of data from different periods made it possible to visualise quarries that experienced continuous exploitation,

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of the potential insolation in terms of the number of days of sunlight each terrain cell could receive throughout the year. The resulting map highlights areas with greater solar exposure, which are more favourable for ancient agricultural activities, particularly in hilly or marginal zones.

as well as those whose extraction activities only began in more recent times. Negative excavation results further refined the model by helping to reduce false positives.

In conclusion, the eastern suburb of Municipio IV stands as an exemplary case demonstrating how digital cartography, geomorphological analysis and structured archaeological datasets can be combined to reconstruct ancient, inhabited landscapes, balancing interpretative rigour with the inherent uncertainties of archaeology (Fig. 10.5).[28]

4. Results

The implementation of the integrated methodological framework described above has produced a series of spatialised and interpretable results that significantly enhance our understanding of the archaeological potential of Rome's eastern suburbs.

1. Cartographic reconstruction of ancient infrastructure.
   The interpolation and reclassification of data within SITAR enabled the identification of 67 km of ancient road axes in the study area. Of these, 23.5 km have been confirmed by stratigraphic documentation, 9 km are supported by partial archaeological evidence (such as architectural alignments or isolated pavement remains), and 34.5 km have been hypothesised based on topographic logic, historical maps and contextual archaeological indicators.
2. Functional zoning and typological density.
   Through the spatial aggregation of 665 partitions and 180 interpretative contexts from SITAR, five functional macrozones were modelled:

– A colour-coded reliability scale (green = high, yellow = medium, red = low) was used to rank the interpretive interpolations. Overall, 42% of the reconstructed routes and sections were assigned high reliability, 31% medium and 27% low. This gradient reflects both the uneven quality of the available data and the conservative approach adopted to avoid over-interpreting partial evidence.
– Funerary agglomerations were mainly found in marginal areas between road networks and slope edges, often aligned perpendicularly to ancient routes.
– The data on burial partitions reveal an expected result: nearly the entire sample is located in close proximity to major roads. After categorising the evidence by size, only two excavated necropoleis in the sample area exceed 100 m^2, 67 burial clusters are smaller than 100 m^2, and 42 consist of single tombs. A consistent correlation emerges between the size of the burial site and its proximity to major roads.
– Settlement structures, including 16 *villae rusticae*, showed a marked concentration on the north-facing slopes of the hillsides, at average elevations between 75 and 110 m above sea level.
– Production and extraction areas were concentrated along the alluvial plain of the Anio and its tributary streams, with clear evidence of quarries and possible lime kilns.[29]
– Public and religious buildings are less frequent; however, at Settecamini an Imperial-period *mansio* is attested.[30]

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[28] Münch 2006; Haase et al. 2025
[29] di Gennaro et al. 2015.
[30] de Franceschini 2005.

3. Statistical and topological indicators
   Thanks to the rigorous methodological framework provided by the integrated analysis of SITAR data, the quantitative modelling has produced several noteworthy indicators relating to ancient settlement patterns:

– the average distance between known *villae* is currently 578 m, with a modal range between 400 and 600 m;
– the average distance from *villae* to the nearest road is 270 m;
– the average distance from the roadside to the boundary of funerary complexes towards the countryside ranges from 190 to 250 m;
– the density of archaeological partitions per km² in Municipality IV was calculated at 43.2, significantly higher than the average value for other suburban areas (approximately 27.8 per km²);[31]
– the temporal analysis indicates a peak of activity between the Late Republican and Early Imperial periods (second-first century BCE), followed by a marked decline in newly founded rural sites after the third century CE.

The integration of predictive modelling with stratified archaeological data has therefore enabled a robust and reproducible reconstruction of the settlement fabric of Rome's eastern suburbium. In particular, the combined use of geological bench stratigraphy, historical cartography and functional reclassification has produced a multidimensional reading of the landscape capable of informing future fieldwork, planning processes and heritage management strategies (Fig. 10.6).[32]

[M.S., P.R.]

5. Conclusions

From a heritage management perspective, the ability to assess archaeological potential in advance using a graded confidence system allows for a more proportionate risk assessment in planning processes, reducing both delays and costs associated with urban development. From a scientific standpoint, the archaeological record of Municipio IV provides a diachronic framework within which future excavations can be contextualised more precisely. Ultimately, this work illustrates how digital infrastructures such as SITAR, when critically managed, can become powerful research tools rather than mere data repositories. The case study presented here marks a step towards predictive modelling of ancient urban structures, aiming to deepen our understanding of settlement dynamics.

This study has explored an innovative methodology for assessing archaeological potential in the suburban areas of Rome, focusing on the eastern sector of Municipio IV. The distinction between quantitative and qualitative potential, combined with the hierarchical classification of archaeological evidence and the use of confidence indices, proved effective in identifying both well-documented features and plausible, yet still hypothetical, areas of interest. Such an integrated approach not only enhances our understanding of the historical occupation and transformation of Rome's suburbs from the mid-Republican period through Late Antiquity but

[31] di Gennaro et al. 2015.
[32] Ciampi et al. 2025.

also offers a replicable framework for other highly stratified urban contexts. Moreover, the case study demonstrates how technological platforms like SITAR, when dynamically updated and coupled with interdisciplinary analyses, can serve as critical tools for archaeological research, urban planning and heritage protection alike. In an increasingly pressurised metropolitan environment such as Rome, such models can help mitigate risks, guide future investigations and promote a more sustainable dialogue between development and conservation.

In conclusion, this research confirms the need to reconceive suburban archaeology not as a marginal appendix to the city centre, but as a palimpsest of long-term human interaction with the landscape – one that merits the same methodological rigour, scholarly attention and institutional commitment.

[M.S.]

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Chapter 11

Archaeological evidence for agricultural production in the suburb of Rome

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> 'For there to be evidence, there must be a preliminary selection within the infinite field of signs that reality is virtually capable of carrying. What will be considered evidence does not present itself as such with indisputable clarity, but following a twofold movement of selection and naming.'
>
> (P. Bayard, *Sherlock Holmes was wrong: Reopening the case of the Hound of the Baskervilles*, Eng. ed. 2008)

Abstract
This paper aims to highlight the types of markers that can be expected during archaeological surveys or excavations in the suburbs of Rome, which are essential for reconstructing both the ancient landscape and patterns of production. Among the various forms of evidence – such as artifacts, structures, stratigraphic layers, and organic remains – particular attention is given to those traces linked to settlement activity, which are often more elusive yet crucial for a fuller understanding of the productive dynamics of the Roman suburban landscape.

Keywords
Rome; suburbs; agricultural production; archaeological markers

Since archaeology is a science, an archaeological excavation can be compared to a scientific experiment: you can formulate hypotheses, but you don't really know where they might lead you or what you might find. However, unlike a scientific experiment, each excavation is unique and cannot be replicated. Archaeologists are responsible not only for the most accurate documentation possible of their findings, but also for interpreting these findings. Archaeology is often likened to an investigation, sometimes invoking the deductive methods of Sherlock Holmes – the most famous fictional detective – in the search for clues, any trace, object, or structure that help to reconstruct former life ways and environmental settings.

It is often said that one finds what one is looking for. I contend, however, that in most cases archaeologists find what they already know and are capable of recognizing, whereas identifying previously unobserved traces or structures is significantly more challenging. The ability to recognize a particular indicator largely depends on the archaeologist's experience and prior expertise. Unfamiliar traces or structures that have never been observed before can be difficult to interpret, and their proper understanding requires careful consideration of the cultural and historical context in which they are found.[1]

Archaeological interpretation is deeply grounded in shared knowledge and experience. Thus, when a little-known or unusual feature is first identified – particularly its function – it is often subsequently recognized at other sites as well, creating a cascading effect: what was once unidentifiable becomes widely recognized. A new discovery can establish a novel interpretive framework that facilitates the recognition of similar indicators elsewhere, sometimes enabling the reinterpretation of previously excavated data.

This paper aims to highlight what one can expect to find during archaeological surveys or excavations in the suburban areas near Rome, and which indicators – clues – we should seek in order to understand the ancient landscape and, most importantly, its use by humans. To begin, it is necessary to consider the geomorphology of Rome, which lies at the confluence of two volcanic systems that have significantly shaped the development of the environment. As a result, this landscape can be characterized by volcanic plateaus, undulating terrain crossed by streams and rivers, and valleys. Although modern urbanization has often deeply altered the ancient appearance, any reconstruction must make reference to this geomorphological framework.

Additionally, it is important to reflect on the motivations behind archaeological excavations in the suburban areas, which, unfortunately, are rarely driven by scientific inquiry. More often, they arise from accidental discoveries during construction activity or, in more favourable cases, they constitute preventive research conducted before the construction of buildings or the development of infrastructure, such as those for the Metro C line.

Despite the apparent simplicity of a suburban excavation – especially when compared to the stratigraphic complexity of urban sites – interpreting what has been found (or even *not* found) is not always straightforward. Finds in suburban contexts, including objects, structures, soil layers, organic remains, and traces, can generally be categorized into three broad groups: infrastructure, settlements, and funerary evidence.

Infrastructure includes roads, paths, and other routes of communication, as well as elements essential for water management, such as wells, aqueducts, tunnels, cisterns, sewers, and canals. These features are generally easier to identify. Likewise, structural remains of buildings and tombs – whether constructed in masonry or as simple inhumations – are often readily apparent. However, this paper focuses on those settlement-related traces that are more elusive, yet crucial for reconstructing the productive activities of the Roman

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[1] Some of the topics discussed in this paper were first presented at a conference held at the École française de Rome on March 4, 2013, as part of the seminar *Rome et les productions alimentaires du suburbium*. This text is a revised version of the paper presented in Pisa on June 28, 2024, during the workshop organized by the IN-ROME project on *La topografia sociale di Roma e del suo Suburbio. Nuovi approcci*. I would like to express my sincere gratitude to Barbara Borg, who asked me to publish this paper, and to the anonymous peer reviewers, whose thoughtful comments and constructive suggestions have significantly contributed to refining and strengthening the final version.

suburb.[2] Furthermore, considering the close relationship between the suburban area and the expansion of the urbanized city, the term 'suburb' in this context will refer to the late Republican and Imperial periods, specifically to an area located at most 5-6 miles from the city. This distance corresponds to the span that could be covered in a single day to reach Rome's markets and return.[3]

The first analyses of the productive activities of the suburb date back to 1985, with the Roman edition of the exhibition *Misurare la terra*. During this event, the model based on the studies published by J.H. von Thünen in 1826 – concerning the spatial distribution of agricultural crops and their cultivation systems in relation to a town – was revisited.[4]

According to this model, which is simple but remains still valid and effective, cultivating perishable products such as fruit, flowers or vegetables is only profitable in the immediate vicinity of urban markets and consumption centres, and therefore in the inner suburban belt. The higher value of land in this area, due to its proximity to the city, necessitates intensive farming, making use of the greater availability of labour and fertilizer. Farther from the city, however, less perishable crops – such as vines, olive trees, cereals, or hay – or animal husbandry are more suitable. It is clear that the production of the suburb was largely intended for the food markets of Rome, as well as for the sustenance of those living in the suburb, and also for the landowner's family, who resided in the urban area. That same publication also presented distribution maps of diagnostic features, such as wine presses and *ollae perforatae*.[5]

Let us begin by examining whether we can recognize clues via the archaeological indicators that testify to the production activities of the suburb. (Table 1)

AGRICOLTURAL PRODUCTION	ARCHAEOLOGICAL EVIDENCE
milk and cheese	sheepfolds, stables
meat	sheepfolds, pigsties, stables, chicken coops, manure heaps
	archaeozoological finds
wheat/cereals	mills
	granaries
	paleobotanical finds

[2] I would like to emphasize that this paper is not the appropriate forum to engage in the broad debate on the formation of villas – which form the central core of every *fundus* – and on the distinction between villas and farms, a topic that has been extensively discussed and is supported by a vast body of reference literature.

[3] There is a vast bibliography and a range of definitions for the suburbs of Rome, see Volpe 2010 and the introduction to Pergola, Santangeli Valenzani, Volpe 2003.

[4] Carandini 1985. The von Thünen model explains agricultural land use patterns, suggesting that different types of farming will be located in concentric rings around a central market. The cost of transporting different farm products to the central market determined the agricultural use of the land around the city. The most productive activities were located closest to the market on more expensive land, and less productive activities were further away on cheaper land.

[5] *Misurare la terra* 1985, 113 (*torcularia*), 114 (*torcularia* with millstone), 132 (kilns), 153 (*ollae perforatae*).

wine	vineyards trenches
	wine presses
	wine cells
	dolia
	paleobotanical finds
oil	oil presses
	oil extraction collection vats
fruit	pits for trees
	paleobotanical finds
fish	pools, fish ponds
vegetables, greens, legumes	traces of cultivation
	paleobotanical finds

Table 1. Correspondence table between foods and archaeological markers of their agricultural production.

Consistent with the ancient literary sources about agricultural production,[6] the numerous archaeological traces range from the more easily identifiable markers, such as *torcularia* (wine or oil presses) or mills, to those that are harder to detect and recognize, such as trenches dug into the ground to accommodate crops. Sometimes, markers like *dolia* (large storage jars) suggest the storage of foodstuffs that could include wine, oil, grain, or other products.[7] Despite the often-fragmentary preservation of structures or the limited extent of excavations, most of the villas identified in the suburbs of Rome display at least one or more indicators of agricultural activity. This means that, despite the increasing emphasis on the residential function of suburban villas during the Imperial period, the landowners did not abandon agricultural exploitation. On the contrary, the cultivation of land for food production (both for self-consumption and for the market) remained the primary source of economic income.[8]

Wheat and cereals

Palaeobotanical research, focused on the analysis of ancient plant remains, such as seeds, pollen, wood, and other plant traces, is a key marker of agricultural production. However, such evidence is unfortunately rare in archaeological excavations, and it sometimes fails to provide specific conclusions.[9]

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[6] A general overview of the issues related to agriculture in the Roman period is in Marcone 1997.

[7] For a similar approach Quilici, Quilici Gigli 2009.

[8] For instance, of the 100 villas catalogued by De Franceschini 2005, as many as 74 feature at least one type of production facility.

[9] The analyses carried out on the soils in the vineyard trenches of Centocelle, for example, did not yield traces of vine plants, but sometimes only those of weeds, testifying to the cultivation of gardens, cereals, and legumes (Gioia, Volpe 2004, 355, 410).

Only one structure, dating to the fourth century CE and discovered during the American excavations on the Via Gabina (in the eastern suburb), has been suggested to have possibly functioned as a *horreum*, or granary. The structure measures 70 m in length.[10] However, the archaeologists themselves remain uncertain about this identification and also consider the possibility that it might have been a stable, although there is no structural evidence to support this theory. The presence of modest inhumation burials, dated through 14C to as late as the eighth century CE and found adjacent to the building, complicates its interpretation. The evidence suggests that the site continued to be frequented until the early Middle Ages, although the nature of its use remains unknown. The functional identification of a building as a granary is, therefore, particularly uncertain, especially in the surroundings of Rome.

To obtain flour for bread, it is necessary to grind cereal grains. Therefore, the best indicator of wheat or other cereal (spelt, barley) cultivation in a suburban archaeological site is the presence of millstones, very hard stones stacked on top of each other, through which the cereals were passed. However, such attestations are not numerous in the suburbium of Rome.[11] Since cereals were an extensive and relatively non-perishable crop, it is likely that, except for the earlier periods, they were cultivated primarily for self-consumption. The land near Rome was probably reserved for more profitable crops.

This is not the appropriate place to discuss the grain needs of the population of Rome, nor the grain dole and public food distributions, which are unrelated to suburban productions and instead linked to massive imports that were stored for distribution. The fact that it was certainly not the wheat from the surroundings of Rome that fed its population is demonstrated by the early imports of wheat in the last two centuries of the Republic from Sicily, Sardinia, and Africa, as well as by the specific *leges frumentariae*.

It is also possible that on estates where the wheat harvest exceeded local needs, the surplus could have been directed to another property equipped with millstones, that served multiple production areas – as documented in the Middle Ages – or brought directly to the markets prior to milling. Milling, moreover, could also have taken place in large communal facilities, such as the one identified near Porta Maggiore, almost certainly connected to the property of the famous entrepreneur Eurysaces, who depicted all the stages of bread-making on the frieze of his monumental tomb.[12]

Breeding

In the Roman suburbium, no structures have yet been definitively identified as stables, sheepfolds, or pigsties, built with non-perishable materials, let alone of a scale that would suggest large-scale livestock farming.[13]

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[10] Widrig 2013.

[11] See the distribution map already mentioned in n. 5.

[12] Coates-Stephens 2005-2006. In the inscription over his tomb (*CIL* VI, 1958) Eurysaces defines himself as baker and contractor (Corrado, Prieto, Goldman 2023).

[13] Such as the structure identified as a pigsty in the Villa of Settefinestre. De Franceschini 2005, 319, suggests that structures with pillars inside, but without *dolia*, were warehouses that could have been used as stables, barns, or similar constructions.

Archaeozoological analyses confirm the consumption of meat, primarily pork (about 60%) and ovicaprine meat (about 15%),[14] but it is likely, at least for pigs, that they were sourced from large farms located in Cisalpine Gaul, and, in later periods, from Apulia and Bruttium.[15] As in the agricultural economy up to the 19th century, livestock farming on estates was typically limited to one or two animals, kept in wooden enclosures or other areas whose function is not clearly evident from archaeological excavation.

Sheep and goats, on the other hand, have always been part of the symbolic landscape of the Roman Campagna, which, however, refers to a city that only existed from the Middle Ages until the early 20th century, and was relatively small in size.

It is worth noting that a flock of 50 sheep requires approximately five hectares of open pasture, in addition to other land dedicated to crops, in order to provide sufficient fodder and hay for the winter months.[16] In the Centocelle area, located about four miles from Rome, it has been estimated that during the late Republican and Imperial periods, the estates would have extended over a maximum of 18 to 20 hectares.[17] The economy of the Roman villas was consistently oriented toward self-sufficiency of agricultural estates. These properties therefore had to support not only arable farming but also the cultivation of fruit and, above all, vegetables and fresh greens – crops that needed protection from animals. Given the relatively modest size of the properties near the city, it would not have been feasible to raise more than a very limited number of animals, sufficient only to supply fresh milk and cheese. Larger flocks would have to be kept further from the actual suburban area, where spoilage and transportation of animal products to the city did not present significant logistical challenges.

One potential indicator of the combined presence of livestock and cultivation is certainly the manure pit, or compost heap, with some examples beginning to be identified in the southern suburbs.[18] These are fairly large rectangular spaces, often carved into the tuff, usually lacking one of the short sides, with the floor sloping inward. The risk, of course, is that they could be confused with basins for other purposes; however, a useful indicator could be their relative distance from the inhabited area of the *fundus*. It is perhaps not a coincidence that the few examples identified in the suburbs of Rome are all found quite far from the city.

Archaeozoological analyses show that evidence for bovine consumption is not abundant. Cattle were expensive and valuable animals, and their use in the suburbs of Rome was likely limited primarily to draught periods, given the lack of extensive pastureland. Nevertheless, every production unit would have surely required some form of transport – a cart or small

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[14] De Grossi Mazzorin 2008 and primarily De Grossi Mazzorin, Minniti 2010.

[15] Belli Pasqua 1995.

[16] One thousand square metres of pasture per sheep is the average amount currently recommended: www.prospecierara.ch/it/animali/tiergattungen/pecore/allevare-e-custodire-pecore.html (January 2025). I am grateful to the anonymous reader who suggested referring to the data provided by the EU: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Agrienvironmental_indicator__livestock_patterns#Livestock_density_at_regional_level_in_2020 (even if they refer to a modern environment).

[17] The size of the suburban land properties naturally varied according to the historical period and, above all, their proximity to the city.

[18] See the examples cited by Quilici Gigli 2016, although in many cases the identification is not based on fully reliable data. The large structure found in the southern suburb at Torrino, built in *opus quadratum* of tuff blocks (Buccellato, Coletti, Palombella 2015, fig. 4), might nevertheless appear too elaborate and costly to be identified as a *sterquilinium*.

wagon – for moving goods, pulled by oxen, donkeys, or horses. These animals would have certainly required shelter, but their meat probably never reached the markets of Rome.

Documenting poultry farming is equally challenging, as no structures identifiable as chicken coops have been found. These coops, although still widespread today, were probably modest in scale and often built with perishable or temporary materials. Archaeozoological analyses conducted on the fill layers of a well on the Centocelle plateau revealed the presence of chicken remains at various stages of development, along with tableware ceramics. However, this deposit likely consisted of material used in ritual practices.[19]

Literary sources confirm that fish products were an integral part of the Roman diet and were consumed by all social classes. Yet, in the contexts where archaeozoological remains have been studied, fish are underrepresented. Freshwater fish, in particular, were commonly consumed, sourced from rivers (primarily the Tiber) and lakes near Rome. Some villas featured fishponds, such as the one that gave its name to the Villa della Piscina on the Centocelle plateau. This fishpond consisted of a large basin, 50 m in length, located at the edge of the garden and dated to the second half of the first century BCE. While primarily serving a decorative function within the villa's green area, the structure included holes and channels on the walls of both the basin and the central fountain, specifically created for fish farming.[20] Such facilities were rare in the suburban landscape, and it remains difficult to determine whether they supplied food to the citizens of Rome, or solely to the inhabitants of the villa itself.

Oil and wine

In the first century BCE, Varro considered the cultivation of the olive tree to be extremely useful, and not only for oil production.[21] Cato, however, regarded olive oil as very valuable and expensive, recommending its use in moderation.[22] More than two centuries later, Apicius made olive oil an essential ingredient in many of his recipes. Between these two references, there was a significant increase in large-scale imports of olive oil, initially from Apulia, and subsequently from Africa and Spain. The volcanic soils around Rome were in fact only moderately suitable for olive cultivation, which was nevertheless practiced – at least during the Republican period – as evidenced by the olive press (*torcular*) found in the villa at the Auditorium (Fig. 11.1).[23]

The most significant archaeological marker of olive cultivation and oil production is, of course, the press itself. As early as the 1985 publication *Misurare la terra*, presses appear to have been relatively widespread, although distinguishing olive presses from wine presses it is

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[19] De Grossi Mazzorin 2004.

[20] Coletti, Pacetti 2007, 320-31; at 331 they provide additional examples, including the 50 m-long pool found in the villa at Quarto Cappello del Prete (near the Via Prenestina), which may also have functioned as a fishpond. Other fishponds were found along the Via Portuense and at Grottarossa on the Via Flaminia. Moreover, a fish farming installation has been documented in the excavation beneath the National Gallery of Modern Art at Valle Giulia (see Boldrighini 2002).

[21] Varro *rust*. 1.55

[22] Cato *agr*. 58 refers specifically to the monthly ration of oil (about half a liter) allocated to the slaves' diet.

[23] Carandini, D'Alessio, Di Giuseppe 2006, 107-108.

Fig. 11.1 Auditorium Villa, area of the *torcular.*

not always straightforward, and in some cases both types are found within the same complex. The presence of a production facility with a press is inferred from the discovery of certain parts of it, such as the *arae* (which could have had channels carved directly into the tuff or floor, or into a large stone, to drain the liquid), the tanks, or the holes for the placement of the wooden beams of the *torcular*, usually associated with *cocciopesto* or *opus spicatum* flooring. The presence of tanks (*lacus*) used for collecting or decanting the liquid further also indicates a process that could involve wine or oil production. At present remains of *molae olearіae* appear to have been found only in villas located quite far from the city.[24]

As for wine production, a range of structures may indicate its presence: from traces of vineyard cultivation to areas for crushing, pressing, harvesting, and storage. In smaller facilities, grape crushing was likely carried out directly within the vineyard. Larger estates with greater production capacity or those not intended solely for self-consumption required designated spaces and purpose-built structures for pressing, reflecting a more significant investment in infrastructure.[25]

During the 1980 excavation conducted with Riccardo Santangeli Valenzani at the intersection of Via Laurentina and the G.R.A., in the locality known as Tor Pagnotta, we uncovered a substantial number of parallel trenches dug into the tuff. At the time (and sometimes, unfortunately, still today), these features were commonly referred to as 'canals' and were mostly interpreted as part of an undefined 'drainage system'. Following the insights from Emilio Sereni's seminal *Storia del paesaggio agrario italiano*, these parallel trenches were instead identified as evidence of vineyard installation.[26] Some lateral expansions, also cut into the tuff and generally rectangular in shape, were interpreted as recesses for trees, suggesting a planting system based on *vitis arbustiva* or *maritata*, in which vines were trained to grow along tree supports. Ancient literary sources (Cato and later Pliny and Columella[27]) describe the planting of vines in trenches (*sulci*), dug into the ground to a depth of at least 80-90 cm, necessary for proper root growth. In areas with shallow topsoil, such as the Roman suburbs, these trenches were cut directly into the tuff, and their traces remain visible today as evidence of the installation. The common features of many of these long, regular, parallel trench systems – typical of row cultivation – support their identification as vineyard installations. As Cato himself observed, viticulture was considered the most profitable form of agricultural enterprise in his time.

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[24] See the villa 'della Standa' or that of the *Volusii* at Fiano Romano (more than 30 km from Rome): De Franceschini 2005, nos. 98-9.

[25] For a general overview of viticulture and winemaking see Dodd, Van Limbergen 2024.

[26] Sereni 1979.

[27] Cato *agr.* 32 and 40; Colvm. 3 and 13; Id. *arb*. 4.3. Plin. *nat.* 17.171.

All the systems discovered so far, for which dating has been proposed, can be traced back to the Republican period. The relative distance between the trenches demonstrates the practice of mixed cultivation, with wheat, vegetables, or legumes planted between rows of vines. This method is well attested by ancient sources and is characteristic of the subsistence economy typical of small agricultural enterprises. When practiced on larger areas, such as those of the suburban estates, this system not only met the needs of the farm, its personnel, and the owner's family, but also helped supply the nearby urban market.

The use of living supports (such as *vitis arbustiva* or *maritata*) allowed for either the provision of the necessary wood for farm management (in the case of using elms or poplars, which, with their sparse foliage, did not block light from reaching the vines) or fruit, in the case of fruit trees used instead.[28]

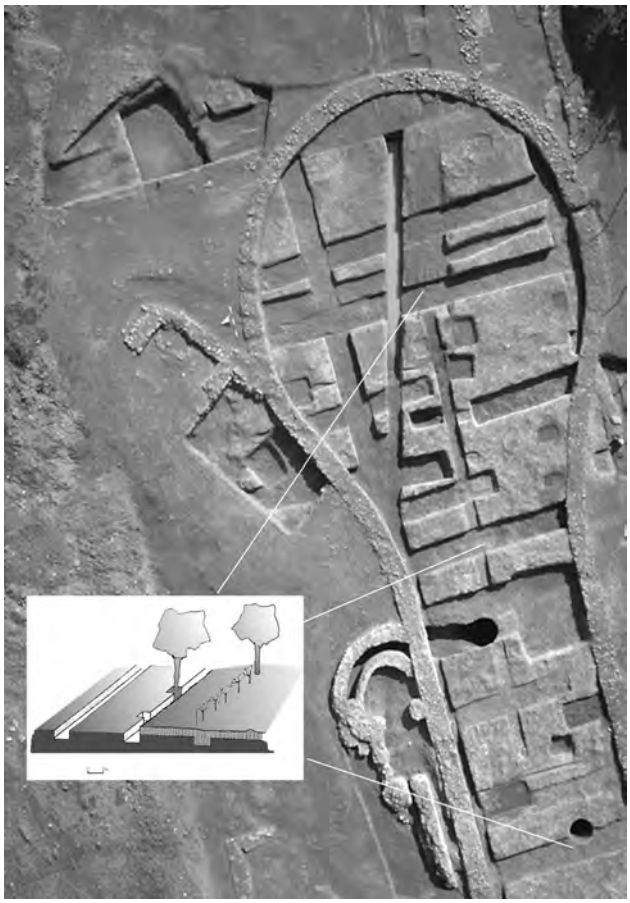

Fig. 11.2 Centocelle, area S.5, vineyard planting trenches and schematic reconstruction.

In some extensively investigated areas, multiple agricultural systems have been identified within a single site, where the scale of the excavated surface has enabled a more comprehensive understanding of their characteristics and extent. For instance, during the preliminary excavations for the S.D.O. project, as many as ten trench cultivation systems – interpreted as vineyard installations – were identified on the Centocelle plateau. When aggregating the reconstructed surface areas for each system, and acknowledging that this figure likely underestimates the actual extent, it can be observed that, of the more than 50 hectares investigated, at least 5 hectares – approximately one-tenth – were occupied by vineyards during the Republican period.

At the *Suburbium II* conference, I also advanced the hypothesis that, given the scarcity of amphorae (containers typically associated with imported goods) in the Republican-period

[28] Braconi 2012.

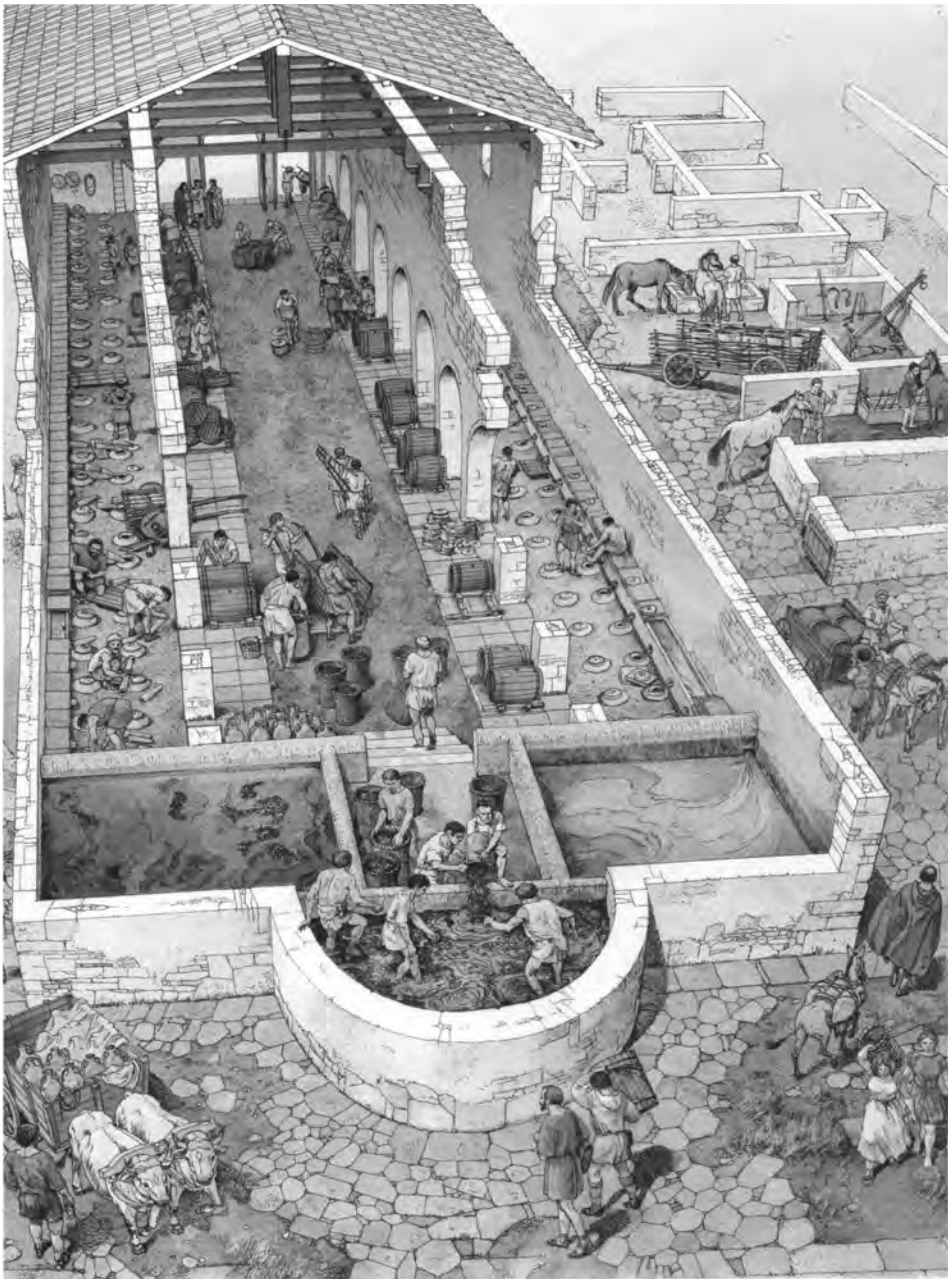

Fig. 11.3 Tor Vergata, villa of Passolombardo, reconstructive drawing of the *cella vinaria.*

archaeological contexts of Rome, wine consumption among the urban (and suburban) population of Rome might have been ensured by local suburban vineyards, located at a short distance from the markets; wine was probably transported by carts or pack animals, using skins or

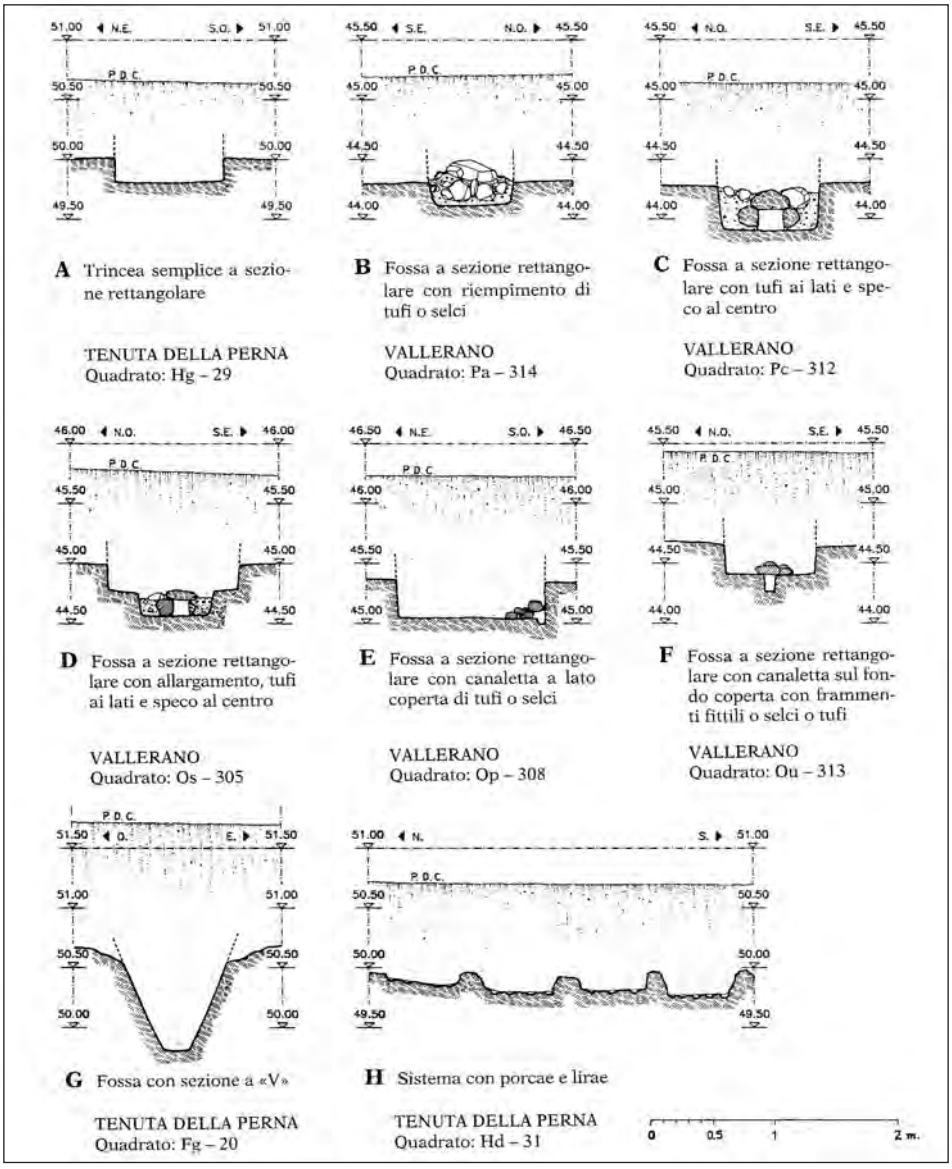

Fig. 11.4 Cultivation and drainage trenches in the southern suburbs of Rome.

leather bags, or, though less likely in this period, wooden barrels.[29] With the increase in wine imports during the Imperial period, these Republican vineyards seem to have been abandoned, either replaced by more convenient cultivations or covered by buildings and expansion of the residential area of the villas.

[29] Volpe 2009.

By the fourth century CE, evidence of renewed transformations emerges, attested both by the installation of new *dolia* in some villas and by elements such as the extraordinary wine cellar at Tor Vergata, perfectly matching the description of Palladius, recognized by Andreina Ricci.[30] In this case, it was the presence of the *dolia* in this space that enabled the functional identification of the large apsidal room, which featured an almost basilica-like floor plan (Fig. 11.3).

Fruits and vegetables

Evidence for fruit tree cultivation can be inferred only from holes dug into the ground, and even then, only if their traces have been preserved in the tuff. However, even when such features have been discovered and properly identified, palaeobotanical remains that could determine the species are rarely recovered.[31] Furthermore, they are never found in arrangements or concentrations sufficient to suggest the existence of an intensive orchard. More commonly, these holes appear in association with vineyard trenches; in such cases, they are typically interpreted as planting pits for trees that provide minimal shade – such as elms or poplars – so as not to interfere with the sunlight necessary for grape maturation.

Regarding the cultivation of vegetables and staple crops, it has been estimated that, during the peak summer production period, 40 m^2 of well-managed land could approximately satisfy the needs of a family of four. A vegetable garden of 250 m^2 (approximately 50 x 50 m) would therefore have met the needs of both the resident household of the villa and the urban family of its owner. A larger cultivated area could also have supported surplus production for sale in the Roman markets. Unfortunately, archaeological evidence for vegetable cultivation is even more difficult to identify and excavate properly. Only in a few cases – such as those reconstructed at Tor di Nona or the recent excavations conducted by Anna Buccellato in the eastern suburb – has a cultivation system based on *porcae* and *lirae* been recognized. This method, involving a raised bed for growing vegetables, facilitates drainage and improves access to the crops.[32]

Some years ago, A. Bedini published a table proposing a typology of the soil trenches identified in the Roman countryside (Fig. 11.4).[33] However, determining the specific crops cultivated in these features remains challenging in the absence of targeted palaeobotanical analyses. Some of the trenches discovered in the southern suburb have been interpreted as drainage systems to manage water and aerate humid or heavy soils, aimed at cereal cultivation.[34] Even legumes, which represented a significant source of protein as a more affordable alternative to the more expensive meat, have similarly left almost no archaeological trace, not even in storage or transport containers.

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[30] Ricci 2005; Pallad. 1.18.

[31] We must consider that, unfortunately, targeted investigations, such as sediment flotation and palynological analyses, are not so frequent, even in modern excavations.

[32] Buccellato, Coletti, Palombella 2015. During an extensive excavation carried out in Via dei Gordiani, near the Via Prenestina, two adjacent fields were uncovered. These fields were marked by dense parallel channels placed at a distance of 1.1-1.3 m, intended for intensive vegetable cultivation, established at the beginning of the second century BCE: Buccellato 2005.

[33] Bedini 1997.

[34] See the territory of Vallerano, Mandriola, and Selcetta: Buccellato, Coletti, Palombella 2015, 329 and fig. 4.

Honey and flowers

Literary sources dedicate considerable attention to honey, which in the Roman world served as a sweetener, preservative and medicinal substance. The entire sixteenth chapter of the third book of Varro's *De re rustica* is devoted to beekeeping. The collection of honey and other bee products was therefore closely linked to villa activities, with beehives typically placed in sheltered locations, often beneath porticoes. According to Varro, beehives could be round, made from wicker, wood, hollow tree trunks, or terracotta, or rectangular, three feet in length and one foot in width, with removable lids on top to allow the beekeeper to extract the honeycombs.

To date, no specialized container for the storage or trade of honey has been securely identified. It is likely that, in addition to perishable materials such as wicker or wood, amphorae or small amphorae were employed. The contents of these vessels can only be determined through scratched inscriptions – such as those found at Magdalensberg – or via physico-chemical residue analyses.[35]

The literary sources also refer extensively to another suburban product, although not related to food: flowers. Archaeological evidence for floriculture remains limited and largely indirect, primarily consisting of small containers known as *ollae perforatae* (perforated pots designed to facilitate root propagation). In the aforementioned excavation of the Villa della Piscina in Centocelle, palaeobotanical analyses identified traces of *Verbena officinalis* in a row of such pots. These plants were likely used for ornamental purposes, intended to enhance the visual appearance of garden beds rather than for commercial distribution.[36]

Conclusions?

According to the literary sources, the products most likely transported daily from the suburban areas to the city of Rome were those forming the base of the food pyramid: vegetables, fresh greens, legumes, eggs, and fresh cheeses. Given the perishable nature of these goods and their need to reach the market in optimal condition, they could not withstand long transport times. It is therefore reasonable to assume that such products were sourced primarily from the immediate suburban hinterland surrounding the city.

However, despite the considerations outlined above, it should be noted that these products are among the least attested archaeologically, both in terms of production and transport containers, due to a marked scarcity of evidence in this regard. Their supply to the Roman markets must have been constant and continuous, since they were never subject to public measures aimed at ensuring their availability, unlike other foods such as grain or meat. It may be precisely their short life cycle, from the garden to the market (what Pliny refers to as *ex horto plebei macellum*[37]), which is consumed in a very short time, that leaves no significant archaeological traces.

However, if we plot all the production facilities we have already identified (mills, presses, vineyards, storage jars) on a single map, and overlay it with von Thünen's model, we see that most of them are located in the intermediate zone, rather than in the area closest to the city.

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[35] See the cases discussed in Bassi 2008.

[36] Coletti, Pacetti 2007, 343-6. The archaeobotanical analysis is by A. Celant.

[37] Plin. *nat*. 19.52.

This may suggest that the early urbanisation of areas closer to the city, combined with the consequent lack of systematic archaeological investigations has led to a scarcity of significant data, which in turn explains why evidence of intensive cultivation is largely absent.

I would like to conclude my excursus with a focus on Late Antiquity. In the archaeological documentation currently available for Rome and its suburbs, stratigraphies dating at latest to the sixth-seventh century CE appear to be attested. It is not the place to address here the long-standing debate about this phenomenon, between 'continuists' and 'catastrophists'. It is inevitable to identify a radical change in the modes of occupation and management of the Roman suburban territory between the end of the fifth and the sixth century, which parallels the transformations in the inhabited areas within the Aurelian Walls. Scholars, though with some variations in figures, generally agree on the significant decrease in Rome's population, which dropped from several hundred thousand inhabitants in the fourth century to just a few tens of thousands by the end of the fifth and early sixth centuries CE.

This demographic decline greatly reduced the city's food requirements, and thus the suburban production destined for the city also decreased. This not only meant fewer cultivated areas but also the availability of areas not just closer to the city but even within the walls, which could be dedicated to more perishable crops. This phenomenon could appear as the reversal of the previously mentioned model: areas at a medium distance from the city, initially used for semi-intensive crops, were re-adapted for cultivation or livestock, which did not require frequent transport to the trading areas, made certainly more complicated by the lack of infrastructure maintenance. For this kind of economic management, with extensive crops and especially vast pastures, large building structures were not needed, so it would have been sufficient to use, when necessary, the existing villa structures, some parts of which were undoubtedly in ruins, but others could provide shelter or accommodation for people, tools, or animals, in a model of land use where human presence was sparse and mostly seasonal. Archaeological traces of these activities are, of course, very scarce.

One currently unique piece of evidence in this regard was found during the SDO excavations in the area closest to the Fosso di Torre Spaccata, in the south-eastern suburb of Rome, where the charred remains of a structure were identified. Inside it, preserved palaeobotanical remains were previously interpreted as evidence from the pre- or protohistoric period; it is probably precisely due to the accuracy typical of these excavations that the few traces found (after all, it was just a few postholes and some earth) have turned out to be valuable evidence of agricultural activities. These are remains of cereals (wheat, barley, spelt, oats) and legumes (broad beans), dated via radiocarbon to the beginning of the second millennium CE.[38]

These data are linked to the exceptional discovery, just a few metres away, of footprints left by the passage of humans and animals, including horses, goats, sheep, and birds. This confirms the integration of agriculture and livestock in this same valley area, rich in water. The presence, among others, of the footprints of a child shows that even in this period, as was true for seasonal workers in the Roman countryside until just under a century ago, labourers could sometimes be accompanied by their entire families, including women and children. This example is important because it demonstrates how an excavation that pays attention not only to the more striking forms of evidence – such as villas, walls, mosaics, frescoes, or marble – but also to more modest traces, which are no less significant, can contribute meaningfully to the reconstruction of both the ancient environment and the socioeconomic reality.

[38] Gioia 2008, 285-96.

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Chapter 12

Boundaries and belonging: Greek dedications in the urban topography of Rome

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Abstract

This chapter investigates the spatial and social dynamics of Greek dedicatory inscriptions in the city of Rome, demonstrating how their distribution across the urban topography shaped and reflected patterns of religious identity. Drawing on a corpus of Greek dedications that range from monumental inscriptions in the Forum and on the Capitoline Hill to modest tablets from the suburbium, this study combines provenience data with epigraphic content to explore contrasts between the urban core and periphery. In Rome's centre, collective actors such as cities or other state agents deployed Greek in large-scale, bilingual monuments that distinguished foreign dedicators and recipients within a predominantly Latin landscape. Conversely, on the city's margins, individual dedicators and discrete communities employed Greek in more personal cult spaces, most notably for Palmyrene, Syrian, and other eastern divinities. Together they forged communal bonds, sustained diasporic identities, and expressed personal piety. By mapping these dedications onto Rome's built environment, the chapter reveals Greek to be a versatile medium of both boundary and belonging, instrumental in negotiating cultural alterity and religious pluralism in the imperial capital. These findings underscore the active role of language and space in constructing social and sacred landscapes in ancient Rome.

Keywords

Epigraphy; Rome; mapping; Greek; Greek inscriptions; Roman religion

The language of Greek transcended boundaries in the Roman imperial period: it could evoke radically different places or time periods depending on the context. The language uniquely cut across Roman society, making it both familiar and foreign, highbrow and lowbrow in the city of Rome.[1] Despite its societal prevalence, Greek remained a rarity in Rome's epigraphic landscape. Approximately 1,790 Greek inscriptions have been found in the urban area of Rome that can be dated to the Republican or imperial periods, accounting for less than

[1] For more on the role of Greek in Roman society, Kaimio 1979; Dupont, Loraux, Valette-Cagnac 2005. Studies on multilingualism in Rome, which address the role of Greek in Roman society, include Adams, Janse, Swain 2002; Adams 2003; Elder 2020.

4% of the city's total number of inscriptions.[2] Yet, Greek inscriptions took on nearly every epigraphic genre and form in Rome across the city: public and private, large and small. Dedications represented a substantial portion of the Greek epigraphic record of Rome, accounting for approximately 10% of the total, making them the second most numerous category after funerary inscriptions.[3] Approximately 143 dedications in Greek have been recovered in the urban area of Rome, honouring over 50 different divinities, of both familiar and foreign varieties.[4]

Dedications, as inscribed blocks of stone offered to a divinity, provide valuable insights into the personal and communal identity of their dedicators. Who was honoured, and how, reflected culturally informed practices, representative of different people and places, articulated through the personal choices of the dedicator. Offering a Greek dedicatory inscription in Rome referenced a world beyond the city itself, evoking the eastern origins of the dedicator or even the divinity. Greek inscriptions thus captured a negotiation between their present physical and historical context and the more distant identity they expressed. Dedications, furthermore, unlike the more common funerary inscriptions, interacted with the urban landscape at both its centre and periphery. Greek dedications could and did appear in every region of Rome and took on all forms, from small tablets to large architectural pieces. Dedications, by their nature, would also be set up near one another in spaces of religious significance.[5] The density of their original deposition, and later recovery, can help reconstruct the dedications' original contexts in the city and its suburbium. By visualizing the documented provenience data for Greek dedications of Rome within the city's urban topography, it becomes possible to see such sites of density within the urban landscape, revealing where and how individuals could actively express aspects of their identities in Rome through such inscriptions (Fig. 12.1).[6] Yet, it also shows how Greek dedications, and their use of the language, changed relative to the city's landscape.

Moving from the centre to the periphery, this chapter examines the Greek dedications of imperial Rome within their urban contexts in order to show how expressions of identity and community in religious contexts could engage with the city's topography. By analysing the inscriptions' relevant provenience information alongside their content, Greek dedications can

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[2] L. Moretti in *IGUR* catalogues 1,705 Greek inscriptions from the urban area of Rome. Moretti opted to not include relevant Jewish and Christian inscriptions within his volumes, perhaps due, in part, to the difficulty of dating the material. The hundreds of Greek inscriptions from the Jewish and Christian catacombs have been published in *JIWE* 2 and *ICUR* respectively. Since the publication of the final volume of *IGUR*, 83 additional Greek inscriptions from Rome have been published within *Supplementum Epigraphicum Graecum* (vols 40-69), excluding graffiti, *instrumenta domestica,* magical texts, and Jewish and Christian inscriptions. The percentage is calculated based on an approximation of 40,000 Latin inscriptions from imperial Rome, as catalogued in the *CIL*, excluding *inscriptiones falsae*.

[3] The *IGUR* contains 1,227 Greek funerary inscriptions from Rome, to which recent volumes of the *SEG* have added 69 new inscriptions.

[4] The total is limited to votive dedications to divinities: *IGUR* 5-20, 94-214, 242, 1660-62; *SEG* 43.661, 52.985, 56.1136. The number excludes dedications to emperors, which predominantly served to honour living emperors rather than engage with their divinized form or *numen*. Such inscriptions to emperors, moreover, are almost exclusively attested in the urban centre.

[5] On the offering of dedications at sanctuary spaces in the Greek world, Pedley 2005, 101-16.

[6] The map only includes dedications with provenience information related to excavated contexts, as signalled in *IGUR* using the verbs *eruere, invenire, reperire,* etc. and documented within a publication of the findings. Inscriptions recovered within a secondary context, such as private collections, have not been included.

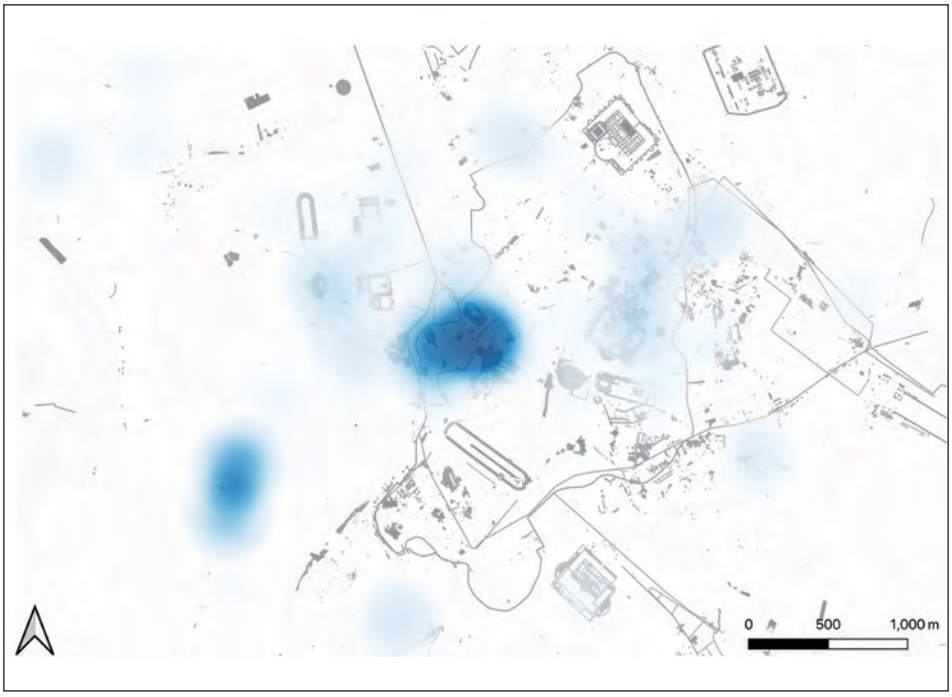

Fig. 12.1 Heatmap visualising the known find spots of Greek votive dedications within imperial Rome. It draws attention to the concentration of Greek votive dedication across the city's landscape, with particular density in the areas of the city centre and the southern Transtiberim region.

provide insight into how communities navigated the topography of imperial Rome and highlight the active role of inscribed Greek in shaping and negotiating their experience. For dedications in the centre of the city, in areas such as the Capitoline Hill and Forum Romanum, the choice of Greek marked the alterity of their dedicators or divine honorands: the Greek dedications resulted from the isolated actions of collective bodies who looked to distinguish themselves or their gods. Yet, for clusters of dedications on the outskirts of the city, where five to ten inscriptions related to the same subject matter have been found, the choice of Greek signalled inclusion within a broader community. At these sites, particularly visible in the southern Transtiberim region, individuals used the inscribed Greek to engage with others – and the space around them – across multiple generations. The Greek dedications of Rome, when examined in their urban landscape, reveal not only a distinction in their nature within the city's topography but also show how inscribed language can take on different meanings depending on its context.

Centre

Not even the very centre of Roman power was exempt from Greek dedications. Greek appeared in prominent positions within the most central civic and religious spaces in the city, beginning in the late Republican period. The use of Greek distinguished the dedications in the Latin-filled landscape, setting apart the dedicator or divine dedicatee from the cultural context of urban Rome.

Civic bodies and their leaders offered monumental dedications in Greek within the urban centre of Rome. In the late Republic, at least three kings and four cities from Asia Minor set up bilingual dedications to Jupiter Capitolinus, together with the people of Rome, on the Capitoline Hill.[7] The dedicators, which included leaders such as Mithridates IV and towns such as Ephesus, sought to solidify their relationship with the growing power of Rome: the text of the inscriptions, which repeated the same information in both Greek and Latin, stressed the dedicators' roles as 'friends and allies' of Rome.[8] Several of the inscriptions formed a cohesive monument, which consisted of a large travertine base that may have stretched for a remarkable twenty metres in length at its full extent and supported a row of statues that likely represented the goddess Roma and people of Rome.[9] Its monumental scale, combined with its numerous statues, on the high elevation of the Capitoline Hill would have made it visible to those below, while its inscribed dedications would be legible only at close proximity. The dedications, which were likely the only monumental Greek inscriptions openly displayed on the Capitoline, presented the origins of their eastern dedicators through their choice of Greek alongside Latin.[10] The use of Greek in the public context of the Capitoline Hill aligned the dedicators with the Eastern Mediterranean in the eyes of a Roman audience, while also asserting their cultural autonomy from Rome. The inclusion of Latin ensured broader legibility and demonstrated their loyalty to Rome, yet the Greek inscriptions emphasized their geographic and cultural distinction.

Greek inscriptions in the centre of Rome could not only signal the origins of their dedicators, but also that of the gods they honoured. In the middle of the Forum Romanum, a series of large marble altars were dedicated to various protective gods in Greek and Latin.[11] The altars, which were likely set up in the second half of the second century CE, stood almost a metre tall each (Fig. 12.2). The name of the god and its apotropaic epithet were conveyed in Greek, while each inscription concluded with the Latin phrase *ex óráculó*.[12] The Greek divinities included Athena 'averter of evil', as well as the more generically named 'gods who repel evil' and 'highest gods'.[13] While the dedicators of the altars were not specified, the Roman state had a history of importing divinities, particularly at points of crisis such as epidemics.[14] When Rome suffered

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[7] *IGUR* 5-20. The dedications to Jupiter Capitolinus, including discussions of their dedicators and chronology, are treated in Degrassi 1962, 415-44; Mellor 1978, 319-30; Lintott 1978, 137-44; Masri 2016, 339-40; Pérez Yarza, Bonnet 2024, 770-71.

[8] The dedicators who left Greek dedications included the Lycian League (*IGUR* 5), Laodicea by Lycus (*IGUR* 6), Mithridates Philopater and Philadelphus (*IGUR* 9), Tabae (*IGUR* 10). *IGUR* 7 l. 2, 9 l. 7, 10 l. 2, 13 l. 1, 17 l. 3 and 19 l. 4 use the term σύμμαχος to describe the dedicators' relationship with Rome.

[9] Mellor 1978, 321 suggests that the dedications were reinscribed into a single travertine monument during the time of Sulla, a date put forward by Degrassi 1951-1952, following Mommsen 1858, 206.

[10] Several bronze inscriptions recording laws and decrees in Greek (*IGUR* 1-4) may have been originally set up on the Capitoline Hill, as suggested by their text. For instance, *IGUR* 1 l. 25 lacks provenience information, but its text references the inscriptions being 'on the Capitoline', perhaps near the Temple of Fides. Even if these inscriptions were placed on the Capitoline Hill, their small scale does not rival the monumentality of the travertine monument or other Greek dedications to Jupiter Capitolinus.

[11] *IGUR* 94-7. The altars are discussed in Aronen 1983; Pérez Yarza, Bonnet 2024, 764, 769-70.

[12] *IGUR* 94 l. 3 *ex óráculó*; *IGUR* 95 l. 3 *ex óraculo*; *IGUR* 96 l. 2 *ex óraculó*.

[13] *IGUR* 94 ll. 1-2 ἀπωσικάκοις θεοῖς has been proposed to refer to the Dioscuri by Aronen 1983, 5-11. *IGUR* 95 ll. 1-2 Ἀθάναι ἀποτροπαίαι, *IGUR* 96 l. 1 Διὶ πατρίωι, *IGUR* 97 l. 1: Διὶ ὑπάτωι.

[14] A graffito found on steps of the Basilica Iulia, *CIL* VI, 29850, that reads *Senatus populus(que) [Romanus ex] oraculo*, has been used to associate the altars with a decree of the senate but may combine two separate inscriptions, as proposed by Hülsen 1894, 92; Aronen 1983, 6.

from a plague in the fifth century BCE, for instance, a temple was vowed and constructed for Apollo Medicus, a god previously not worshipped in Rome.[15] Apollo Medicus' nearby temple in the Forum Holitorium, which was reconstructed in the late Republican period, was ornamented with a classical pediment imported from Greece, and its epistyle may even have been inscribed in Greek, based on a fragment found in the area.[16] The altars in the Forum Romanum may come from yet another moment in which Rome sought divine assistance from non-Roman gods: the Antonine plague of the second century CE.[17] The choice of Greek emphasized the gods' importation into the very centre of Roman society, while also evoking associations between Greek divinities and healing.[18] From the perspective of the Romans, the gods, as notably foreign imports, may have also preferred to be honoured in their native tongue.[19] The Latin, on the other hand, offered an explanation for the altars' presence in the city's civic centre for those passing through the Forum.

Fig. 12.2 Altar dedicated to the gods who repel evil (*IGUR* 94). One of two large altars found near the Column of Phocas, presently displayed in the area of the Basilica Iulia. The deities are named in Greek, while the inscription concludes with '*ex óráculó*' in Latin.

The Greek dedications in the most central areas of Rome were the product of collective action: they were offered by leaders, cities, and perhaps even the Roman state.[20] They did not speak to the motivations of individuals,

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[15] Liv. 4.25.3, Viscogliosi 1993, 49-54. Asclepius, worshipped on Tiber Island, was similarly brought in following plagues in the early third century BC (Nutton 2004, 225). No Greek inscriptions, however, have been attributed to the cult of Asclepius on Tiber Island except for *IGUR* 148 of dubious provenience.

[16] *IGUR* 144, which bears the name of Apollo on a marble epistyle, has been attributed to the Temple of Apollo Medicus by L. Moretti in *IGUR* due to its provenience in the area of the Porticus Octaviae. La Rocca 1985 examines the pediment sculpture of the Temple of Apollo Medicus in detail but does not address the potential epistyle.

[17] Aronen 1983, 5-6; Kajava 2007; Pérez Yarza, Bonnet 2024, 769-70.

[18] For more on medicine and its continued association with the Greek world in the Roman empire, Nutton 2004, 157-70.

[19] Pérez Yarza, Bonnet 2024, 764 and Kajava 2007, 128 propose that the use of Greek might relate to a precise ritual context, namely the oracle of Klaros in Asia Minor.

[20] It is worth noting that dedications to emperors follow a pattern similar to that of votive dedications, with those in the city centre primarily being offered by collective civic bodies. The most monumental inscriptions to the emperor were offered by cities in central areas, such as the inscriptions set up to Antoninus

nor did they show repeated interaction with the sites of the dedications over time. Rather, the Greek dedications in the city centre were isolated monuments that captured a single moment in time. Their use of Greek signalled exteriority to Roman society, whether on behalf of the dedicator or the divinity worshipped, and distinguished the dedication within the Latin-filled landscape of the city. Moving out from the centre, limited Greek dedications from private citizens appear in Rome, indicating the shift in the nature of dedications within the city's landscape.[21]

Periphery

Clusters of Greek dedications found on the outskirts of Rome, in areas of the city that would later be transformed by the construction of the Aurelian Wall, point to spaces established by private citizens that were maintained over time. The inscriptions in Greek not only distinguished the sites and the communities they represented but also left the only evidence for their existence in the Roman imperial period. Rather than signalling difference, their use of Greek may have instead expressed a sense of belonging. It allowed dedicators to communicate with a particular audience with whom they identified, thereby participating in and shaping the communities centred around these sacred sites. Greek dedications, moreover, could engage with various types of community and serve different ends, as illustrated by two sites within the southern Transtiberim region.

On the west bank of the Tiber, eight inscriptions point to a community of people who maintained their linguistic and religious traditions in the city for multiple generations, despite being 3,000 kilometres from their home city of Palmyra. The eight dedications, which date between the second and third centuries CE, honour a combination of Palmyrene gods in Greek, Latin and Palmyrene Aramaic. The gods included Bel, Iarhibol, Aglibol, Malakbel, Ares Patroios (Arsu) and Astarte, all of whom were worshipped alongside each other in a monumental temple to Bel in Palmyra that served as the centre for the city's religious life.[22] Additionally, one of the fragmentary dedications seems to honour the generic

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Pius and his family by the city of Delphi in the area of the Quirinal Hill (*IGUR* 25), by the *boule* of Athens in the Campus Martius (*IGUR* 27), and by Mopsuestia near the Temple of Peace (*IGUR* 24).

[21] Only a few additional, small clusters of dedications can be attributed to the area of the city centre: three dedications found on the Esquiline hill honour Asclepius (*IGUR* 102-4), while two inscriptions for Serapis can be associated with the Temple of Isis and Serapis in the Campus Martius (*IGUR* 98-99) – relatively small numbers given the prominence of both divinities and their eastern association in the built environment of Rome. These two areas, however, speak to the trend of more private dedications moving away from the city centre.

[22] Bel, Malakbel, Palmyrene Gods: *IGUR* 117, 118; Aglibol and Malakbel: *IGUR* 119; Malakbel and Palmyrene gods: *CIL* VI, 30817; Bel and Iarhibol: *IGUR* 120; Astarte: *IGUR* 121; Ares Patroios: *IGUR* 122. The religious life of Palmyra has been examined comprehensively in works such as Teixidor 1979 and Kaizer 2002. For the Temple of Bel and the various gods honoured there, see Kaizer 2002, 73-5; Fowlkes-Childs 2016, 197; Le Blanc 2024, 351-4. Malakbel and Iarhibol, two of the most common recipients of dedications at the cult site in the southern Transtiberim region, were also well attested in other Palmyrene diaspora communities. Palmyrenes, for instance, created a Sanctuary of Bel and Iarhibol located just outside the city walls of Dura-Europos, and special ethnic unit of the Roman army known as the *numerus Palmyrenorum* set up inscriptions to Malakbel and

designation of 'Palmyrene gods', catching the many other divinities worshipped in Palmyra.[23] The various Palmyrene gods, though all well attested in Palmyra itself, otherwise do not appear in the city of Rome. Five of the eight inscriptions were uncovered in the modern area of southern Trastevere, during excavation campaigns between 1858 and 1861.[24] Three additional inscriptions, though they lack secure provenience, can be related to the Palmyrene cult on the basis of their style and content.[25] The general density of the inscriptions related to Palmyrene gods in the Transtiberim region suggests that they were dedicated at a recognised site within the area. Two of the inscriptions, moreover, commemorate the dedication of a physical space for the worship of Palmyrene gods, named as a ναός and *aedes*, in 116 CE (Fig. 12.3).[26]

The temple came from the joint benefaction of two private individuals: C. Licinius, whose cognomen has unfortunately been lost, and Heliodoros Palmyrenos. Furthermore, one of the Greek inscriptions consisted of a fragmentary block of a marble epistyle. It honoured the emperor Antoninus Pius and named a certain Quintus Iulius, who likely financed the structure to which the epistyle was once joined. The quantity of the inscriptions found in the southern Transtiberim area, together with the inscribed and physical evidence for a built structure, point to the existence of temple space that was constructed through private efforts and dedicated to the Palmyrene gods.[27]

In addition to the building dedications and epistyle, the other inscriptions related to the Palmyrene cult in the southern Transtiberim region consisted of anaglyphs and altars that ranged in size from a few centimetres in their fragmentary state to over a metre in height. In total, nine

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Iarhibol in places as far reaching as Dacia and Numidia (Smith 2013, 151, 168). For more on Malakbel, Bonnet 2018, 241-4.

[23] *IGUR* 119 and 120 reference the "…πατρῴοις θεοῖ[ς]…" and "…θεοῖς πατρῴοις…" respectively. Raja 2024, 119-37 examines Palmyra's polytheism, providing evidence for 48 different divinities that appear on Palmyrene banqueting *tesserae*.

[24] The first campaign, organized by Giambattista Guidi, occurred on the property of the Bonelli family in the area of modern Trastevere in the mid-19th century. Carlo Ludovico Visconti, who visited the excavation, provided the only report of their findings and location in his 1860 publication. Visconti described the site of excavation as 'la Vigna Bonelli, fuori circa un mezzo miglio della porta Portese', with no additional direction or information. See Visconti 1860, 424 (*IGUR* 120), 424 (*IGUR* 121), 428 (*IGUR* 117), 432 (*IGUR* 122), 434 (*IGUR* 123). Visconti, however, misattributed *IGUR* 121 to the same relief as *IGUR* 120: the two were subsequently distinguished by Pietrangeli 1951. See Fowlkes 2012, 187 n. 68 for more on this issue. In addition to these inscriptions, the excavations also brought to light two inscriptions related to the Porticus of Sol, Visconti 1860, 434 (*CIL* VI, 52), 440 (*CIL* VI, 31034a). For more on the Porticus of Sol, Hijmans 2009, 501-3.

[25] An inscription from Rome (*IGUR* 118), currently within the collection of the British Museum (inv. 1867,0508.86), records a dedication by C. Licinius and Heliodoros Palmyrenos, who were also mentioned in a nearly identical inscription found within the Guidi excavation (*IGUR* 117). Additionally, the collection of the Mattei family, whose palazzo was also in Trastevere outside the Porta Portese, possessed two inscriptions (*IGUR* 119, *CIL* VI, 710) that referenced the Palmyrene gods and included Palmyrene Aramaic. See Fowlkes 2012, 159, 185.

[26] While the Greek word ναός (*IGUR* 117 l. 6) can denote a temple or even a portable shrine, *aedes* (*IGUR* 118 l. 3) more explicitly indicates a temple in Latin. Both words refer unambiguously to a physical structure used for religious purposes.

[27] Equini Schneider 2024, 277-8 suggested that the temple may have been constructed within the area of the Horti Caesaris. Its exact location in the southern Transtiberim, however, can only be inferred from the provenience of the relevant inscriptions.

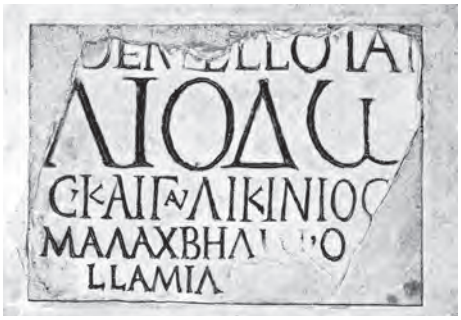

Fig. 12.3 Bilingual inscription (*IGUR* 118) commemorating the dedication of a temple to Bel, Malakbel, Palmyrene Gods by Gaius Licinius and Heliodoros Palmyrenos. The text concludes with the names of the consuls for that year in Latin dating the dedication to 116 CE.

Fig. 12.4 Relief of a snake goddess, Rome, Museo Nazionale Romano inv. 121190. One of four Greek inscriptions found at the seventh kilometre of the Via Appia. While other dedications from the site honour Zeus Bronton and Astarte, this relief appears most comparable to examples from Egypt.

different individual dedicators are named across the eight inscriptions.[28] Some of the dedicators explicitly identified with the city of Palmyra: Heliodoros, named in the building dedication, added the *ethnikon* Palmyrenus to his name, while another offered his altar together with 'the Palmyrenes,' further emphasizing their connection with the eastern city.[29] Some dedications

[28] The dedicators are as follows, observing the abbreviations used within the inscriptions and transliterating their names from Greek as relevant: C. Licinius and Heliodoros Palmyrenos: *IGUR* 117, 118; I. Aur. Heliodoros Antiochou Adrianos Palmyrenos (Iulius Aurelius Heliodoros, son of Antiochus, from Hadriana Palmyra): *IGUR* 119: Makkaios; *IGUR* 120; L. Licinius Hermias: *IGUR* 122; Ti. Claudius Felix, Claudia Helpis, Ti. Claudius Alypus: *CIL* VI, 710. The *cognomen* of one additional name, Q. Iulius, does not survive (*IGUR* 123). None of the individual names, however, can be identified within the epigraphic record of Palmyra; their association with Palmyra is thus limited to their *ethnikon* rather than any evidence from the city itself.

[29] Heliodorus Palmyrenus: *IGUR* 117, 118; I. Aur. Heliodoros Adrianos Palmyrenos: *IGUR* 119. The Aramaic portion of *CIL* VI, 710 adds that the dedication is on behalf of 'Tiberius Claudius Felix and the

honour the Palmyrene gods for the health of the emperor, perhaps as a means of encouraging imperial leniency toward their worship. The emperors Trajan, Hadrian and Antoninus Pius are named in these dedications, demonstrating the site's continuous use over several generations.[30] The dating of the dedications was not based solely on imperial titles: one building dedication concluded with the names of the consuls in Latin, while two others employed the Seleucid calendar, the most common system of dating in Palmyra.[31] The gods invoked, the dedicators' names, the dating systems used, and even the choice of languages all linked the offerings to Palmyra.

The eight dedications were written in a combination of Greek, Latin, and Palmyrene Aramaic. The inscriptions reflected the languages of Palmyra: seven out of the eight inscriptions included Greek in some capacity, while two contained Palmyrene Aramaic. Greek, while less specific to Palmyra, nonetheless evoked the epigraphic tradition of the city. Greek likely began to be used in Palmyra for administrative purposes during the Hellenistic period and continued to gain in popularity as more traders stopped in the city on their way to and from the Mediterranean, acting as a *lingua franca* among merchants and other cities of the Near East. The two languages most well attested within the inscriptions from the Palmyrene cult in Rome thus reflected the most common epigraphic and administrative languages of Palmyra. Furthermore, more than half of the dedications were bilingual: two Latin and Greek, two Greek and Palmyrene Aramaic, one Latin and Palmyrene Aramaic.[32] Bilingual inscriptions, while notably rare in Rome, were a defining feature of the epigraphic culture of Palmyra: nearly 200 bilingual Palmyrene Aramaic-Greek inscriptions are known from Palmyra, accounting for approximately 10% of its inscriptions.[33] The city produced bilingual civic inscriptions, like the so-called 'Tariff of Palmyra' from 137 CE and bilingual coinage.[34] The choice to create a dedication in both Greek and Latin adapted the bilingual tendency of Palmyrene inscriptions for Rome. Latin addressed the cult's context in Rome, where the language would be the most prevalent within the epigraphic record, while Greek offered a constant which connected the modified bilingual dedications back to the city of Palmyra.

The eight dedications related to the Palmyrene gods in Rome testified to the commitment of individuals, who acted of their own accord and ornamented their temple space in the southern Transtiberim region in the process, in the second and third centuries CE. Though the dedications come from distinct dedicators and honour various gods in different languages, they share a common usage of Greek – a language that was neither the most common in Palmyra nor in Rome, yet bridged the two distinct cities. Greek helped foster the community of Palmyrenes in Rome over time by enabling communication and helping define their shared space.

Palmyrenes' (translation by Teixidor 1979, 47). It is worth noting that *IGUR* 117, 118 and *IGUR* 119 were dedicated over a century apart, offered by distinct individuals named Heliodoros. The two, however, could possibly be related over several generations. Notably the *ethnikon* of Palmyra is otherwise only attested in one other inscription from Rome, a funerary inscription to a man named Habibi Annubathus found on the Via Appia (*CIL* VI, 19134).

[30] Trajan: *IGUR* 117; Hadrian: *IGUR* 122; Antoninus Pius: *IGUR* 123.

[31] *IGUR* 119 and *IGUR* 122 both reference the Seleucid calendar, dating to February 236 CE and April 134 CE respectively (Taylor 2001, 23-28; Lieu 2018, 89).

[32] Greek-Latin: *IGUR* 117, 118; Greek-Palmyrene Aramaic: *IGUR* 119, 120; Latin-Aramaic *CIL* VI, 710.

[33] Lieu 2018, 87; Yon 2024. For comparison, only around 150 bilingual inscriptions come from Rome, representing less than 0.005% of the inscriptions from Rome (Elder 2020, 285, averaging the totals estimated by Felle 1997 and Tozzi 2012).

[34] Lieu 2018, 99-100; Fowlkes-Childs, Seymour 2019, 142; *PAT* 259 ('Tariff of Palmyra').

While Greek helped articulate the Palmyrene identity of the dedications in the southern Transtiberim region, the language's commonality in the eastern Mediterranean could also unite different cultures within the context of the imperial city. Three clusters of inscriptions on the outer limits of the city, for instance, bring together disparate divinities and dedicators, united in their usage of Greek at a shared sacred space. Three Greek dedications found on the Esquiline in the vicinity of the Castra Praetoria, for instance, honour gods from Cilicia and Thrace, underscoring the eastern origin of the soldiers stationed there.[35] Similarly, four dedications found near the fifth mile of the Via Appia, which may have been set up by people working at the nearby Villa of the Quintilii, celebrated the Phrygian gods Zeus Bronton alongside Astarte and an Egyptian snake divinity (Fig. 12.4).[36]

In the southern Transtiberim region, higher up on the Janiculum Hill than the Palmyrene dedications, eleven inscriptions attest to a site where a variety of divinities from different eastern cities were celebrated together in the second and third centuries CE. The dedications, composed in both Latin and Greek, primarily honoured Jupiter Heliopolitanus.[37] The city of Heliopolis, later known as Baalbek, in Roman Syria served as the main cult site of Jupiter Heliopolitanus, as his name implies. One of the dedicators, moreover, explicitly identified as being from the colony of Heliopolis.[38] The other inscriptions celebrated the Semitic storm and agrarian fertility god Hadad, as well as Jupiter Maleciabrudes whose epithet brings together the Semitic term for 'king' with the name of the city Yabrouda located to the east of Heliopolis in Roman Syria.[39] In addition to these far-ranging divinities, one of the dedications honoured Zeus Keraunios, whose cult was popular in Asia Minor, alongside Furrina, a local divinity of Latium whose grove was supposedly located in the Transtiberim region.[40] A woman named Artemis, also known as Sidonia, from Cyprus set up the Greek-inscribed altar, inspired by a divine command.[41] The divinities in the dedications, despite

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[35] *IGUR* 131-5 have been associated with the Praetorian Guard. *IGUR* 131 and 132 were both found on the Esquiline hill, not far from the Castra Praetoria (Henzen 1875, 3; Lanciani 1880, 2). The divine recipients include the patron god of Anazarbus Zeus Olybris (*IGUR* 131), the Thracian gods Zberthourdos and Iambadoule (*IGUR* 132). For more on dedications by Thracians in Rome, see Dana & Ricci 2014; Camia 2022.

[36] *IGUR* 136-9 were uncovered around the seventh kilometre on the Via Appia, near the Villa of the Quintilii, in 1929 (Annibaldi 1935, 76-104). They honour Astarte (*IGUR* 136), a snake goddess whose only identifiable *comparandum* is from Narmouthis in Egypt (*IGUR* 137; Bresciani 1977, 11-13), and Zeus Bronton (*IGUR* 138-9).

[37] On the worship of Jupiter Heliopolitanus in Rome, Bellelli, Bianchi 1997; Fowlkes 2012, 197-212.

[38] *CIL* VI, 423 ll. 6-8: '*L(ucius) Trebonius Fab(ia tribu) / Sossianus / colonia Heliupoli(tana)*'. The dedication, dated between 238 and 244 CE, also describes Trebonius as a centurion of the *frumentarii* of the Legio IV.

[39] Hadad: *IGUR* 110; Jupiter Maleciabrudes: *CIL* VI, 36792 (Calzini Gysen 1997a, 268). Many thanks to Seth Schwartz for confirming that the name relates to 'king', like Baal Milk-qart, rather than 'messenger'.

[40] *IGUR* 111. Varro described Furrina as a water-nymph (*ling*. 7.45), while Cicero characterized her as a chthonic deity (*nat. deor.* 3.46). Her cult was celebrated through a *flamen*, according to Ennius recorded in Varro (*ling*. 7.45), as well as an annual festival. The poorly understood divinity was honoured in a sacred grove in the Transtiberim region known as the Lucus Furrinae. The grove's location across the Tiber is known from the account of Gaius Gracchus' death, which occurred in the grove (Plut. *CG* 17). For more on Furrina, Goodhue 1975; Calzini Gysens 1996.

[41] *IGUR* 111, ll. 3-7: Ἄρτεμις / ἡ καὶ Σιδωνία / Κυπρία / ἐξ ἐπιταγῆς / ἀνέθηκεν.

their cultural and geographic variety, share an association with meteorological phenomena – a fitting association given that they were uncovered at one of the highest elevations in Rome.

The nine inscriptions in Greek and Latin were brought to light over the course of four different campaigns and construction events on the Janiculum Hill, in the area of the modern Villa Sciarra, between 1803 and 1906.[42] Additionally, two inscriptions honouring Jupiter Heliopolitanus, though they lack more precise provenience, can be associated with the others: one comes from a dedicator well attested among those inscriptions found in the area of the Villa Sciarra, while another honours the divinity Furrina alongside Jupiter Heliopolitanus, similar to the altar to Zeus Keraunios.[43] Though the dedications associated with Jupiter Heliopolitanus and Syrian gods on the Janiculum Hill do not reference a physical structure or consist of architectural fragments, the large scale of four of the inscriptions suggests the existence of a permanent cult site.[44] Two of the marble dedications, for instance, measure well over a metre in length. One consisted of a large marble square slab, measuring 120 cm on its sides, with a circular hole at its centre. A Greek inscription, positioned above and below the central hole, refers to a δεσμός, a term which can relate to tying and fastening, suggesting that the slab could be used to restrain the sacrificial victim (Fig. 12.5).[45] Another large marble dedication, measuring nearly 130 cm in length, seems to have functioned as a table for offerings or sacred meals. The edge of the table is inscribed in Latin and celebrates the safe return of Marcus Aurelius and Commodus.[46] The two dedications suggest the existence of a permanent space for communal activities, such as sacrifice and communal dining, organized around the cult of Jupiter Heliopolitanus in the southern Transtiberim region. Additionally, three fragments of a long and thin rectangular block

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[42] The first, which occurred in 1803, was organized by Carlo Fea in the area of the modern Villa Sciarra park and unearthed one dedication (*CIL* VI, 423; Attilia, Filippi 2008, 176). Approximately a century later, two large Greek inscriptions (*IGUR* 109 and 112b) were found on the property of 'Mussi' also along the Via Dandolo in the area of the Villa Sciarra (Gatti 1906, 248-9). In 1906, the construction of a guardhouse (*villino*) on the grounds of Villa Sciarra brought to light further dedications, as well as additional inscribed marble fragments that may have been architectural elements (*IGUR* 110-11, *CIL* VI, 36792; Vaglieri 1907, 88-9). The finds, however, did not halt the construction of the guardhouse, but they were brought to the attention of the French archaeologist Paul Gauckler, who excavated the site, uncovering two additional inscriptions to Jupiter Heliopolitanus (*CIL* VI, 36791, *CIL* VI, 36793) that were reused in the so-called 'late antique sanctuary' also within the Villa Sciarra (Gauckler 1912). Given that the inscriptions were repurposed in the late antique construction without particular care to their content, the late antique sanctuary thus seems distinct from an earlier phase of a sanctuary of Syrian gods in the area. Calzini Gysens 1982, 64; Id. 1997b, 277-86, maintains that there has, to date, been no evidence to identify the earlier phases of the construction at the site of the late antique sanctuary with the cult of Jupiter Heliopolitanus. This view was supported by Fowlkes 2012. Frel, Duthoy 2008, and Grainger 2018, however, have attributed its earlier phase to the cult of Jupiter Heliopolitanus. For more on the 'late antique sanctuary', see Filippi 2008 and Goddard 2008.

[43] *IGUR* 166, *CIL* VI, 422 found near the church of SS. Quaranta Martiri in modern Trastevere (Hülsen 1907, 245).

[44] Calzini Gysens 1997b, 277-88.

[45] *IGUR* 109 l. 1; Scheid 1995, 312. While it has been argued that the slab functioned as a fountain head or fishpond cover, the limescale that covers the slab seems to be from a later reuse. Cumont 1917, 274-84 proposed the slab formed part of a fishpond, while Moretti in *IGUR* and Hajjar 1977 have interpreted it as a fountainhead.

[46] *CIL* VI, 36793.

were found in the area of the Villa Sciarra. The fragments, inscribed in Greek, range from 58 to 215 cm in length.[47] Two smooth faces of the blocks show signs of wear, while the two rough edges suggest that they were once set into something. They may have functioned as steps, perhaps used to address the steep natural landscape of the area, or formed part of a building foundation.[48] Though the extant fragments do not specify a deity or dedicator, they nonetheless suggest the demarcation of a permanent, physical space for the cult.

Two of the large inscriptions associated with the cult of Jupiter Heliopolitanus come from the same dedicator: a man named Marcus Antoninus Gaionas who displayed a unique penchant for Greek metered verse. Gaionas, whose *cognomen* is attested in Roman Syria, set up multiple dedications to the god in Rome between 176 and 186 CE.[49] Of the three dedications set up by Gaionas, one is in Latin, another in Greek, and a third uses both languages for different ends.[50] Every instance of Greek within the dedications of Gaionas was either written in metre or elevated, poetic language: an exceptional choice given that all other known inscriptions to Jupiter Heliopolitanus from the Italian peninsula were written in Latin, and no others from anywhere else in the empire are known to be in metre.[51] The large slab that likely restrained sacrificial victims, which was offered by Gaionas, not only used Homeric language like δεσμός, but also can be scanned as elegiac pentameters (Fig. 12.5).[52]

A bilingual inscription by Gaionas, found elsewhere in Trastevere, adds two lines of Greek between a total of 13 lines of Latin. The brief Greek interlude described Commodus with poetic epithets, including βασιλικωτάτῳ and the unusual ἀσπιστῆ.[53] The latter word means 'one armed with a shield' and appears only in the works of Homer, Sophocles and Euripides.[54] Similarly, the only legible word among the fragmentary long blocks is the Homeric word πουλυβοτείρῃ, meaning 'all-nourishing'.[55] The word's additional upsilon in the first syllable suggests that the vowel may have been lengthened for the sake of hexameter.[56] The unique choice of word and metre indicates that Gaionas may have been responsible for these inscriptions as well. While Greek helped bring together people from different parts of the eastern Mediterranean within the sanctuary space on the Janiculum, the metrical inscriptions present yet another function of the language. It openly showcased the erudition of Gaionas, while

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[47] *IGUR* 112, with the respective dimensions of each fragment: A) 30 x 178 x 23 cm; B) 24 x 215 x 36-39 cm; C) 16 x 58 x 34 cm; fragments A and B are now in the cortile of the Museo Nazionale Romano.

[48] Moretti 1968, 97-8 suggested that the blocks functioned as steps, following Hülsen 1907, 240. Gauckler 1912, 35 proposed that they formed part of a terrace wall or surrounded a basin.

[49] Gaionas offered the sacrificial restraint (*IGUR* 109) and marble table (*CIL* VI, 36793; dated to 176 CE). He also offered a large marble column (*CIL* VI, 420 = *IGUR* 166), dated to166 CE. Both dates are based on Commodus' titles (Hajjar 1977, 362-3).

[50] Latin: *CIL* VI, 36793; Greek: *IGUR* 109; Latin-Greek: *IGUR* 166.

[51] Hajjar 1977 catalogued the extant dedications to Jupiter Heliopolitanus. Out of the 85 inscriptions from Heliopolis, 19 inscriptions are in Greek while none are in Aramaic. Only a single inscription is bilingual (Hajjar 1977, 76), in Latin and Greek, where Latin is by far the dominant language and only a prohibition is described in the Greek.

[52] *IGUR* 109 l. 1. The term δεσμός is otherwise unattested epigraphically but is used in Homer to mean 'anything for tying or fastening'. Scheid 1995, 303 identified the inscription's metre.

[53] *IGUR* 166 ll. 3-6. For more on the epithets, Lombardi 1997, 70.

[54] *IGUR* 166 l. 5. The term ἀσπιστῆ occurs 11 times in the *Illiad*, more than any other preserved literary source (Hom. 4.90, 4.201, 4.221, 5.577, 8.155, 8.214, 11.412, 13.680, 16.490, 16.541, 16.593).

[55] *IGUR* 112A: πολυβότειρα is used to describe different lands and the earth (Hom. 3.89, 6.191, 11.770).

[56] Moretti 1968, 97-8 identified the inscription's metre as hexameter.

uniting him with all who recognized the arcane phrases he used. Greek could unite an intellectual community, just as it could a geographic one.

The creation of the Aurelian Wall in the late third century CE transformed the periphery of Rome, affecting both the built and cultural environment of the area. The restriction of movement caused by the wall, combined with the conquest of Palmyra, likely contributed to the disuse of the sanctuary spaces on the periphery: the latest dedication attributed to the Palmyrene cult in the Transtiberim region, for instance, dates to 236 CE, while the latest dateable inscription to Jupiter Heliopolitanus found on the Janiculum dates to around 238 CE.[57] Yet, as those spaces ceased to function, others became more popular. In the area of the Vatican, five Greek inscriptions were uncovered that attest to the worship of the Phrygian divinities Magna Mater and Attis in the late third and fourth centuries CE.[58] The singular Greek inscription which can be seen today, as the other four have been lost since their discovery, takes the form of an ornate altar whose inscription speaks directly to its reader in hexameter.[59] Greek may have better served the poetic tone desired by the dedicator, or more fittingly honoured the Phrygian goddess. At approximately the same time, Greek inscriptions began to appear in a different religious context within the Jewish and Christian catacombs located outside the city walls. Among the epitaphs from the Jewish catacombs, Greek emerged as the predominant language, with many community leaders choosing it for their funerary inscriptions.[60] The Christian catacombs,

Fig. 12.5 Large, square marble offering by Gaionas (*IGUR* 109) uncovered in the area of the Villa Sciarra. The inscribed slab, which may have been used in the restraint of sacrificial victims, is one of several metrical dedications associated with the worship of Jupiter Heliopolitanus on the Janiculum Hill.

[57] *IGUR* 119 l. 4 provides a date in the Seleucid calendar (ἔτους ζ·μ·φ΄ μηνὸς Περιτίου) that corresponds with 236 CE, *CIL* VI, 423 ll. 4-5 honours Gordian III (238-244 CE).

[58] Cameron 2011, 144-6. The five Greek inscriptions were found together with nine in Latin. *IGUR* 126-7, 130 were written entirely in Greek, *IGUR* 128-9 featured sections in Greek and Latin. *CIL* VI, 497, 498, 499-503, 504, 508 are entirely in Latin. The dedications were offered by prominent men, including some of consular rank and *viri clarissimi.*

[59] *IGUR* 127: one face is inscribed in Greek, the other three faces around the sides are ornamented with reliefs of pines, torches, and other religious instruments.

[60] Rutgers 1995, 176. The Monteverde Catacomb, located approximately one kilometre south from the area of the Temple to Palmyrene gods, contained the highest quantity of Greek inscriptions out of all the Jewish catacombs in Rome: approximately 150 out of 182 inscriptions were in Greek. The other Jewish catacombs in Rome also featured primarily Greek inscriptions, ranging from 63% to 92% of the total for each site. Noy 1997, 306 calculated that 86% of epitaphs for holders of Jewish titles were in Greek, suggesting that the most prominent community members opted to be commemorated in the language.

which remained in use for an even longer period, also incorporated Greek, albeit to a lesser extent than their Jewish counterparts.[61] These developments in the third and fourth centuries CE demonstrate how transformations within the built environment continued to shape the religious landscape of the urban periphery.

Viewed across Rome's urban landscape, the Greek dedications reveal how the built environment actively shaped religious expression: the city centre functioned as a space of structured activity, while the periphery became a site for more personal, community-driven forms of devotion. In the urban centre of Rome, Greek dedications came about through collective action, whether by cities or other state actors. Their monumental use of Greek set them apart within the Latin-filled landscape, marking the dedicators or the foreign deities they honoured as distinct. By contrast, Greek dedications on the city's periphery reflected more individualized expressions of piety, often associated with discrete communities and created through the agency of particular individuals. These inscriptions show how Greek served as a means of organizing communal identity, whether by maintaining ties to cultural heritage or by poetically invoking the authority of eastern divinities. Together, these inscriptions underscore not only the linguistic plurality of religious expression in Rome but also how inscriptions, shaped by their physical and social environments, could articulate belonging, differentiation, and devotion within the imperial city.

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[61] See Felle 2018 for more on the use of Greek in early Christian inscriptions in Rome.

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Part 3
Italy

Chapter 13

The town beyond the town: the peripheries and suburban areas of Interamna Lirenas

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Abstract
Thanks to an integrated archaeological fieldwork project deploying geophysical prospection, field survey and excavation, the plan of the Roman town of Interamna Lirenas is now firmly established at a considerable level of detail, and extra-urban settlement patterns have been mapped too. This wealth of information makes it possible to explore the relationship between the urban core and its immediate hinterland – and the ways in which it may have developed over time. Our analysis highlights the town's role as a commercial hub, serving not just the needs of its urban residents, but also those of a wider population within its hinterland and the wider region. Remarkably, most of our reconstruction rests on evidence coming from either the immediate periphery of Interamna Lirenas (*forum pecuarium*, warehouses) or its suburbs (river port), that is areas traditionally underrepresented within the archaeology of Roman town.

Keywords
Geophysical prospection; field survey; river port; *forum pecuarium*; regional trade networks

1. Introduction

The relationship between a town and its hinterland was invariably a very close one in the pre-industrial world – and the Roman period was no exception. Towns normally came with a territory (*ager/territorium*), their combination constituting an essential feature of many

polities.[1] In the past, the relationship between these two elements has often been framed in rather hierarchical – and asymmetrical – terms: pivoting on the political primacy and social privilege of their elite inhabitants, towns would have exercised a disproportionate level of command on what was being produced in the countryside (notably through taxes and rent), offering comparatively little in return.[2] However, this extreme view of the 'consumer city' failed to recognize how much towns materially contributed to the lives of the rural population: not only the level of manufacturing in some of these centres turned out to have been significantly underestimated, but, even irrespective of that, there could be hardly any doubt that towns in any period delivered unique services which the entire population – both urban and rural – benefitted from. In other words, the relationship between town and countryside was not parasitic, but rather symbiotic and bidirectional.[3]

A much-improved understanding of what the countryside was really like – in terms not just of occupation/settlement, but especially its articulation and complexity – has undoubtedly contributed to a more balanced appraisal of its relationship with towns. In a way, notwithstanding the centrality of the urban dimension to any definition of the Greco-Roman world ('a world of cities' according to Finley), field survey and landscape archaeology have since revealed its counterpoint in what Graeme Barker referred to as the 'busy countryside'.[4] Among other things, the *Roman Peasant Project* has shown how the rural population could have accessed goods imported from outside their region (often from overseas), something in which nearby towns, acting as crucial nodes of this distribution network, must have clearly played an important part.[5]

On the other hand, our own understanding of Roman towns has also improved – and keeps improving. If attention has since been drawn to the existence of significant urban productive/manufacturing activities that were simply too extensive to be aiming at satisfying an exclusively local urban demand for petty commodities, it is also clear that these were often – albeit not exclusively – located in peripheral areas which have rarely received the same level of archaeological investigation compared to their more central (and monumental) counterparts.[6] As a consequence, only few notable sites (e.g. Pompeii, Ostia, Timgad), whose overall plan is comprehensively known through excavation, have normally yielded meaningful evidence of such productive activities. However, this is now changing thanks to the systematic and extensive application of geophysical prospection, which in recent years has yielded nearly complete plans of still-buried towns at an unprecedented level of detail.[7]

It is through a combination of these distinctive datasets that we are best placed to map aspects of continuity and reciprocity between town and hinterland, straddling that artificial divide that the recourse to partial evidence may in fact contribute to create. From this point of view, the results of recent work at and around the Roman town of Interamna Lirenas may offer an enticing case-study through which to pursue these questions.

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[1] Zuiderhoek 2017, 37-55.
[2] Finley 1977, 325-6.
[3] Mattingly 1996; Hopkins 1978, 75.
[4] Finley 1977, 305; Barker 1994.
[5] Bowes et al. 2020, 548-54, 561-5; Bowes, Grey 2020, 626-9.
[6] Wilson 2002; also Mattingly et al. 2011, 261-6.
[7] Millett 2013; Patterson 2023.

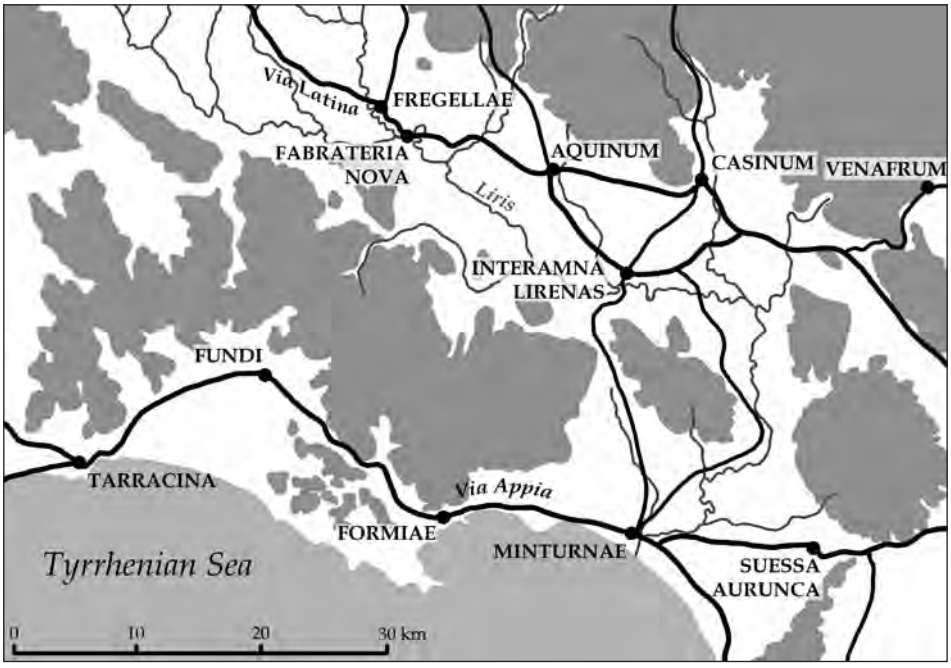

Fig. 13.1 Settlement and road networks in the lower Liri Valley in Antiquity (dark grey areas = over 1,000 m asl).

2. Interamna Lirenas as a case study

Interamna Lirenas was originally established as a Latin colony in 312 BCE. Its civic centre was placed along the path of the Via Latina, an important route through Latium, linking Rome to Campania, in close proximity to the course of the river Liri (ancient *Liris*), a fundamental (navigable) waterway through this part of Central Italy (Fig. 13.1).[8] The site occupied a well-defensible position on a clay spur (plateau) of the northern river terrace, overlooking the narrowest passage in miles between the terrace and the river, thus controlling movements both across and along the latter's course. Its foundation certainly reflected considerations of a military nature, as the colony effectively represented a bulwark in support of a broader Roman strategy aimed at containing and repelling the Samnite threat within a highly contested area. However, the ideal position Interamna occupied in relation to such an integrated communication network could also serve other scopes, well beyond more immediate military concerns.

At the beginning of the second century BCE, once solidly peaceful conditions had been firmly established following the end of the Second Punic War, Interamna found itself ideally placed in relation to the flow of goods and people – at the local, regional and supra-regional level – which passed through the Liri Valley, linking the Apennine uplands, a rich agricultural hinterland and the wider Mediterranean through the port of Minturnae (established as a Roman citizen colony in 296 BCE). In short, Interamna Lirenas represented a node within an extensive

[8] Launaro, Millett 2023b, 6-7.

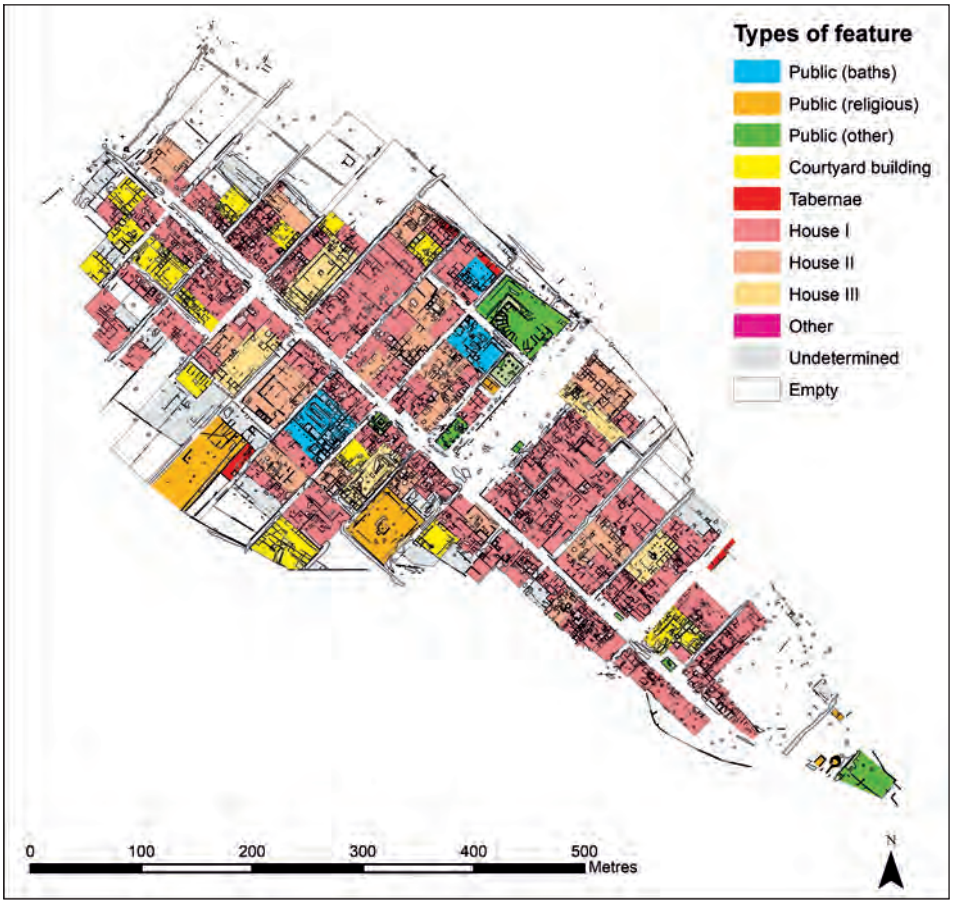

Fig. 13.2 The distribution of different types of buildings at Interamna Lirenas.

and articulated communication network, something which can hardly be seen as a unique feature when considering the spread and development of the other urban centres in Italy in this period. If anything, the stable conditions resulting from the Roman 'political unification' of Italy only strengthened and consolidated this network, while the conquest of the Mediterranean further extended its reach.[9] As trade flourished both within Italy and between Italy and a growing Roman empire, centres like Interamna Lirenas must have played a crucial role in the (re)distribution of resources and wealth – and, as such, greatly benefited from it. If these considerations alone may configure Interamna as an enticing case study, the extent to which its archaeology has been revealed over the past 15 years makes it even more crucially so.[10]

[9] Roselaar 2019, 61-120; also Launaro 2015; 2017, 96-106.

[10] Our project undoubtedly benefited from and built upon the results of earlier archaeological work (as discussed in Launaro, Millett 2023b, 10-13), most notably Cagiano de Azevedo 1947; Lena 1982; Hayes, Wightman 1984; Hayes, Martini 1994.

The plan of the buried remains of the town is now comprehensively known thanks to a full-coverage geophysical prospection involving a combination of magnetometry (2010-12) and ground-penetrating radar (2012-17).[11] At its height, the intramural area of Interamna Lirenas (23 ha) was densely occupied and featured a varied array of private residences (including a few very large ones) as well as a range of public buildings conferring a clear monumental character to the town (Fig. 13.2). A complementary study of the chronological distribution of archaeological finds recovered through systematic surface collections (2016-17) offers a sense of how urban occupation may have developed over time: in the century following the colony's foundation, occupation appears to have gravitated around the forum; most of the site was then occupied in the course of the second–first century BCE, a condition which lasted well into the third century CE; a progressive contraction followed, until the site's likely abandonment towards the end of the sixth century CE.[12] Furthermore, systematic field survey across the town's immediate hinterland (up to 4 km away from the main centre) has made it possible to outline the parallel development of rural settlement.[13] More recently, targeted use of ground-penetrating radar in peri-urban areas (2020), notably nearer to the course of the Liri river, has contributed new crucial elements to our understanding of the place of Interamna Lirenas both in relationship to its more immediate hinterland and within the broader region.

The role played in all of this by a timely and thorough study of commonware pottery cannot be overstated. Over the last couple of decades commonware has acquired an important position within the study of Roman material culture due to its wide accessibility across social groups and the settlement hierarchy in any period, featuring vessels of everyday use for the preparation, consumption and storage of food.[14] Indeed, for the most part, the commonware potsherds collected at Interamna and across its hinterland feature clay fabrics of local/regional origin, and thus reflect networks of production, distribution and consumption which were less likely to be affected by supply fluctuations than those associated with imports from overseas (increasingly the case with fineware and amphorae).[15] As such, the evidence provided by commonware pottery is especially important when mapping the relationship between this town and its hinterland – and the way it may have developed over time.

3. The periphery of Interamna Lirenas

When considering the relationship between town and hinterland, drawing a spatial boundary between the two may at first seem like an easy task. Although wall circuits (when present) may be thought of as offering an intuitively clear demarcation of where the town ended and the countryside began, such an assumption may prove to be rather misleading.[16]

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[11] Launaro, Millett, Leone 2023, 39-68.

[12] Launaro, Millett, Leone 2023, 69-80.

[13] Launaro, Leone 2018, 332-7; Launaro 2019, 124-33.

[14] Launaro, Leone 2018, 328-9; also Parisotto et al. 2022. Banducci 2021 and Goddard 2025 offer recent examples of the remarkable informative potential of this class of material culture.

[15] Local/regional origin as indicated by thin-section analyses by Claudio Capelli (Launaro, Millett, Leone 2023, 80).

[16] As discussed and illustrated by other contributions in this volume.

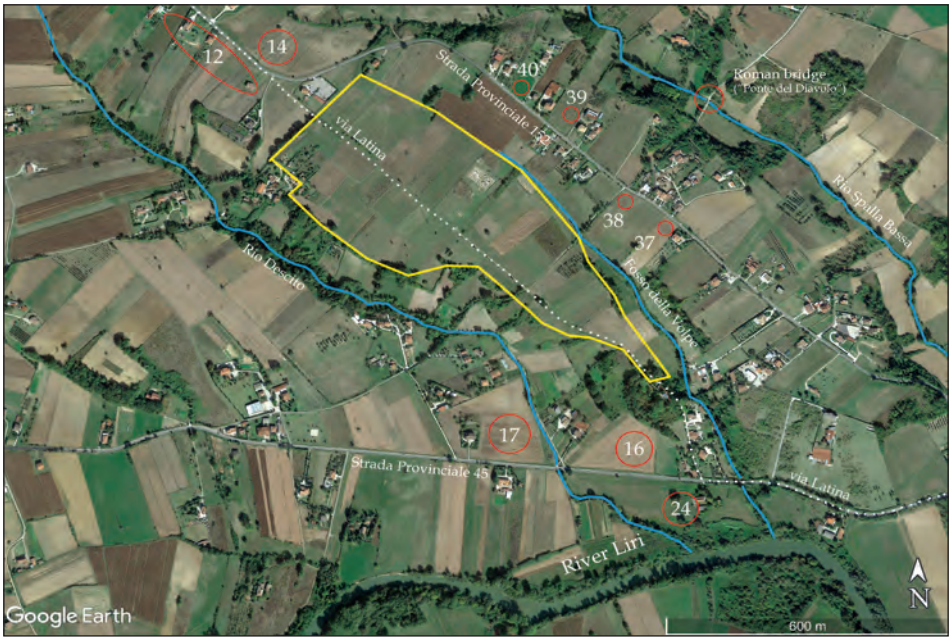

Fig. 13.3 Site of Interamna Lirenas and its environs.

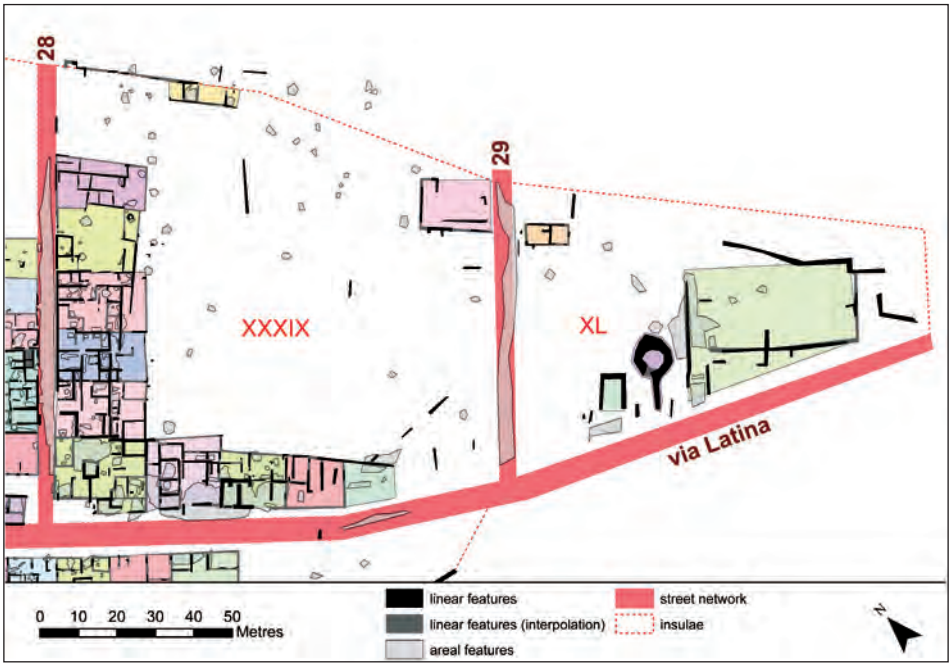

Fig. 13.4 Plan of the town of Interamna Lirenas: *insulae* XXXIX and XL.

Indeed, the case of Interamna concretely shows how difficult any attempt to disentangle one from the other may be, even in the presence of such a boundary.[17]

The plateau occupied by the urban settlement is roughly triangular in shape and oriented obliquely towards the course of the river Liri to the southeast. Two relatively steep slopes, together with the two streams running at the base of them (Rio Descito and Fosso della Volpe), provided a degree of separation from the surrounding countryside – and a level of natural protection – to the south-west and to the north-east. In turn, the much more accessible north-western side was effectively closed off with an artificial embankment (*agger*), whose likely vestiges remain still visible today.[18] As the Via Latina approached the town from the north-west, a *diverticulum* (whose path probably corresponds to a section of the modern Strada Provinciale 152) branched out and ran along the parallel ridge located immediately to the north-east of the plateau, intersecting the road which connected Interamna with the town of Casinum, eventually descending the slope of the terrace and reaching the river plain underneath (Fig. 13.3).[19]

The geophysical prospection carried out over the main urban area has identified a series of linear anomalies which we believe to be part of a wall circuit featuring protruding towers. These walls effectively reinforced the topography of the site and enclosed most of the plateau bar its narrow south-eastern tip. Although we are inclined to consider this structure roughly contemporary with the establishment of the colony, its chronology remains somewhat elusive.[20] In any case, it was largely still in place when occupation of the site was at its height in the first-second century CE.[21] The line of the walls appears to have been broadly respected throughout the town's existence, with no later structures extending over it, with the notable exception of the section which may have originally closed off the south-eastern tip of the plateau. As site occupation expanded and eventually extended over this area (*insula* XL) from the middle of the first century BCE onwards, this section of the wall was probably knocked down, its place taken by street 29 (Fig. 13.4).[22]

To the immediate north of the town, a 'sanctuary' (site 14) stood not far from the path of the Via Latina (Fig. 13.3; Table 1). Although its period of main activity dates to the fourth-second century BCE and is thus contemporary with the colonial phase of Interamna, a few finds may point to an even earlier origin (seventh-sixth century BCE).[23] It has indeed been suggested that this may have been part of a pre-existing territorial infrastructure serving transhumant husbandry in the region: accordingly, cult places like this one would have acted as point of convergence within an articulated communication network stretching between the Apennine valleys and the Tyrrhenian coast.[24] It is possible that this cult place had continued to play this

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[17] Goodman 2007, 7-78 offers a comprehensive and perceptive discussion of this problem.

[18] Hayes, Wightman 1984, 139; Launaro, Millett 2023a, 87.

[19] Although this road has sometimes been interpreted as corresponding to the Via Latina (Cagiano de Azevedo 1947, 21-4; Hayes, Wightman 1984, 140), it seems rather more likely that this represented a secondary route (Lena 1982, 58-60, 67 pl. I, 68 pl. II; Launaro, Millett, Leone 2023, 42).

[20] Launaro, Millett 2023a, 87.

[21] A passage from the Lib. *col.* (L 234.18–20 = C 182.36–37) may in fact be taken to suggest that a wall was *already* in place by the triumviral period (Launaro, Millett 2023b, 16 n. 22, 102 n. 16).

[22] This appears to be the local expression of a much more widespread phenomenon across Italy in this period: see Emmerson 2020, 47-51.

[23] Lena 1982, 63; Giannetti 1988, 202-6.

[24] Bellini, Murro, Trigona 2014, 1807-8.

territorial role as it developed into an 'extramural sanctuary' once the Latin colony had been established at the end of the fourth century BCE. As the size of the urban settlement increased, the necropolis which had since appeared on the other side of the Via Latina in the second century BCE (site 12) may have become insufficient. This may have prompted a change of use in the area of the 'extramural sanctuary' (site 14), which had probably ceased to exist as such by the beginning of the first century BCE, being itself replaced by another necropolis.

It is perhaps no coincidence that it is in this period that the urban occupation began to further expand towards the south-east, featuring an increasingly notable presence over an area that, throughout the history of Interamna, remained fundamentally free of buildings (*insula* XXXIX) (Fig. 13.4). Considerations of topographical nature have prompted us to interpret this large open space (0.5 ha) as a *forum pecuarium* (cattle market).[25] Located at the town's periphery, this open space was not far from its north-eastern and south-eastern gates (and relevant main roads into/from the hinterland). Although placed within the area originally encircled by the walls, it did in fact represent a notable break with respect to Interamna's original layout: not only may it have required the suppression of one of the secondary roads going north-eastwards from the Via Latina, but its size did not conform to the regular module of *insulae* which, introduced at the time of the colony's foundation, had been broadly respected and preserved, with relatively few and limited

Site	Interpretation	350-200 BCE	200-50 BCE	50 BCE-100 CE	100-250 CE	250-400 CE	400-550 CE
12	Necropolis		x	x			
14	Sanctuary	x	x				
	Necropolis			x	x	x	
16	Settlement				x	x	x
17	Settlement			x	x	x	x
24	River port			x	x	x	
37	Small farm			x	x	x	
38	Medium farm	x	x				
39	Medium farm	x	x	x	x		
40	Small farm	x	x	x			

Table 1. Sites identified through our own field survey and mentioned in the text.

[25] Launaro, Millett, Leone 2023, 66, 92-4.

exceptions, throughout the town's life.[26] The fact that, as noted, this open space remained unoccupied throughout the town's history – *regardless* of the intense developments taking place in the adjacent *insula* XL (see below) – lends further support to our interpretation. It is indeed very tempting to see the appearance of a possible *forum pecuarium* as a sign of how the town may have absorbed and inherited that territorial role which the (extra-mural) cult place had previously played with respect to transhumant husbandry.

As the town further expanded in this south-eastern sector from the middle of the first century BCE onwards, a new area (*insula* XL) was opened next to the *forum pecuarium* (Fig. 13.4). Interestingly, this latter *insula* featured a terraced enclosure as well as a series of shrines/temples, suggesting its use as a sacred area.[27] Although we originally considered it an 'extramural sanctuary' due to its position, it is not in fact possible to establish if the relevant section of the walls was still in place by the time *insula* XXXIX was being developed. Whatever the case, the possible barrier separating the sacred area from the *forum pecuarium* was eventually removed and replaced with street 29. Even though one can only speculate about the reasons (and precise chronology) behind this development, it probably resulted in a closer (spatial) association of religious and economic elements. That being the case, the town *may* have absorbed all the functions of the earlier extramural sanctuary (site 14), relocating them immediately to its south-east, thus breaking out of its original urban mould and perimeter (as defined by the walls) in the process.

To the northeast of Interamna, along the *diverticulum*, our field survey (2014) identified four sites (37, 38, 39 and 40) (Fig. 13.3; Table 1).[28] Two of them (39, 40) would fall within what an earlier field survey (1980) had interpreted as two oblong areas of broadly uninterrupted occupation on either side of the road, possibly corresponding to burial grounds.[29] As it happens, we did not observe much continuity between sites 39 and 40, and between these and sites 37 and 38. If anything, these sites were all characterised by well-defined and distinct concentrations of finds, whose features appear compatible – in terms of size and composition – with others located further away from the town, which we straightforwardly interpreted as 'farms' (i.e. small to medium rural sites).[30] The chronological range of the sites signals a remarkable level of continuity

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[26] Launaro, Millett 2023a, 83-5.

[27] Launaro, Millett, Leone 2023, 66.

[28] Bellini et al. 2016, 295-8. Away from the *diverticulum*, towards the southern end of the plateau, earlier surveys had also identified the presence of a 'minor site' dated between the third century BCE and the first century CE: Hayes, Wightman 1984, 146 (site 649) = Hayes, Martini 1994, 219 (site 428).

[29] This occupation was originally referred to as 'sviluppo a nastro' and 'disposizione a nastro' (Hayes, Wightman 1984, 138 fig. 2, 140, 146), rendered in English as 'ribbon development' (Patterson 2006, 104).

[30] Admittedly, due to their proximity to the town (and the very preliminary nature of the original report), these sites were initially interpreted as '[p]ossibile periferia di Interamna Lirenas', without any further qualification (Bellini et al. 2016, 298 Table 2). However, this interpretation was soon revised, and they were accordingly (re)defined as four distinct 'farms' (as such they featured in Launaro, Leone 2018, 336, fig. 10 and Launaro 2019, 125, fig. 8.3). The town's close proximity would have made daily commuting especially straightforward, so that the presence of these 'farms' may appear somewhat redundant. However, a similar situation may have also characterised the plateau to the southwest of Interamna (i.e. the one immediately beyond Rio Descito), where, although we did not find any clear evidence of permanent occupation, earlier surveys did record the presence of four 'minor sites': Hayes, Martini 1994, 115 fig. 40, 211-12, 218 (sites 355, 356, 364 and 422). In other words, if one can safely assume daily commuting to have been one possible option, it was not the only one.

in the occupation of this area, from the earliest phases of the Latin colony until the early Imperial period, followed by a gradual process of contraction in the second-fourth century CE and no signs of further settlement from the fifth century CE onwards.[31] It seems quite possible that the *diverticulum* (and the traffic moving along it) had, from the very beginning, triggered and sustained the development of some permanent occupation along its path. As such, those four 'farms' may not have been entirely dedicated to the cultivation of some fields (provided they were involved in that at all); they may have taken advantage of their strategic position with respect to the communication network, possibly featuring shops and workshops (as well), intercepting the flow of travellers bypassing the town.[32]

4. The river port

The southward expansion of the main settlement in *insulae* XXXIX and XL found its counterpart in the contemporary development taking place in the plain immediately below, between the slope of the terrace and the river itself (Fig. 13.3). This area is today bisected by the Strada Provinciale 45, whose path likely conforms to elements of the ancient communication network. Indeed, having descended from Interamna and reached the plain underneath, the Via Latina did not cross over the river Liri but rather turned sharply to the east, proceeding along the same path as the one followed today by Strada Provinciale 45. However, at the very spot where the Via Latina turned east, the communication network branched off into two more directions. One headed south, crossing the river, eventually linking with Minturnae and the Via Appia along the coast.[33] The other, corresponding to the westward continuation of the Strada Provinciale 45, proceeded along the base of the river terrace, heading west/north-west.

To the north of Strada Provinciale 45, field survey has revealed an extensive spread of archaeological materials over an area of a little more than 2 ha overall (sites 16 and 17), whose density is comparable to the one recorded on the main urban site (Fig. 13.3; Table 1).[34] Our study of the finds suggests that this occupation may have started at some point around the middle of the first century BCE, further expanding in the second century CE, with a remarkable continuity well into the sixth century CE. Whether to consider it an instance of suburban expansion or an altogether distinct satellite settlement rests again on our views about the transition from urban to rural. Admittedly, what separates this site from the town is mainly topography (i.e. the slope), which may have nonetheless sufficed to break the *continentia aedificia*.[35] As it happens, our understanding of the nature of this settlement may benefit from recent discoveries immediately to the south-east, on the other side of the Strada Provinciale 45.

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[31] *Pace* Hayes, Wightman 1984, 138 fig. 2 (followed by Patterson 2006, 101-6), who viewed this occupation as an exclusively late Republican phenomenon.

[32] See Emmerson 2020, 125-62 for an extensive discussion of this range of activities in suburban areas.

[33] Although there are no traces of an ancient bridge in this section of the river, its existence has been considered possible given local accounts of the supposed presence of 'breakwaters' (*frangiflutti*) which, until the 1930s, could be seen when the water level was low (Hayes, Wightman 1984, 140).

[34] Hay et al. 2011, 513-14 (specifically sites 16 and 17); also Launaro 2019, 129, 132. This concentration of finds had already been identified by Hayes, Wightman 1984, 146 (site 316), but was tentatively interpreted as another necropolis dated between the late Republic and the fourth century CE.

[35] On the notion of *continentia aedificia* see Buongiorno in this volume; also Goodman 2007, 13-18, 68-71; Emmerson 2020, 5-10.

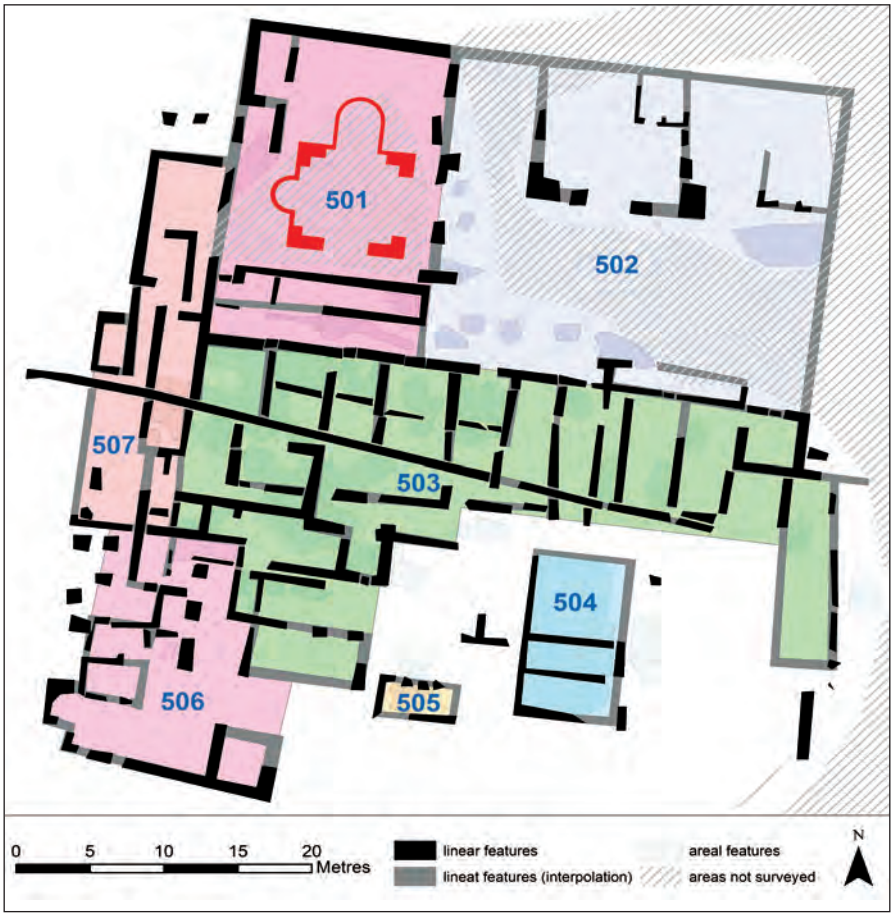

Fig. 13.5 Structures associated with the river port of Interamna Lirenas.

As mentioned, the point where the Via Latina turned east constituted a significant node within the communication network. This place, known as *Dogana Vecchia* ('Old Customs House') and corresponding to site 24 (Fig. 13.3; Table 1) represented the narrowest point in miles between the terrace and the river, thus constituting a forced passage for anyone travelling east-west through this central sector of the valley. The modern toponym itself is indeed quite telling and points to the nodal character of this location in the early (?) modern period. Significantly, this locality is also marked by the presence of ancient ruins. Until the Second World War there stood a square structure in *opus vittatum* (about 7.80 x 7.75 m) covered with a cross vault, with four openings: the one to the west featured a vaulted apse, whereas the one to the north continued with a rectangular room (itself covered with a barrel vault) and ended with another vaulted apse (Fig. 13.5).[36] This 'vaulted building' was originally interpreted as a service

[36] This building was first described by Cagiano de Azevedo 1947, 24-5. The vaults and most of the structure have since disappeared: only the lower parts of the southern and eastern sides of the main square

room, part of a (larger) late Roman bath complex.[37] Indeed, it was apparent that this was surrounded by a series of still-buried archaeological features which, from time to time, agricultural activities had brought to light.[38] However, our own field survey (2012) yielded a range of materials which would date the main occupation of this site from at least as early as the middle of the first century BCE until the fourth century CE.

In July 2020 a ground-penetrating radar (GPR) survey was carried out in this area, which indeed revealed a significant range of buried structures surrounding the ruins (Fig. 13.5).[39] The whole complex appears to be oriented 282° north-west to 102° south-east. Although this represents a very clear break with respect to the axis of the urban centre (313° north-west to 133° south-east), it does in fact match the alignment of the ancient road immediately to the north (as indicated by the path of the Strada Provinciale 45).[40] As in the case of the geophysical prospection of the main urban area of Interamna Lirenas, it has been possible to identify a series of discrete Building Units (BUs 501-7):[41]

BU 501. This looks like a sizable enclosure (ca. 23 x 15 m), bordered by a couple of rooms along its western side and two sizable oblong ones (with limited signs of internal divisions) to the south. Its western profile is continuous with that of BU 503, which may be taken to suggest that they were part of the same development. Even though the 'vaulted building' is effectively contained within the enclosure, the former is neither perfectly centred nor precisely aligned with the latter, so that they could well represent two distinct and separate phases in the development of BU 501. Assuming the 'vaulted building' to belong to a later phase (as suggested by the employment of *opus vittatum*), the resulting plan would amount

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structure remain visible (for a maximum of about 1 m in height). A recent survey of the remains (carried out in 2020) revealed the actual orientation of the building to be different from the one originally proposed. As a result, Cagiano de Azevedo's plan (Ibid., 26 fig. 2) needs to be rotated 90° anticlockwise.

[37] Cagiano de Azevedo 1947, 26-7. As such it was identified as the one mentioned in two inscriptions recording the benefactions of M. Sentius Crispinus (at some point in the third/fourth century CE: *CIL* X, 5348) and M. Sentius Redemptus (in 408 CE: *CIL* X, 5349), which in fact likely refer to a large bathhouse located within the main urban centre (Launaro, Millett 2023a, 101)

[38] Cagiano de Azevedo 1947, 25 (floors); Lena 1982, 61 n.10 (tombs); Giannetti 1988, 210-11 (tombs, inscription).

[39] Systematic presentation and comprehensive discussion of the results of this work will appear in a future publication. As far as this contribution is concerned, let it suffice to say that survey conditions were optimal: the weather was dry and the vegetation was short, so that there was a good contact between the antennas and the soil. An array of fourteen 500 MHz GPR antennas was used, towed by a quad bike. This allowed a dense sampling strategy, with a distance of *ca.* 0.05 m between the survey lines and between measurements along the lines. Using a GPS receiving a correction signal broadcasted by base stations in the region, the coordinates of every GPR measurement were known with an accuracy better than 0.02 m. A standard workflow was followed to process the data (Verdonck et al. 2020). This included noise removal (e.g. by suppressing very low and high frequency data and removing stripes from vertical profiles and horizontal slices), amplification of weak reflections caused by deeper structures, and correction of the location and shape of the buried structures ('migration').

[40] The main axis of Interamna corresponded to the urban segment of the via Latina: Millett, Launaro 2023a, 83.

[41] Although this complex of structures appears rather self-contained and relatively coherent, we cannot exclude the possibility that it extended further than revealed by the GPR. Having said that, within the area surveyed, no significant anomalies were detected further to the north, west and south (it was not possible to investigate the sector immediately to the east due to the presence of modern buildings).

to a series of rooms (some rather sizable) bordering an open space. This type of 'courtyard building' is well-attested at Interamna and could be easily adapted to mixed uses, including trade (shops), storage (depots) and even some productive activities (workshops).[42] As a corollary of this interpretation, we are in turn inclined to see the 'vaulted building' as a stand-alone, later structure, of uncertain interpretation, but almost certainly unrelated to bathing (see below).

BU 502. This appears to represent a rather large open space (ca. 27 x 23 m), whose eastern and northern limits cannot be established. Since all linear features present the same alignments as those detected in BU 501 and BU 503, we are inclined to think that BU 502 may have shared their northern and eastern boundaries respectively. That being the case, we would be in the presence of another 'courtyard building', featuring four (?) sizable rooms along its northern edge, with possibly another narrow one along the southern edge.

BU 503. This large building (with a long side of ca. 40-43 m) is made up of a series of large rectangular rooms, featuring likely signs of internal divisions, and defines the three sides (western, northern and eastern) of an open space to the south. Those located along the northern and eastern side feature a north-south orientation, whereas those to the west present an east-west alignment. The long linear anomaly cutting obliquely across the northern block of rooms results from a shallow furrow (ca. 0.1 m deep and 1 m wide) present at the time of survey, not by a buried structure.[43] Although a regular layout may have originally characterised this building, its plan developed organically over time. This appears to be another 'courtyard building', with one side open towards the river. We are very much inclined to interpret it as a *horreum*, although some of the rooms (i.e. those whose access may have not been impeded by BUs 504-5) could have been boatsheds as well.

BU 504. This rectangular structure (ca. 12 x 7 m) stands precisely in the centre of the open courtyard of BU 503 and it is oriented north-south. It is probably what is left of the *podium* of a south-facing temple, its three sections corresponding to the steps (south), portico (middle) and *cella* (north). Its remains may in fact have been visible in the early 1800s, when Francesco Notarjanni reported to have seen, during his visit to Interamna, 'the base of a temple, not far from the river, and the basement of another, to the west of it'.[44]

BU 505. This is an isolated rectangular structure (6 x 3 m), located within the courtyard of the *horreum* (BU 503), to the immediate west of the temple (BU 504). It could be a vat, perhaps serving as a public drinking trough for animals or – given its proximity to the temple – a monumental fountain (*nymphaeum*).[45]

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[42] Launaro, Millett, Leone 2023, 47-8, with reference to Béal 2010, 17-19; Holleran 2012, 108-9; Yegül, Favro 2019, 577-8.

[43] Interpretation of GPR results should take into account the limitations of the method and the complexity of the data (Verdonck et al. 2023). As such it can also be complicated by irregularities at the surface. These cause differences in the contact between the antennas and the soil, which can be visible in deeper horizontal slices. Often it is difficult to remove these variations through data processing, and we must be careful not to interpret them as real archaeological structures.

[44] Notarjanni 2016 [1814], 42: 'si scorgevan le basi di un tempio, poco lungi dal fiume, e li sotterranei di un altro dalla parte di occidente'.

[45] Remains of this structure may have been seen by Notarjanni 2016 [1814], 42, being (mis)interpreted as 'li sotterranei di un altro [tempio] dalla parte di occidente' (n. 46) (a possibility suggested to us by one of our anonymous reviewers).

BU 506. This building (ca. 17-18 x 9-15 m) presents a somewhat irregular plan, partly encroaching on the western side of BU 503. Its internal divisions suggest a possible succession of rooms, especially along its western side, whereas its southwestern corner may have featured an apse. On the whole, we are inclined to interpret this as a small bath complex.

BU 507. This unit (ca. 28 x 6-7 m) is made up of a series of elongated rooms placed along the western (continuous) boundary of BUs 501 and 503. It is cut across by the same linear anomaly recorded for BU 503, which resulted from modern agriculture (above). Its plan is not suggestive of any specific function, although the rooms would have been large enough to be used for a range of activities akin to those suggested for the 'courtyard buildings' (BUs 501-3).

All these facilities could have served the traffic of goods and people which probably converged at this location along the river and may have provided suitable space for a wide range of activities associated with it. In other words, we believe these structures to belong to a river port.[46] BUs 501-3 and 507 could have provided plenty of suitable space for storage as well as shops, workshops and boatsheds. The small bath complex (BU 506) could have catered to the needs of travellers or, given its close structural association with BU 503, could have been intended for the exclusive use of the workers.[47] The temple itself (BU 504) most likely played a part in this. We cannot say whether its construction had preceded that of the other buildings (which may have later developed around it) or had been contemporary with it (designed together as part of the same project). Whatever the case, it certainly signalled an important point along the river and placed the activities taking place within this area under the protection of a deity (perhaps Neptune, or even Fortuna).[48]

After all, this location had almost certainly acquired relevance before the creation of the facilities associated with the port. Around the middle of the fourth century BCE, the river Liri may have acted as a boundary between the areas of influence of the Romans (right bank) and of the Samnites (left bank).[49] With the outbreak of the Second Samnite War (326-304 BCE), the site of the Latin colony of Interamna Lirenas was chosen as a bridgehead into Samnite territory, likely protecting an important crossing along this natural barrier. This should not be taken to imply the presence of a bridge at this time – or even later on.[50] A barge would have sufficed, as we know it did at several locations along this river in the medieval and post-medieval period.[51] Although the chronological range of the materials collected by our field survey around site 24 predominantly dates to between the middle of the first century BCE and the end of the fourth century CE, a couple of Black Gloss potsherds (undiagnostic walls) may hint to an earlier – if less substantial – occupation. Even though the temple may date to a Republican phase, it may well represent a later monumental development of the cult area, perhaps contemporaneous with the creation of the main port infrastructure and Interamna's southward expansion around the middle of the first century BCE. Accordingly, the interpretation of the 'vaulted building' may acquire new light, particularly if we assume its eastern opening

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[46] The presence of 'breakwaters' (n. 33) would also be appropriate in the context of a river port (a possibility suggested to us by one of our anonymous reviewers).

[47] A comparable situation is known from the port of Vada Volaterrana, in northern Etruria, where the *Piccole Terme* ('small baths') were not only attached to a large *horreum*, but were in fact only accessible through it (hence the suggestion that their use would have been limited to the warehouse workers): Menchelli, Sangriso 2019, 477-8.

[48] For cult activities in the context of river ports in Italy see Diosono 2010, particularly 92-8.

[49] Liv. 7, 19, 4; 7, 30, 4; D.H. 15.7; Salmon 1967, 191-4.

[50] *Pace* Hayes, Wightman 1984, 140.

[51] Serra 2003.

to have originally featured another apse, symmetrical to the western one.[52] If so, the resulting structure would have looked like a stand-alone triconch, and we would be very tempted to interpret it as an early Christian chapel, or small church. Were this to be the case, the 'vaulted building' may have succeeded/replaced the temple, inheriting its cultic role, perhaps in the context of a more general restructuring of the whole complex (including the demise of BU 501) towards the end of the fourth century CE.

On the whole, the combination of the various archaeological traces to the north and south of the Strada Provinciale 45 seem to point to the existence of a 'suburban agglomeration' which developed in close relationship with – if spatially distinct from – the main urban centre of Interamna Lirenas.[53] This satellite settlement would have further extended Interamna's reach and participation in the broader communication network, of which the Via Latina was only one part – and not necessarily the most important one. By 28/27 BCE the Via Latina had indeed acquired a more direct course between Aquinum and Casinum, thus effectively bypassing Interamna.[54] However, this did not represent the end of the old Via Latina, which continued to connect the important centre of Aquinum with Interamna – and its port. Similar considerations can be made for the road linking Interamna with Casinum, the one served by the bridge on the Rio Spalla Bassa (so-called *Ponte del Diavolo*), itself located less than 500 m to the northeast of town (Fig. 13.3). In other words, it is the river Liri which probably represented the most important pull factor in the long term, a situation which may have also determined the southward expansion of the main urban centre.

5. The town beyond the town

When one considers developments in the immediate periphery of Interamna and in its suburban areas, the role played by the communication network appears obvious. All these settlements were placed in connection to it and, notwithstanding their varied nature, all effectively served to project Interamna's reach into its hinterland and the broader region. Whether or not the town *institutionally* ended with the line of the walls or the *continentia aedificia*, its influence extended very much beyond it. There are indeed strong indications that town and countryside not only were very closely integrated, but that they effectively performed as one – thus pointing to a rather high degree of permeability. This may find support not only in the parallel development of urban/rural settlement patterns, but also in the distribution of different classes of pottery, whose patterns of expansion/contraction appear to broadly coincide over time.

As mentioned, Interamna Lirenas was a node of an articulated network of distribution, with goods and resources reaching the town from a wider catchment, with a significant share of it being in turn redistributed across its hinterland and broader region. Signs of improved infrastructure from the second century BCE onwards point to Interamna's early involvement in this. Within the town, a *porticus* was built early in the second century BCE, not far from the

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[52] Although there are no visible traces pointing to the existence of this missing apse, the state of the visible remains is such – and was such when it was first surveyed (Cagiano de Azevedo 1947) – that such a possibility cannot be excluded. Although buried traces of the apse's foundations may still exist, dense vegetation and considerable debris made it impossible to investigate this area as part of our GPR survey.

[53] As per the definition provided by Emmerson 2020, 161: 'minor urban zones that were dependent on but not physically contiguous with a nearby city'.

[54] Ceraudo 2007, 105-10; also Id. 2004, 155-6.

forum, in an area later occupied by the roofed theatre.[55] It is contemporary with the 'utilitarian' *porticus* which had begun to appear in Rome, just outside the Porta Trigemina, and may have fulfilled similar function(s), thus expanding the range of productive/commercial activities within the town.[56] The construction of the so-called *Ponte del Diavolo,* dated to the later part of the second century BCE, would have not only reinforced the direct connection with Casinum, but also improved conditions within the communication network more generally.[57]

As we saw, the development of the *forum pecuarium* and the river port during the first century BCE reinforced the place of Interamna as a point towards which people and goods converged – and from which they spread again. Two inscriptions generally dated to the first century CE confirm that Interamna had at some point been part of two separate networks of periodical markets (*nundinae*), the only location featuring in both.[58] Admittedly, we cannot be sure that these two networks had been functioning at the same time: if they did, Interamna would have represented a crucial link between the two, bringing them together and thus further extending the reach of the goods traded within them; if they did not, this evidence would still attest to the enduring relevance of Interamna within the regional trade network. In short, whatever the case, Interamna Lirenas must have represented a significant entrepot in this part of Italy during the early imperial period, part of a regional market network, as indicated by the notable presence of local/regional commonware pottery dated to this period.

Activities related to transhumant husbandry, and the wool trade in general, probably played a big role in this. Whether or not the 'extramural sanctuary' (site 14) was precociously linked with it, the presence of a sizable *forum pecuarium* within the town points to such role. As it happens, regular transit of animals through the river port could be indicated by the presence of a possible public drinking trough (BU 505). Furthermore, the geographical distribution of the places mentioned in the two lists of periodical markets seems to bring together the pastures of the Apennine highlands (Samnium, Apulia), the textile-processing facilities and consumption centres of the lowlands (including Interamna), and the redistribution node of Minturnae along the Tyrrhenian coast.[59] Remarkably, of the only two professions that are epigraphically attested at Interamna, one is that of a *colorator* (dyer), the other being a baker.[60]

The geophysical prospection of the urban area has also revealed the existence of numerous 'courtyard buildings', much like those identified at the river port. Although their mere presence should not be equated with trade/storage-related functions, their number (18) and combined area (more than 1 ha) may well appear excessive if they were only meant to serve the resident population of a middling town like Interamna. These buildings tend to be located at the margins of town, not far from the main gates (Fig. 13.2), and it seems reasonable to assume at least some of them to have provided temporary storage for goods which were meant to be distributed elsewhere. It could well be that a broader range of goods found its way to – and *through* – Interamna on the back of the wool trade, thus turning this town into something of a regional commercial hub.[61] This strategic role may explain the attention which the town

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[55] Bellini et al. 2019, 333; Launaro, Millett 2023a, 92.
[56] Davies 2017, 131.
[57] Murro 2013, 524.
[58] *InscrIt*, XIII, 2, 49-50.
[59] Storchi Marino 2000, 102-3; Ziccardi 2000; also Launaro, Leone 2018, 327.
[60] *CIL* X, 5352 (*colorator*), 5346 (*pistor*).
[61] Launaro 2023, 180.

received from Julius Caesar (*patronus* of the municipium in 46 BCE), who would have had every interest in securing the loyalty of a crucial node in the supply network in this part of Central Italy.[62] Similar considerations may also apply to Anoptes, a wealthy freedman of the Sulpicii Galbae, whose trade interests, although concentrated along the coast, may have also extended inland, following the course of the river Liri, all the way from Minturnae.[63]

There can be no doubt that, throughout its history, Interamna Lirenas largely relied on resources coming from its hinterland. At the same time, the town must have made a wide range of goods accessible not only to its urban residents, but to a much larger population settled in its territory – and even further afield, across the region. Although archaeological research has recovered preciously little which may allow us to properly appraise the scale of urban manufacturing (if any), there is plenty of evidence to suggest that Interamna had provided its territory – and the wider region – with an articulated and extensive infrastructure in support of the distribution of goods produced elsewhere.[64] Remarkably most of this evidence comes from either the immediate periphery of Interamna (*forum pecuarium*, 'courtyard buildings') or its suburban areas (river port). As already pointed out, notwithstanding some notable exceptions, these areas have not traditionally received the same level of attention as the civic/monumental core of (Roman) towns. However, when systematically investigated, they rarely fail to enrich – and complicate – our understanding of the relationship between a town, its territory and its broader region.

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[62] Launaro, Patterson 2020, 215-24.

[63] Launaro, Patterson 2020, 235-40.

[64] Some limited evidence of productive activities within town was reported in Hayes, Wightman 1984, 143-5.

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Chapter 14

Between city and countryside: investigating the *suburbium* of Roman Pisa

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Abstract

Roman Pisa represents a compelling case study for understanding the *suburbium* in the context of a medium-sized centre on the Italic peninsula. Its strong commercial vocation, shaped by its strategic position near the Tyrrhenian Sea and between the Arno and Auser rivers, played a decisive role in defining its urban and suburban landscape. Past attempts to reconstruct Pisa's urban layout have often imposed rigid models that align poorly with archaeological and palaeohydrographic evidence, obscuring the complexity of city-periphery relationship. The Pisa Progetto Suburbio was initiated to overcome these limitations through an interdisciplinary approach that integrates literary and epigraphic analysis, palaeoenvironmental reconstructions, legacy data, targeted excavations, and 3D reconstructions. This study reveals both well-defined patterns and significant knowledge gaps, offering new perspectives on the evolving relationship between Pisa and its *suburbium*.

Keywords

Palaeoenvironment; legacy data; archaeological excavation; medium-sized centre; 3D-reconstructions.

Introduction

The periphery is frequently conceptualised as a liminal space between urban and rural landscapes.[1] Due to its inherently transitional nature and its variability over time and space,

[1] See for example Goodman 2007, 1-6; Annibaletto 2010, 22-3; Emmerson 2020, 8-10.

defining it with precision remains challenging. It constitutes indeed a dynamic and evolving entity, comparable to a fluid 'belt' that transcends the established physical and conceptual boundaries of the urban centre. A multiplicity of factors contributes to the formation of this liminal zone, which is often characterised by distinctive economic and social dynamics that significantly shape the relationship between urban and rural areas. As urban centres expand and transform, the periphery plays a crucial role in accommodating shifting populations, evolving land-use patterns, and diverse cultural interactions. The city and its periphery thus constitute two facets of a single phenomenon, each reflecting, as in a mirror, the phases and modalities of development, stagnation or decline experienced by the other.

Ancient sources concerning *suburbia* report information that pertains primarily to the city of Rome.[2] However, there is a clear risk in automatically transposing the characteristics of the suburban spaces of the *Urbs* onto considerably smaller urban centres. Nevertheless, it is once again the sources that confirm the existence of spaces that may be defined as 'suburban' beyond Rome itself. In this regard, it is worth noting how the legislation of colonies under Roman law or of *municipia* incorporated the concept of *suburbium*, even when applied to urban centres with characteristics distinct from those of the capital.[3]

Significant efforts have been made to establish criteria for differentiating urban areas from their suburban counterparts,[4] at times applying excessively rigid definitions. Such rigidity does not align with a reality that, as we have seen, is highly dynamic and fluid. In defining the concept of *suburbium*, we do not seek to provide spatial parameters determined *a priori* or based on a theoretical extension.

Ultimately, the definition of the suburban area cannot be reduced to a simple matter of drawing a circle around the urban centre, even while considering indications from the sources.[5] Instead, the definition of a *suburbium* must be based on an analysis of different urban areas, some of which may have highly irregular spatial configurations and contain rural areas. The *suburbium* may extend with outlying branches – sometimes over considerable distances – towards specific productive or commercial areas, not necessarily forming a continuous territorial link with the urban core. As a result, in some instances, agricultural land may be found near the city, while in other cases, suburban areas may extend along terrestrial and fluvial routes towards hubs located several miles away.[6]

Roman and Late Antique Pisa represents a compelling case study for understanding the *suburbium* in the context of a medium-sized centre of the Italic peninsula. Pisa is a settlement distinguished by its long historical continuity and its pronounced commercial vocation, which was largely determined by its strategic geographical position – close to the Tyrrhenian Sea and located between the courses of two rivers, the Arno and the Auser, the latter subsequently displaced from the urban landscape.

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[2] Annibaletto 2010, 21-4 (on the centrality of Rome), 172-300 (for a complete list of literary and epigraphic sources on *suburbia*).

[3] Annibaletto 2010, 172-300 (for literary sources). See also: Goodman 2007, 14-18; Todisco 2016; Emmerson 2020, 5-8.

[4] Panciera 1999; Grilli 2000; Goodman 2007, 59-68, esp. 65; Annibaletto 2010.

[5] On the issue of the theoretical and non-theoretical extension of *suburbia* from the sources see Grilli 2000, 46, n. 28; Annibaletto 2010, 96-130.

[6] Goodman 2007, 93-6; Emmerson 2020, 160-62.

The complexity of the relationship between the city and its *suburbium* has never been adequately addressed in the case of Roman Pisa. Over the past century, archaeologists have made various attempts to reconstruct its urban layout. Some scholars have sought to impose a 'canonical' *forma urbis*, tracing and delineating a conjectural walled circuit,[7] while others have proposed an orthogonal urban plan composed of uniformly arranged quadrangular blocks, oriented either in a north-south direction[8] or, alternatively, aligned with the centuriation system of the Triumviral-Augustan period.[9] However, these reconstructions suffer from three fundamental weaknesses: their tenuous relationship with the archaeological data, the tendency to impose rigid urban boundaries, and the absence of reliable reconstructions of the ancient course of the Auser river.

In reality, understanding the urban form and the relationship between Pisa and its *suburbium* is still hindered by the elusive nature of the river courses and the lack of identification of key public spaces, primarily the forum area. Furthermore, key markers that typically define the transition between city and *suburbium* are missing, most notably the absence of – or at least the failure to identify – any urban fortifications.[10]

The *Pisa Progetto Suburbio*[11] was initiated with a set of key environmental, topographical, historical, and social questions that guided the research investigations, as follows:

- What was the palaeoenvironmental and palaeohydrographic configuration of Roman Pisa?
- What characteristics define the urban area, and what distinguishes the suburban zones?
- How did the extent of urban and suburban areas change over time, particularly in relation to the river systems?
- How was the suburban landscape utilised over time?
- Is it possible to identify differentiated uses of space within the suburban environment?
- What activities specifically characterised the fluvial landscape over time?
- Which social groups were involved in the processes of suburban development and urban expansion?
- Which social groups were involved in the processes of urban and suburban contraction?
- How did the city and its *suburbium* appear when seen from the river? An attempt to investigate perception phenomena.

These questions can be addressed through a host of methodological approaches:

- Analysis of literary sources.
- Study of epigraphic documentation.
- Investigations aimed at environmental reconstruction (geomorphology, geoarchaeology, palaeobotany, archaeozoology); elaboration of digital palaeogeographic elevation models (PalaeoDEM).

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[7] Neppi Modona 1932; Banti 1943.

[8] Neppi Modona 1953, as also in Bocci 1965, 193.

[9] Redi 1991, 36-42, 50-51, pl. 6; Meo 2014, 82-95, pl. 1.

[10] On the presence of fortifications in Pisa, particularly in relation to the sieges laid by the Ligurians against the city in 193 and 183 BCE (Plb. 2.16.2; Liv., 34.55.1-56.1; 35.3.1; 41.13), and on the associated archaeological evidence, see Maggiani 1986, Bruni 1998, 228-32; Pasquinucci 2003b, 81; Fabiani, Ghizzani Marcía, Gualandi 2013, 169 n. 27; Gattiglia 2013; Fabiani, Rizzitelli 2019. Additionally, for a reconstruction of a hypothetical defence circuit dating to the Late Antique and Early Medieval period, based exclusively on literary sources, see Garzella 1990.

[11] https://pisaprogettosuburbio.cfs.unipi.it

– Review of archaeological literature and GIS-based analysis of legacy data.
– New archaeological research, focused on key study areas in order to examine specific phenomena and analysis of finds from reliable contexts.
– 3D reconstructions.

In this chapter, we aim to provide an overview of the various methodological approaches employed in the *Pisa Progetto Suburbio*. These approaches, akin to ideal 'layers', have yielded specific information with varying degrees of validity and criticality. By superimposing these different layers in our discussion, we will establish correlations between the data derived from each, allowing for the emergence of an integrated picture that exhibits certain well-defined features, extensive blurred areas, and vast empty spaces. These gaps are not merely topographical voids but also encompass the intricate network of economic, cultural, and social relationships underlying the material reality under investigation. It is precisely these absences and indistinct contours that offer fresh and stimulating avenues for further research.

F. F.

1. Methodological approaches and data acquisition

1.1. *Literary sources*

The written sources of the Roman period constitute the starting point for defining both the urban reality of Pisa and its natural environment. However, these sources provide topographical information that is often imprecise, sometimes contradictory, and dispersed across texts of varying genres (historical, geographical, poetic). This diversity and vagueness make it particularly challenging to correlate their content with the data emerging from environmental reconstructions.

A series of passages (Ps.-Ptol. 3.1.4; Str. 5.2.5; Plin. *nat*. 3.50; Rvt. Nam. 1.564.70; Clavd. 15.415-17, 479-90) contribute to outline a complex hydrographic framework for the territory of the urban centre of Pisa – a framework that has long been the subject of scholarly debate.[12] Whatever questions may be raised by the various texts, Pisa (Fig. 14.1) was bordered to the north by the Auser and to the south by the Arno. The former flowed into the latter, creating what Rutilius Namatianus describes as a *conum pyramidis*, a wedge-shaped strip of land, gradually narrowing towards the confluence of the Auser into the Arno, where the city was built.[13]

The poetic text *De bello Gildonico*, composed by Claudian at the beginning of the fifth century CE, offers a further intriguing detail with its mention of *navalia* – an architectural feature certainly well-suited to the natural environment and the strong commercial vocation of Roman Pisa.[14]

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[12] See, most recently, Bruni, Cosci 2003; Pasquinucci 2003a; Camilli 2012; Id. 2019.

[13] For the continuing importance of the two rivers even during the sixth century CE, see Cassiod. *Var*. 12, 5, 17.

[14] Clavd. 15.479-485.

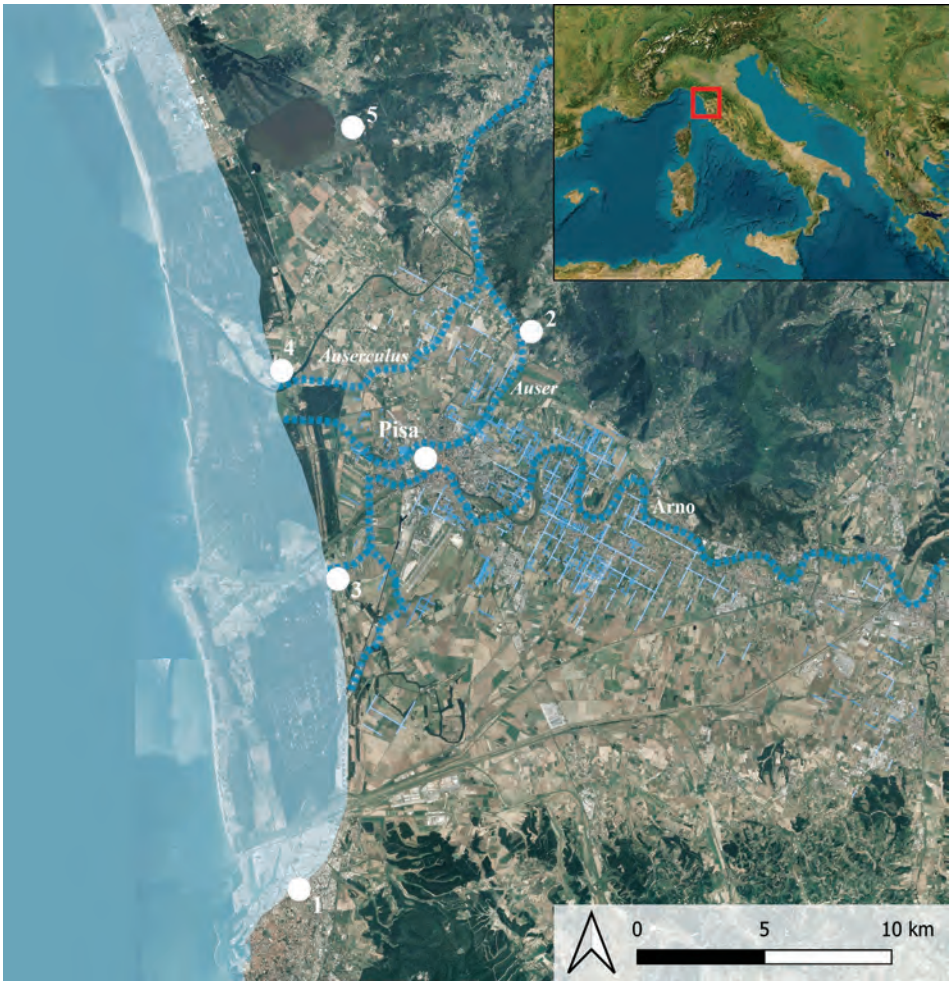

Fig. 14.1 Pisa and its suburban clusters with hypothetical reconstruction of the Roman era coastline, river system, and centurial grid. 1. *Portus Pisanus*; 2. San Giuliano Terme/*Aquae calidae Pisanorum*; 3. San Piero a Grado; 4. Isola di Migliarino; 5. Massaciuccoli. The confluence of the Auser into the Arno in Pisa, mentioned in the sources, has not been identified.

Moreover, both *Portus Pisanus*,[15] the Imperial-Age main maritime port (Fig. 14.1 no. 1), and *Aquae Calidae Pisanorum* (Fig. 14.1 no. 2),[16] a settlement at the foot of Monte Pisano, likely reveals through their very names a strong connection to the urban core. This suggests

[15] For literary sources on the *Portus Pisanus*, see Rvt. Nam. 1.527-40; 2.11-13; *Anton. Aug.* p. 501, 1-4; Clavd. 15.415-17, 479-90. Tacitus also mentions the *sinus Pisanus* (*hist.* 3.42), a geographical expression hypothetically connected to the coastal strip but difficult to appreciate.

[16] Plin. *nat.* 2.103: *Patavinorum aquis calidis herbae virentes innascuntur, Pisanorum ranae, ad Vetulonios in Etruria non procul a mari pisces.*

their affiliation with spaces that could be defined as *sub urbe*, situated on the threshold between the city and its wider territorial context.[17]

1.2. *Epigraphic sources*

The epigraphic corpus of an urban centre typically provides valuable insights into various aspects of political, administrative, economic, and social life, including those related to the definition of suburban spaces. However, the case of Pisa presents significant limitations in this regard. One of the primary challenges lies in the extreme dispersal of epigraphic texts – an issue particularly acute in Pisa, where only few inscriptions have been found in their context.[18] Furthermore, a substantial number of inscriptions, along with statues, sarcophagi, and architectural elements, arrived in Pisa as part of a complex medieval trade of *spolia*, largely sourced from Ostia and Rome by Pisan merchants.[19] Consequently, only the inscriptions that can be unequivocally attributed to the Pisan context – based on internal textual elements and/or distinctive formal characteristics – can be considered in reconstructing the city's epigraphic repertoire.

Despite these challenges, the available inscriptions offer insights into the legal status of the city and urban development, particularly for the period spanning from the Late Republic to the Early and Middle Empire (first century BCE–second century CE). They provide a partial yet valuable picture of Pisan society and the economic activities in which its diverse social strata were engaged.

The elevation of Pisa to the status of a Roman colony,[20] following the settlement of Octavian's veterans between 42 and 27 BCE, is attested by the *Decreta Pisana* dating to 2 and 4 CE.[21] These decrees document measures taken by the *ordo decurionum* upon the deaths of Gaius and Lucius Caesar. They confirm the city's new colonial title, *Colonia Iulia Opsequens Pisana*,[22] and refer to a temple dedicated to Augustus in the forum (*in foro in Augusteo*),[23] likely corresponding to the *celeberrimus coloniae nostrae locus* mentioned as the intended location for an honorary arch dedicated to the two *principes*.[24] The texts also attest to the presence of other civic buildings, including unspecified *templa deorum immortalium*, *tabernae*, and public *balnea*.[25] *Decreta Pisana* additionally provides some information on the suburban landscape. A cenotaph-altar dedicated to Lucius Caesar, where an annual funerary rite was to be performed, may have been located in a suburban necropolis. More securely attested is the existence of an area outside the city designated for *ludi circenses*,[26] though rather than a permanent *circus*, this likely consisted of a temporary arrangement for chariot races. The

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[17] For a definition of the expression *sub urbe* and the terms derived from it (*suburbanus, a, um*; *suburbicarius, a, um*; *suburbium*; *suburbanitas*), see Annibaletto 2010, 65-8 and table 2.

[18] *InscrIt* VII, 1, 48; *CIL* XI, 1433.

[19] Parra 2003; Donati 2012; Caldelli, Raggi, Slavich 2017.

[20] Pisa obtained the status of *municipium* after the Social War (Pavl. Fest. 155 L).

[21] *CIL* XI, 1420, 1421. On *Decreta Pisana* see Segenni 2011.

[22] *CIL* XI, 1420, 35.

[23] *CIL* XI, 1420, 1.

[24] *CIL* XI, 1421, 34-7.

[25] *CIL* XI, 1421, 22-3.

[26] *CIL* XI, 1421, 30.

presence of a permanent theatre is inferred only from a vague reference to *ludi scaenici*. Brick stamps[27] and a dedicatory inscription[28] attest to the involvement of the only known Pisan senatorial family, the *gens Venuleia Aproniana*,[29] in the construction of two key infrastructural features: the aqueduct of Monte Pisano and the public *thermae,* so-called Terme di Nerone.

Between the first century BCE and the second century CE, the social composition of Pisa appears to be characterised by a significant servile[30] and freedman[31] population, particularly documented in funerary inscriptions. This group played an active role in the city's economic and productive activities,[32] often participating in *collegia* such as the *Mercuriales* and, later, the *Augustales*.[33] Freedmen were also involved in acts of euergetism[34] and in dedicatory practices at sacred sites.[35] Professional *collegia* are also attested, including the *fabri navales* and *fabri tignarii,* involved in shipbuilding and construction companies.[36] In contrast, the presence of Octavian's veterans is known primarily from inscriptions found in the broader territory rather than within the urban core.[37] The local magistracy is better attested, with epigraphic evidence recording the presence of *duoviri, aediles* and members of the *ordo decurionum*.[38]

S. G.

1.3. *Palaeoenvironmental reconstruction*

An integrated methodological approach combining geomorphological, geoarchaeological, palaeobotanical, and archaeozoological analyses is essential for producing robust palaeoenvironmental reconstructions through multi-proxy data. However, the spatial and temporal variability of environmental records, along with the differing resolution of datasets, complicates the transition from site-specific evidence to broader territorial interpretations; spatial

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[27] Pasquinucci 1990, 177-8, figs 20-21.

[28] *CIL* XI, 1432 = *AÉpigr* 1955, 120.

[29] See also *CIL* XI, 1433; *CIL* XI, 1436 = *ILS*, 7258; *CIL* XI, 1498; *InscrIt* VII, 1, 123 (from Pisa); *CIL* XI, 1525 = *AÉpigr* 2016, 402a (from Lucca); *CIL* XI, 1433a = *AÉpigr* 1983, 383 = *AÉpigr* 1994, 603 (from Massaciuccoli).

[30] See the numerous servants of *Marcus Appius* involved in the production of bricks in the hinterland of *Portus Pisanus* (Genovesi 2014a).

[31] *CIL* XI, 01441 = *ILS* 6599; *CIL* XI, 1442; *CIL* XI, 1444; *CIL* XI, 1460; *CIL* XI, 1462; *CIL* XI, 1514; *AÉpigr* 1982, 358 = *AÉpigr* 1990, 348; *AÉpigr* 1991, 654. The presence of freedmen seems also attested, with some doubt, in *CIL* XI, 1471 = *AÉpigr* 1985, 389; *CIL* XI, 1474; *CIL* XI, 1475; *CIL* XI, 1481.

[32] For people involved in the city's ceramic productions see, in general, Menchelli 1995 (for the brick manufactures *CIL* XI, 6689, 201a).

[33] *CIL* XI, 1445 = *AÉpigr* 2017, 425; *CIL* XI, 1446; *CIL* XI, 1416a-b; *CIL* XI, 1417. See also Fabiani 2002; Fabiani 2024, 68-71.

[34] *CIL* XI, 1418.

[35] *CIL* XI, 1419.

[36] *CIL* XI, 1436 = *ILS*, 7258; *Epigraphica* 1990, 140.

[37] *CIL* XI, 1524; *AÉpigr* 1991, 658 (from Pisa area); *CIL* XI, 1440 (from Pisa).

[38] *CIL* XI, 1441 = *ILS* 6599; *CIL* XI, 1447; *CIL* XI, 1526; *AÉpigr* 1985, 388. The entire *ordo* is also mentioned in *CIL* XI, 1429, datable to the mid to late Imperial period. The community is named as *civit(as) Pisana* in the text of a milestone dating between 375 and 378 CE (*CIL* XI, 6665 = *AÉpigr* 2017, 2). A limited number of epigraphic texts, all funerary, can be referred to people of low to middle class status: *CIL* XI, 1440, 1450, 1478, 1485, 1488.

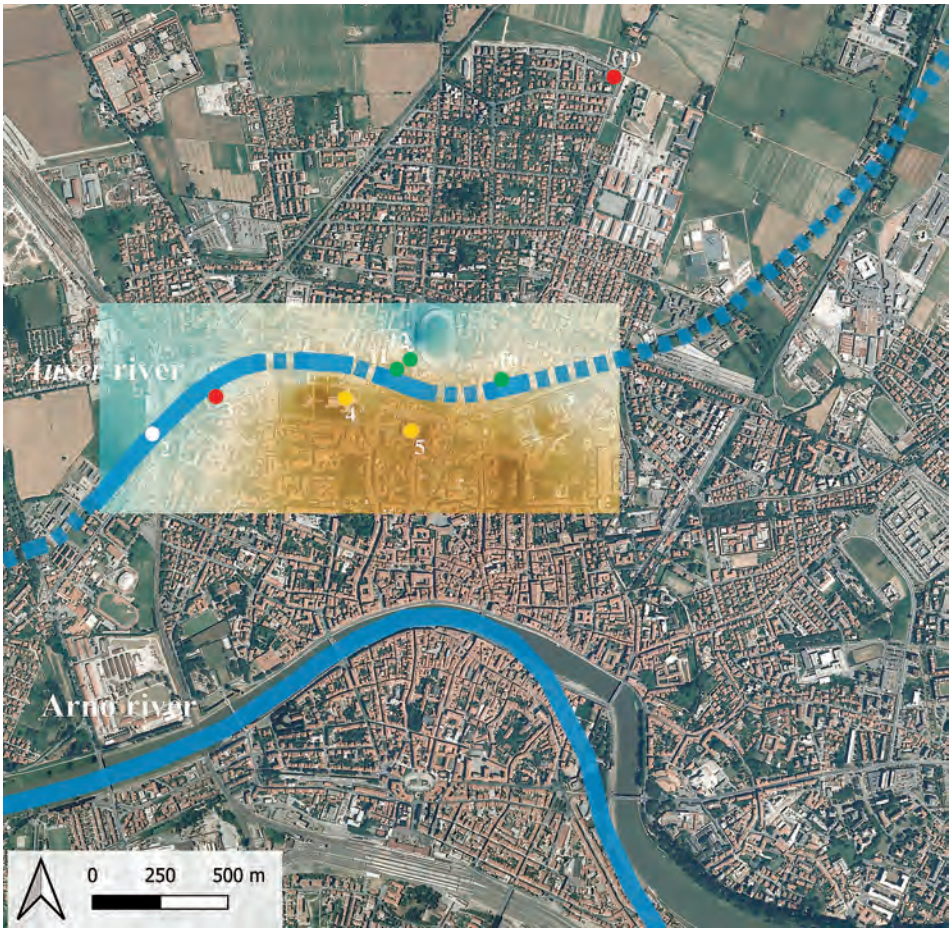

Fig. 14.2 Pisa, Late Republican era. 2. San Rossore shipwrecks; 3. Piazza Andrea del Sarto; 4. Piazza del Duomo; 5. Arcivescovado; 11. Via Contessa Matilde; 12. Via Galluppi; 16. Via Marche; 19. Via di Gello. Typology of sites: villas/farms (red); residential quarter (yellow); trade and craft structures (green); shipwrecks (white).

analysis can partially mitigate these gaps, but significant limitations persist. Furthermore, the frequent absence of metadata and detailed documentation of sampling and recording strategies hinders data verification, reuse, and comparability.[39] In the specific case of alluvial plains with long-term settlement continuity, the reconstruction of ancient river systems presents additional challenges. Natural geomorphological processes gradually hide inactive fluvial features, while anthropogenic modifications continuously reshape the hydrographic network, resulting in highly dynamic and stratified landscapes. Even when palaeochannels and buried morphologies are identified, their classification, chronology, and relationship to settlement patterns often remain

[39] Huggett 2015.

uncertain and require ongoing revision as new datasets and analytical methods become available.[40] These complexities highlight the need for adaptive interpretive frameworks that integrate geomorphological and archaeological evidence within evolving research contexts. Applied to the Pisan landscape, this approach has significantly enhanced our understanding of the region's palaeohydrography and its interaction with the surrounding environment.

Roman Pisa developed on a broad morphological plateau at the closest convergence of the Arno and Auser rivers (Fig. 14.2), within a floodplain marked by considerable hydrological instability. As the previously mentioned literary sources suggest, these waterways played a significant role in shaping the city's identity and development, both geographically and symbolically. The integrated methodological approach has resulted in the reconstruction of significant sections of the ancient Auser and Arno rivers, providing a context for the discovery of ancient ships in the San Rossore area (Fig. 14.2 no. 2).[41]

However, reconstructing the course of the Auser is particularly challenging due to its extreme variability over time, which has led to its gradual shift away from the urban area. In the Roman period, following its passage through the Ripafratta gorge, the river is believed to have bifurcated near Pappiana. The main branch continued southward through San Giuliano and Gello before entering the city from the northeast, while a secondary branch, the *Auserclus*, veered westward towards an independent seaway at Isola di Migliarino (Fig. 14.1). The Arno likely followed a meandering course similar to its present path. The most significant differences are evident at the city's entrance, where the river once followed a gentler course than today's abrupt meander. Beyond the city, the now-lost meanders of Barbaricina, Vettola, and San Rossore preceded its outlet to the sea at San Piero a Grado.[42] Within the urban area, the Auser flowed through the northern district of San Zeno, while the Arno defined the southern sector, creating a dynamic fluvial landscape that framed the city on multiple fronts. The Auser, in particular, is well documented as a vital resource and primary route of communication, actively shaping the character of the spaces it traversed and attracting specific economic activities along its course. Its dynamic and aggregating role complicates any clear-cut distinction between urban and suburban contexts along its shores. In contrast, the confluence of the Auser and the Arno, as described in historical sources, has not yet been clearly confirmed by archaeological and geomorphological evidence in spite of the many hypotheses,[43] nor has the possible continuation of the Auser to its outlet into the sea.[44]

Morphological reconstruction has focused on the northern sector of the city, where the density of finds enables a reasonably reliable estimation. The ArcGIS Pro *Topo to Raster* function (ANUDEM algorithm) was used to conduct a GIS-based interpolation of altimetric data and paleochannels.[45] The resulting elevation map reveals a low alluvial plain with subtle morphological highs and depressions prone to seasonal flooding; elevations gradually decrease, particularly toward the peripheries, where data, however, becomes increasingly sparse.

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[40] Bini et al. 2012.

[41] Camilli 2012.

[42] For the urban area see Bini et al. 2013; Id. 2015; Fabiani, Rizzitelli 2022, 11-14; for the Pisan plain, see Campus, La Rosa 2021, with references.

[43] See Fabiani, Gualandi 2016.

[44] Rutilius (Rvt. Nam. 1.569-570) states that the Arno named the unified course and was the sole river reaching the sea, though this may apply only to the stretch beyond the confluence.

[45] For a more detailed description see: Fabiani 2024, 28-31.

Analyses of both pedological and palynological samples have revealed significant changes in the environment over time. During the Etruscan period, palynofacies suggest a transitional environment between palustrine and alluvial conditions, marked by shallow, ephemeral wetlands. In the Roman period, the extensive network of centuriation channels facilitated the transition from an undrained to a predominantly drained condition. As wetland vegetation declined, species of agricultural significance, including vines (*Vitis*), olives (*Olea*), oats (*Avena*), wheat (*Triticum*), and barley (*Hordeum*), became increasingly dominant.[46] Conversely, in Late Antiquity, the proliferation of hydro-hygrophilous species and the re-emergence of marshy areas seem to be linked to the gradual abandonment of water management practices.[47]

Studies on climate variability and paleo-vegetation in this region between the Late Republican period and Late Antiquity reveal fluctuating climatic conditions.[48] The first century BCE experienced multi-decade droughts, followed by increased rainfall between the late first century BCE and early first century CE, before returning to drier conditions in the second century CE. During this period, forest cover declined, with a steady decrease in firs (*Abies*) and beeches (*Fagus*), largely replaced by deciduous oaks (*Quercus*) and related species, indicating rising temperatures in line with the onset of the 'Roman Climate Optimum'. While this trend primarily reflects natural climatic shifts, human activity may have played a role, as evidenced by an increase in spore content, often associated with deforestation and controlled burning. Large woodlands likely covered the territory in antiquity, as Pisa's timber was highly valued and extensively used for shipbuilding and construction.[49] Additionally, Rutilius Namatianus refers to hunting in the forested areas near *Portus Pisanus*.[50] From the mid to late Imperial period (200–450 CE), data indicate a general trend toward wetter conditions, although the evidence is restricted to specific meteorological events rather than broader climatic patterns.

Given these complexities, any environmental reconstruction in this context must be viewed as a dynamic and ongoing process. It requires continual refinement through new discoveries and the advancement of interdisciplinary research, which will enhance the accuracy and depth of our understanding over time.

A. Cam.

1.4. *Legacy data*

Legacy data, derived primarily from past rescue excavations and more recent development-led archaeology associated with public works in the city, provide invaluable insights into areas that can no longer be directly investigated due to urban expansion. Their analysis allows for a reconstruction of settlement dynamics along the course of the Auser within the urban core, as well as in the various suburban zones that developed around the city. Within the urban context,

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[46] Literary sources refer to agricultural production in the Pisan area. Strabo (Str. 5, 2, 5) describes it as particularly fertile, while Pliny (Plin. *nat.* 18.86-7 and 109) notes its cereal production, especially *siligo* and *alica,* and mentions the *Pariana* grape (Plin. *nat*. 14.39).

[47] Amorosi et al. 2012; Allevato et al. 2013.

[48] Mariotti Lippi et al. 2007; Bini et al. 2020; Id. 2024,

[49] Str. 5.2.5.

[50] Rvt. Nam. 1.621-2.

key areas include the present-day Piazza del Duomo (Fig. 14.2 no. 4)[51] and the Arcivescovado (Fig. 14.2 no. 5),[52] which can be attributed to a single residential sector of the ancient city. From the second century BCE onwards, this area was characterised primarily by *domus* with medium-to-high decorative and architectural apparatus.

The interpretation of available legacy data for the southern sector of Pisa, near the Arno, is more problematic. The dense medieval urbanisation in this area has obscured the ancient landscape to such an extent that neither the precise limits of the city nor the layout of its southern *suburbium* can be clearly defined.[53]

In the Imperial period, a large public complex was constructed in a liminal area of the eastern urban sector, involving the patronage of the *gens Venuleia Aproniana,* the so-called Terme di Nerone (Fig. 14.3 no. 6).[54] In 1908, in the same district, some parts of an entertainment building – a theatre or an amphitheatre – were discovered near the present church of San Zeno (Fig. 14.3 no. 7).[55]

In contrast, the settlement pattern of the extensive northern *suburbium,* which developed beyond the Auser, can be more clearly defined. Between the Late Republic and the Early Imperial period, this area was characterised by a mixture of funerary, residential, and artisanal/commercial functions. The latter is particularly evident in the complex of buildings along Via Contessa Matilde (Figs 14.2 and 14.3 no. 11), facing a *via glareata* running parallel to the river.[56] Farther from the riverbank, agricultural estates, such as the one excavated in Via di Gello and the one in La Figuretta (Fig. 14.3 nos 19, 20), supplied the city, while necropoleis occupied significant areas (Fig. 14.3 nos 10, 17, 18, 20).[57]

From the early first century BCE, engineering works such as amphora-based consolidation structures (Fig. 14.3 nos 8, 13, 15)[58] and riverbank reinforcements, including the long embankment wall of Via Marche (Figs 14.2 and 14.3 no. 16),[59] were constructed, possibly as flood mitigation measures. Evidence of frequent flooding is provided by the periodic submersion of boats, as exemplified by the shipwrecks of San Rossore (Fig. 14.3 no. 2).[60]

Between the late second and early third centuries CE, while the residential districts around Piazza del Duomo maintained a degree of urban decor, the northern *suburbium,* despite the construction of a thermal complex – perhaps positioned along the main approach roads to the city (Fig. 14.4 no. 12)[61] – began to show signs of decline. This process was driven by multiple factors, including environmental instability linked to severe flooding events. Extensive necropoleis (Fig. 14.4 nos 11, 14, 16, 21), associated with the lower and middle social classes, now occupied large sections of the *suburbium*, sometimes occupying abandoned buildings.[62]

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[51] Alberti, Paribeni 2011; Taccola 2019.
[52] Rizzitelli, Fabiani 2020, 39-48.
[53] Bruni 1993; Fabiani, Rizzitelli 2022, 40.
[54] See, most recently, Fabiani, Gualandi, Campus 2019; Fabiani, Gualandi 2020.
[55] Fabiani, Rizzitelli 2022, 47.
[56] Maggiani 2018, 458-9; Fabiani, Rizzitelli 2022, 36, fig. 12.
[57] Fabiani, Rizzitelli 2022, 38, fig. 16, nos 4, 15 and 39-40, fig. 16, nos 4, 16, 17, 28.
[58] Genovesi, Bueno 2020.
[59] Fabiani, Rizzitelli 2022, 23-6 and 31-2.
[60] Camilli 2012, 13-18.
[61] Genovesi, Bueno 2020, 57, figs 3, 5 and 4; Fabiani, Rizzitelli 2022, 38.
[62] Regarding the necropolises, see especially the site of Via Marche (Fabiani, Rizzitelli 2022, 49-53 and 225-36).

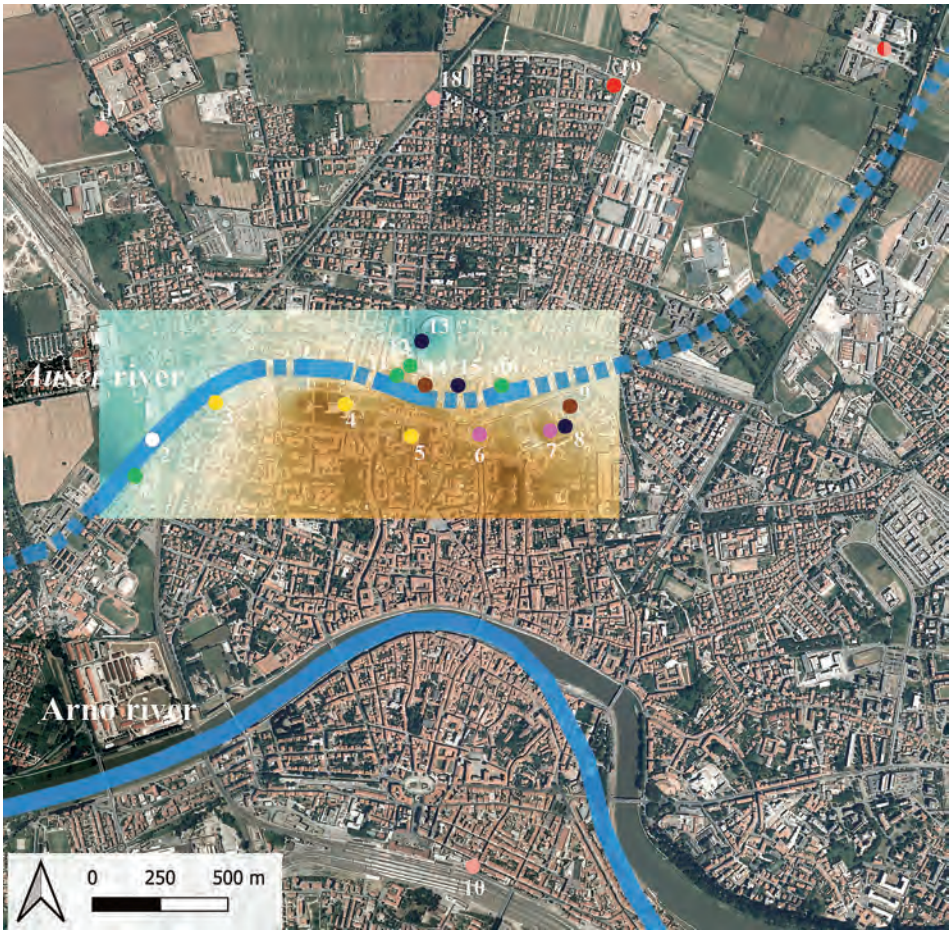

Fig. 14.3 Pisa, Early Imperial era. 1. Area Scheibler; 2. San Rossore shipwrecks; 3. Piazza Andrea del Sarto; 4. Piazza del Duomo; 5. Arcivescovado; 6. 'Terme di Nerone'; 7. Via San Zeno – Istituto di Fisiologia; 8. Via San Zeno – Dipartimento di Biomedicina; 9. Via San Zeno – Dipartimento di Biochimica; 10. Via Corridoni; 11. Via Contessa Matilde; 12. Via Galluppi; 13. Arena Garibaldi; 14. Via Santo Stefano; 15. Via Sant'Ansano; 16. Via Marche; 17. Via Pietrasantina; 18. Via XXIV Maggio; 19. Via di Gello; 20. La Figuretta. Typology of sites: villa/farms (red); residential quarter (yellow); trade and craft structures (green); public building – bath, theatre/amphitheatre (purple); amphora-based consolidation structure (blue); necropolis (pink); pottery waste (brown); shipwrecks (white).

Further from the city, significant settlements are attested, known from historical discoveries and more recent archaeological investigations. One of the most notable sites is *Portus Pisanus* (Fig. 14.1 no. 2),[63] which comprised port infrastructure, a residential district inferred from

[63] Ciampoltrini, Cianferoni, Romualdi 1982-83; Ducci, Pasquinucci, Genovesi 2011; Genovesi 2010; Id. 2012; Id. 2014a.

associated necropoleis, and an extensive manufacturing hub producing goods for both local and transmarine markets.[64] Additional riverine ports were located at the mouths of the Arno at San Piero a Grado (Fig. 14.1 no. 3)[65] and the *Auserclus*, a northern branch of the Auser. At Isola di Migliarino (Fig. 14.1 no. 4), a production centre focused on the manufacture of Italian terra sigillata and Late Italian terra sigillata.[66] In the lagoonal area corresponding to the present-day Massaciuccoli Lake, the Pisan senatorial *gens Venuleia Aproniana* built an extensive residential complex that integrated productive facilities and included a *mansio* (Fig. 14.1 no. 5).[67]

1.5. *New archaeological investigations and analysis of finds from reliable contexts*

Research excavation represents the most effective extensive investigative method for addressing specific historical and archaeological questions. The objective of understanding the relationship between the urban layout and the course of the Auser led to targeted investigations in Piazza Andrea del Sarto and the Area Scheibler.

Excavations in Piazza Andrea del Sarto have provided critical insights into the intricate interrelationship between the city and its *suburbium*, shedding light on their diachronic evolution.[68] The earliest structure dates to the second century BCE, when the area was occupied by farms and ironworking facilities (Fig. 14.2 no. 3). By the third quarter of the first century BCE, Piazza Andrea del Sarto was entirely occupied by *domus* (Fig. 14.3 no. 3), assuming an urban character in continuity with the residential quarter of Piazza del Duomo. This phenomenon may be compared to those previously noted in other Roman cities, where suburban spaces were gradually absorbed into the urban fabric, incorporating planning models reflective of broader growth dynamics.[69] The architectural and decorative features of these *domus* qualify the entire western sector of Pisa as a mid- to high-status residential area, where domestic spaces served as expressions of refined taste and social prestige. In Late Antiquity, a gradual destruction and transformation of these *domus* took place: the former dwellings were first used for artisanal activities and later for burials (Fig. 14.4 nos 3 and 21).

In contrast, other areas on the same riverbank have more consistently retained their suburban character, such as the Area Scheibler. From the late first century BCE, the banks of the Auser were stabilised and reinforced to facilitate the mooring of boats, including the construction of embankments and the opening of a probable *via helciaria*. A major intervention in the Julio-Claudian period confirmed and expanded the previous functions, improving both the scale and architectural quality of the riverine facilities (Fig. 14.3 no. 1). This programme included the construction of a truss-roofed building supported by pillars and the creation of an inclined plane extending from the riverbank to the building's façade. The open area in front of the pillared building featured recesses designed to accommodate

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[64] Menchelli 1990-1991; Picchi et al. 2010; Genovesi 2014b, 52-5.
[65] Bruni 2001; Bruni 2002.
[66] Menchelli, Vaggioli 1987; Menchelli et al. 2001; Camodeca 2006.
[67] Anichini 2012.
[68] Fabiani 2024.
[69] Emmerson 2020, 1-5.

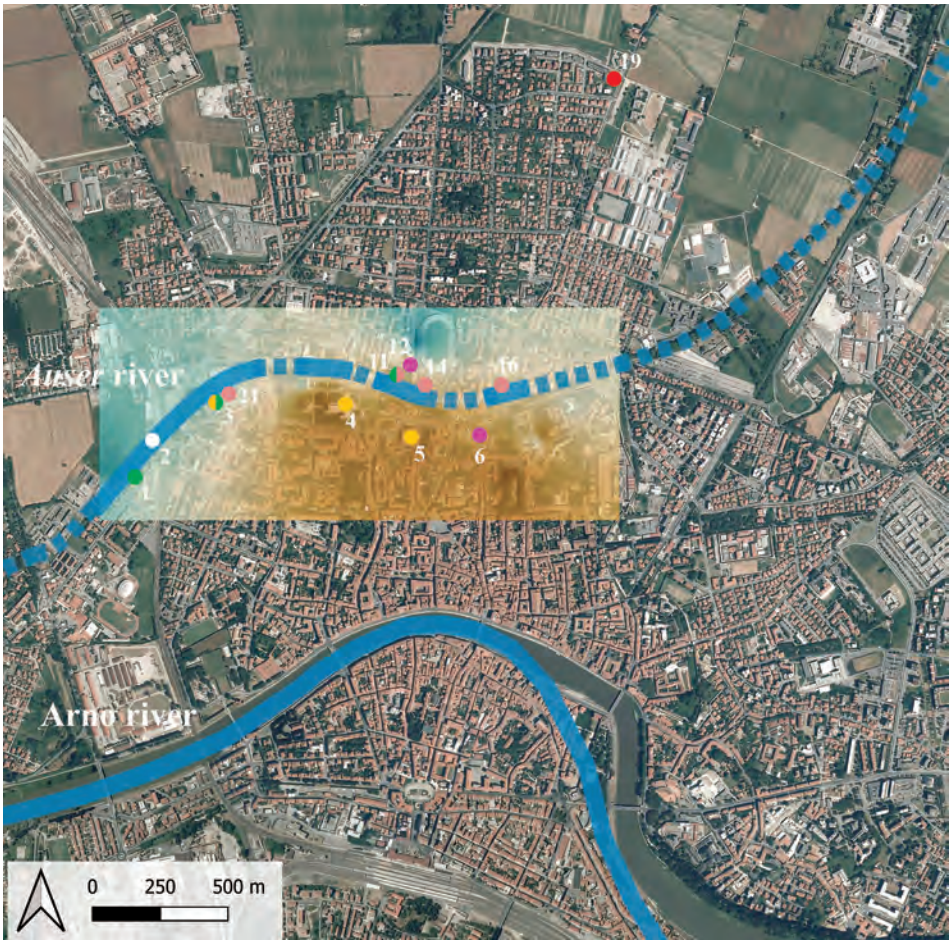

Fig. 14.4 Pisa, Middle-Late Imperial era. 1. Area Scheibler; 2. San Rossore shipwrecks; 3. Piazza Andrea del Sarto; 4. Piazza del Duomo; 5. Arcivescovado; 6. 'Terme di Nerone'; 11. Via Contessa Matilde; 12. Via Galluppi; 14. Via Santo Stefano; 16. Via Marche; 19. Via di Gello; 21. Piazza Andrea del Sarto/Via Cammeo. Typology of sites: villa/farms (red); residential quarter (yellow); trade and craft structures (green); public building – bath, theatre/amphitheatre (purple); necropolis (pink); shipwrecks (white).

wooden ramps for hauling ships ashore, allowing the identification of the complex as the first clear example of civilian *navalia*,[70] as also confirmed by comparative discussions with Boris Rankov.[71]

[70] Fabiani et al. 2022; Fabiani, Genovesi 2023.

[71] Cf. Rankov in Fabiani, Genovesi, Caroti forthcoming. For *neoria* and *navalia* in the Greek and Roman Mediterranean, see Blackman et al. 2013.

1.6. *Three dimensional reconstructions*

Traditionally accustomed to analysing structures through plans and sections, representations that fail to fully capture the variability of viewpoints within a three-dimensional space, digital reconstruction has long been established as a fundamental tool for understanding the perception of places. However, a key critical issue in digital simulation is the tendency to project modern sensibilities onto the past. It is crucial that reconstructive processes abandon 'Black Box' visualisations, which may be aesthetically pleasing but offer no epistemological transparency, in favour of authentic 'White Box' representations.[72]

Nowadays, reconstruction methodologies ensure that virtual reconstruction is not merely a visual tool but a scientific instrument capable of generating new knowledge and enhancing the management and interpretation of data.[73] For this reason, reconstructions – typically based on heterogeneous datasets – must integrate and explicitly convey all the information underpinning the proposed representation of the studied object. Metadata and paradata provide essential validation and comparative elements. Ultimately, the validity and authority of any reconstruction are defined by its final level of reliability, in accordance with the principle of intellectual transparency. Every archaeological reconstruction inevitably carries a degree of uncertainty, as it aims to propose plausible interpretations and solutions without asserting the recreation of an absolute historical reality. Various methodological approaches have been developed in recent decades to ensure such transparency in reconstructions.[74] In the case of the *navalia* at the Area Scheibler, a bespoke H-BIM-based reconstructive process has been adopted, enhancing the capacity to represent 'absences', which is particularly crucial in contexts marked by long-term occupation. This approach has resulted in a final product that is verifiable at every stage, allowing for an in-depth analysis of how spaces were utilised, how work activities unfolded within them, and how social interactions were structured from multiple vantage points.[75] Ultimately, such a reconstructive process enables a reflection on the physical and sensory impact of the complex on both the landscape and its ancient riverine users.

The ephemeral traces of activity carried out within the *navalia* of the Area Scheibler have enabled the detailed reconstruction of stratigraphic sequences, the precise establishment of chronologies, and the identification of functions and commercial networks. However, they have also provided an opportunity to delve into the lived experiences of labourers, master builders, and, more broadly, the individuals who frequented the area.

Through the comparison of excavation data, literary sources, and three-dimensional simulations, it has been possible to integrate the actors who once inhabited the Area Scheibler into its reconstructed landscape. This has enabled an attempt to trace their movements through space, reconstruct their interactions, and ultimately, to observe these places from their own perspective (Fig. 14.5).[76]

A. Car.

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[72] Demetrescu, Ferdani 2021.
[73] Demetrescu, Fanini, 2017; Gabellone 2020.
[74] For example, Demetrescu, Ferdani 2021.
[75] Fabiani, Genovesi 2023, 116-29.
[76] Fabiani, Genovesi 2023, 129-38.

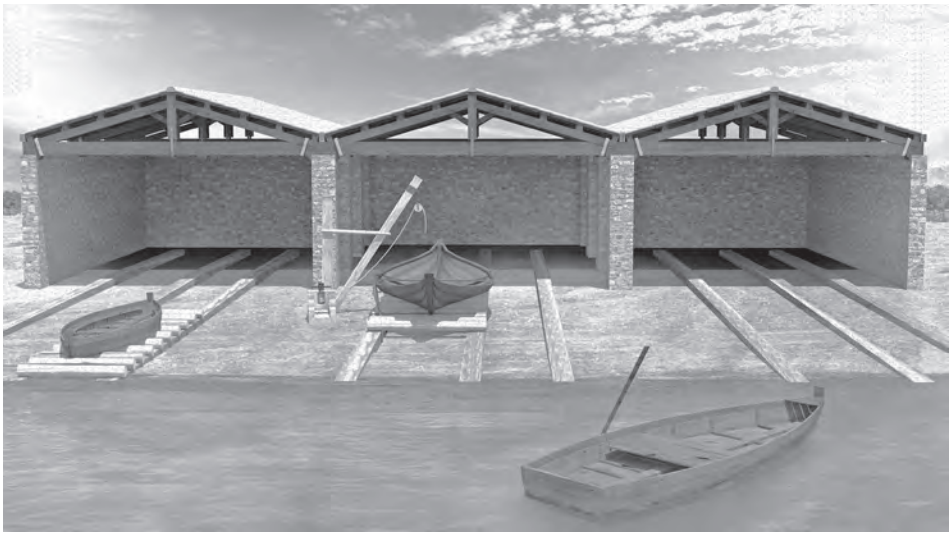

Fig.14. 5 Reconstruction of the *navalia* at the Area Scheibler.

2. City and *suburbium*: an overview of Roman Pisa

The integration of different 'layers' – a metaphor for the knowledge acquired through various methodological approaches – allows for a comprehensive synthesis of palaeoenvironmental, archaeological, epigraphic, and literary data. This, in turn, provides deeper insights into the evolution of the city and its periphery, as well as their reciprocal interconnections. Nevertheless, as previously noted, significant gaps persist in defining their spatial and chronological boundaries.

Detailed palaeoenvironmental investigations have further refined the palaeohydrological framework described in literary sources; yet some key aspects remain elusive – ironically, the very ones most emphasized by ancient texts, such as the precise point where a branch of the Auser flowed into the Arno. The city would, in any case, appear well integrated between the courses of the two rivers, which, during this period, may have represented more of a filter than a boundary between the city and the *suburbium*. While the definition of the areas around the Auser is fairly clear, those around the Arno, where the medieval city developed more intensively, are less well known.

From the middle of the first century BCE, and even more so in the early decades of the following century, during a period of significant economic growth driven also by the production of Italian terra sigillata and Late Italian terra sigillata, both the urban and suburban areas connected to the Auser underwent substantial expansion. Indeed, the city progressively extended into suburban areas, while the *suburbium* experienced even more intense occupation alongside a notable expansion into the surrounding rural area.

The *continentia aedificia*[77] merged with the city's oldest urban core (Fig. 14.3 nos 4, 5), creating a continuous expanse of predominantly residential districts along the southern bank of the Auser (Fig. 14.3 no. 3). Meanwhile, both the aforementioned bank and the opposite

[77] Antico Gallina 2000; Goodman 2007, 13-18, 46-59; Annibaletto 2010, 114-16; Todisco 2016; Buongiorno, this volume.

shore witnessed the emergence of districts with a pronounced commercial and industrial character, featuring highly specialised activities closely linked to riverine trade networks, as exemplified by the *navalia* in the Area Scheibler (Fig. 14.3 no. 1).

At a greater distance, across a broad expanse of territory, a more loosely structured settlement pattern emerges; here, orchards and farms were dedicated to the production of both perishable and non-perishable foodstuffs for the urban daily consumption and external markets (Fig. 14.3 nos 19, 20).[78] In addition, funerary areas, primarily aligned along main roads, feature a mix of monumental tombs and more modest incineration burials (Fig. 14.3 nos 10, 17, 18, 20). This remains a fully suburban space, shaped by distinct functional needs and closely integrated into the city's economic and social framework.

However, following a well-documented model,[79] it is possible to discern the presence of settlement clusters with peculiar functions in areas farther from the urban core (Fig. 14.1). Alongside maritime ports such as *Portus Pisanus,* San Piero a Grado, and Isola di Migliarino, there were manufacturing districts, as attested at both *Portus Pisanus* and Isola di Migliarino, as well as sacred spaces, including the previously mentioned *Aquae Calidae Pisanorum*. The recurrence of reference to their affiliation with the urban centre of Pisa (e.g., *Portus Pisanus, Aquae Pisanae*) clearly designates these sites as dependencies, highlighting their functional integration with the city. The term *suburbium*, in its deepest etymological sense, is particularly appropriate for all these settlements: *sub urbe* expresses the close relationship of these areas to the city, of which they constituted complementary extensions.[80]

Significant doubts persist regarding the exact location of the ceramic manufacturing sites in close proximity to the city. The massive deposits of pottery waste discovered over time in areas near the Auser (Fig. 14.3 nos 9 and 14) have led some scholars to suggest that the main workshops for the production of Italian and Late Italian terra sigillata were located there.[81] However, it is also possible that these deposits, along with amphora-based reinforcement systems, served a different function, such as stabilizing the riverbanks and the fragile surrounding terrain. If this were the case, the actual workshops would likely have been located farther from the city, along the coastline or near river mouths, in sites more directly connected to large-scale transmarine trade, such as the hypothesized manufacturing district at Isola di Migliarino. Industrial quarters with production capacity comparable to the *figlinae* for terra sigillata would have required large open spaces to accommodate the full range of the required infrastructure. These would have included clay storage areas, settling basins, potters' workshops, drying courtyards, kilns with loading areas, *praefurnia,* and fuel depots.[82] Additionally, it is essential to consider the common tendency of craft industries, including terra sigillata production, to cluster together in specialized manufacturing districts. This allowed for the shared use of production facilities, services, and tools, enhancing efficiency and fostering technological and commercial collaboration.[83]

A. Cam., A. Car.

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[78] Annibaletto 2010, 72-9, 88-95, 118-24.

[79] Goodman 2007, 93-6 (for sacred spaces); Emmerson 2020, 161-2 (for port settlements).

[80] Annibaletto 2010, 65-8 and table 2.

[81] For an extensive discussion of this complex topic, see Fabiani, Rizzitelli 2022, 41-4.

[82] Minero-petrographic analyses indicate the terminal stretch of the *Auser* branches as a probable site of production of rectangular manubriate sesquipedal bricks, a type of brick recently identified in Pisa (Fabiani, Genovesi 2022).

[83] Goodman 2017, 324-5.

The diverse types of structures present in Roman Pisa and its *suburbium* and their spatial distribution introduce the theme of social topography. As a matter of fact, a remarkable homogeneity can be discerned in the spatial layouts and decorative schemes of the medium to high status *domus* investigated within the urban area[84] and in Piazza Andrea del Sarto, which developed between the first century BCE and the first century CE at the expense of previously suburban spaces.[85]

Archaeological and epigraphic evidence together contribute to identifying the actors involved, in different capacities, in this urban development. Alongside a class of small and medium landowners, a structured entrepreneurial class of freeborn citizens and, above all, freedmen – widely attested in the epigraphic record – progressively emerged. On the basis of the spatial distribution of the inscriptions, veterans associated with the colonial deduction settled in a wider area and were involved in the management of *praedia* located even at considerable distances from the city.

It could thus be precisely this entrepreneurial class, particularly composed of freedmen, that was the driving force behind this urban development. In the same period, indeed, this social group derived their wealth from the production and trade of ceramics, agricultural products from the surrounding territory, and redistribution of goods transported via Mediterranean trade routes to the vast northern Etruscan hinterland.[86] Their full economic emancipation led some of them to pursue the only career path available to them as a means of achieving complete social fulfilment, membership in the college of the *Mercuriales*, later replaced by the *Augustales*.[87] The location of the *domus* within the district, in close proximity to the river and the trade along it, supports this interpretative framework. The vibrancy of commercial and shipbuilding activities – domains in which the freedmen class was deeply involved – is attested indeed at a short distance at the shipwreck site of San Rossore,[88] and in the complex linked to the storage and maintenance of boats at the Area Scheibler.[89] In this context, the well-known epigraph *CIL* XI, 1436, which records the *statio vetustissima* of the Pisan *fabri navales* and the *fabri tignarii*,[90] acquires tangible significance. While it is not possible to establish a direct topographical correspondence between this inscription and the archaeological evidence, the emerging landscape, dotted with shipyards and riverine navigation-related activities, offers an appropriate setting for the undertakings of members of these *collegia*.

This evidence underscores the interest of the freedmen class in maximising the advantages offered by the commercial and productive clusters facilitated by river networks. Additionally, it hints at the economic significance of activities that may have developed around religious sanctuaries. Evidence for this can be found at the *Aquae Calidae Pisanorum* (Fig. 14.1 no. 2) in the form of a small *aedicula* dedicated by the freedman *Eros*[91] and an ex-voto offered by the slave *Corinna*.[92]

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[84] For the Piazza del Duomo urban quarter, see Alberti, Paribeni 2011, 79-86.

[85] Wallace-Hadrill 1988, 43-97; Id.1994; Hales 2003; Platts 2019.

[86] For the involvement of these social classes in the Pisa's manufacturing activities in the Early Imperial period, Menchelli 1995, 333-50; Id. 1997, 191-7; Menchelli et al. 2001, 89-104.

[87] Fabiani 2002; Id. 2024, 68-71, fig. 34.

[88] For which see, in general, Camilli 2012.

[89] Fabiani, Genovesi 2023.

[90] *CIL* XI, 1436 = *ILS* 7258 = *InscrIt* VII, 1, 16.

[91] *CIL* XI, 1418 = *InscrIt* VII, 1, 85.

[92] *CIL* XI, 1419 = *InscrIt* VII, 1, 86.

Figures of higher social standing, such as the *Venulei Aproniani*, who were involved in the production of terracotta building materials, also played a role in developing a large *suburbanum*[93] at Massaciuccoli (Fig. 14.1 no. 5). This estate combined agricultural activities and the management of a key road junction with the enjoyment of *otium*, taking advantage of a highly significant landscape setting.

The monumentalisation of the city, the expansion of its residential districts along the Auser, and the development of trade and manufacturing-related infrastructure along the riverbanks and in other areas of the territory represent complementary aspects of the same economic growth process affecting both the city and its *suburbium*.

The identification of suburban building complexes, some of particular rarity, such as the civilian *navalia*, along with epigraphic evidence of the *fabri navales*, which provide insights into the types of individuals active in this sector, has led to the development of a transparent and verifiable 3D simulation method. The latter is essential for ensuring the sustainability of reconstructive hypotheses and investigating the complex issue of spatial perception (Fig. 14.5).

A systematic study of ceramic materials attests to the city's persistent centrality in maritime and riverine trade during the Middle and Late Imperial periods. The Arno likely played a crucial role in this dynamic, connecting the *Portus Pisanus* to the vast northern Etruscan hinterland. In contrast, evidence suggests a contraction of trade along the Auser, as indicated by the decreasing number of shipwrecks at San Rossore (Fig. 14.4 no. 2) following the sinking of the *oneraria* A[94] between the late second and early third centuries CE. This decline may reflect a more generalised decrease in the importance attributed to the Auser, preceding its revival in the Early Middle Ages.[95] The reorganization of the *navalia* at the Area Scheibler (Fig. 14.4 no. 1)[96] and the stagnation of the nearby *domus* of Piazza Andrea del Sarto (Fig. 14.4 no. 3),[97] probably also due to the decline of the freedmen class that had originally fostered their construction, further aligns with this pattern.

At the same time, cemeteries (Fig. 14.4 nos 11, 14, 16, 21) began encroaching upon these residential quarters, occupying the former riverbed of the Auser, whose instability had led to its gradual abandonment. The entire northern *suburbium* underwent a parallel process of gradual de-structuring, likely exacerbated by increased flooding and riverbank erosion. From this period onwards, the formation of extensive necropoleis becomes evident. These once-thriving commercial and productive districts were now transformed into silent landscapes, dedicated primarily to funerary rituals.

F. F., S. G.

3. Conclusion

As we have demonstrated, the initial questions posed by the *Pisa Progetto Suburbio* have been partially answered.

The palaeoenvironmental and palaeohydrographic reconstruction has begun to reveal the river network that crossed the city and its *suburbium*, with some sections clearly defined while

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[93] Goodman 2007, 20-26; Annibaletto 2010, 89-95, 101-3, 124-8.
[94] Camilli 2019, 52.
[95] Fabiani et al. 2019; Id. 2021, 16-20, figs 17-21; Fabiani, Rizzitelli 2022, 260-2.
[96] Fabiani et al. 2022, 17-21, figs 20-24; Id. 2023, 18-20, figs 23-4.
[97] Fabiani 2024, 71-3.

others remain uncertain. Critical issues – such as the relationship between the two rivers and their possible confluence – require further investigation as research progresses.

Despite the absence of canonical markers, such as city walls, that would conventionally delineate urban and suburban areas, their specific characteristics emerge through the differentiation of functional typologies. Most importantly, research has highlighted their fluidity and evolution over time, shaped by local economic and social dynamics within broader socio-historical and environmental processes. These include changes in river courses and flow regimes, as well as the occurrence of flooding and climate instability.

The identification of specific uses and clusters within the suburban area can reflect its internal differentiation. In this regard, the issue of the location of terra sigillata workshops – one of the most important ceramic classes of antiquity – remains unsolved. Scholars have debated whether these workshops were located close to the city or farther away in areas directly connected to transmarine trade; however, definitive confirmation is still lacking.

In order to enhance comprehension of the driving forces behind the growth, stagnation, or decline of the city and its periphery, the research has also focused on social topography, integrating epigraphic analysis and material evidence from archaeological investigations. The formulated hypotheses require further verification and reflection, supported by additional corroborating data. Nevertheless, a significant limitation persists in a multi-layered urban centre, where continuous occupation of the same site throughout the medieval, modern, and contemporary periods has significantly constrained archaeological investigation.

F. F.

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Chapter 15

The Pompeian economy from territory to city: new evidence from the excavations of Pompeii I.14

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Abstract

The landscape surrounding Pompeii at the time of the eruption of Vesuvius in 79 CE is among the best known of any ancient territories. Nevertheless, its topography and archaeology have tended to be treated in isolation and are still rarely incorporated into studies of the city itself. This chapter contends that drawing the territory into considerations of Pompeii's urbanism can invite new understandings. It opens by mapping over 250 years of discoveries in the zone surrounding Pompeii, incorporating recent research on the longstanding question of the location of Pompeii's port. The chapter then turns to ongoing excavations conducted on the south-eastern side of the city, proposing two primary ways the extramural territory impacted the intramural economy of this district. First, it argues that the presence of the port outside the wall – and not the Amphitheatre inside it, as has been assumed – formed the primary driver for the development of inns and restaurants across the south-eastern region of Pompeii. Second, it demonstrates that one key, but ephemeral, industry conducted in the zone – the manufacture of woven reed products including mats and baskets – responded directly to the presence of reed beds in the backswamps south-east of the city.

Keywords

Pompeii; urbanism; territory; economy; suburb

Introduction

City and country were inseparable in the Roman world, tied together by a dense web of social, religious, legal, and economic bonds, via human relationships and behaviours that so often crossed those categories as to make them largely inextricable. At Pompeii, arguably the best-known Roman city, the surrounding territory has received interest for as long as the site within the wall, and systematic investigation began already with the Bourbon excavations of the 18th century. Work in the territory has tended to take one of three forms. Belonging to the first type are studies of one or more individual sites outside the city wall, presenting either recent excavation data or revisiting archival material. These began as early as the 1760s and are ongoing today.[1] The second type, which became especially popular from the second half

[1] E.g., Casale, Bianco 1979; Kockel 1985; Mastroroberto 2001; Stefani, di Maio 2003; Senatore 2004; Bielfeldt 2007; Thomas 2015; Coralini 2021; Osanna, Toniolo 2022; Sodo, Stefani, Vitiello 2023.

of the 20th century, examines Pompeii's agricultural economy, pursuing questions like economic performance, carrying yields, and centuriation patterns.[2] The third type emerged in the late 20th century but has continued into the 21st, consisting of topographic reconstructions of the landscape surrounding Pompeii, typically utilizing boreholes as key evidence.[3] Contemporary work on Pompeii's territory, furthermore, has brought together the second two categories, reconstructing ancient topography to provide evidence for economic arguments.[4] This chapter moves in a slightly different direction. I contend that despite a robust history of scholarship, city and country at Pompeii were tied together in ways that have been underemphasized in the past. My central argument is that research inside the wall can be informed by knowledge of the territory outside it. This perspective not only invites a more thorough treatment of Pompeii's countryside but also brings novel interpretations to its urbanism and urban form. The emerging results of the Pompeii I.14 Project, an intramural excavation led by Tulane University in collaboration with the Parco Archeologico di Pompei, indicate that economic activities carried out in one large building complex relied especially on two resources provided by the nearby territory: reed stems harvested from the backswamps of the Sarno River and traffic from Pompeii's port. These resources have been understudied in previous work on the zone surrounding Pompeii but played a significant role in shaping the urban form of one civic sector.

Mapping Pompeii's territory (79 CE)

Thanks to past and ongoing research, Pompeii's territory is today well understood. At the time of the eruption of Vesuvius, the zone immediately outside the fortification wall, the legal boundary of the city, looked in certain areas somewhat like the urban centre, which extended outwards into a densely developed suburb at the Porta Ercolano, and possibly also at the Porta Vesuvio, Porta Marina and Porta Stabia (Fig. 15.1A, B, G, F).[5] The neighbourhood outside the Porta Ercolano is the most completely cleared; both the highway leading northwest towards Herculaneum and many of the structures that lined it have been revealed to a distance of more than 200 m past the gate.[6] The area is also the best studied of any outside Pompeii's walls, having been the subject of several recent projects, two of which included subsurface excavation.[7] Often, the district is referred to as the Porta Ercolano necropolis, but that designation does not capture its full character. In fact, more of its space was dedicated to the living than to the dead.[8] In addition to the roughly 30 monumental tombs located along the highway were a similar number of shops – primarily arranged into three large commercial complexes fronted with porticoes – as well as four luxury villas: the 'Villa of Cicero', 'Villa of Diomedes' and 'Villa of the Mosaic Columns' in the cleared area just outside the gate, and the 'Villa of the Mysteries'

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[2] E.g., De Caro 1996; Ruffo 2011; De Simone 2017.

[3] E.g., Pescatore et al. 2001; Ciarallo, Pescatore, Senatore 2007; Vogel, Märker 2010; Amato et al. 2021; Aiello et al. 2024.

[4] Vogel et al. 2016; Seiler, Vogel, Esposito 2019.

[5] Emmerson 2020, 149–51.

[6] For the history of volcanic clearance at the Porta Ercolano, see Kockel 1983, 185-6.

[7] Anderson 2019; Dessales 2020; Zanella 2020.

[8] Emmerson 2020, 138–49.

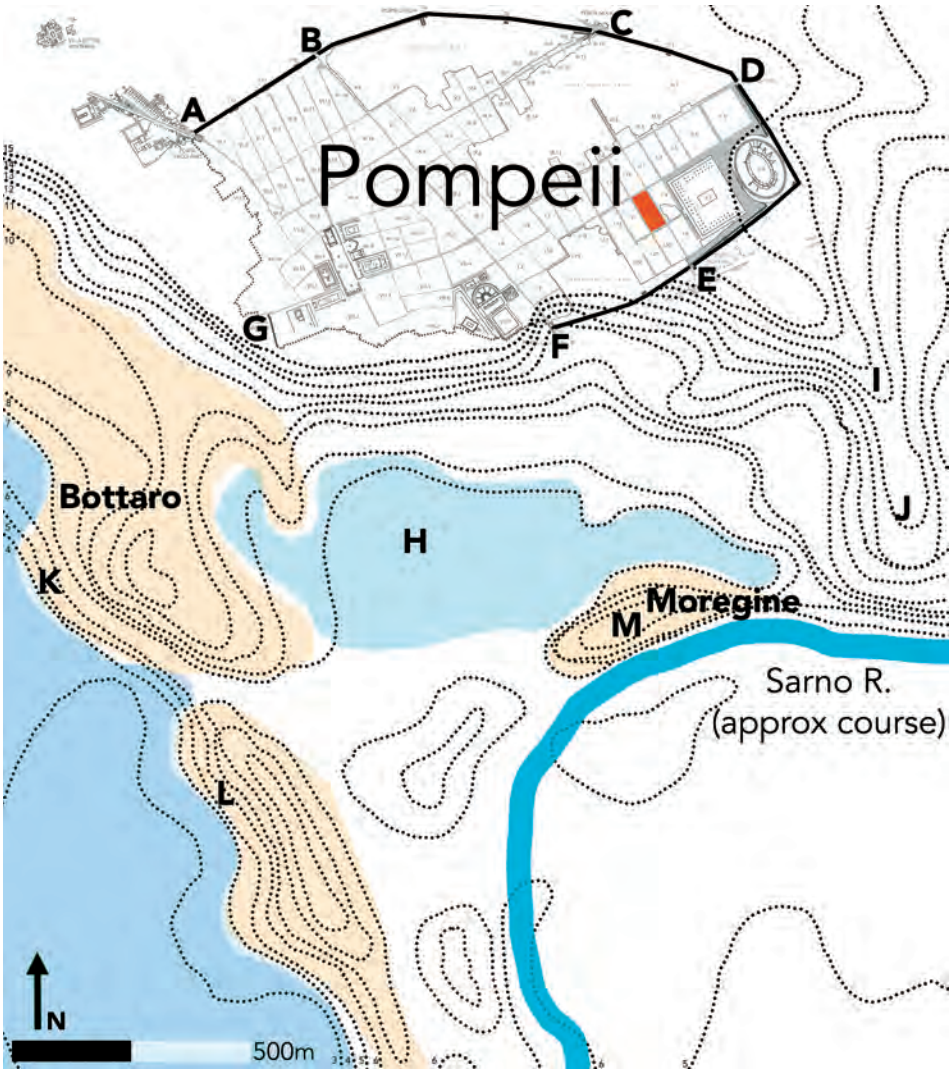

Fig. 15.1 Map of Pompeii with southern suburbs, Insula I.14 highlighted; A: Porta Ercolano; B: Porta Vesuvio; C: Porta Nola; D: Porta Sarno; E: Porta Nocera: F: Porta Stabia; G; Porta Marina; H: Masseria Curati depression; I: Fondo Iozzino; J: Sant'Abbondio; K: Bottaro, hypothesized area of Neptune Temple; L: Bottaro, Fondo Matrone; M: Moregine.

ca. 100 m north-west of those. Humbler residences are suggested by the shops, since many Romans both lived and worked in the same space, as well as by incorporated staircases that most likely led to rented rooms or apartments above them.[9] Like neighbourhoods within the wall, the area was fitted with infrastructure to serve its activity: not only the paved highway

[9] Ellis 2018, 9-10.

lined with high curbs and colonnaded sidewalks that shielded pedestrians from the weather while allowing them to avoid street drainage and wheeled traffic, but also a public fountain to provide water and a street-side shrine where the gods of the district might be propitiated.[10] This neighbourhood might have extended, moreover, even beyond the area now exposed. A collection of structures emerged recently in modern Torre Annunziata, ca. 300 m beyond the Villa dei Misteri and along the presumed extension of the highway leading from the Porta Ercolano. The finds included a ceramics workshop, at least two monumental tombs, a series of warehouses, and several other buildings, one of which has been interpreted as a suburban villa.[11] While the structures could represent an isolated cluster beyond the contiguous suburb, the similarity of development in both places might indicate that the neighbourhood outside the Porta Ercolano stretched 500 m or more beyond the gate.

Although only small areas are now cleared outside the Porta Vesuvio, Porta Marina, and Porta Stabia, each shows evidence of having once been more extensively developed. At the Porta Vesuvio, several villas were uncovered alongside shops and workshops in the late 19th and early 20th centuries; more recently, Eric Poehler and Ivo van der Graaff have reconstructed a shrine to Jupiter Meilichios here (Fig. 15.1B).[12] The Porta Marina suburb featured the 'Terme Suburbane', which incorporated shops and a bar facing a colonnaded sidewalk (Fig. 15.1G). To the north-west were the mansions of the Insula Occidentalis, which breached the fortification wall to open into lush gardens in the suburb.[13] To the south-east were warehouses cut into the cliff below the Temple of Venus, which neighboured the terraced commercial and residential complex now known as the 'Terme del Sarno'.[14] The small area cleared outside the Porta Stabia, meanwhile, features the largest concentration of highly prestigious tombs known from the city (Fig. 15.1F).[15] This likely was Pompeii's busiest gate, with a large but still little-known suburb; indeed, rescue excavations conducted especially over the past decade have indicated development south of the currently-cleared area.[16] Only the gates on the eastern side of the city – the Porta Nocera, Porta Sarno, and Porta Nola – seem to have featured little development in the immediate suburb, although future excavation could change that impression (Fig. 15.1E, D, C).

Looking further from the wall, viticulture dominated the zone north of the city. An ongoing project led by Florian Seiler, Sebastian Vogel, and Domenico Esposito has shown convincingly that the landscape was utilized above all for vineyards, supporting earlier suggestions that grain for local subsistence must have come from further afield.[17] The so-called *villae rusticae* where grapes were grown took on a wide variety of forms, from luxurious mansions to rustic farmsteads. The 'Villa Regina' at Boscoreale remains the best known of these, being one of the only examples both fully uncovered and left exposed after volcanic clearance.[18] Others vary widely, from small

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[10] Emmerson 2020, 140, 196.

[11] Grimaldi, Jacobelli 2021.

[12] Stefani 1995; Poehler, Van Roggen, Crowther 2019, 252; Emmerson 2020, 150-51; Poehler, van der Graaff 2022.

[13] Jacobelli 2001, 33-9; Grimaldi 2014; Stevens 2017, 125-36.

[14] Koloski-Ostrow 1990; Bonetto, Busana, Berardi 2021.

[15] Emmerson 2020, 150; 2023; Stefani 2021.

[16] De Carolis, Pardi 2018, 147-50; Aiello et al. 2024, 8.

[17] Seiler, Vogel, Esposito 2019; for absence of grain, Scheidel 1992; Senatore 1998; De Simone 2017 (*contra* Jongman 1988).

[18] Jashemeski 1979 II, 288-91; De Caro, Zevi, Jashemski 1994.

buildings of primarily service rooms surrounding courtyards – much like the 'Villa Regina' – to significantly larger and more luxurious structures, like the nearby Villa of P. Fannius Synistor.[19] Remarkably, of the many villas in the territory north of the city, 20 of which have well-known plans, only a single example, the 'Villa of Asellius' at Boscoreale shows no evidence for viticulture: i.e., no grape press, *dolia*, or associated vineyard.[20] While more remains to be discovered, we can be confident that the land north of Pompeii, sloping upwards towards Vesuvius, was blanketed in vines.

South of the city, the situation was dramatically different. Reconstructing the pre-eruption topography of this area is complicated by a variety of factors, but a major interdisciplinary study published in 2024 provides the clearest view yet of the landscape.[21] Pompeii's southern territory included little suitable space for viticulture.[22] Instead, much of the zone fell within the floodplain of the Sarno River and was occupied by a patchy landscape that included both wetlands and shallow marine environments. Immediately south of the city, a large back-ridge depression known as the 'Masseria Curati' held shallow saltwater up to 5 m deep (Fig. 15.1H).[23] Further south and east were freshwater backswamps lining the Sarno River, which continued along its course to the north-east.[24] Development concentrated on the coastal ridge now known as 'Bottaro', to the south-west of the city, and along the outflow of Pompeii's volcanic plateau to the south-east, where extramural sanctuaries have been uncovered at the Fondo Iozzino (Fig. 15.1I) and on the Sant'Abbondio hill (Fig. 15.1J).[25] Other buildings stood on high ground alongside the river at Moregine.[26] Pompeii's port was located somewhere in this southern area – in fact, the new study hypothesizes that it is represented by the Masseria Curati depression – and salt flats attested in Roman literature must also have been nearby, possibly to the northwest in the direction of modern Torre Annunziata.[27]

While the precise location of the city's port is still subject to debate, several densely developed districts certainly existed nearby it.[28] One of these was the settlement along the Bottaro Ridge. Already in 1765, Francesco La Vega recovered various objects from a structure here that he interpreted as a temple.[29] Since that time, many more buildings have come to light; although most were exposed only as single walls, others appear to have been warehouses containing *amphorae* or *dolia*.[30] Reported finds of mosaic floors could indicate the presence of

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[19] Moorman 2007, 436-8; Sieler, Vogel, Esposito 2019, 187-90.

[20] Seiler, Vogel, Esposito 2019, 189.

[21] Aiello et al. 2024.

[22] Recent palynological analysis supports this idea, showing very little *Vitis* pollen from cores taken south of the city. Horticulture in the area appears to have consisted of small-scale vegetable and cereal cultivation on patches of higher ground, while one cypress plantation has been identified along the river (Vignola et al. 2022; see also Ciarallo 2001).

[23] Aiello et al. 2024, 15-17.

[24] Longobardi 2003; Vogel, Märker 2010; Nicosia et al. 2019; Amato 2021, 119-21; Seiler 2023. For a proposed full course of the Sarno River in 79 CE, see Seiler 2022, fig. 6.

[25] Kockel 1985; Stefani, di Maio 2003; Seiler 2022, 287-8.

[26] Nappo 1999, 2012; Mastroroberto 2001.

[27] Port: Aiello et al. 2024, 17; salt flats: Colum. 10. 135-36; Murolo 1995; Ciarallo, Pescatore, Senatore 2007; Bulian et al. 2024, 17.

[28] For the debate, see Stefani, di Maio 2003, 162-7 (with earlier bibliography); Amato et al. 2021; Seiler 2022; Aiello et al. 2024.

[29] Kockel 1985, 568-70; Pagano 1997, 26; Stefani, di Maio 2003, 142-5.

[30] Stefani, di Maio 2003, 145-8.

luxury housing, while a structure that contained a kiln and neat rows of more than 500 unused roof tiles (now incorporated into the reconstructed roof of the Villa dei Misteri) can confidently be interpreted as a ceramics workshop.[31] Several deposits of votives also were uncovered at Bottaro, along with a dump of rubble that seemingly derived from the dismantlement of a pre-Roman public building, given that parts of a floor in *opus signinum* preserved an Oscan inscription in white *tesserae*.[32] A small shrine shaped as a freestanding *aedicula* has attracted particular attention due to its inscription, which recorded a dedication to Neptune.[33] Treating the shrine together with the possible temple of La Vega's excavation and the rubble dump with Oscan inscription, scholars often reconstruct a long-lived sanctuary to Neptune at Bottaro (Fig. 15.1K).[34] The evidence, however, remains too fragmentary to draw together with any certainty, since the precise locations of all these finds remain open to question.

One area of the Bottaro suburb, however, now usually called the 'Fondo Matrone' or the 'Pagus Maritimus', is better documented (Fig. 15.1L). The central discovery was a building complex that included both a well-decorated villa and a long row of nineteen shops and one bar opening onto a colonnaded sidewalk.[35] Extensive graffiti attested to the busy nature of the portico; most examples consisted of names in Latin and Greek, and some individuals were identified as sailors.[36] The shops incorporated wooden mezzanines, while a staircase in the portico and another within one shop led to rooms or apartments above. Additional housing might have been represented by two rows of small, undecorated rooms that faced one another across a narrow road between the villa and the shops. While some have interpreted this space as housing for enslaved workers, the rooms were strikingly similar to some recently uncovered at nearby Oplontis B and convincingly interpreted as row houses available for rent, which might be a better interpretation here.[37] At ca. 5x5 m, the larger rooms at Bottaro slightly exceeded the size of the row houses (ca. 5.6x3 m), while the smaller were on roughly the same scale. All faced a passage that was ca. 3 m wide, about the same size as the road between the Oplontis B row houses and wider than some one-way streets in Pompeii. Although the single extant plan shows a wall blocking the passage at the eastern side of the rooms, suggesting an interior corridor instead of an exterior road, the accuracy of that drawing, particularly in the small details on the edges of the excavated area, remains open to question.[38] Indeed, the original report records a road between the villa and the shop complex; based on the published plans, the only place such a road could have been located was running between the rooms.[39] One of the rooms contained an oven or kiln, and a second a large, commercial-style mill, finds that do not exclude a function as housing for enslaved workers, but which do not necessitate it. No other finds were recorded. Given the presence of highly similar row houses at Oplontis B

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[31] Kockel 1985, 568; Stefani, di Maio 2003, 155.

[32] Inscription: I*mIt* Pompei 15. D'Ambrosio 1977; Id. 1984, 11-17; De Caro 1983; Stefani, di Maio 2003, 157.

[33] *CIL* X, 8157. Stefani, di Maio 2003, 146-7.

[34] E.g., D'Ambrosio 1984; Longobardi 2003, 371; Curti 2005, 53; Small 2007, 185.

[35] Sogliano 1901; Paribeni 1902; Matrone 1903; Fienga 1934; Stefani 2003; Stefani, di Maio 2003, 149-51; van der Graaff et al. 2020, 126-7.

[36] Sogliano 1901, 425; Stefani 2003; Stefani, di Maio 2003, 150.

[37] Van der Graaff et al. 2020. For the rooms at the Fondo Matrone as housing for enslaved workers, see Stefani 2003, 436; Stefani, di Maio 2003, 150.

[38] Plan published in Matrone 1903.

[39] Matrone 1903, 8: 'Une rue étroite séparait ce toit et ces magasins de la noble villa voisine.'

and the lack of comparable quarters for enslaved workers from other Campanian villas, these spaces might be better interpreted as residential and/or commercial rental units, possibly under control of the villa, but not certainly intended to house those enslaved there.[40]

Further south, beyond the shops, was a building that consisted of a series of rooms on two storeys arranged around a colonnaded courtyard.[41] This structure is sometimes called the 'Villa of Marcus Cellius Africanus' for a signet ring recovered within. The collapsed upper rooms were well decorated, with painted walls and mosaic floors. Downstairs, most of the rooms were simpler; a single room on the north-eastern side of the courtyard was decorated with fourth-style motifs and a panel showing the seasons. *Dolia* were installed in the courtyard and in one large room, and another room featured fittings for a grape press. The building appears, therefore, to have been used for grape processing, at least at certain times of year.[42] Given that it was surrounded by other structures, with no apparent land for vineyards, the grapes pressed here must have derived from elsewhere in the territory.[43]

About 600 m east of the Fondo Matrone was another suburban neighbourhood, fully covering the riverside ridge at modern Moregine (Fig. 15.1M). The best known of the recovered structures took the form of a peristyle lined on its northern side with three exceptionally well decorated dining rooms and a large kitchen.[44] In the north-western part of the building, a bath suite was under construction in 79 CE. The dining rooms appear to have been temporarily out of use at that time. Construction materials for the baths had been piled in one as well as in the kitchen, while wooden accordion gates closed all three dining rooms.[45] Although only the northern side of the portico could be explored in any detail, the building might have been three-sided, opening towards the river to the south.[46] This arrangement would have provided pleasant views and cool breezes for those enjoying the garden or dining around it, and similar designs are well attested in the Vesuvian region, both in standing architecture (e.g., Villa A at Oplontis) and in the representations of idealized villas included on many fourth-style walls. At the time of the eruption, the building appears to have been the property of the Sulpicii family; an archive of ca. 300 wax tablets recovered in one of the dining rooms attested to their financial activities in Puteoli, while tiles prepared for use in the baths were marked *SVL*.[47]

Other finds from Moregine are less well known than this extraordinary Triclinium Building, but show that it was embedded in a zone of dense development. 19th-century farmers working in the area described regularly encountering ancient buildings, roads paved in basalt, and walls decorated with electoral *programmata*.[48] Unfortunately, the earliest systematic excavations

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[40] For possible rooms for enslaved workers at Italian villas, see George 2011, 386-91; Joshel, Hackworth Petersen 2014, 165-9; *contra* Marzano 2007, 129-48. The recent work at Civita Giuliana supports the idea that enslaved workers did not have distinct living quarters and instead inhabited spaces concurrently used for storage and housing animals (Osanna, Toniolo 2022, 235-70).

[41] Fienga 1934, 174-6; Stefani, di Maio 2003, 157-9.

[42] See Dodd Chapter 3 this volume.

[43] Stefani, di Maio 2003, 158.

[44] Nappo 1999; Mastroroberto 2003b, 480; De Simone 2021.

[45] The volcanic ash preserved clear impressions of these gates, which rolled on wheels and locked at the center. Some other finds suggest that the triclinia were used for storage at the moment of the eruption: e.g., oars and an iron anchor in Triclinium B (De Simone 2000, 65).

[46] De Simone 2000, 63.

[47] De Simone 2021, 256.

[48] Fiorelli 1880.

– conducted in an area known as the 'Fondo Valiante' – were poorly documented, and no plans of the recovered structures were made.[49] Nevertheless, the written reports indicate a large complex, including some 20 barrel-vaulted rooms of various sizes, several of which preserved evidence for wooden mezzanines. A few were decorated in the fourth style while others had simple white plaster walls; one exterior wall featured a Nilotic scene with a crocodile and pygmies.[50] Staircases led upstairs, some from within the building and others from narrow streets outside; the remains of balconies survived on the exterior. Unfortunately, the function of the rooms and buildings remained unclear, and the greater part of the excavators' attention went to moveable finds.[51] The report, however, makes clear that the building was not isolated, noting additional structures to both the east and west. In subsequent years, excavations on adjoining properties to the southwest revealed the upper storeys of buildings, but the presence of groundwater led to the almost immediate abandonment of those projects.[52] Nevertheless, they provided further evidence that the complex at the Fondo Valiante was part of a larger neighbourhood.[53]

Highway construction of the early 21st century provided the best – if still partial – view of this district, revealing a building complex now known as 'Moregine B'.[54] The structure closely resembled descriptions of the complex at the Fondo Valiante and was likewise surrounded by other buildings that were left unexcavated but extended to both its east and west. The ground floor was dominated by shops, above all by those retailing food. The high water table preserved wooden triclinia in several of the interior rooms (a few pairs of cork sandals were tucked below one couch). Two outdoor cooking benches served these restaurants, along with interior cisterns, basins, latrines, and pantries, one of the latter with wooden shelving preserved. Along the northern side of the building, outdoor benches provided seating for passers-by; a long bench that incorporated a cistern head along the wall of one shop might have been used as a seat or, more likely, for food preparation. As in the Fondo Valiante building, some rooms were decorated – mostly in the fourth style, although one in the first – while others had white plaster walls. Several rooms featured multiple niches in their walls; based on finds of dishes and utensils within, most of these appear to have served for storage rather than cultic use.[55] Interior staircases provided access to an upper floor from within the buildings; another staircase led from an exterior porticoed sidewalk to independent rooms upstairs, which probably were rented.[56] Taken together with the buildings recovered in earlier excavations, the finds at Moregine B suggest a zone of primarily commercial structures, devoted above all to hospitality.

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[49] The only preserved image from this work is a single map showing the location of the excavation (Pirozzi 2003, fig. 3).

[50] Fiorelli 1881, 28-9. The painting is probably that now in the collection of the J. Paul Getty Museum (object no. 72.AG.86; see Pirozzi 2003, 60-61).

[51] Many of the finds are now dispersed, although a small number remain in the collections of the Museo Archeologico Nazionale di Napoli (Pirozzi 2003, 58-60).

[52] Sogliano 1898; Id. 1900.

[53] Stefani 2003, 450.

[54] Mastroroberto 2001; Nappo 2012.

[55] Nappo 2012, 94.

[56] Most of the upper storey had been lost prior to the excavation (Nappo 2012, 91). One preserved exterior painting shows a group of togate males sacrificing to two gods alongside an *opus quadratum* wall, possibly placing the action in a suburban setting outside a city wall (Mastroroberto 2003a, 467; *contra* Nappo 2012, 97).

While the Triclinium Building at Moregine has been interpreted in a variety of ways – among them as a villa, a collegium seat, and a luxury inn specifically built for Nero's visits to Campania – its structure and context alongside Moregine B suggest that it too was devoted to commercial dining, if on a far more elevated level.[57] In fact, it might best be compared to a similar building inside Pompeii's wall, the Praedia of Julia Felix.[58] Despite its common categorization as a house, this luxurious property shares little in common with domestic space, and as others have argued, is better interpreted as a commercial complex offering both interior and garden dining arrangements, additions in keeping with the shops, apartments, and baths offered by the famous rental notice on its façade.[59] Considering both the Triclinium Building and the other remains recovered at Moregine, therefore, the district appears to have been devoted firstly to hospitality, including dining, bathing, and probably room rentals, most likely in service to the nearby port. Grete Stefani has hypothesized that Moregine was the district known in antiquity as *Sarnum* and the location of the *pons Sarni* (Sarno Bridge) mentioned in a graffito from Pompeii's eastern suburb, while the recent landscape study puts forward the idea that it controlled access to the port.[60] Whatever its specific situation might have been, Moregine can be interpreted securely as a hub of activity very near Pompeii's port, while the emphasis on hospitality suggests an expectation of regular traffic.

Inside the wall – new excavations at Insula I.14

Pompeii's territory, therefore, is among the best understood of any Roman city. Nevertheless, it continues to play a relatively minor role in Pompeian scholarship, which beyond work focused specifically on the city's surroundings, still tends to restrict its view to the structures within the fortification wall. Approaching the city with an eye towards its territory, however, invites new interpretations. Since 2022, Tulane University has been excavating a building complex on the southern side of Region I, Insula 14, inside the Porta Nocera on the south-eastern side of Pompeii (Fig. 15.2).[61] Property I.14.1/11-13 features two shops along its southern façade, at Entrances 11 and 13. Passing through a narrow door between them (Entrance 12), one arrives at a portico overlooking a garden, around which are arranged two smaller and two larger decorated rooms; the latter are scaled to hold triclinia for dining. At 8.8x4.5 m, the largest of the rooms (A-4) rivals in its size some of the most impressive dining rooms from the city; for example, the 'Room of the Cupids' from the House of the Vettii (VI.15.1) measures only slightly larger, at ca. 9x6 m. A narrow doorway opened into the room from the portico. The second dining room (A-5), which featured a wide doorway to the portico, is more typically sized at 3.3x3.3 m and would have held three couches comfortably. The smaller pair of rooms (A-3 and B-5) each include a niche for one couch and a wide window onto the garden; these might have been used either for intimate dining groups, sleeping, or both. A masonry triclinium in the southern garden (C-1) adds additional, outdoor dining space.

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[57] For the various possibilities (with earlier bibliography), see most recently De Simone 2021, 249-54.

[58] As already pointed out in Torelli 2012, 68-9.

[59] Rental notice: *CIL* IV, 1136. Nappo 2007, 361; D'Ambra 2021, 85-7.

[60] Graffito: *CIL* IV, 3864. Stefani, di Maio 2003, 169 (*contra* De' Spagnolis Conticello 1994; see also Poehler, van der Graaff 2022, 40-1); Aiello et al. 2024, 17.

[61] Emmerson, Farrior, Rogers 2023; Emmerson et al. 2024a; Iid. 2024b. For the building, see also D'Anna 2024, 75-146.

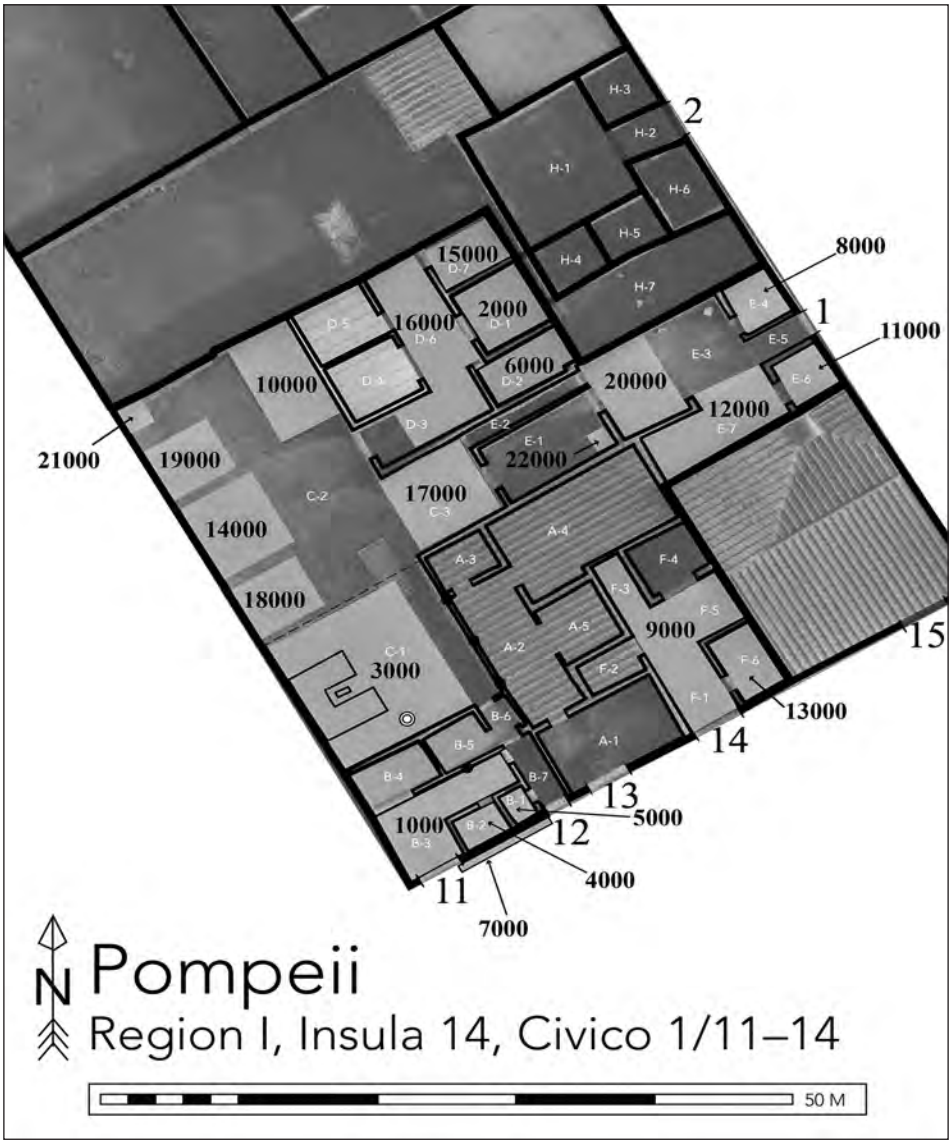

Fig. 15.2 Plan of southern side of Region I, Insula 14 at Pompeii, showing archaeological areas excavated between 2022 and 2024.

The arrangement of rooms around the portico in I.14.1/11-13 strongly suggests commercial dining, a conclusion supported by the presence of a bar on the corner of the block, at I.14.15, which had once been connected both to the portico and to the largest dining room via doorways through I.14.14.[62] Although these doorways had been blocked by 79 CE, the buildings

[62] Emmerson et al. 2024a, 108-10.

might have continued to function as a unit; no kitchen of the final phase has been recovered from I.14.1/11-13, but well-equipped cooking spaces were incorporated into both I.14.14 and I.14.15. The smaller decorated rooms on the portico could suggest that the building offered sleeping rooms for rent, as well. While the level of refinement certainly falls below the Praedia of Julia Felix or the Triclinium Building at Moregine, the third- and fourth-style walls and tessellated *opus signinum* floors of the rooms around the portico are on par with decorated rooms found in some large Pompeian bars – such as the dining room associated with the bar at I.8.8 or the more recently-excavated example at V.3 – as well as with those at Moregine B.[63] The garden triclinium, meanwhile, also suggests commercial space; as others have pointed out, such fixtures are more often associated with Pompeii's restaurants than with its residences.[64]

Commercial dining, however, was not the only significant economic activity undertaken in this building complex. At the time of the eruption, vines were cultivated in the garden,[65] while the eastern and northern areas of the building were devoted to a reed-working workshop. Various pieces of evidence confirmed the presence of the workshop.[66] Firstly, two rooms in the eastern suite, inside Entrance 1 (E-1 and E-7), were filled at the time of the eruption with stems of common reed (*Phragmites australis*), stacked in piles that likely reached the ceiling of each room (Fig. 15.3). In the millennia following the eruption, these massive organic deposits compressed and mineralized through transfer of silica derived either from the overlying ash and lapilli or from the phytoliths of the reeds themselves. In a nearby room (E-6), stacks of highly decayed but partially mineralized reed mats were preserved under a mortar subsurface of the final phase. In the small courtyard to the north (D-6) was a shallow vat appropriately sized for the soaking and crushing phases necessary for the manufacture of reed products like mats and baskets. It was fed by water collected from the roof and could be emptied into an adjoining cistern. In addition to functioning as a restaurant and/or inn, therefore, the building included a reed-working workshop. The two activities might have rotated on a seasonal schedule, since dining along the portico or in the garden would have been most pleasant in the warm months, while reeds were harvested at the beginning of winter and Roman authors like Columella and Pliny saw reed working as an appropriate wintertime activity.[67] An individual most likely associated with the workshop appears in an election endorsement left on the southern façade of the building, alongside the shop at I.14.14; it records a certain *Tegeticula* – literally, 'little reed mat' – as a supporter of Rufus for the office of *duovir*.[68]

Prior to the recent work in I.14.1/11-13, a single reed-working workshop was known from an urban context in the whole of the Roman world. Notably, it was located at I.14.2, immediately north of the complex currently under excavation.[69] The southern rooms of that building were cleared in the 1950s, when scraps of one or more carbonized reed mats were recovered from

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[63] For bar decoration, see Ellis 2018, 140-43.

[64] Costa 2020, 116; Kastenmeier 2023, 145-6.

[65] The final phase of viticulture was preceded by a long period in which the garden functioned as a work yard for an as-yet-unidentified activity that required the use of some form of heavy materials or equipment, as indicated by the presence of a worn and often repaired cart path that passed through the space (Emmerson et al. 2024a, 110-1; Iid. 2024b, 4-5).

[66] Emmerson et al. 2024a; Iid. 2024b, 7-11.

[67] Colvm. 11. 90-92; Plin. *nat*. 17. 33.

[68] *CIL* IV, 10929; Giordano, Casale 1991, 277 no. 6.

[69] Cullin-Mingaud 2010.

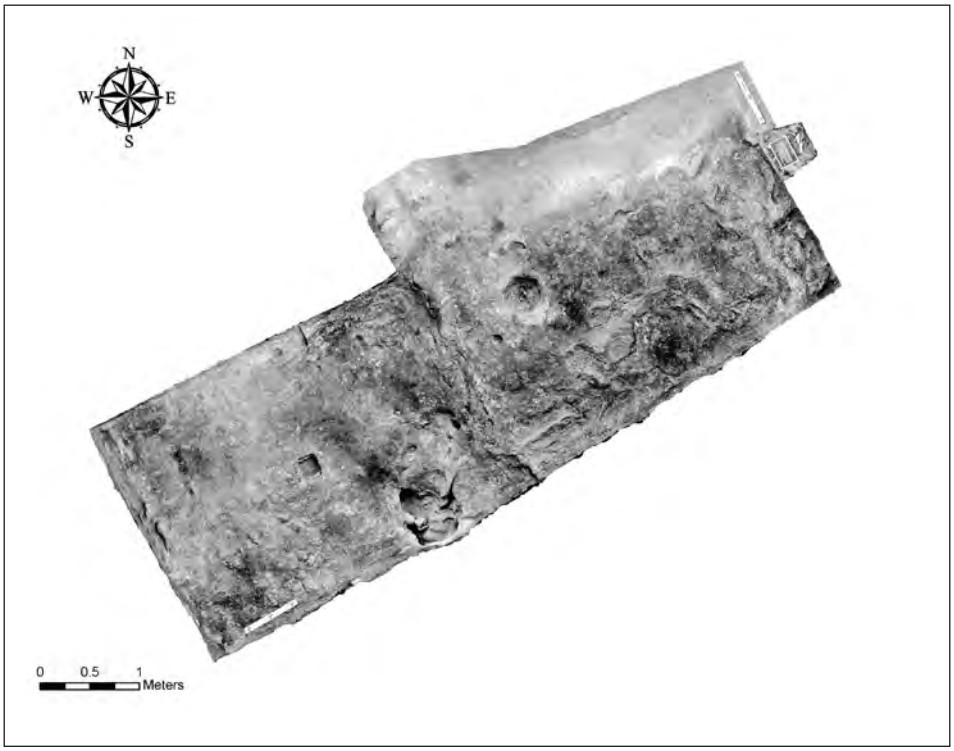

Fig. 15.3 Compressed deposit of *Phragmite australis* recovered from Room E-7.

the small atrium.[70] Wilhelmina Jashemski excavated the garden in 1972, and the northern interior spaces were fully exposed in the 1990s.[71] That latest project revealed two small rooms that contained piles of reeds and pliable branches like willow, which had been carbonized in a localized fire during the course of the eruption. A paved courtyard featured a soaking vat similarly outfitted to the example in I.14.1/11-13, having been fed via a water channel carrying rainwater from the roof and draining into a subterranean cistern. The two buildings were alike in other ways as well; I.14.2 included a garden triclinium and one interior dining room with fourth style walls and tessellated *opus signinum* floors extremely similar to the rooms adjoining the portico of I.14.1/11–13.[72] Whether these might also have been used for commercial dining is unclear, but likely.

While the reed-working workshops of Insula I.14 are the only confirmed examples from the city, additional properties at Pompeii have been associated with this activity. Following the via di Nocera northwards from Insula I.14, one arrives at the via dell'Abbondanza, the major route crossing east-west through Pompeii. At this intersection, early 20th-century excavators reconstructed one or more reed-working workshops on the northern side of the street, in

[70] Cullin-Mingaud 2010, 2.2.15.
[71] Jashemski 1979 I, 94-7; II, 59-60; Cullin-Mingaud 2010; D'Anna 2024, 149-89.
[72] Cullin-Mingaud 2010, 2.2.40-4.

Insula III.3.[73] Only the facades of the buildings were uncovered, complicating the interpretation, but the work revealed wide shopfronts at Entrances 1, 2, 4, and 5, as well as a narrow doorway at Entrance 3. On a (collapsed) balcony running above III.3.2-3, excavators discovered a mass of carbonized grasses, piled with stems running in the same direction.[74] Upon initial clearance in 1914, this material was understood as a low wattle wall along one side of the balcony and therefore part of its structure.[75] That idea, however, was reconsidered two years later, when clearance of the northern façade of Insula I.13 revealed an election endorsement that read, *Lollium Aed(ilem) o(ro) v(os) f(aciatis) tegettari* – 'The matmakers ask you to elect Lollius for Aedile.'[76] The endorsement, likely indicating the C. Lollius Fuscus who ran for office in 78 or 79 CE, was located on a pilaster between Entrances 4 and 5, directly opposite the balcony discovered two years earlier. Its presence encouraged a reconsideration of the latter context, which the excavators now interpreted as raw materials necessary for matmaking, stored on the balcony above a shop or workshop at III.3.2.[77] Based on the recovery of tools possibly used for matmaking, Matteo Della Corte believed that much of the block was devoted to this activity.[78] Hans Eschebach, meanwhile, reconstructed an additional matmaking workshop across the street, in I.13.6.[79] While the evidence remains fragmentary, it comes together with that from I.14 to suggest that the via di Porta Nocera could represent a matmaking corridor, concentrating the industry in one sector of the city (Fig. 15.4).

Workshops that cluster within the urban fabric can share various resources such as labour, material, or client networks, increasing profit and efficiency for all.[80] The confirmed reed workshops in Pompeii's Insula I.14, moreover, might not represent separate endeavours but a unified business operated under central management. The two are separated by an unusual space with no doorways for access – a *unicum* in Pompeii – but which served as a lightwell offering windows into both (Fig. 15.2, Room H-7).[81] The space featured hydraulic infrastructure still partially visible at ground level, which supplied water to the soaking vat in I.14.2 via a narrow (ca. 35 cm wide) corridor between the two buildings. While the current project in Insula I.14 has not yet had the opportunity to clear and fully examine the relevant fixtures, the system appears also to carry water into I.14.1/11-13. This shared infrastructure would strongly suggest that the workshops were owned and managed by a central party. Whether this cluster also shared operational or managerial relationships with any potential workshops located further north, in Insula I.13 or III.3, remains unclear.

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[73] Cullin-Mingaud 2010, 2.1.

[74] Della Corte 1919, 237-8. According to Vittorio Spinazzola, the recovered vegetal material was later identified as *Ampelodesma tenax,* although when and how this attribution was made remains unclear and the sample is now lost (Spinazzola 1953, 100).

[75] Della Corte 1915, 279-80; Cullin-Mingaud 2010, 2.1.1 (who notes that if the organic material were a wall of the balcony, it would match neither of the other two walls of the same balcony in construction style). All remains of this balcony were destroyed in the bombing of 1943.

[76] *CIL* IV, 7473.

[77] Della Corte 1919, 237-8; Cullin-Mingaud 2010, 2.1.1.

[78] Della Corte 1926, 351, no. 762; cf. Cullin-Mingaud 2010, 2.1.1, who places a shop selling mats at III.3.2, with a possible workshop at III.3.3.

[79] Eschebach, Eschebach, Müller-Trollius 1993, 68. The standing remains of this property, however, currently show no evidence of such activity (Gallo 2022, 158-9).

[80] Goodman 2016, 310-25.

[81] D'Anna 2024, 163-4.

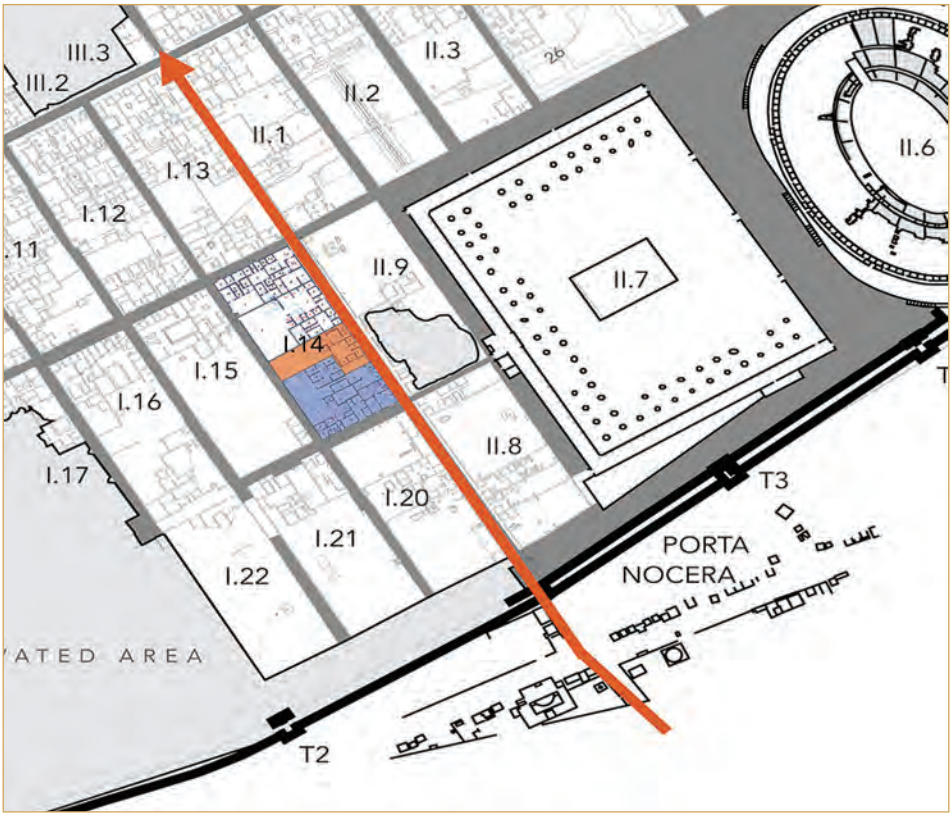

Fig. 15.4 Plan of potential reed-working corridor on southeastern side of Pompeii.

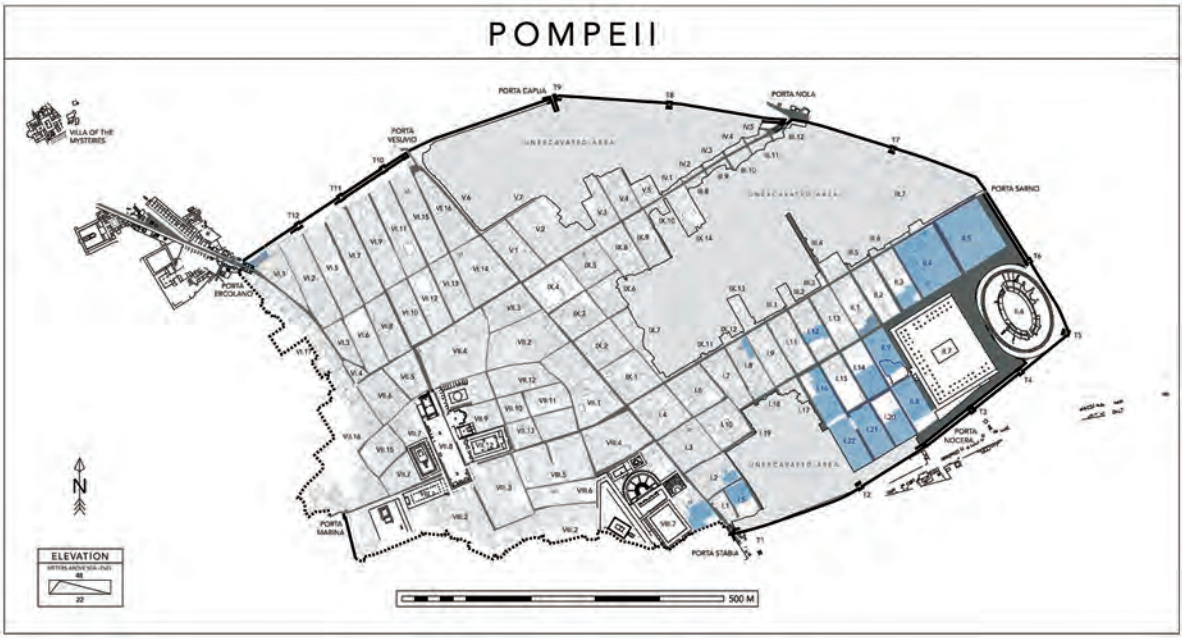

Fig. 15.5 Plan of likely commercial dining spaces featuring garden triclinia at Pompeii.

Why reeds were worked in this part of the city probably has several explanations, but one significant factor is elucidated by considering the territory beyond the fortification wall. Exiting southwards from the Porta Nocera, the landscape sloped down gently along the volcanic outflow represented by the Fondo Iozzino and Sant'Abbondio hills (Fig. 15.1I, J).[82] Just beyond, to the south-east, one arrived at the Sarno River, and – notably – the freshwater backswamps that lined its banks.[83] Such wetlands made ideal locations for reed beds. Common reed thrives on riverbanks, and while it can tolerate brackish water, it greatly prefers fresh. As the plant develops, it emits two harmful toxins – Gallic acid and Mesoxalic acid – which suppress nearby growth of other plant species.[84] Thus, the Sarno is best reconstructed as heavily lined with reed beds. Further support for this reconstruction comes from a recent pollen analysis of the landscape south of Pompeii, which showed hydrophilous grasses in general and those of the family *Poaceae* in particular – to which *Phragmites australis* belongs – as dominant across all analysed phases from the Iron Age to the eruption of Vesuvius.[85] The production of mats required massive amounts of reed stems, a situation to which the reed store from Insula I.14 attests. These could have been harvested from the banks to the southeast of Pompeii, transported into the city via the Porta Nocera, and carried by cart, animal, or human power to the workshops along the via di Nocera.[86] The positioning of those workshops within the urban fabric, therefore, appears to have been determined above all by access to raw materials in the southern territory.

Commercial dining in Insula I.14, furthermore, might also have responded to a resource offered by the territory: not materials, but traffic, and in particular, traffic from the nearby port. Pompeii's bars were distributed along major roads and at busy intersections throughout the city,[87] but restaurants that incorporated garden dining in the elite style – as in Insula I.14 – was more restricted, concentrating on the south-eastern side of Pompeii, just inside the Porta Stabia, Porta Nocera, and Porta Sarno (Fig. 15.5).[88] Some have attributed this pattern to factors related to the urban economy within the wall. Fiorenza Proto, for example, has seen hospitality businesses in Regions I and II responding to the need to feed crowds during festivals at the Amphitheatre.[89] Jessica Venner has followed Proto, while placing additional emphasis on the commercialization of Pompeii (and especially the growth of commercial dining[90]) in the first century CE, as well as on the accessibility of the south-eastern regions to cart and pedestrian traffic.[91] Such explanations, however, do not fully explain the pattern. While the commercial dining spaces of Regions I and II surely could have catered to crowds flocking to the games, those events happened only occasionally.[92] Even if the Amphitheatre was used for various purposes throughout the year, other areas of the city, like the zone of the theatres and the forum, attracted regular crowds without giving rise to garden dining. This explanation, furthermore,

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[82] Aiello et al. 2024.
[83] Longobardi 2003; Vogel, Märker 2010; Nicosia et al. 2019; Amato et al. 2021, 119-21.
[84] Gucker 2008; Rudrappa et al. 2009.
[85] Vignola et al. 2022, 180-1, 183.
[86] For Roman exploitation of wetlands, see Frassine 2013; Tol, De Haas 2022.
[87] Ellis 2018, 86-92.
[88] Venner 2022, 223; Kastenmeier 2023, 148-51.
[89] Proto 2006, 21; see also Ciarallo 2012, 435 n. 144; Costa 2020, 119.
[90] See also Ellis 2018.
[91] Venner 2022, 222-37.
[92] Tuck 2008.

does not account for the notable lack of bars in the district surrounding the Amphitheatre, leaving unclear why that building would attract permanent structures including elite-style garden dining, but not the far more common shopfronts devoted to quick meals.[93] Arguments hinged on the intensity of local traffic in the south-eastern zone of the city also appear to be overstated. The evidence most often taken as proxy markers for pedestrians – including locations of shopfronts and incidence of painted notices – are notably lacking from the streets immediately surrounding the Amphitheatre, while network analysis of the city's streets suggests that, absent events in the public buildings, this area attracted significantly less pedestrian traffic than neighbourhoods to the north and west.[94] For carts, moreover, Regions I and II were among the least accessible in the city. Side streets in the area were unpaved at the time of the eruption, making them more difficult to navigate by cart, while the zone around the Amphitheatre and 'Grand Palestra' was entirely pedestrianized and could be closed to exclude even foot traffic.[95]

Looking outside the gates to the territory south of the city might better clarify the pattern of garden dining on the south-eastern side of Pompeii. Certainly, the most significant extramural feature accessed via the south-eastern gates was Pompeii's port. If the recent landscape study is correct in associating the port with the Masseria Curati depression, then it was located less than 500 m from Porta Stabia and less than 600 m from the Porta Nocera, depending on the precise layout of roads and locations of major port features.[96] Whatever the exact topography, the walk from either gate to the port would have been under 10 minutes for most adults. We should imagine, therefore, that port and city were very closely linked, and that port workers were often present in the city just as Pompeians could be found in the port districts. Pompeii's port, furthermore, also attracted a wider population of travellers. According to Strabo, it served all the inland cities of the southern Bay of Naples, including the substantial centres of Nola, Nuceria, and Acerrae.[97] This situation most likely explains the emphasis on hospitality at Moregine, which could have served both port workers – including those present only for brief periods – and travellers passing through as one stop on much longer journeys. Certainly, those traveling to and from neighbouring cities needed places to rest, eat, and sleep, whether they were leaving or arriving via ship. Hospitality-focused establishments inside the walls on the south-eastern side of the city might likewise have appealed to this group. Stop-offs in Regions I and II would have been especially convenient for those traveling eastwards towards Nuceria or northwards to the inland plains of Campania – populations that Strabo emphasized as users of the port.[98] Garden dining, furthermore, would have been most pleasant during the high travel

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[93] Ellis 2004, 383.

[94] Poehler 2017; see also Kastenmeier 2023, 152-3 on lack of density as a defining characteristic of this quarter.

[95] Poehler, Crowther 2018. While many of these streets are covered and so inaccessible for analysis today; small-scale excavations of the 1980s and 1990s revealed that at least some were unpaved in 79 CE (S.C. Nappo, *pers. comm*.)

[96] Aiello et al. 2024, 17.

[97] Str. 5.4.3.

[98] Strabo suggests that major cities and settlements to the northwest of Pompeii were less served by the city's port, probably because they had better access to the larger hub at Puteoli. This situation could explain – at least in part – why garden dining did not proliferate near the Porta Marina, which also appears to have been easily accessible from the Masseria Curati depression and would have been a natural stopping point for those traveling northwards. Land availability/real estate prices in the dense district surrounding the forum might also have discouraged garden dining (notably, however, this was not the

seasons of spring, summer, and early autumn.[99] In the warm months, the hospitality-oriented businesses of both Moregine and the intramural districts on the south-eastern side of Pompeii appear to have catered to a large number of travellers with accommodations for dining and likely sleeping offered at a variety of price points.

Conclusion

While much work remains to be done in Pompeii's territory, a now well-established knowledge of the zones outside the wall offers significant opportunities to better understand the city. Intramural and extramural Pompeii were inseparable, and research inside the wall can benefit significantly from reflection on the territory beyond it. As the current excavation project in Insula I.14 indicates, considering both the natural and cultural topography of its territory can illuminate previously hidden aspects of Pompeii's urbanism, shedding light on larger social and economic forces that affected the city. On the south-eastern side of the Pompeii, both reed-working and commercial dining inside the wall relied on resources generated outside it: reed beds along the Sarno River in one case and port traffic in the other. Ignoring the territory would have left these essential economic connections unexplored, and a key aspect of Pompeii's urbanism unrecognized.

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situation for the dense neighbourhood just inside the Porta Stabia; see Ellis, Emmerson, Dicus 2023), while the landscape on the western side of the city would have been less conducive to horticulture than the southerly slopes to the east (see Venner 2020, 3).

[99] Winter navigation was possible in the ancient world but restricted to open-water routes. The more common coastal routes were too dangerous to navigate in the winter months (Tammuz 2005).

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Chapter 16

A socio-religious territory in the Clitumnus valley (Umbria) in Roman times – resource management and religious institutions as markers for blurred boundaries between city and country

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Abstract
Religious institutions and places as well as the variety of deities worshipped in Roman Italy, so the claim, offered ritualised frames for shifting, creating, or negotiating social and spatial boundaries. To test this hypothesis, I examine the landscape, settlements, socio-economic activities and sacred sites in the valley of the River Clitumnus in Umbria between the third century BCE and the fourth century CE. The focus lies on the towns of Hispellum, Mevania and Spoletium and three sanctuaries – at the Villa Fidelia, the Lago d'Aisillo, and the source of the Clitumnus. By analysing differences in location, layout and architecture, the deities involved, the remains of ritual practices, as well as their position within the cultivable territory and their relation to nearby settlements, the blurred boundaries between rural and urban areas in the Clitumnus valley become evident – as does the role of the sanctuaries in managing the valley. The underlying assumption is that clear-cut boundaries between city, *suburbium* and countryside – in the case of the Clitumnus Valley – did not exist as fixed entities but were continuously in the making through people's activities and practices within the dynamic riverine landscape.

Keywords
Hispellum; Mevania; Lago d'Aisillo; terrace sanctuary; dynamic landscapes; *centuriatio*

The Clitumnus valley, the sanctuary at the source and the question of the relationship of city and country

The valley of the River Clitumnus, south of Perusia and the Lacus Trasimenus, was famous beyond the regional borders of Umbria (Fig. 16.1). According to Pliny, writing in the first century CE, the fame and attractiveness centred on the sanctuary of Iupiter Clitumnus at the river's source and arose from the particular interconnectedness of natural, cultural and religious features: the aura of the sacred grove, the ponds, the old temple, numerous *sacella*, all linked to Rome by the cattle bred here and sacrificed in the triumphal ceremony to Iupiter Optimus Maximus, the river landscape and the *amoenitas* one could enjoy at this place.[1]

[1] Plin. *epist*. 8.8.

Yet, the sanctuary of Iupiter Clitumnus was only one part, albeit an important one, of a wider religious-territorial system. It played an administrative role in organising space and territory in the valley in the middle of the central Apennines, in what is today the Valle Umbra. This role can be glimpsed between the lines of Pliny, where transfers of rights and responsibilities are hinted at. Beyond the literary idealisation of the river and its god, the fertile lands, swamps, groves, navigable waterways, roads, hills and peaks – along with the many smaller and larger settlements – had to be organised and utilised in a feasible and equitable way. At least during certain periods, the sanctuary, situated in the midst of nature, played a vital role in this process, as did other sacred places in the valley (Fig. 16.1).

This raises several questions: What were the relations between cities, villages, and the sacred places in the Clitumnus valley? How were the sanctuaries located outside the settlements linked with them and their communities?[2] How did religious institutions – represented by deities, sanctuaries, rituals and practitioners – organise properties and allotments? As often in historical research, phenomena and patterns become visible particularly when changes occur, as in the Clitumnus valley, when Umbria came under Roman domination in the third century BCE and experienced political-administrational shifts as e.g., the influx of new citizens and the reorganisation of the territory. A further question follows: how, on both spatial and social levels, did the people, communities, and administrative bodies of settlements cooperate with religious places to make the most of the dynamic landscape of the valley? How were people, religion, economy and settlement patterns intertwined, and what can this tell us about possible boundaries between 'city and country'?

In the following these questions will be addressed by integrating the archaeological and epigraphical evidence on the social and spatial interrelations in which people were engaging and which shaped these places. By better recognising the interlinkages between settlements and sacred places, we can reinterpret the relationship between city and country as it appears in the Clitumnus valley between the third century BCE and the fourth century CE.

I start from the main assumption that clear boundaries between city, suburbium and countryside may not have existed as fixed entities but were continuously in the making through people's activities and practices in many regions of the Roman Mediterranean.[3] My claim is that religious institutions and practices provided ritualised frameworks for shifting, creating, or negotiating social and spatial boundaries, which in turn were reflected in settlement patterns and ways of life.[4] To test this, I will examine the landscape dynamics of the Clitumnus valley, the cities and villages of Hispellum, Mevania and Spoletium, and the sanctuaries with which they were associated between the third century BCE to the fourth century CE.

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[2] Cf. Bradley 2000, 62-77, 227-9. Bradley builds on the common argument that pre-Roman sanctuaries in Umbria 'provided political and economic centres in the absence of urban agglomerations' (64) to argue for their role in the formation of local identities (64-77). These arguments, however, apply only to the larger sanctuary sites (e.g., Grotta Bella, Colle San Rufino, on Monte Subasio); see also Zapelloni Pavia 2024, 164-8, 184-9, who supports his arguments with her strictly archaeological approach.

[3] For the production of spaces through human practices see Lefebvre 1974; Löw 2016. For a recent discussion of boundaries and boundary-making in Roman archaeology, Dubbini 2019.

[4] In analogy to spaces, which are dynamically produced, religion is also 'in the making', see Albrecht et al. 2018.

The land- and waterscape of the Clitumnus Valley and people's ways of living

The Clitumnus valley is surrounded by mountains of the Apennines – Monte Subasio, Monte Maggiore, Monti Martani, Monte Cinque Querce – that reach heights of over 1400 m asl. The earliest settlements, prior to the phase of expanded urban development in the fifth/fourth century BCE, were located primarily on the slopes rather than in the valleys.[5] People used the upland areas, the slopes and plateaus for pasturing livestock, as herding was one of the most common economic activities in the first millennium BCE (Fig. 16.1).[6]

The major rivers shaping this landscape are the Tiber and Chiasco (ancient *Clasius*) into which the Topino (*Tinia*), flowing from the Clitumnus valley, drains. The Clitumnus itself is a very short river (16 km), joining the Teverone at Mevania before becoming, some kilometres downstream at Cannara, a tributary to the Topino (Fig. 16.1).[7] Together these rivers and torrents produce a dynamic landscape with swamps, ephemeral ponds and shifting river courses. In antiquity, the largest bodies of water were the *lacus Umber* and the *lacus Clitorius*, located in the floodplains north and south of Mevania (Fig. 16.1).[8] Water management was therefore a crucial concern for the communities in order to ensure both communication and passage through the valley and its agricultural exploitation.

The Clitumnus valley was also traversed by routes from south-west to north-east. One major line of communication passed through Mevania. This route connected Ocriculum and Carsulae in the south with Nuceria in the north, becoming a part of the Via Flaminia, linking Rome with the Adriatic Sea (and Umbria with Etruria and Picenum) in the last quarter of the third century BCE. An eastern branch of this road passed Spoletium, which had been re-founded as a Roman *colonia* in 241 BCE, heading north to Forum Flaminii, itself a foundation of the late third century BCE, where it joined the western section of the Via Flaminia (Fig. 16.1).[9] Yet communication did not rely on roads alone. Navigable waterways formed another vital aspect of infrastructure and economy. The Valle Umbra was connected to Rome by the Tiber. The Clitumnus and the Topino were navigable in antiquity downstream from south of Mevania, which possessed a fluvial port (Fig. 16.1).[10] Transport and trade thus constituted one dimension of the local economic activities, while agriculture and livestock-breeding formed another for the people of the Valle Umbra.[11] Alongside the elite who owned land and held offices in

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[5] E.g., Ameria, Plestia, Urvinum Hortense, cf. Bradley 2000, 42-83.

[6] Bradley 2000, 50-51, 55, 233-234; Camerieri, Mattioli 2014; Desibio 2018; Camerieri, Galli 2022; Zapelloni Pavia 2024.

[7] For the Marroggia/Teverone, Camerieri, Manconi 2010b, 23-5; Camerieri 2019a, 10-11.

[8] Cf. Camerieri, Galli 2022, fig. 1.

[9] See Bradley 2000, 222-25 on the re-foundations and renovations of cities in Umbria between the Social War and the battle of Actium. The sample of settlements and the area between them chosen for this paper is sufficient for the argument I want to make; the sample, however, could be extended and include e.g., Umbrian 'hillforts' (Fontana, Neef 2024), such as Urvinum Hortense with its sanctuary above Mevania (Bradley 2000; Zuddas 2013) or sanctuaries such as Nocette di Pale above Forum Flaminii (Albanesi, Romana Picuti 2022) to see also connections between settlements, people and sacred places in different environmental contexts.

[10] See infra; see Pasieka 2021 for a study of riverine infrastructure including the Tiber in southern Etruria.

[11] Gabba 1986; Bradley 2000, 48-53, for the phase of the early Principate; Malone, Allegrucci, Stoddart 1994 with the case of Gubbio.

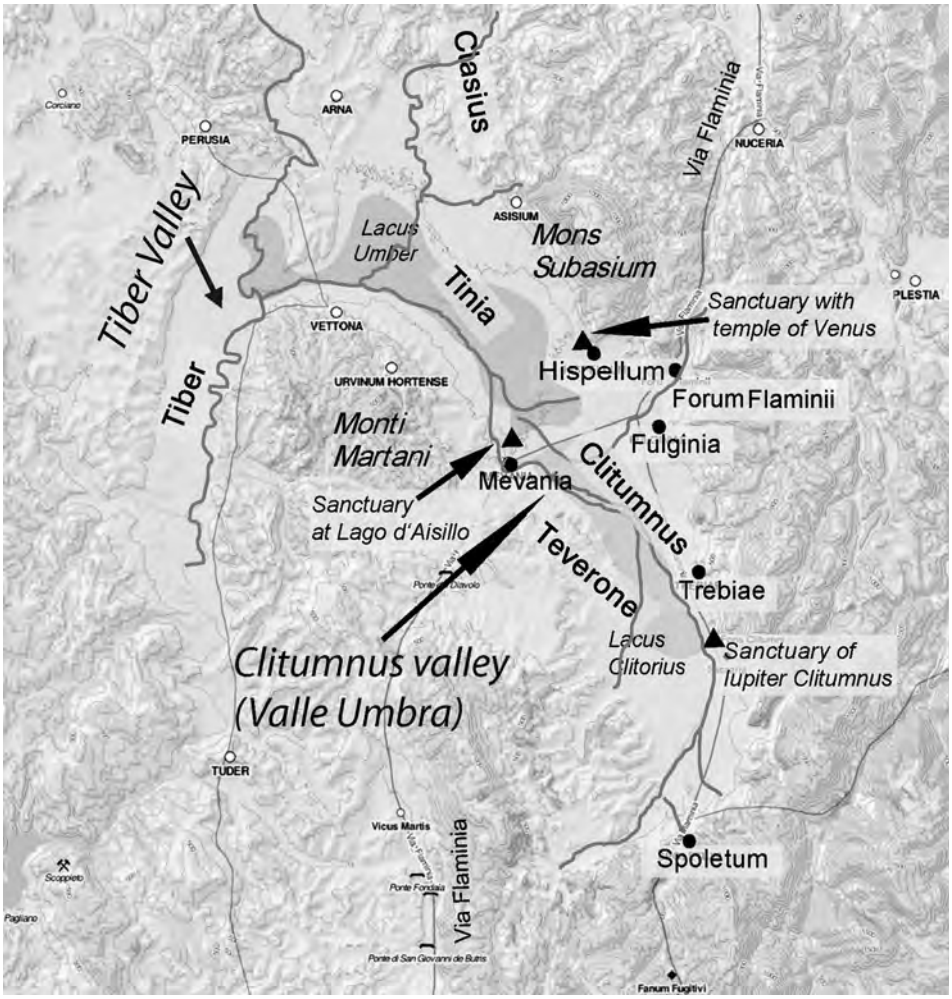

Fig. 16.1 Clitumnus Valley (Valle Umbra) with settlements and sanctuaries, infrastructure, rivers and swamps.

both pre-Roman and Roman times, craftsmen, farmers, herders and merchants shared this environment. They encountered one another not only in towns, at markets, or along roads, but also, at least to some extent, at sacred places.[12] The Clitumnus Valley, therefore, emerges not simply as a physical landscape, but as a lived space where economy, infrastructure and religion intertwined to structure everyday life.

[12] There were sacred places for each of these groups individually, such as on the *tratturi* or *calles* for transhumance (Collefiorito, Ocriculum / Monte San Pancrazio) or in the settlements (Mevania, Hispellum). The scope of this paper covers the river plains and the foothills of the mountains, thus excluding the uphill sanctuaries; see on the aspect of religion and transhumance Desibio 2018.

A threefold perspective – territory, economy and religion

In the dynamic landscape of the Clitumnus valley people made use of space for dwelling, agriculture, craft production, transport and herding. These practices were both social and economic in character and were closely intertwined with the organisation of space. Farmers' families might live near the fields, meeting at markets in towns;[13] landowners might reside both within and outside settlements and administrative and trading centres to maintain connections to networks of production and redistribution; herders passed from downhill to uphill pastures. Access to resources such as stone, wood or clay required not only practical knowledge, but also formal rights of exploitation. Socially, the economic activities of people in the river plain and in the settlements on the mountain slopes took place within shifting and overlapping groups: a village community could encompass individuals engaged in both farming and craft production; some members would leave the settlements seasonally with their flocks, while others, due to their status or public role, held administrative positions and interacted with their counterparts from neighbouring communities.

If we accept the perspective of (shifting) groups of people in the Valle Umbra, they appear as situationally formed collectives operating within distinct topographies of administration, mobility, production or redistribution of goods. They can be conceptualised as 'communities of practices'.[14] At times, such communities might consist of local elites, farmers, transregional traders, herders or town- and village-dwellers. Their interests intersected, sometimes clashed, and often changed over time, yet they all shared the same physical environment of plain, hills, swamps and mountains, albeit using it differently. Religious practices were woven into all these activities. Communication with the gods, who are present both in the environment and within social groups, accompanied economic and social routines alike. Religion, in this sense, emerges as a unifying element – spatially as well as socially – within the dynamic landscape of the Clitumnus valley with its fertile plains and the adjoining mountainous zones.[15]

This conceptualisation of fluid and intersecting groups and their use of space has implications for the understanding of religion and religious practices. It challenges pre-assumed distinctions between urban and rural sanctuaries. The conventional scholarly categories of extra-, peri- or suburban sanctuaries, defined exclusively in relation to the city, do not necessarily reflect ancient perceptions of their role, position and significance. Interpreting sanctuaries through the lens of 'communities of practices' rather than by physical proximity to a settlement allows us to move beyond an urban-centred bias. Focusing instead on shared spaces and mobile groups opens new perspectives on the relationship between city and countryside.

In what follows, I will therefore compare the location, layout, architectural equipment and cult practices (where they can be reconstructed) of sacred places in the valley as reflections of their users and their interests. In doing so, I aim to shed light on the blurred boundaries between religious sites in rural settings and those within settlements or, in the Umbrian context, within smaller urban centres.

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[13] Camerieri 2019b.

[14] See for 'communities of practice' in an archaeological application Wendrich 2012.

[15] See Rüpke 2015 for the understanding of religion as a social practice.

Hispellum and the sanctuary of Venus – a religious hub beyond the settlement's borders

The sanctuary on the outskirts of Hispellum is an example of blurred boundaries between the city, its local elite, the wider territory in the Valle Umbra and Rome. The former Umbrian settlement of Hispellum located on the eastern side of the valley became a Roman *municipium* in the late third century BCE and was later granted the status of a *colonia* after the Perusine war in the 40s BCE.[16] As is often the case, these political changes are mirrored also in the development of the sanctuary (Fig. 16.2).

The sanctuary lies to the northwest of Hispellum on the southern slopes of Monte Subasio. The visible remains, overbuilt by a baroque villa (Villa Fidelia), originate from the first century BCE after the foundation of the *colonia*. It was erected as a terrace sanctuary, overlooking the Clitumnus valley from its elevated position. Shortly before the end of the first century BCE members of the local elite rebuilt the sanctuary at a grand scale with a long upper terrace of ca. 100 m where at each end a temple was situated. The southern one was dedicated to Venus, the northern one most likely to Minerva.[17] On the lower terrace, a nymphaeum marks the central point; in front of this terrace a theatre was built in the Augustan period, while slightly to the south-east, an amphitheatre completed the ensemble (Fig. 16.2). This arrangement created a space dedicated to religious practices, games and festive gatherings outside the city walls.[18]

Traces of a probable earliest phase of the sacred site are scarce. Apart from a bronze hand dating to the fifth/fourth century BCE, possibly a dedication, the only significant find is a miniature stone altar or base dedicated to Iupiter Pater, inscribed in the Umbrian script and datable to either the fourth/third century or the second century BCE. This piece, which might once have supported a bronze object, points to the veneration of the highest male god by people using the Umbrian script.[19] Both objects were found in the zone of the theatre west of the terrace sanctuary. Whether the unpublished fragments of architectural terracotta decoration of the second/first century BCE, discovered in the same area belong to the temple underneath the Augustan Venus temple, or attest to another cultic building of that time has to remain open.[20]

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[16] Bradley 2000, 134-35; 137; 168-69; 237-39; 244-45; 296-97; Zapelloni Pavia 2024, 48-83; Sisani 2007. I do not go into details about the sanctuaries inside the cities.

[17] On Venus in the southern cella, see n. 21; an inscription mentioning an *aedes Minervae*, *CIL* XI, 5263 = EDR150802, of the first half of the first century BCE was found at the foot of the hill west of the theatre (Casa Silvi, Fig. 16.2a), see Manconi, Camerieri, Cruciani 1996, 390; Sisani 2012 , 424-5, 444, no. 3.3 with fig. 9. It is not clear whether she was venerated in the northern cella of the symmetrical terrace sanctuary.

[18] Camerieri, Manconi 2012; Occhilupo 2012. I will not deal here with the famous *rescriptum* of the fourth century CE, *CIL* XI, 5265 = EDR136860, where an – imagined – Umbrian collective asks for the re-installation of festivals at Hispellum, comparable to the *fanum Voltumnae*, which in my view refers to an Augustan re-invention of this ethnically defined league, see e.g. Coarelli 2001.

[19] For the bronze hand see Manconi, Camerieri, Cruciani 1996, 391 with n. 54; for the small base or altar see Crawford et al. (eds) 2011, s.v. Hispellum 1, 109, dating this inscription to 200-150 BCE in contrast to Sisani 2012, 424 with n. 86. 444, no. 3.2 with the earlier dating.

[20] Manconi, Camerieri, Cruciani 1996, 389 and 391; Sisani 2007, 178-9. Manconi, Camerieri, Cruciani 1996, 389-90 with n. 50 also claim that a bath and a farmhouse found in the lower zone belonged to the sanctuary of the second/first century BCE because of its pre-Augustan date and location under the theatre.

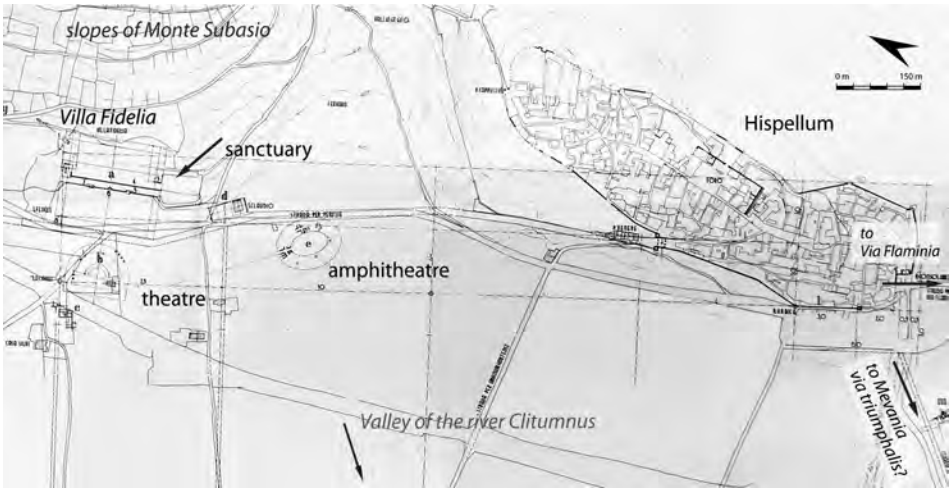

Fig. 16.2 Terrace sanctuary on the eastern side of the Clitumnus valley to the north of Hispellum, today's Villa Fidelia.

The clearest evidence of this earlier phase of the sanctuary is preserved on the terrace itself, where the remains below the southern cella can be dated before the Augustan renovation, when the walls of the slightly smaller cella-like room were incorporated into the new cella. Its floor was decorated with a mosaic into which a slab with an inscription was inserted. The inscription not only records the donors – two men who held the offices of *duoviri* and *quinquennales* of Hispellum – but also mentions a statue of Venus on a base, thereby identifying the deity to whom the temple was dedicated.[21]

The sanctuary at Villa Fidelia occupies a dual role within the Clitumnus valley and beyond. First, it served as a place where the local elite holding administrative offices in Roman times invested their means to enhance both their own reputation and the standing of the deity. They embellished, even enlarged the terrace sanctuary, and added both a theatre and an amphitheatre in its vicinity, which most likely had a close connection to the sanctuary. With its position outside the city overlooking the valley, the sanctuary was simultaneously linked to Hispellum and extended into the *Umland*, exerting a degree of dominance over it. It thus functioned as a junction between the settlement and its territory. Secondly, the sanctuary's architectural form aligns it with a phenomenon in central and southern Italy of the Republican period: the terrace sanctuary, closely related to Hellenistic architecture and associated with Rome's territorial expansion from the second century BCE onwards.[22] The terrace sanctuaries as socio-religious places linked local communities to the central power

[21] Sisani 2012, 435-6, 445, no. 3.6, *CIL* XI, 5264 = EDR150547: *M*(*arcus*) *Granius*, *Sex*(*tus*) *Lollius IIvir*(*i*) | *quinq*(*uennales*) *signum et basim Veneris* | *ex d*(*ecreto*) *d*(*ecurionum*) *f*(*aciunda*) *c*(*uraverunt*) *eidemq*(*ue*) *prob*(*averunt*).

[22] The most famous examples of this kind of highly visible sanctuaries enlarged in a Hellenistic style in the second century BCE are those of Fortuna Primigenia at Praeneste, Iupiter Anxur at Terracina, Hercules Victor at Tibur, and Diana at Nemi, see D'Alessio 2011; Diosono 2024; Rous 2010; Stek 2015.

of *urbs Roma* while simultaneously asserting that their authority rooted in their strong relations with Rome. The terraces at Hispellum as preserved today in the Villa Fidelia may have been constructed only in the first century BCE under the influence of Augustus or shortly before, in the period of the triumvirate, when we have the first clear attestation to the goddess Venus in the inscription of the cella. As the dynastic deity of the Iulii she might have been introduced to Hispellum only at that time. The sanctuary thus functioned as a symbolic link – through both its deity and its architectural language – between the community of Hispellum (in a social and spatial sense) and the distant centre of Rome. Relations between local elites in Hispellum and Rome can be viewed from two perspectives. On the one hand, elite agents interacted with the imperial house of the late first century BCE: either drawing inspiration from beyond Umbria to renovate this sacred site or responding to an initiative from the imperial house itself, which had an interest in establishing the cult of Venus on the terraces along the eastern slope of this important valley.

On the other hand, religion 'percolated' from this sanctuary, with its Republican origins and its first century BCE monumentalisation, into the surrounding countryside, reflecting shifts in influence and territorial claims. As will become clear, the sanctuary at Hispellum is connected to Mevania, a settlement on the western side of the Clitumnus valley. The phases of *centuriationes* in this fertile yet swampy and dynamic area reveal much about power relations and hierarchies between the valley's settlements and their inhabitants. In most cases, these relationships and organisational issues were articulated through religious places and institutions as the example of the terrace sanctuary at Hispellum demonstrates. The land had to be reorganised when a veteran colony was founded during the triumviral period in the second half of the first century BCE.[23] This new assignment of land to the *colonia* of Hispellum was accompanied by a new *centuriatio*, carried out at the expense of territory taken from Asisium and Arna, as is evident from the surviving *cippi* and their inscriptions.[24] In this context, the sanctuary with the temple of Venus outside the newly founded *colonia* of Hispellum may have functioned in a practical sense as a reference point, not only visually but also in concrete terms for the parcelling of land. It may also have served as a meeting place in cases of disputes or issues concerning allotments. Shifts in responsibilities and claims over land, since the new *centuriatio* was superimposed on the old one, created palimpsests of different orientations, which had to be resolved. The sanctuary, located outside the settlement, provided an appropriate space for such negotiations, with the deity serving as witness and guarantor.

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[23] Bradley 2000, chs 3 and 5 on 'Colonization' and 'Romanization'; Camerieri 2015; Emmerson 2020, 196-228; Manconi, Camerieri, Cruciani 1996.

[24] *CIL* XI, 5291 = EDR150622: *fin*(*es*) *col*(*oniae*) / *Hispell(atium),* from Arna to the northwest of Hispellum dating to the last decades of the first century BCE found at ancient Arna in the 19th century, see Camerieri 2019b; Manconi, Camerieri, Cruciani 1996, 411-12 (arguing in favour of an enclave of land of Hispellum, coming into existence through land attributed to the *colonia* for the veterans of the civil wars in the second half of the first century BCE) and see Biundi 2004, 427. We know little about the *centuriatio* before this time. However, when Hispellum was already a Roman *colonia,* the administration attributed new and not only adjoining land to it: Keppie 1983, 177-9, with reference to the passage in Hyginus Gromaticus mentioning the *ager Spellas* as an example of extension of territory of a city becoming a *colonia*. Corroborating arguments for this come from the family of Propertius (Prop. 4.1.127-30) based at Asisium and affected by losses of wealth, and the distribution pattern of people of the *gens Lemonia,* see Sisani 2012, 432-4. Sisani 2012, esp. 421; however, much is based on literary and poetic sources of the first century CE, see also Scheid 2006.

The sanctuary at the Lago d'Aisillo near Mevania – reaching into the swampy land

Religious places outside settlements can either be a stable factor and remain in the former orientation even when territorial boundaries shift, or they may themselves reflect those changes. If we look at Mevania opposite Hispellum on the western side of the Clitumnus valley, on the slopes of the Monti Martani, both are true (Fig. 16.1). Mevania was an important settlement, serving as a hub along the western branch of the Via Flaminia,[25] which ran between the *lacus Clitorius* and *lacus Umber*. It was a harbour site at the confluence of the Teverone and Clitumnus, while the city itself was (and still is) situated on a small elevation above the valley (Figs 16.1; 16.3a).[26] The close relationship between settlement and river was not merely physical, as seen in the river harbour, but also administrative. At least until the Augustan period, Mevania seems to have been responsible for the entire course of the Clitumnus, up to its sources between Trebiae and Spoletium.[27] With the Roman expansion, however, new people were assigned land in Mevania through viritane allotments. Since little is known about the pre-Roman settlement, the precise changes through this reorganisation of land remain difficult to assess. Some tombs and fragments of architectural terracotta decoration attest to the existence of a settlement with a sumptuous building in the fifth/fourth century BCE.[28] A bronze figurine of the widespread type of votive offerings in pre-Roman Italy was found near the Lago d'Aiso (Fig. 16.3a), located between Hispellum and Mevania.[29] In Roman times Mevania possessed many of the typical buildings of an urban centre, such as a city wall, harbour infrastructure, a theatre and possibly an amphitheatre. The organisation of land around Mevania followed its own *pertica* and centuriation grid. This orientation appears to have been aligned with that of Hispellum before the latter's refoundation as *colonia*, as it corresponds with the axis of the terrace sanctuary at Villa Fidelia (Fig. 16.3a).[30]

Once again, it is religious places located beyond city walls and outside inhabited areas of towns, villages or hamlets that serve as stable hubs and fixed points for organising and managing surrounding territories, the *agri*. In the case of Mevania these included not only the aforementioned Lago d'Aiso, which might have served as a site for ritual depositions, but also

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[25] The Via Flaminia passes from the Monti Martani through Mevania and bends eastward running through the Valle Umbra, see Sisani 2012, fig. 14. The eastern course through the *colonia* of Spoletium is established under Roman influence in the region in the second half of the third century BCE.

[26] For an impression of Mevania and its rivers, see www.anticaviaflaminiaumbra.it/it/mevaniabevagna-pg#&gid=1&pid=2 (last accessed March 15, 2025).

[27] Also, the inhabitants seem to have played a significant role in resisting Roman influence and in the Umbrian league, which was revived in the first century BCE, cf. the findings of Umbrian inscriptions north of Mevania and at Asisium pointing to possible rituals: Crawford et al. (eds) 2011, s.v. Meuania 2, 122-3, around 100 BCE on a sundial by questors 'in charge of the spelt', and Crawford et al. (eds) 2011, 101-2, s.v. Asisium, beginning of first century BCE about land which is 'bought and delimited', ending with a religious formula, see also Sisani 2012, 443, 445, nos 2.2. and 4.1. with fig. 7.

[28] Bonomi Ponzi 2014, 203, tav. 4, for the earliest traces at Mevania dating to the seventh/sixth century BCE.

[29] Sisani 2012, fig. 2.

[30] Camerieri 2019b. In contrast to Hispellum, which gained territory elsewhere, Mevania was affected by the loss of territory, as can be inferred from *CIL* XI, 5039 = EDR157773: *finis / mevanas / et Sentina*(*s*), which suggests that Sentinum, a city ca. 100 km to the north, had territorial claims in the Mevanate area, most likely after the battle of Sentinum in 295 BCE; see Biundi 2004, 427 and Sisani 2012, 433 with n. 130.

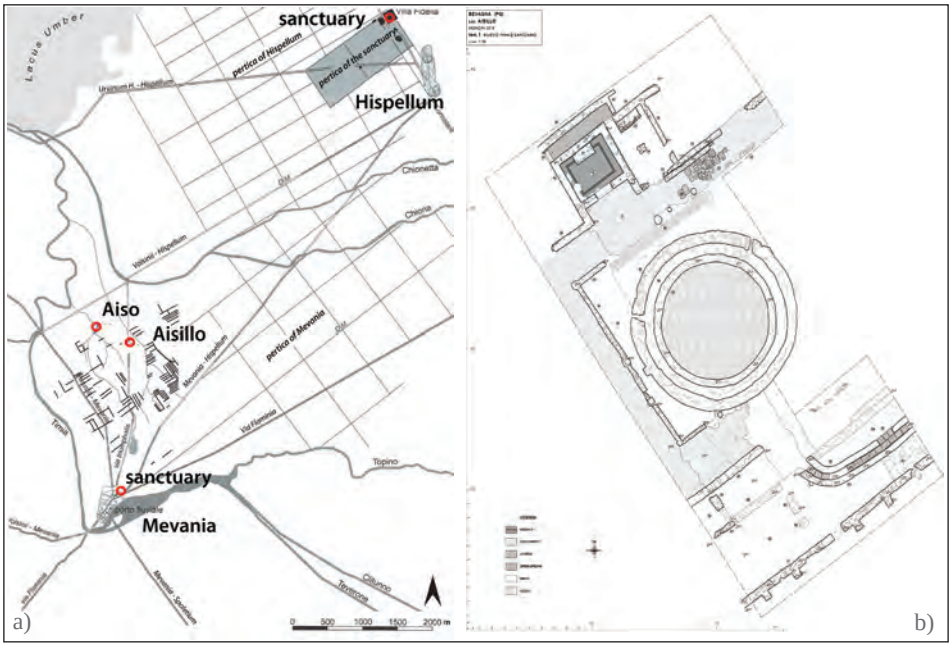

Fig. 16.3 Mevania on the western side of the Clitumnus valley: (a) area between Mevania, the Rivers Clitumnus and Teverone and Hispellum with the sacred place at Lago d'Aisillo (circled), northwest of it the Lago d'Aiso (circled), the roads and *centuriatio*; (b) plan of the sanctuary at Lago d'Aisillo with circular pond and rooms at the northern side.

the Lago d'Aisillo to the northwest of the settlement. Unlike the Republican and Imperial terrace sanctuary of Hispellum, these cult places were located in the river plain and were directly connected to a hydro-morphological phenomenon characteristic of the Clitumnus valley – sinkholes. Sinkholes are holes which are in the area of the Valle Umbra filled by underground springs (limnocrenic sources) and appear on the surface as water-filled depressions. In antiquity they were even more numerous in the Valle Umbra than today when large-scale drainage works lower the water table. The sinkholes have inspired fabulous stories, as they can appear and disappear unpredictably causing incidents among the inhabitants of the area.[31]

At the Lago d'Aisillo, architectural remains around the pond came to light (Fig. 16.3b).[32] The pond itself is embanked with a double circular lining of cocciopesto on a sandstone foundation to collect the underground springs within the basin, which contains a central pole.[33] On its northern side, across a passageway behind a porticus, at least four rooms open onto the pond.[34] One of them (Ambiente 1) was decorated with a white *tesselatum* floor bordered by a band of light-pink *tesserae* of local stone and had a base at its rear wall. The room to the east

[31] Albanesi et al. 2013, e.g., fig. 6.
[32] Albanesi, Picuti 2009; Sisani 2012, figs 4 and 13.
[33] Albanesi, Picuti 2009, 140-48.
[34] Albanesi, Picuti 2017 compare the Lago d'Aisillo sanctuary to the sanctuary of Minerva close to Breno on the river Oglio in the province of Brescia, where, however, there is no pond in front of the

(Ambiente 2), slightly projecting, also contained a base as well as a stand or pole in its centre. A narrow corridor-like room with *opus spicatum* flooring marked the northern end of what is known about the sanctuary's built structures. The architecture and decoration date to the early Imperial period, but the site was in use from the Republican period[35] to the beginning of the fourth century CE. Dedications start in the second century BCE with terracotta figurines, accompanied by architectural terracotta decoration. From the first century CE onwards, however, marble replaced terracotta: fragments of small statues and inscriptions are preserved. Coins, a common and long-practiced form of offering, are also frequent finds from the basin in the Imperial and high-Imperial phase, while people only rarely dedicated particular objects to the deity/ies at the Lago d'Aisillo, such as silver or lead figurines.[36] This evidence points to nearly 500 years of continuous religious activity.[37] Worshipping waters and the natural phenomenon of sinkholes in the form of one or more deities appears as central for the inhabitants of the rivers' valley.[38] The sacred place was frequented by people from the surrounding area, as indicated by the locally produced pottery.[39] Ritual practices included eating and drinking, judging from the forms of the vessels (bowls, jugs, etc.). The porticus around the basin and an enclosure to the south provided space for communal gatherings linked to cultic activities (Fig. 16.3b).

What does this sanctuary reveal about the relationship between city and country? Situated closer to Mevania than to any other settlement, it is reasonable to assume a connection with Mevania. This is supported by findings from another place at the northern fringe of the city, outside the Roman city walls (Fig. 16.4).[40] The earliest traces of what seems to be a sanctuary can be dated to the beginning of the third century BCE; in the first century BCE the preserved structures consisted of at least three basins aligned along a southwest-northeast running road. The orientation of this thoroughfare at the northern end of Mevania is significant as it connects with an inscription from Mevania of the first half of the first century CE which mentions a *via triumphalis*.[41] Notably, this road was paved with *lapis hispellatis*, a whitish-pink limestone quarried probably at Monte Subasio. The pavement of this small section of road at this sacred

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rooms. Only a four-sided porticus is probably present in both cases, though the east side at Lago d'Aisillo has not been excavated and remains unknown.

[35] Albanesi, Picuti 2009, 145-8, 153.

[36] Albanesi, Picuti 2009, 148-52, 158-59, e.g., the figurine fig. 27 (second/first century BCE) might be carrying a gift for the deity.

[37] Albanesi, Picuti 2009, 148-52, 161.

[38] Albanesi et al. 2013, 37 describe the process of sacralisation of the (dis)appearing sinkholes as 'enfatizzati,… ed interpretati come *prodigium*.' The number of sinkholes can be seen in Ead., fig. 6; fig. 3 is a view on the Lago d'Aiso.

[39] Albanesi, Picuti 2009, 161-6 on the pottery: Fineware is attested in limited quantities during both the late Republican and the early Imperial period, increasing over the course of the first century CE. Amphorae are of the type produced in Spello in the first century CE. The forms point to food preparation and consumption, especially for drinking. Of course, the difference in the excavation history and preservation of the sanctuary at Villa Fidelia and Lago d'Aisillo make a full comparison impossible.

[40] Located between Viale Properzio and Viale 1 Maggio; see Feruglio, Bonomi Ponzi, Manconi 1991, 133 on the coin deposit of the second century BCE; Bonomi Ponzi 1986; Prosperi Valenti 2006, 292 for the inscription to *Valetudo* found nearby; Sisani 2012, fig. 2.

[41] *CIL* XI, 5041 = EDR157788 (first century CE), see Prosperi Valenti 2005, 29-30, no. 2; Prosperi Valenti 1998, 152, no. 6 (2); Sisani 2012, 416-17 for the inscriptions mentioning Valetudo, and Sisani 2002, 496-97 (relating the *via triumphalis* to leagues of indigenous populations), ll. 8-10: *...viam triumphalem | straverunt lapide | Hispellate.*

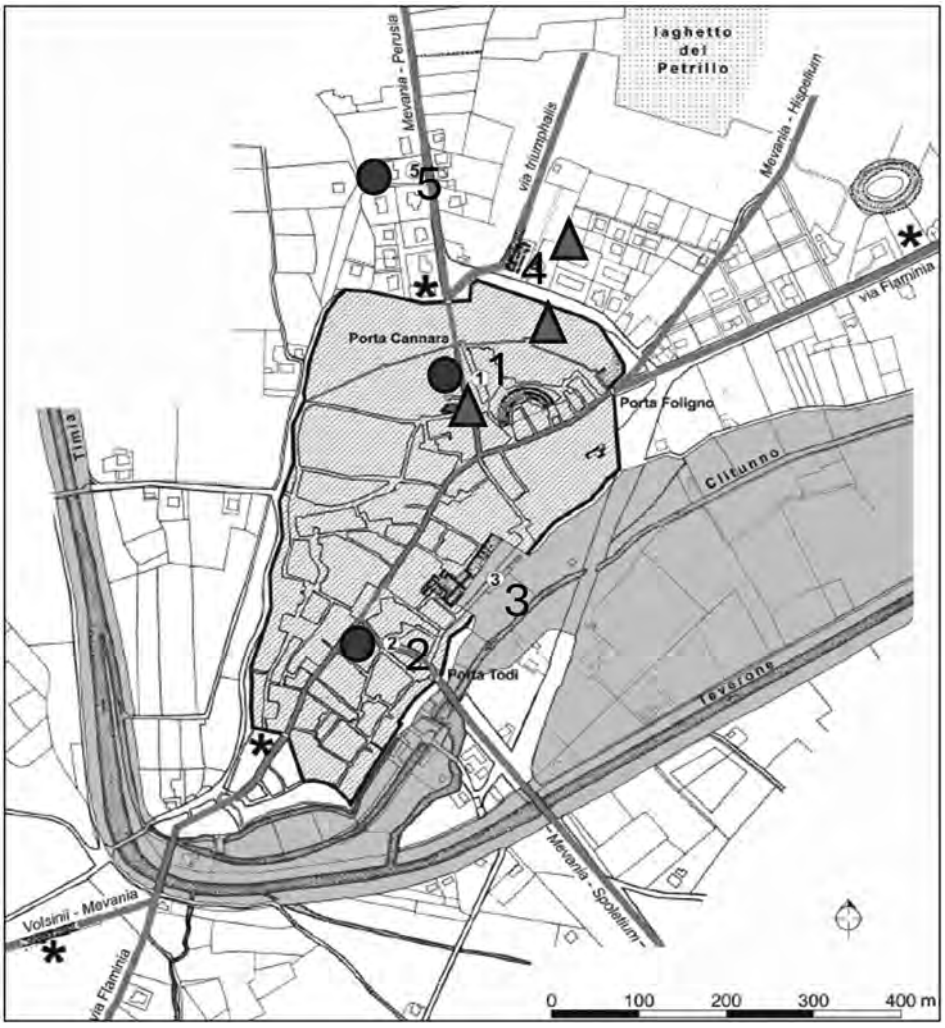

Fig. 16.4 Map of Mevania with find spots of inscriptions (dots) and architectural remains (triangles): 1: *CIL* XI, 5041 = EDR157788; 2: *CIL* XI, 5040 = EDR122653; 3: river harbour; 4: sanctuary at the Viale Properzio; 5: sundial with Umbrian inscription (see n. 27).

site is made of limestone.[42] Another inscription from Mevania refers to a *via a porticu,* maintained by a *collegium*, most likely acting on behalf of the goddess Valetudo, who is a deity associated with healing and attested in Mevania by several inscriptions.[43] The *via triumphalis,* or at least

[42] Letta 1996; Prosperi Valenti 1998; Sisani 2012, 417; both inscriptions were found close to gates (Porta Cannara and Porta Todi, Sisani 2012, fig. 2), see also Prosperi Valenti 2005. Bonacci, Guiducci 2009, 52-3.

[43] *CIL* XI, 5040 = EDR157775: at the bottom of the three columns of the inscription l. 7: … [*mag*(*istri*)] *val*(*etudinis*) *viam a porticu ad m*[*iliarium - - - straverunt*]*;* further inscriptions with *Valetudo*

the *via a porticu*, may thus have linked the sanctuary on the city's outskirts with the one at Lago d'Aisillo (Figs 16.3a, 16.4).[44] If we follow Sisani's (2012) interpretation, this special road ran northeast towards Lago d'Aisillo. The alignment of the passageway north of the basin and its porticus with this road from the early Imperial period, ties this sacred place to the *pertica* of the *colonia* of Hispellum. Such alignments fit the centuriation of the valley, datable to the second half of the first century BCE. The sanctuary at the sinkhole, though older, was reoriented according to the grid of the new centuriation, thereby making the viritane land allotments clearly recognisable (Fig. 16.3a).

Why did this small sanctuary play a role in this administrative act? On the one hand, the hydrological dynamics in the valley were obvious and powerful at this site. On the other hand, changes in groundwater and other hydromorphological phenomena could be observed at the sinkhole. Most likely people from both sides of the valley visited the place regularly, and the religious gatherings offered opportunities to share their observations and exchange information. As a deity of healing, Valetudo has a close relation with water, but she was also powerful in regards of *virtus* and victory. Her origin might be Italic, and her veneration experienced a boost in the late Republican and Imperial periods.[45] Yet the connection goes beyond a simplistic, one-directional relationship of healing goddess to a body of water. Rather, water itself was the dominant force in the Valle Umbra: at Lago d'Aisillo (as at Lago d'Aiso) people were in direct contact with water as the element determining subsistence, agriculture, mobility and trade. Consequently, the sanctuary located between the settlements and in the countryside became a place where inhabitants of the wider area shared observations and knowledge over decades and generations.

Moreover, the *via triumphalis* can be interpreted as a significant transversal route in the valley, used for ceremonial processions to other sacred places (Lago d'Aiso, Venus sanctuary at Hispellum), distributed across the drained lands. Such processions organised and overseen, for example, by the *collegium* of *magistri* of Valetudo, provided an opportunity to monitor drainage systems, fields and plots, and to control fluctuating water levels and the risk of flooding. Maintaining the *via* was inseparable from maintaining the land. The presence of a long-standing and active group of *magistri*, a *collegium* and priests – operating both within Mevania and beyond its walls – confirms that the community's social and spatial ties under the protection of Valetudo were organised with notable sophistication. Thus, rather than being simply classified as a rural sanctuary on the basis of its location amid fields and water, the sanctuary at Lago d'Aisillo may more accurately be described as a point of environmental surveillance and an archive of long-term human-environment interaction.[46] As part of the settlement's soft zone reaching outward into the surrounding territory it played a crucial role in sustaining the communities and settlements at the fringes of the valley.

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and her priests or *collegium CIL* XI, 5046 = EDR157861. 5048 = EDR157870. 5053 = EDR157877. 5059 = EDR157893. 7926 = EDR159420. 7927 = EDR159492; *novemviri Valetudinis* in *CIL* Xl, 5044 = EDR157823 and 5047 = EDR157863. From this corpus the lists of names in *ClL* XI, 5040 = EDR122653 and 5041 = EDR157788 are interpreted as *novemviri* of this goddess, see Letta 1996, 333-4 with n. 44.

[44] Sisani (2012, 416-22, fig. 13) argues in favour of this interpretation, diverging from Camerieri (2019b, fig. 7.2) and Camerieri, Manconi (2012, fig. 17), who see the *via triumphalis* in the stretch of the Via Flaminia northeast of Mevania.

[45] Coarelli (2001, 48) and Sisani (2002, 497) see in this deity a local, Umbrian goddess in an *interpretatio Romana*. See Prosperi Valenti 2006, 294-5, 281-3 for other places she is venerated at.

[46] See for this relation of sanctuaries as archives of environmental knowledge Raja, Rieger 2021; Rieger 2025.

The source of the River Clitumnus and its sanctuary – (shifting) territories and control across the Valle Umbra

If we follow Sisani's (2012) interpretation of a (processional) road from Mevania towards the sanctuary at Lago d'Aisillo and continuing to Hispellum, two questions arise: why it has such a grandiose name, and where it began. One assumption is that it originated in the south, functioning as a line of communication with the sanctuary at the source of the River Clitumnus between Trebiae and Spoletium. Mevania, located where the Clitumnus became navigable, played an important role in the economic utilisation of both plain and river, and seems to have maintained long-standing ties with the river's source (Figs 16.1, 16.3a).[47] Pinpointing the precise location of the source is difficult amid the many springs, but it is generally identified at a site north of Spoletium, near today's Campello (Figs 16.1, 16.5). The main deity worshipped there was Iupiter, bearing the local epithet Iupiter Clitumnus.[48] The river is fed at this point by several subterranean springs, and a temple is believed to have once stood there, possibly where the Langobard chapel was built in the seventh/eighth century CE incorporating spolia from the first century CE (e.g., in its tabernacle). Our knowledge about life and activities at the sanctuary rests largely on literary sources, mainly a letter of Pliny to his friend Romanus, written in the first century CE, and the much older so-called *lex spoletina* from the third century BCE (Fig. 16.5).[49] Archaeological evidence beyond the mentioned spolia and the stones bearing the *lex* is lacking, so we have to rely on Pliny's descriptions. He speaks about visitors throwing coins into the pool, thereby sacralising it, or scratching graffiti into the columns; about several *sacella* dedicated to various gods; divination services offered at the sacred place and activities such as bathing and boat tours; in short, the *amoenitas* of the place.

Comparable trajectories can be observed at Lago d'Aisillo where water and a healing cult, maybe of Valetudo, tend to dominate interpretations. Yet Pliny also emphasises the sacred atmosphere, the deities and their *sacella* at the source of the Clitumnus. Importantly, by distinguishing a sacred (*sacer*) and a mundane (*profanus*) zone, he clearly hints at property regulations that went beyond the visitors' romanticised perception of nature and divine presence. Pliny also notes that Hispellum now claimed the spring and its sanctuary, having received it as a grant from Augustus. Most likely, responsibilities were transferred from Spoletium to Hispellum. The formula he uses is a religious one, *dono dedit*, but the underlying reality is one of political influence, exploitation and control of resources.[50] Thus, even if we have few traces of the sanctuary and its religious practices, there is more to examine regarding territory, ownership, resource management and infrastructural connections, all of which have a focal point in the sanctuary at the *fons Clitumni*. The *lex spoletina* confirms these concerns. Preserved on two *cippi* (boundary stones) located northwest of the sacred area, this legal text

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[47] See also Sisani 2012, 431.

[48] See Vib. Seq. *geogr*. 148.1 R (fifth century CE); in 152.16 R he calls the source *Clitumnus Mevaniae*, i.e. the Clitumnus the river 'of Mevania'. On questions of ownership and responsibilities for this place see below.

[49] *CIL* XI, 4766 = EDR161485. Panciera 2006 [1994]; according to Scheid 2006, 79-80 the sanctuary belongs to the federal sanctuaries of pre-Roman times, passing from the control of Mevania into the one of Spoletium with the deduction of the Roman *colonia* at the end of the third century BCE.

[50] The *Hispellates* built a bath at the site according to Plin. *epist*. 8.8, which is an economic factor, both as investment and potential source of revenues.

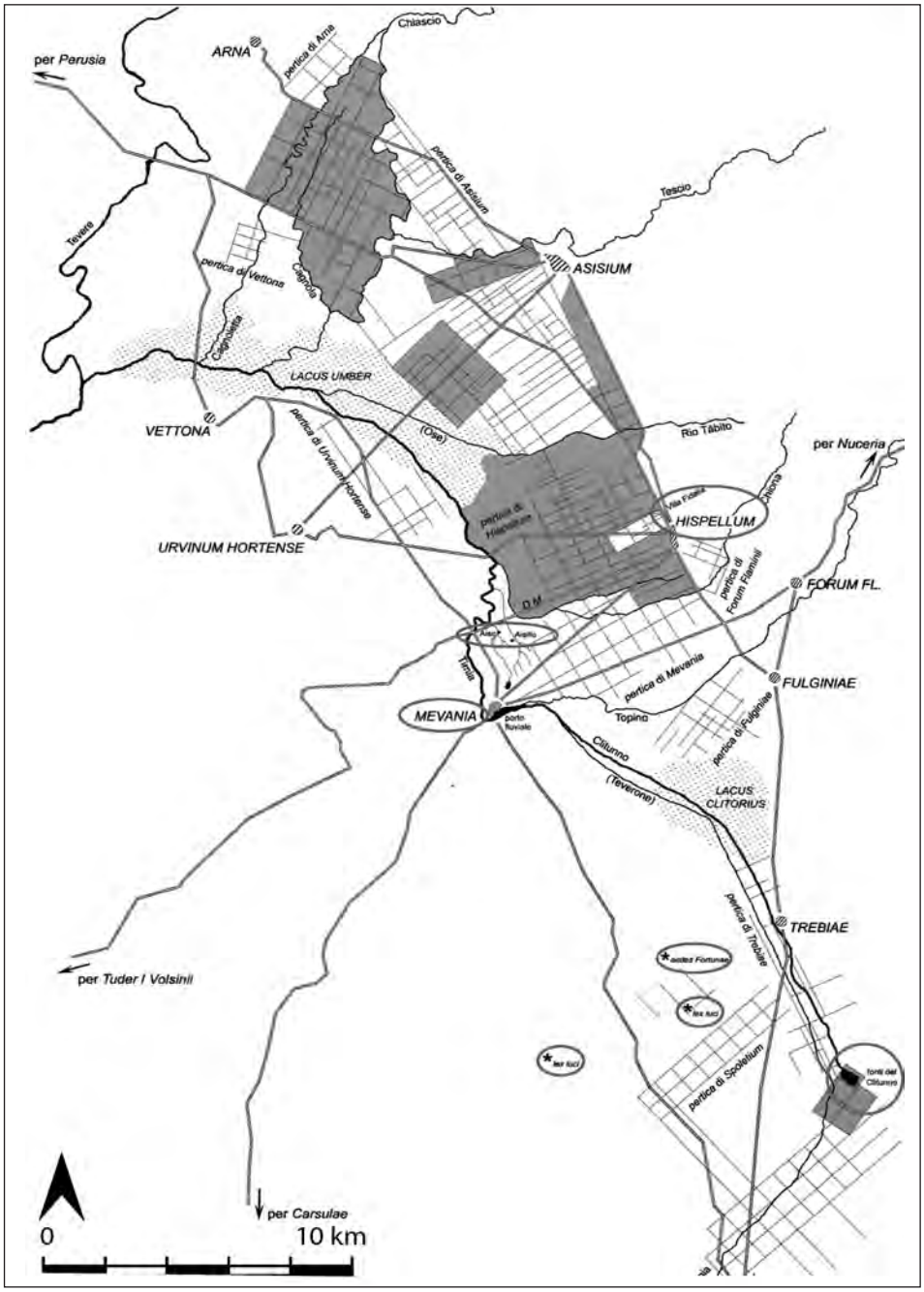

Fig. 16.5 Area of the Clitmnus Valley with the sanctuary at the Clitumnus source (bottom right), the find spots of the cippi of the *lex spoletina* (asterics) and the urban settlements of Mevania with the sanctuary at Lago d'Aisillo and Hispellum with the sanctuary at Villa Fidelia. The grids show the various reconstructed *centuriationes*.

of the time when Spoletium became a Roman *colonia* regulates the exploitation of the southern Valle Umbra (Fig. 16.5).[51] It prohibits violating or taking out of the grove what belongs to it, especially wood. Exceptions were allowed only for the annual rituals in honour of the god(s). Transgressors were required to offer *piacula* in the form of an ox, and in cases of deliberate violation ('with malice') an additional fine of 300 *asses* was imposed. Misuse of natural resources belonging to the deity was thus religiously proscribed. Responsibility for enforcement fell to a *dictator*, underscoring the importance of managing the forests, pastureland and water resources. While we cannot reconstruct how surrounding communities shared in the revenues from such penalties, we can trace the shifts of control: the sanctuary at the source of the Clitumnus together with its property shifted from Mevania as the most important place, where the navigable river starts, to Spoletium in the third century BCE,[52] and later to Hispellum by the end of the first century BCE.[53]

In terms of territorial organisation, this brings us back to the terrace sanctuary of Venus outside Hispellum. Just as this sanctuary projected significance beyond its immediate site by the influence of the Imperial house as well as across the valley to Mevania, so did the *fons Clitumni* extend its significance far beyond the Valle Umbra: According to poets of the Imperial period, the white bulls bred in the Clitumnus valley were especially valued for triumphal processions and sacrifices in Rome.[54] For a river barely 16 km long (before it meets the Teverone at Mevania becoming the Tinia and eventually flowing into the Topino at Cannara) this represents a considerable symbolic importance. To Roman eyes, the river epitomised the Valle Umbra, its fertility, abundance and splendid nature; to local communities, however, the focus likely lay on pragmatic issues such as water levels, drainage systems and fields subject to periodic flooding.

Sacred places in the countryside in a mutual relationship to settlements

The case study of the Clitumnus Valley in Roman times has shown that religious places outside settlements were crucial in linking places of dwelling, market activity and administration with areas of agriculture and natural resources. While sanctuaries within the towns of Mevania, Hispellum, and Spoletium, which certainly fulfilled civic and religious purposes, sacred places beyond the city walls, in the plains of the valley, were decisive nodes for organising territory, securing food production and facilitating mobility, living in agreement with the gods and establishing a shared identity. The terrace sanctuary of Venus at Hispellum, the sanctuary at Lago d'Aisillo and the sanctuary at the source of the Clitumnus all reveal this dual character. Their religious function was inseparable from their economic role as focal points for managing

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[51] Sisani 2012, fig. 1 and 18; see also *supra* n. 48.

[52] The centuriation to the north of the *fons Clitumni*, the find spots of the cippi with the *lex spoletina* and another shrine seem to be aligned with Mevania, Sisani 2012, fig. 18. Camerieri, Manconi 2010a; Camerieri, Manconi 2010b, esp. 23-4 are able to prove an individual *centuriatio* at the *lacus Clitumnus* to the south of the tempietto, which does not affect the argument here.

[53] It was perhaps transferred back to Mevania in the time of Caligula, according to one interpretation of Svet. *Cal.* 43; however, the phrasing of *nemus flumenque Clitumni Mevaniam* might be due to the generalising connection of Mevania with the Clitumnus, see Sil. 644-45; Stat. *silv.* 4; Ivv. 12.1.82; partly also Prop. 4.1, where the source of the Clitumnus appears to be under the control of Mevania, which makes sense in so far as poets write on the one hand retrospectively, and on the other hand refer to the most recent Imperial ideas.

[54] E.g., Verg. *Aen.* 8.77; Prop. 2.19.25-26; see Sisani 2012, 414-15 with n. 31.

cultivable land. Their histories, building phases and associated officials reflect shifting political claims in the Valle Umbra. Their purpose goes beyond the veneration of Venus, Valetudo or Iupiter at sites in nature and is very much tied to the management of the area, giving space to 'communities of practices', especially when new people arrived in the valley between the third and the first century BCE due to viritane allotments. At the same time, their longevity across centuries, though not without change, made them stabilising institutions that outlasted political constellations and thus served as enduring mediators between cities and countryside.

It is therefore no coincidence that, at Hispellum, the Roman emperor took an interest in the valley-controlling sanctuary and supported the introduction of his dynastic goddess Venus overlooking the valley. The sanctuary at Lago d'Aisillo, rooted in a water-related cult, played a role in questions of water and resource management. It was rebuilt at the end of the Roman Republican period or in the early Principate when the nearby settlement of Mevania lost its territorial dominance in the valley to Hispellum. Yet, the site remained important for cross-valley negotiations and maintenance of the territory. In the southern Clitumnus valley, with its fields and groves belonging to Iupiter Clitumnus, a legal institution from the third to the first century BCE regulated use and revenues of this property, which was linked to the *colonia* of Spoletium before Hispellum assumed control in the early Principate.

Adjusting our perspective and considering sanctuaries in the countryside of the Valle Umbra not as satellites of the cities but as actors that were vital for the cities, sharpens our understanding of their socio-religious and socio-economic significance. These sites were not merely boundary markers or farmers' and herders' sanctuaries but were integrated into the practical management of the valley. Like urban sanctuaries which functioned as political arenas and places of civic identity, the sanctuaries in the river plain were not subordinate to them, but were equally important as they preserved and transmitted the environmental knowledge, shared by the people who used them over centuries.

In this light, the Clitumnus valley emerges as a landscape of fluid boundaries, shifting territorial claims, and overlapping networks of communication, in which sacred places acted as hubs and fixed points for organisation and negotiations. Their location outside towns and villages implies that they were visible, accessible and suitable for gatherings, where deities served as guarantors and symbols of legitimacy.[55] Hence, this perspective on the religious infrastructure in the countryside of the Valle Umbra not only mitigates overly hierarchical views of the relationship between city and country, but also emphasises the mediating role of sanctuaries in linking the two. The three sites examined here, Hispellum, Lago d'Aisillo, and the source of the Clitumnus, stand as emblematic nodes of this dynamic interplay, at once religious, social and environmental.

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[55] Cf. the case of the sanctuary of Atargatis at the source of Apheca and its relation to Byblos (Lebanon), Rieger 2025.

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