

POMPEII, *INSULA* IX.3
A case study of urban infrastructure

Volume I:

Text and Figures

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2012

Thesis submitted for the degree of D.Phil.
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Abstract

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Thesis submitted for the degree of D.Phil., Hilary Term 2012

Pompeii, *Insula IX.3*: A case study of urban infrastructure

This thesis takes *insula IX.3* in Pompeii as a case study and examines how life-sustaining basic utilities and services were made available in this city block. The evidence comes in the form of finds, as documented by nineteenth-century excavators, and structures, either those still standing or those discovered during recent excavations by the *Expediitio Pompeiana Universitatis Helsingiensis*. Building on concepts deriving from consumption studies and studies of humans and their material culture, this thesis focuses on patterns and non-conformity, and approaches observed phenomena from the point of view of need and desire, cost and efficiency, ownership and law.

An analysis of broad-ranging evidence is made possible by operating at a city block level, and patterns can be recognized because the city block contains 19 units. Comparative material and written sources are used to put the evidence in context. Some of the evidence conforms to previously-identified patterns while other evidence reveals new patterns, to be tested further in other contexts. It is shown that basic utilities and services were generally readily available. Nonetheless, there are clear differences between units, and some parts of the city block were more advantageously positioned than others. These reveal differences in hierarchies of needs, social and economic standing, and the impact of the physical constraints in the arrangement of utilities.

Some units shared the use of particular utilities. Servitudes, which made these kinds of arrangements possible between adjacent properties, best explain some situations. However, in the majority of cases they most likely derive from common ownership. As a result, the city block contained fewer properties than the number of units. This sheds light on the social relations within the city block and gives grounds for discussion of dominance and dependence. It is shown that the city block contained four clusters of units dominated by large households which were surrounded by dependent units smaller in size. The configuration enabled the owners to play out and gain social, political and economic power.

Preface

In 2003, I became a member of the *Expeditio Pompeiana Universitatis Helsingiensis*. In the very first days on site in Pompeii I was asked to remove a part of the modern topsoil covering the *atrium* of the so-called House of Marcus Lucretius. What was soon to be discovered was a massive rubbish dump of building debris. After several days of excavation, the limits of the dump seemed to be beyond our reach and it was decided to leave the dump as find boxes were quickly filling up with wall painting fragments deriving from it. I was asked to remove the modern debris covering the structures of a nearby toilet. The mouth of the cess pit became soon visible and its contents started to fill up further find boxes: ceramics, bones, bits of metal and organic matter. Thanks to these first experiences, the questions pertaining to rubbish, together with other aspects related to the daily life of the Pompeians, have become my primary interests, from which the current thesis derives.

It would not have been possible to write this thesis without the help and inspiration from friends, colleagues, supervisors and teachers. I am particularly indebted to Dr. Janet DeLaine for guidance and support in all aspects of my research. Her devotion and skills have been invaluable. Discussions with Dr. Damian Robinson, who supervised my work during Janet's leave, gave much food for thought. Without the Finnish Pompeii project this thesis would not exist, and therefore I want to express my gratitude to Prof. Emer. Paavo Castrén whose expertise made the project possible and who helped me in the early stages of my research. Dr. Antero Tammisto has taken the lead in recent years and kindly assisted me in applying for research permits. Dr. Eeva-Maria Viitanen has taught me a lot of what I know about building archaeology and shown her tireless support throughout my work. Her constructive critique has been of significant help. Dr. Ria Berg has been a brilliant teacher in analysing finds and hence paved my way into artefact studies. Maija Holappa has provided valuable help with plans and measurement data and with Laura Nissinen and Sanna Aho I have had the pleasure to work side by side drawing pottery. Dr. Michael MacKinnon has provided me with valuable insight into osteology, and with Dr. James Andrews I have had countless of interesting conversations regarding upper floors, undoubtedly to the benefit of this thesis. Dr. Nicolas Monteix has likewise been available for questions, for which I am thankful.

In the last three years I have been lucky to meet enthusiastic scholars who have been willing to share their knowledge and let me consult their work. I would like to thank Dr. Jo Berry, Dr. Jeremy Hartnett, Dr. Duncan Keenan-Jones, Dr. Eric Poehler, and Dr. Robyn Veal. Moreover, I want to express my gratitude to the *Soprintendenza archeologica di Pompei* for allowing me to carry out my research. Prof. Pietro Giovanni Guzzo, Dr. Antonio Varone and Dr. Antonio D'Ambrosio have granted me the permissions needed. Custodians and people in the *Direzione* have been very helpful.

In the course of my work I have been fortunate to stay in Rome, in the *Institutum Romanum Finlandiae* (Villa Lante). While the place is inspirational on its own right, to say the least, my stays have been made even more enjoyable by the knowledgeable personnel. I would particularly like to thank Intendent Simo Örmä, and, as for my last stay, Director Katariina Mustakallio. In Oxford I have been very fortunate to have friends with whom to share all things related (and unrelated) to writing a dissertation. I want to express my warmest thanks to Alexandra Sofroniew, Christina Triantafillou, Charlotte Potts, Beth Munro and Caillan Davenport. At home, both in London and in Finland, I have been encouraged and supported. I could not have made it without my husband Saku Oikarinen and my parents Ritva and Toivo Ynnilä.

Regarding financial support, I am indebted to the Osk. Huttunen Foundation for providing me the funds to study in Oxford, to the Villa Lanten Ystävät ry. for enabling my first visit to the archives of Pompeii and Naples, and to the Jenny and Antti Wihuri Foundation for making it possible to stay in Villa Lante and to work on the final version of this thesis.

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CHAPTER 1: Introduction to the thesis and *insula* IX.3

This thesis sets out from the premise that in order to fully appreciate the complexity of Roman urbanism, we need to deepen our understanding of the elements which enabled the development of large cities, and belongs to a growing number of case studies focusing on urban infrastructure. This is the first time, however, that a range of aspects pertaining to urban infrastructure has been studied at a city block level. Operating on the scale of a single city block allows a detailed examination of the arrangements made in a range of properties. This provides a cross-section of Pompeian society and a range of situations in which to distinguish differences and conformity, enabling us to give a general assessment of the situation on a small, day-to-day scale. This thesis takes *insula* IX.3 in Pompeii as a case study. By cataloguing all available evidence we can examine the ways in which basic utilities and services were made available, and compare the emerging picture with what we know so far of this town in the first century AD. As a result of this examination the special characteristics of the city block are defined. It will be shown that while there are conformities, special arrangements stem from physical constraints, ownership factors, social and economic realities. By defining these particulars, we proceed from practical aspects to studying the society more widely.

1.1 Urban studies of Pompeii

Throughout the history of research on Pompeii, certain structures and questions, such as the Forum and the existence of the so-called *Altstadt* (the initial nucleus from which the town would have expanded) have received special attention.¹ Studies have tended to see Pompeii of the second century BC as a prosperous Oscan town where, according to Hellenistic models, inhabitants built luxurious residences and acquired exotic goods. The founding of Sulla's colony in 80 BC has been perceived as the beginning of what was characteristically 'Pompeian' in the later part of the town's history and the period of Augustan rule is often

¹ For the Forum, see e.g. Dobbins (2007) whose recent contribution includes references to previous works. For the *Altstadt*, see Haverfield (1913: 63-8); followed by Von Gerkan (1940). For more recent studies on the development of the town, see e.g. Nappo (1997), Geertman (1998, 2001, 2007), Jones and Schoonhoven (2003). For a new, revolutionary way of interpreting the process of urbanisation, see Coarelli (2008).

described as the golden era of the town.² The situation in AD 79 on the other hand has often been neglected.³ The period after the AD 62 earthquake was until recently seen as one of decline and disaster, the town in crisis with its powerful families leaving it in the hands of a new class of opportunists who generated income through involvement in trade.⁴

Until the mid-20th century, excavations focused on exploring large houses, due to their potential to reveal aesthetically pleasing decoration and artefacts. As a result, the emphasis has always been on studying the Pompeian building stock from an art-historical perspective.⁵ The tendency to focus on certain *atrium*-houses has canonized them as representative of the houses of certain social classes or historical periods and styles,⁶ even though it is very difficult to find a building in Pompeii which does not bear extensive evidence for change and alterations. As a consequence, both scholars and the public have been made to think that most, if not all, Pompeians lived in decorated *atrium*-houses of several hundreds of square meters in size. In contrast, until recently, little was done to study smaller and less abundantly decorated houses, separate from or combined with shops.⁷ Shops themselves as working and living spaces were long only briefly looked at. The studies of the distribution and role of economic activities were categorical and limited to certain industries.⁸

Although the abundance of texts found on walls and facades of buildings, and on artefacts such as *amphorae* and writing tablets, has encouraged several epigraphic studies on

² E.g. Zanker 1998. This view resembles a typical mind-set in art history which includes the rise, peak and fall of styles.

³ Zanker (*ibid.*) discusses the history of the late first century AD Pompeii in passing after spending tens of pages discussing its earlier phases, especially the impact of Augustus' ideology.

⁴ Maiuri (e.g. 1942: 217-8) who drew on the ideas of Rostovtzeff (1926), and whose views have influenced later works, most recently the interpretations of Allison (1995, 2004).

⁵ E.g. Mau (1882), Schefold (1957, 1975), Laidlaw (1975, 1985), Tammisto (1997). See Clarke (1991), Gazda (1991) and Wallace-Hadrill (1994) for the social importance of paintings. Recently more emphasis has been placed on techniques and the process of painting. See e.g. Frecchero (2005) on wall plaster types and Esposito (2009) on the workshops of the Fourth Style paintings.

⁶ 'Pompeian' and 'Roman' are frequently equalled, especially in the discussions of *atrium*-houses. 'Samnite' is frequently used in connection with the Houses of the Faun (VI.12), Pansa (VI.6.1) and Labyrinth (VI.11.10) for example (Lauter 1975); 'modest' and 'working class' are used to describe houses such as the House of the Loom (V.3-4) in Herculaneum (Packer 1975: 139). The House of the Vettii (VI.15.1) in particular has been used as an example of a house owned by freedmen turned wealthy (Zanker 1998: 191).

⁷ E.g. Packer 1975, Evans 1978.

⁸ Gassner (1986) on shops in general, Kleberg (1957), Ruddell (1964) and Packer (1978) on drink and food outlets as well as lodgings, Mayeske (1972, 1979) on bakeries, Moeller (1973, 1976) on wool-working, Cerulli Irelli (1977) on a lamp-shop, Curtis (1979) on fish-products, Jashemski (1979) on commercial gardens, and Grafts (1988) on metal-working.

Pompeian society,⁹ finds in general have been selectively studied. The primary interest lay in their artistic values, techniques and materials used.¹⁰ The stores of Pompeii alone contain some 100,000 artefacts,¹¹ an enormous, underexploited resource, and adding finds in the Naples National Archaeological Museum and in other collections spread around the world makes the number much higher. In the absence of rigorous artefact studies, interpretations of living arrangements have been derived from ancient literature. Pompeii has been used to illustrate ancient texts despite the fact that none of the given texts refer to the town.¹² This has not, however, prevented scholars from assuming that the Pompeian *domus* reflects how housing was arranged in the capital, and Pompeian evidence has also been used to explain painting and political and social practices not only in Rome but in the Roman world in general.¹³

Through these examples it becomes apparent that the abundance of material has resulted in simplified approaches, and a focus on classifying evidence rather than thinking about what it tells, and what it does not tell, about an ancient society. As Flohr has put it, in '[t]he last two decades, an increasing amount [sic] of archaeologists and historians has come to realize that the usual methods and approaches failed to transcend the boundaries of their disciplines and tend to exclude certain types of evidence, issues and people from the historical record'.¹⁴ Instead of searching for the best model to describe the development processes, we should try to understand the dynamics of the town. Scholars have become more and more aware that having been a medium-sized provincial town, the development that took place in Pompeii should not be used to generalize the development of housing and urbanism in the ancient world.¹⁵ Looking beyond the organisation of space within well-known houses, house layouts are anything but standard.¹⁶ In fact, *atrium*-houses as domestic units were more of an exception, and hence we need to focus on the mundane and common rather than exceptional to understand the general living conditions.¹⁷ It is now recognized that only by

⁹ Andreau 1974, Franklin 1974, 1986; Castrén 1975a, 1975b, 1979; Solin 1975, 1979; Mouritsen 1988, 2001.

¹⁰ E.g. Conticello de Spagnolis and De Carolis 1988, Tassinari 1993a, 1993b.

¹¹ Berg 2010: 15.

¹² For the use of Latin labels for archaeological evidence, see Leach (1997) and Allison (2001), pointing out the shortcomings of this approach.

¹³ Dyson 1997: 154.

¹⁴ Flohr 2007a: 129.

¹⁵ Tamm (1973: 53-4) was one of the first to emphasise that Pompeian houses of the second century BC, which have been considered to embody the concept of a Roman house, date to the pre-Roman era.

¹⁶ E.g. Grahame 2000: 89-90.

¹⁷ Pirson (1999: 162) has estimated that up to 42 % of inhabitable units in Pompeii composed of rentable *tabernae* and *cenacula*.

paying attention to all types of commerce, and the connections between living and working spaces, can we understand the town as a whole.¹⁸ Furthermore, it is now acknowledged that while the relationship between architecture and artefacts may be complex, combining these studies brings us significantly closer to understanding the realities of life and living conditions.¹⁹

The conflicting picture of Pompeii in AD 79 as a site of rebuilding and repair,²⁰ as well as a booming town with brand new and newly refurbished buildings,²¹ may derive from a situation where the town had been hit by several earthquakes between AD 62 and 79, with some of the damage having already been repaired and other not.²² Work had to be prioritized, and in order to meet rebuilding costs, some owners might have decided to commercialize a part of their property.²³ However, shops had been built, together with houses and public buildings, from early on. The oldest still remaining *tabernae* date to the second century BC and traces of even earlier structures have been found.²⁴ Therefore, at the end, we must ask how different Pompeii of AD 79 was from the early first century AD, and whether the detectable changes were more related to general changes in Roman society than to the proposed ‘chaos’ or ‘crisis’. Evidence strongly suggests that the town was under more or less constant rebuilding also before AD 62. Cities simply never are ‘fixed’ but in an ongoing process of conversion and rebuilding.²⁵ Despite partial disrepair, evidence that Pompeii in AD 79 was a town where its inhabitants aimed to carry on as usual is equally ample.²⁶ Altogether, as there seem to be no simple answers, the questions can be equally

¹⁸ Recent contributors to the studies of commerce in the town include Borgard and Puybaret (2003) on wool-working, Flohr (2003, 2009) on *fullonicae*, Ellis (2004, 2006, 2008) and Monteix (2007) on bars, Borgard *et al.* (2005) on various crafts including dyeing, tanning, painting, scent-making, basketry and lead-work, Peña and McCallum (2009a, 2009b) on pottery production and retail. For the overall importance of commerce, see La Torre (1988), Wallace-Hadrill (1991a, 1994), Robinson (1997, 2005), Laurence (2007), and Flohr (2007a).

¹⁹ Allison 1992a, 1995, 1997a, 1997b, 1999, 2004, 2006; Wallace-Hadrill 1994: 87-9, Berry 1997a, 1997b, 2007a.

²⁰ Jacobelli 1995: 19, fig. 3.

²¹ Berry 1997a, 1997b; Dobbins 2007.

²² On the earthquake of AD 62, see Tacitus (*Ann.* 15.22) and Seneca (*Nat.* 6.1-2, 26); also Pliny (*Ep.* 6.20) on frequent tremors in Campania. See De Simone (1995), Ehrhardt (1995), Nappo (1995), Ling (1995), Varone (1995, 2005a), Dickmann and Pirson (2002: 256-7) on archaeological evidence for later earthquakes.

²³ Zanker (1998: 126-33) for prioritising, Andreau (1979: 43) for commercialization.

²⁴ Pirson 1999: 97.

²⁵ Hales 2003: 99-100; compare Allison (2004: 191-2, 2006: 399-405) on change and disruption which she however interprets as abnormal.

²⁶ Berry 1997a: 189-90. The present townscape seems to contain structures built no earlier than in the second century BC, as opposed to the long-held belief of the early date of particular structures (Wallace-Hadrill 2007: 281), which only emphasises dynamics and constant change.

complex. With the new willingness to approach the material with more complex sets of questions, the focus of studies has also been newly formulated.

As Zanker remarked in 1998, '[t]he history of Pompeii continues to be written as a history of individual structures, providing little or no sense of larger connections'.²⁷ The first step in the process of understanding these larger connections is to focus on neighbourhoods. The importance of studying a quarter or a city block in order to trace developments in a town's physical form, land ownership and population was already stressed by Noack and Lehmann-Hartleben in their *Baugeschichtliche Untersuchungen am Stadtrand von Pompeji* (1936). However, only after new excavation permit principles were introduced by the *Soprintendenza speciale per i beni archeologici di Napoli e Pompei* (hereafter SANP) in the mid-1990s, has the number of such studies increased. Today the permits are granted on the basis of a city block (Lat. *insula*), with an incentive to study all separate (housing/working) units²⁸ within the block. In this new era of Pompeian scholarship, a series of publications on the *Insula* of the Menander (I.10), produced by Ling and his team, showed the potential of projects which, instead of large-scale excavations, focus on already excavated sites to add to our understanding through re-documentation. By careful architectural and finds analysis, they reconstructed the building history of the city block, and tackled, when evidence allowed, the question of ownerships and unit functions.²⁹ Today, several more publications of Pompeian city blocks are available,³⁰ and a number of projects are working towards their final publications.³¹

²⁷ Zanker 1998: 30.

²⁸ Architectonically separate entities which were not connected by internal doorways in AD 79.

²⁹ Ling 1997, Painter 2001, Ling and Ling 2005, Allison 2006.

³⁰ E.g. Bonghi Jovino 1984, Carocci *et al.* 1990, Gallo 2001, Aoyagi and Pappalardo 2006, Coarelli and Pesando 2006a, Amoroso 2007, Verzár-Bass and Oriolo 2010.

³¹ A number of Italian teams have worked on *insulae* in Regions V, VI, VII and IX under the aegis of projects 'Regio VI', 'Rileggere Pompei' and 'I primi secoli di Pompei' (Coarelli and Pesando 2004, 2006b; Anniboletti *et al.* 2007, Befani 2008, Sorriento 2008, Giglio 2008); a British re-documentation and excavation project focused on *insula* 9 of Region I (Fulford and Wallace-Hadrill 1995-6, 1998); the Anglo-American Project in Pompeii studied *insula* VI.1 (Jones and Robinson 2004, 2007; Jones 2008); the Swedish Pompeii Project works on *insula* V.1 (Boman and Nilsson 2008a, 2008b; Karivieri and Forsell 2008, Leander Touati 2008, Staub Gierow 2008); and the Pompeii Archaeological Research Project Porta Stabia works on VIII.7 (Devore and Ellis 2005, 2006, 2008, 2009, 2010).

1.2 *The aims and objectives of this thesis*

This thesis draws on an ongoing re-documentation project and examines the available evidence with a specific set of questions. By focusing on a city block, the aim of this thesis is to understand how the basic necessities of everyday life were made available, and what the arrangements tell about general living conditions, neighbourhood relations and the role of households in relation to town administration. This is important, because the elaborate forms of Roman urbanism, such as luxurious *horti* and private baths, were developed on the precondition that life-sustaining basics, such as light, air, water and heat, were available, and basic services, such as rubbish disposal and street maintenance, were adequate. So far the micro-scale arrangements of these utilities are not properly understood, in particular in relation to each other, and their importance has been overlooked. Connecting a detailed study of a city block into studies of the use of urban space elsewhere in Pompeii and in the Roman world at large contextualises the present thesis and adds depth to the analysis.³² So far no studies with a combined focus on basic utilities and services as well as infrastructure, on the level of individual houses and city blocks, have been carried out.³³

The principal questions of the thesis are the following:

1. Can a city block be considered as a true, significant entity? Were the basic utilities and services needed for everyday life available in a city block and thus was it a nucleus of daily life for its inhabitants?
2. How coherent were the ways in which utilities were made available in the city block? What does possible conformity or non-conformity signify?
3. Should noted changes in the provision of basic utilities and services be considered as due to individual, municipal or state incentives?

³² Comparative material derives largely from studies of certain city blocks (see notes 29-31 above) and sample studies including Watt's (1987) study of 21 houses in Pompeii (4), Herculaneum (7) and Ostia (10); Allison's (2004) study of 30 *atrium*-houses in Pompeii; Wallace-Hadrill's (1994) study of 234 units in 19 Pompeian and Herculaneum city blocks; and Berry's (1997a) study of 45 units, which may have been internally connected but which form architectonically discernible entities, in three adjacent Pompeian city blocks.

³³ For separate unit-based studies of water provision, see Jansen (2001, 2005) and Dessales (2007); for light and heat, see Boman (2005); for storage, see Kastenmeier (2007); for access, see Grahame (2000). For town wide assessments of accessibility and the availability of utilities and services, see Robinson (1999), Laurence (2007) and Poehler (2009).

4. Can we define neighbourhood relations, including ownership and mutual dependence, by examining the availability and organisation of these utilities and services?

The thesis brings together all presently available evidence concerning the provision of utilities and services in *insula* IX.3. The evidence, together with basic data concerning all structures and finds in the city block, have been collated in an accompanying catalogue (part II of this thesis). The material available mainly reflects the situation in AD 79 as the structures still standing form the main body of evidence. However, discussion of temporal change is undertaken where material allows it. Limited excavation below AD 79 levels in the city block have revealed earlier structures, and discussion of time and change can take place on the basis of mapping different building materials and techniques, changes in wall orientations, evidence of blocked doorways and windows and various wall or floor-embedded structures that had been left out of use or stripped out in a way still detectable. Hence, while change is an important component in the current thesis, trends in the household arrangement and organisation that were long lasting and widespread are equally significant. The presence of such tendencies shows that certain arrangements were relevant in society and prevailed beyond personal choice.

Because some questions about society are more susceptible to archaeological enquiry and others are less so, the primary questions of this thesis are practical. Nonetheless, the answers to these questions may open avenues to approach questions of their socio-cultural implications. For instance, certain arrangements may indicate common ownership. It has been argued that common ownerships may be detectable through mapping parallel alignments of properties, similar building techniques and materials, continuous pavements and curb-stones, and shared structures or facade treatments, for example.³⁴ Therefore, if properties seem to form an architectonic unity in a way or another, a connection can be assumed. However, even if the units were built simultaneously and as a single unit of ownership, it does not mean that the situation remained as such. For example, facades could have remained largely unaltered even when units behind them were expanded or shrank.³⁵ Moreover, because changes in ownership did not necessitate manifestations in architecture,

³⁴ Pirson 1997: 173-4, Saliou 1999: 177, Leander Touati 2008: 117.

³⁵ Nappo 1997, Geertman 2007: 91.

identifying ownership remains difficult.³⁶ Therefore, although these architectonic clues may be informative about building histories, they may not reflect the situation in AD 79. Further evidence is needed to understand the situation at the time of the eruption. Roman law may be of particular help because it describes circumstances in which structures were shared by neighbouring houses without common ownership. By understanding different forms of dependencies between neighbours as described in written sources and with a good command of the archaeological evidence we can begin to reconstruct the most likely situation in AD 79. This opens avenues for further enquiries about the population and their social relations.

In order to seek answers to the questions presented above, the available evidence must be identified. The sources of information and the process of collecting and interpreting the data will be presented in Chapter 2. Having established the data and methodology, an examination of the evidence for the arrangements made to secure basic utilities within the units of the city block will take place in Chapter 3. The examination is continued in Chapter 4 which deals with the disposal of the end and by-products of these utilities and everyday activities. These detailed studies are followed, in Chapter 5, by an analysis of the general principles of provision and supply in AD 79. The results are shown to provide information on social relations and dependencies in *insula* IX.3 which will be discussed in detail, and the conclusions are reflected against evidence that speaks further about the general living and working conditions. In Chapter 6 the discussion is expanded outside the confines of *insula* IX.3 to examine it as a part of its neighbourhood and in comparison to some other city blocks in Pompeii and elsewhere. Chapter 7 provides the final discussion of the general importance and applicability of the thesis, in terms of improving our understanding of urban infrastructure.

1.3 Theoretical framework

As George in her study of the social structures of a household through architecture has pointed out, '[i]nspired by the work of anthropologist Pierre Bourdieu and other French cultural theorists, scholars of the classical world have come to regard Greek and Roman houses as cultural artefacts that can make their own unique contribution to understanding

³⁶Wallace-Hadrill 1994: 103-8, Pirson 1999: 66.

ancient life'.³⁷ The difficulty has been, however, how to interpret the function and meaning of these cultural artefacts.³⁸ Our interpretations depend on theories, presumptions and hypotheses in use consciously or subconsciously.³⁹ Since theories are typically difficult to fully establish and test in the practice of archaeology, they constitute a set of ideas and approaches to guide research, instead of providing readily available tools to study the archaeological record.⁴⁰ As for the present thesis, such approaches derive from the studies of consumption and the role of architecture in shaping human conduct.

1.3.1 Consumption studies

Although the concept of consumption is burdened by modernistic connotations,⁴¹ it can be used as an approach to the ancient world.⁴² Because the questions of this thesis relate to the consumption of material and immaterial goods as well as services, consumption studies provide us with helpful concepts. Altogether, consumption studies in the field of ancient history have recently become more and more popular, and some of them emphasise a consumer revolution in a Roman context.⁴³ On the other hand, studying consumption has always been an integral part of archaeological research, because the acquisition, use, maintenance and disposal of goods, utilities and services are examined when studying material culture. Furthermore, it can be argued that while archaeologists aim to trace consumption in the available data, they too become consumers of ancient culture or its material remains. In particular post-processual archaeology stresses that a scholar does not simply reveal the meaning of his or her data, but is actively involved in the process of interpretation.⁴⁴

³⁷ George (2004: 7) on the basis of Bourdieu (1973) and Lefebvre (1991).

³⁸ Locock (1994) for discussion. In the present thesis terms 'cultural' and 'social' are used interchangeably, whereas Rapoport (1990: 10) for instance has emphasised that social is more tangible and cultural is more abstract or ideational, and that it is 'the social manifestations of culture which are potentially observable'.

³⁹ Clarke 1977: 5-6.

⁴⁰ *Ibid.* 17-8; also Grahame 1997: 161.

⁴¹ E.g. Bauman (2000, 2007) on modern consumerism.

⁴² Studies of consumption in the ancient world were long focused on defining units of consumption and production, following Weber's (1976) and Finley's (1973) influential works on the subject (e.g. Moeller 1976 and Jongman 1988 in Pompeian context). For discussion on the current views and emphases, see Mattingly and Salmon (2001), Wilson (2002), Fincham (2002), Martins (2003), Ray (2006), Greene (2008).

⁴³ E.g. Woolf 1998, Wallace-Hadrill 2008: esp. 315-55.

⁴⁴ Shanks and Tilley 1987; Hodder and Hutson (2003: 195-203) on critical hermeneutics and (pp. 226-33) on different 'archaeologies'.

Consumption is ultimately a response to basic human needs including access to food, drink, light, air and warmth. In consumption studies it is common to distinguish between needs that can be considered as innate, i.e. related to basic sustenance, and needs that are more related to social and personal desires and are therefore socially constructed.⁴⁵ This dichotomy may however be unnecessary, because it is widely acknowledged that archaeological traces of consumption show elaboration even when dealing with basic necessities.⁴⁶ Practice-oriented archaeologists tend to study the socio-cultural, political and technological aspects of ancient societies through consumption, especially because it involves choice.⁴⁷ For instance, De Sena and Ikäheimo have shown, in their study of pottery excavated at the House of the Vestals (VI.I.7) in Pompeii, that choice increased over time and the variety became relatively wide during the second half of the first century BC.⁴⁸ These developments may reflect various processes in the society at large. For instance, the general political and economic situation, the number of novelties reaching the market, and the development of new methods to make products increasingly accessible had an impact on how people consumed. Furthermore, habits changed over time. New ways to eat and dress for instance created new needs.⁴⁹ Therefore, we need to pay attention not only to choices made but to the variety of choice available at a given time in a given context.

Some choices may be particularly visible in the archaeological record. Conspicuous consumption is a term first used by Veblen to describe the deliberate visibility of consumption.⁵⁰ For example, we know from class-conscious Roman authors, such as Cicero⁵¹ and Vitruvius,⁵² that housing conditions were supposed to reflect one's social standing. In a similar vein, the surviving municipal law of Tarentum, the *Lex Tarentina*,⁵³ from the late Republican period defines a minimum house size for the *decuriones* of the

⁴⁵ Witt 2001: 26-9, Martins 2003: 85-7, Greene 2008: 66, building e.g. on the classic division of human needs by Maslow (1970: 35-51).

⁴⁶ For example, clothes and food serving vessels were frequently decorated without added functional advantage. See Douglas and Isherwood (1996: 26-9) for general critique of rationale and maximization of utility as the driving force of human behaviour.

⁴⁷ Ray (2006: 25-7) for a relevant bibliography and discussion.

⁴⁸ De Sena and Ikäheimo 2003: 315. In comparison, the variety of edible plant species had increased by the second half of the second century BC (Ciaraldi and Richardson 2000: 75).

⁴⁹ Greene 2008 for discussion and references.

⁵⁰ Veblen 1899.

⁵¹ Cicero *Off.* 1.138-9.

⁵² Vitruvius 6.5.1-2.

⁵³ Crawford 1996: 301-12.

town.⁵⁴ Hence, because elite houses were, besides private homes, places to meet friends, clients and associates, they did not only reflect personal taste but also the political and social standing of the owner.⁵⁵ Consequently, to some extent consumption was obligatory, or socially necessary. Ostentatious consumption was virtuous, as long as, as Cicero puts it, a man brought honour to a house and not vice versa.⁵⁶ Having a certain type of house or certain items showed that one had enough means to purchase them, belonged to a certain group that acquired and used them, and thus shared the way of life and appreciated aesthetics connected to the goods.⁵⁷ In order that status symbols work effectively, the symbols must be based on widely shared ideologies. DeMarrais *et al.* have emphasized how '[i]deology becomes an important source of social power when it can be given material form and controlled by a dominant group'.⁵⁸ Hence, when ideologies and social relations are expressed through material culture, they simply become more 'real'.⁵⁹ People learn to appreciate the given goods by participating in the society, i.e. engagement with the world around us makes us desire what is commonly regarded as desirable.⁶⁰

Conspicuous consumption was not the privilege of upper classes alone but took place between classes. Solomon in particular has focused on 'vertically oriented' consumption and examined how people acquire goods for their symbolic value to reach an aspired level of the society.⁶¹ His observations can be useful in the context of competitive Roman society where relatively many strove to, and could, progress in the rank of classes.⁶² In Pompeii too the phenomenon is clearly recognizable. For instance, Packer has noted, much to his surprise, that not only large but also small houses contained elaborate paintings and shops

⁵⁴ That is, the house must have had a roof of at least 1,500 tiles (II, 26-31; Crawford 1996: 307). While the sizes of *tegulae* varied from region to region, using the mean value of five Pompeian *tegula* sizes provided by Adam (1994: 213), that is 63 x 49 cm, a roof of 1,500 *tegulae* would have measured some 463 m². Like Pompeii, Tarentum acquired Roman citizenship around 90 BC but became a *municipium* instead of a colony (Crawford 1996: 302).

⁵⁵ Wallace-Hadrill 1994: 3-61, Hales 2003: 1-3.

⁵⁶ Cicero *Off.* 1.139; Zaccaria Ruggiu 1995: 331-8 for discussion.

⁵⁷ For the importance of consumption in the overall fluid process of defining status, see Douglas and Isherwood (1996: 44-5).

⁵⁸ DeMarrais *et al.* 1996: 15.

⁵⁹ Gardner 2003: esp. 3-5, Witcher 1998: 61.

⁶⁰ Cicero *Leg.* 3.13.30-3.14.31. For participation and sharing of values, see Scott (2000: 16). For the overall process of trickling down of material culture through societies, see Simmel (1904). For learning to consume in new ways, see Woolf (2001: 177-81) concerning Roman Gaul, and Witt (2001: 28-31) in terms of a modern consumption theory.

⁶¹ Solomon 1999.

⁶² Ling 1991: 220, Wallace-Hadrill 1994: 173-4, Zanker 1998: 13; compare Mason (1981: 69-100) on modern 'achieving societies'.

yielded marble fittings and highly decorated artefacts of worthy materials.⁶³ These furnishings were not just decorations and paraphernalia but they were socially coded and ranked.⁶⁴ However, the variability of the material culture seems to indicate that we are not simply dealing with low-quality copies of elite luxuries, but a creative use of the available means to acquire goods related to, yet distinct from, those of the elite.⁶⁵ Therefore, because the scale of consumption was topped by the elite, the consumption of other members of the society is to be understood in comparison to elite consumption, but should also be discussed in its own right. Especially at the lower levels of social hierarchies choice becomes important, and decisions therefore particularly interesting. Because their means were constrained, people had to choose more carefully about what to consume. Consequently, by looking at the overall availability, quality and elaboration of basic utilities, with an understanding of the evidence as a whole, we are able to have an insight into the status and priorities of the population living and working in the city block.

1.3.2 Architecture and human conduct

While the mere availability of utilities is highly revealing, we can learn even more about the society by looking at where the physical structures attesting to the use of these necessities were placed. Because architecture is one of the most visible forms of material culture, it can effectively guide and shape the functions and purposes of built spaces, contributing to the seclusion or availability of places. Fletcher for instance has emphasised, largely on the basis of principles summarized by Watson in his *Symbolic and Expressive Use of Space* (1969), that humans' approach to space is not solely based on physical needs or cost-effectiveness, but embedded into it is the need to differentiate between functions and different social status.⁶⁶ Hence, the division and form of built space are connected to social practices.⁶⁷ This notion provides us grounds to argue that the spatial distribution of the available evidence is meaningful and that patterns may result from not only practical but also social concerns.

⁶³ Packer 1975: 141-2.

⁶⁴ Allison 1992b, Wallace-Hadrill 1994: 8, 147.

⁶⁵ Compare Woolf 1998: 170, Swift 2003: 347.

⁶⁶ Fletcher 1977: 48-9.

⁶⁷ Raper 1977: 192, Rapoport 1982: 180-95; also Lefebvre 1991: esp. 143.

Although the built surroundings possess embedded restrictions, they also contain possibilities that are explored on a daily basis.⁶⁸ Giddens in particular has emphasised the view of humans as agents that are creative and constantly negotiate their roles in their living environment, rather than simply following fixed, imposed rules.⁶⁹ When changes become socially accepted, architecture can nevertheless remain conservative and preserve old layers of social life. The conservatism largely relates to the fact that, because of its physicality, changes in architecture tend to be more time-consuming and costly than changes in social structures. The permanence of architecture can mean that structures are newly interpreted and differently used over time to fulfil changing social practices.⁷⁰ In the context of the current thesis the process of adaptation and transformation is visible as evidence for permanence, demolition, rebuilding and reuse. The evidence for structural change shows, in a very tangible way, the way in which the built surroundings were shaped, time after time, presumably to meet the new requirements by their users. However, structural changes did not need to change all functions of a space. An *atrium* for instance may have remained a central courtyard even if some of the surroundings rooms were disconnected from it. Indeed, structural change and functional change may not be directly linked but the relationship is more complex. Nor does permanence exclude all change. We must therefore combine different types of evidence to approximate possible uses of spaces and discuss functional and structural change separately.

Having established the main theoretical concepts of this thesis, it needs to be clarified how we can fruitfully study *insula* IX.3 to gain an insight into the process of choosing arrangements and negotiating layouts. First, however, the importance of a city block as an urban entity needs to be defined.

1.4 The significance of a city block in the study of urban space

While occurring in many different contexts, the term *insula* is rarely used by Roman authors to refer to a city block.⁷¹ Instead, the term is more frequently employed to denote a tenement

⁶⁸ Rapoport 1990: 12-3, Hodder and Hutson 2003: 10, 100.

⁶⁹ His *theory of structuration* (Giddens 1979: 69-73).

⁷⁰ Foucault 1982.

⁷¹ Festus L 98, Vitruvius 1.6.8, 2.9.16; also *TLL*.

block.⁷² Furthermore, in terms of jurisdiction, *insula* is used by Roman lawyers in contexts where it signifies a unit of ownership.⁷³ In Pompeii the term is attested in a few wall inscriptions. In the best-known example different types of units within a block, the *Insula Arriana Polliana* (VI.6), were, by the request of their owner, advertised for rent.⁷⁴ Although the entire *Insula Arriana Polliana* was in the hands of a single proprietor, it is highly unlikely that this was also the case for all other city blocks.⁷⁵ Instead, the term *insula* is used in modern scholarship without implied ownership. In the later part of the 19th century the director of the excavations, Giuseppe Fiorelli, used the term to divide the urban space of Pompeii. Individual *insula* numbers, which were based on the division of the town into nine regions, made city blocks distinguishable from others and thus decreased misunderstanding when referring to them. Today, the Fiorellian system is widely used and it has been extended to separate units by giving each front doorway an individual number. In line with this tradition, the term *insula* is used in the current thesis to denote individual city blocks. Units within these blocks are referred to both by their ‘Fiorellian’ number and their popular names.⁷⁶

Studies on the level of a city block can bridge the gap between the large and the small scale. A city block is the smallest urban entity with relatively unchangeable, fixed limits. Indeed, this boundedness is already indicated by the primary use of *insula* in Latin as the word for ‘island’.⁷⁷ Historically speaking it has been proposed that already in sixth-century BC Rome buildings were grouped together and flanked by streets or alleys. Instead of having an *ambitus* between each individual building, as ruled in the Law of the Twelve Tables,⁷⁸ the houses shared walls.⁷⁹ As for Pompeii, a new reading of the archaeological data suggests that the layout of streets, and hence the borders of later city blocks, followed an arrangement already at place at the beginning of the Samnite era, instead of a gradual

⁷² E.g. Tacitus *Ann.* 6.45.1, 15.41.1, Suetonius *Nero* 16.1, 38.2, 44.2, Cicero *Off.* 3.66; also *OLD*, *TLL*.

⁷³ E.g. Pomponius *dig.* 7.8.16.1, Labeo *dig.* 19.2.58, Scaevola *dig.* 33.7.7.

⁷⁴ *CIL* IV 138: *Insula Arriana Polliana (C)n Al(le)i Nigidi Mai locantur ex [k(alendis)] Iulis primis tabernae cum pergulis suis et c(e)nacula equestria et domus conductor convenito Primum (C)n Al(le)i*

Nigidi Mai ser(vum). For the *insula*, see Pirson 1997. Other wall-painted references to *insulae* in Pompeii include *CIL* IV 4429 and 7766.

⁷⁵ Ling 1997: 240-1 for discussion.

⁷⁶ E.g. Unit IX.3.5/24=the House of Marcus Lucretius.

⁷⁷ *OLD* and *TLL*.

⁷⁸ Table VII, Law I; Crawford 1996: 666-7.

⁷⁹ Based on the reconstructions of early regal *domus* by Carandini (2007: 68-9, figs. 41-2).

expansion of the town which necessitated the laying of new streets.⁸⁰ The evidence for changes in the established borders of city blocks is altogether scarce.⁸¹

A study of a whole city block, rather than selecting only the best preserved or ‘fine’ houses, provides a comprehensive context for each structure, i.e. arrangements in each individual unit are studied in the context of immediate neighbours, which better exemplifies the complexity of Roman urbanism. This complexity is particularly visible in Pompeii because the city blocks contain a mixture of housing and working spaces, side by side and sharing the same division walls. Indeed, even though scholars have proposed that zones or groupings of certain types of units existed in Pompeii, the city blocks are characterized, by and large, by a mix of commercial and domestic spaces.⁸² This is a rather unusual arrangement in comparison to modern cities with zones for industries and housing.⁸³ Pompeii is different from cities which were founded at a certain point of time, laid out according to the geometric (Hippodamian) plan, and, as in Olynthus,⁸⁴ repeated a single layout of houses block by block. Furthermore, whereas the second/third-century AD apartment blocks of Ostia and Rome frequently housed both poor and affluent, inhabiting different floors,⁸⁵ the social stratification in Pompeii was predominantly, although not entirely, horizontal, i.e. rich and poor lived next to each other.⁸⁶ Therefore, although the evidence for the specific uses of upper floor spaces in Pompeii remains limited, the ground floor evidence alone can shed light on social stratification, even when acknowledging that upper floor evidence would bring even more depth to it.

Tenement blocks were probably developed between the fourth and second centuries BC when the growing population of Rome had to be accommodated within the so-called

⁸⁰ Coarelli 2008: 174-5; contra e.g. Geertman 2001, 2007. Coarelli’s view is supported by the discovery of archaic walls in *pappamonte* tuff in various parts of the town (Carafa 2007), including Unit IX.3.5/24 (Castrén *et al.* 2008: 331-3).

⁸¹ E.g. the Stabian Baths and the Building of Eumachia were built over an archaic street (Eschebach 1970: 19, fig. 5; 31, fig. 11), the Via Marina flanking the Temple of Apollo had originally belonged to the temple area (Arthur 1986: 35), and the temple area encroached on the Vicolo del Gallo at a later stage (Dobbins *et al.* 1998: 739-40).

⁸² For grouping, see Robinson (1997, 1999), Schoonhoven (1999), Laurence (2007), Kaiser (2011); for the lack of zoning, see Raper 1977.

⁸³ But see Laurence (1995: 65) on anachronistic comparison.

⁸⁴ Cahill 2002.

⁸⁵ E.g. Bottke (1999), DeLaine (2000), Gering (2000) for various types of units in Ostian city blocks; e.g. Packer (1967: 80-1), Lauriello (2004: 24) on a few surviving examples of apartment blocks in Rome.

⁸⁶ Robinson 1997: 142-3.

Servian Walls.⁸⁷ The new forms of communal living resulted in significant changes in laws dealing with properties.⁸⁸ These laws applied beyond tenement blocks and are important in this thesis, because, in contrast to the fixed external borders of city blocks, unit borders within a city block frequently changed. A study of these internal changes well illustrates the changes in living conditions. It also brings up neighbourhood relations, because changes in spatial arrangements frequently involved neighbours. Not only changes in the outer limits of units would have required the consent of immediate neighbours, but they may also have been needed when carrying out internal changes.⁸⁹ Therefore, the buildings within a city block constituted the basic setting for their inhabitants to influence their surroundings, provided that they met certain limitations set by social codes, financial means and legislation.

Consequently, while social interaction – and competition for that matter – might have been higher between neighbours across the street, negotiations between neighbours to divide space, arrange functions and secure the availability of utilities took place primarily between those who shared the physical borders of their properties. This is of primary interest for the thesis and hence the emphasis on the city block is well-founded. However, the need to look beyond the city block borders becomes particularly significant when we move beyond the necessities, touch on questions pertaining to living experience and neighbourhoods as social phenomena. Addressing these questions in full would require rigorous studies on several adjacent city blocks which cannot be carried out within the framework of this thesis. Nonetheless, the potential of such studies is acknowledged and the focus is expanded to generate a general understanding of *insula* IX.3 within its immediate surroundings.

1.5 *Insula* IX.3

Insula IX.3 contains several interesting qualities which make it well-suited for the present study. Firstly, the parallelogram form of the city block with sides of roughly equal length

⁸⁷ Rainer 1987: 74-9, Möller 2010: 110 for discussion and references. The archaeological evidence is extremely meagre which explains the vagueness of dating. Livy (21.62.3) however describes an event which, in the third century BC, took place in the 3rd floor of a building that, on the basis of his description, seems to have been a tenement.

⁸⁸ Rainer (1987: 78-9) dates the development period of these laws between the establishment of the Law of the Twelve Tables and the second century BC.

⁸⁹ Laurence 1994: 74-5; also Chapters 3-5 below on servitudes.

(figs. 1-2) would have allowed similar types of buildings to be built on all of its sides, although the local topography may have had some limiting effect.⁹⁰ Despite the regular form, different types of buildings are more common in some parts of the city block than in others. Identifying factors causing this variability enhances our understanding of urban development.

The variability may relate to the location of the city block. Because *insula* IX.3 is located at the geographical centre of the town (fig. 1), along the Via Stabiana, the north-south running thoroughfare of the town, it has an important and striking location which was presumably appreciated by and benefited its inhabitants. Space being at premium it probably was eagerly developed. However, despite its advantageous position, the east side of the city block did not benefit as straightforwardly from the vicinity of the Via Stabiana as did the west side and thus polarization may become evident in some arrangements. On the other hand, the southern side too was flanked by an important two-way street and hence polarization may have taken place between the north and the south.

This polarization can be placed in a bigger picture by comparing *insula* IX.3 with other city blocks.⁹¹ If the location of each individual block in relation to main streets had the greatest impact on the division of space inside city blocks, all city blocks would display biases because some of their flanking streets were inevitably less busy than others. If polarization is not as evident, we need to search for other explanations. This adds to our understanding of the dynamics of the town, with differences between districts and *insulae*.

1.5.1 The make-up of *insula* IX.3 in AD 79

In addition to its central location and regular form, the division of space inside the city block makes it well-suited for the objectives of this thesis. In AD 79 *insula* IX.3 contained 19 units presenting an interesting mix of commercial and residential spaces, often co-existing in a single unit. While some trades have left distinct traces and are therefore well-

⁹⁰ For the impact of topography, see Poehler (2009: 234-44); Holappa and Viitanen (2011: 182-3) with reference to *insula* IX.3.

⁹¹ See Chapter 6.

distinguishable in the archaeological record, the evidence concerning other commercial functions is more ambiguous and needs revision (figs. 2a-b).⁹²

Of the 19 units, four (IX.3.15, 21-22, 23 and 25) contained no architectonic elements or artefact assemblages that would connect them with commercial functions. Although it contained no commercial fixtures, an assemblage of surgical tools discovered in Unit IX.3.5/24 has led scholars to suggest that a doctor may have lived or worked there.⁹³ While this remains a possibility, the tools discovered are rather generic and therefore may testify to the care of body and personal health in a domestic context instead of a specialist working commercially in healthcare.⁹⁴ The rest of the units have wide shop doorways (fig. 3) which identify them as commercial units. Of these, IX.3.3, 4 and 9 contained, as far as we know, no finds or fixtures which would allow us to identify the commerce in question.⁹⁵ Units IX.3.1-2, 10-12 and 19-20 contained a series of similar productive fixtures which suggests large-scale production. Unit IX.3.1-2 contained a battery of three cauldrons. They, together with the discovery of organic substances, indicate that it operated as a dye-workshop.⁹⁶ Units IX.3.10-12 and 19-20 operated as mills-bakeries.⁹⁷ They are the only commercial spaces in the city block where different phases of production were separated into distinct spaces. Separate milling, kneading, bread-making and baking rooms necessitated the employment of a number of people for different tasks.⁹⁸

The remaining units (IX.3.6, 7, 8, 13, 14, 16, 17 and 18) contained either productive apparatuses or groups of finds, none of which was closely similar and hence the units seem to have been involved in retail and production on a less standardized and smaller scale.⁹⁹ It seems possible that the commercial activities could have been managed by one or two persons.¹⁰⁰ The presence of hearths and a number of cooking vessels in Units IX.3.8 and 13

⁹² The picture presented here is preliminary, further work will be carried out by the *Expedition Pompeiana Universitatis Helsingiensis* (see below).

⁹³ Ciprotti 1959: 97, Eschebach 1984: 53, Eschebach *et al.* 1993: 413.

⁹⁴ For the multiple uses of these types of artefacts, see Allison (2006: 347, 384) and Berg (2010: 96).

⁹⁵ Contra Eschebach *et al.* 1993: 413, 415.

⁹⁶ Della Corte 1954: 129, Moeller 1973: 368-9, Eschebach *et al.* 1993: 412.

⁹⁷ Fiorelli 1873: 51, 53; Della Corte 1954: 131, 159; Mayeske 1972: 129-34, Eschebach *et al.* 1993: 415, 418.

⁹⁸ Compare Peacock 1982: 9-10, Flohr 2007a: 132, Wilson 2008: 394-6. The division of labour in mills-bakeries is reflected in surviving depictions: different people are working on different tasks (Wilson and Schörle 2009: 105).

⁹⁹ Compare Peacock 1982: 9.

¹⁰⁰ Compare Flohr 2007a: 132.

suggest that they were involved in commercial cooking.¹⁰¹ Finds and fixture evidence in Units IX.3.14, 16, 17 and 18 suggest the possibility that they all could have been involved in metal-working, perhaps partly on the basis of commissions, as well as selling products made inside and outside the premises.¹⁰² Indeed, Grafts has remarked that a single metal workshop could produce a variety of goods for very different functions made of different metals.¹⁰³ Moreover, the discovery of mended artefacts in Unit IX.3.14 suggests that it was involved in repair.

The identification of Unit IX.3.6 as a doctor's practice or pharmacy (a shop selling medicines and cosmetics) is supported by the discovery of a case for surgical tools and a number of glass bottles.¹⁰⁴ However, because similar tool shapes were used both in medicine and in cosmetics,¹⁰⁵ both of which moreover involved the use of substances stored in similar vessels,¹⁰⁶ a final distinction cannot be made. Moreover, as with Unit IX.3.5/24, we may also be dealing with the evidence for domestic healthcare. In a similar vein, the identification of Unit IX.3.7's function is problematic. Eschebach *et al.* suggested that the unit might have been involved in stone cutting.¹⁰⁷ Unfortunately, the provenience of the majority of the relevant artefacts, including several tools and a number of shaped and unshaped pieces of marble, is ambiguous, and other finds might suggest the retail of household goods.¹⁰⁸

While in AD 79 the north-east corner of the city block was seemingly unoccupied and in ruins (Unit IX.3.21-22, fig. 3), many of the 18 remaining units contained finds such as toilet and household utensils, money-boxes and jewellery, which suggest that they were inhabited. Furthermore, several skeletons were found inside the units.¹⁰⁹ Therefore, there are good

¹⁰¹ Ruddell 1964: 113, no. 128 on Unit IX.3.13. Unit IX.3.13 contained very many mortars too, some of which were used to grind colours, perhaps indicating another commercial activity in the unit, if not attesting to redecoration works in AD 79.

¹⁰² Eschebach *et al.* (1993: 416-7) for Units IX.3.14, 17 and 18. As for IX.3.16, the identification contradicts that of Della Corte (1954: 158) and Moeller (1976: 52) who connected the unit with dyeing or felting thanks to a now-gone furnace in the unit.

¹⁰³ Grafts 1988: 96-103. Units IX.3.14, 16, 17 and 18 are not included in her study however.

¹⁰⁴ Eschebach 1984: 53, Eschebach *et al.* 1993: 414.

¹⁰⁵ Berg (2010: 96-101) for discussion and references.

¹⁰⁶ Allison 2006: 376-7.

¹⁰⁷ Eschebach *et al.* 1993: 414.

¹⁰⁸ Comparing the list of possible finds in IX.3.7 with the contents of Pompeian units in which, according to Mustilli (1950: 215-9), masonry was practised, there are clear similarities although the unit would have contained a comparatively modest number of tools. See the catalogue, under Unit IX.3.7.

¹⁰⁹ The records concerning finds in Unit IX.3.5/24 are contradictory which makes it difficult to establish the number of skeletons found in the unit. However, it probably contained at least three human skeletons/skeleton

reasons to argue that most of the units were in use in AD 79, and doubled as living and working spaces.¹¹⁰ Nonetheless, some units may have been only half-occupied or half-operating. For instance, at the time of the eruption, Unit IX.3.5/24 was under restoration. This is indicated by the discovery of uncovered water channels, lacking or severely damaged decoration, and construction work equipment, including hammers and a stack of quicklime. Some units reportedly contained very few or no finds at all which could be taken as evidence for their abandonment. However, as discussed below, the lack of finds is more bound to the lack of initial reporting than the conditions in AD 79. Nonetheless, Unit IX.3.23 not only contained very few finds, but the composite structure of the walls, with numerous alterations and cracks, indicates that it had been under repair, and possibly was still being repaired in AD 79. Likewise, very few, if any, finds derive from Unit IX.3.25, and, according to the early accounts, the walls at the rear were ‘senza essere nemmeno rivestita d’intonaco’.¹¹¹ Therefore, the units might have been temporarily unoccupied in AD 79. The presence of some under- or unoccupied premises provides interesting comparisons to units in full use and enables a discussion on choices, such as possible priorities in the rebuilding that took place in the aftermath of earthquake damage.

1.5.2 The ownership of insula IX.3: a hypothesis

Without the rental advert the common ownership of *Insula Arriana Polliana* would not be apparent to us. As discussed above, while architectonic clues are helpful in tracing property boundaries, they are not necessarily sufficient, or may convey outdated information. Nonetheless, because we do not have any straightforward written evidence of the ownership of *insula* IX.3 as a whole,¹¹² we are left with the possibilities offered by such evidence. Starting by examining the borders of each individual unit within the city block (fig. 4), we can observe that there is much less regularity than in the plan of *Insula Arriana Polliana* (fig. 5). Greater regularity is obtained by grouping some units together. This search for regularity is well-founded because studies have shown how city blocks were first divided

parts. In addition, one human skeleton was found in Unit IX.3.13 entrance (thus possibly not representing a member of the household), two crania were found in Units IX.3.15 and 16, one cranium in Unit IX.3.19-20, and a skeleton of a dog was found both in Units IX.3.16 and 19-20. Compare De Carolis *et al.* 1998: 94.

¹¹⁰ See section 5.5.1 for further discussion.

¹¹¹ Bechi 1852: 18.

¹¹² For *programmata* and inscriptions found in *insula* IX.3, see the catalogue.

into plots by using particular measures and ratios to produce rectangular plots.¹¹³ Therefore, it can be assumed that the irregularities in the modern plan of *insula* IX.3 result from later developments in which units were combined and split, with walls rebuilt in new locations. In order that our groupings are not entirely intuitive, mapping the extent of upper floors (fig. 6) gives grounds to group some units together.¹¹⁴ According to the principles of Roman jurisdiction, *superficies solo cedit* (that which stands on the land goes with it), and thus the proprietor of the ground floor owned the upper floors too.¹¹⁵ It follows that if a house extended over its neighbour, they must have been owned in common. The borders of units in the upper floor level (fig. 6) are somewhat different from those of ground floors (fig. 4), indicating a connection between two or more units.¹¹⁶ Taking these two factors into consideration, it can be suggested that the corners of the city block were occupied by four properties containing rectangular units or unit clusters, and the interior of the block contained five properties including three rectangular units and two irregular-shaped clusters (fig. 6).

The resulting plan may reflect the ownership of *insula* IX.3 in AD 79, and it is taken as the working hypothesis of this thesis. The following chapters explore this possibility, i.e. that the city block was divided into nine properties in addition to 19 separate units, by examining whether this is reflected in the organisation of space and the provision of basic utilities. Not only can we assess whether the hypothesis is borne out by in-depth analysis of the archaeological material, but we can also examine its validity from a time perspective. A map of the blocked doorways and windows between units (fig. 7) gives an impression that the borderlines were fluid. Consequently, although it is possible that some of the units had a common ownership at some point in time, there is no evidence supporting this in AD 79. Moreover, it is possible that in AD 79 there were further connections between units than first meets the eye.

The arrangements made for basic utilities provide a useful tool for deepening our understanding of ownership, thanks to the availability of a rich body of both archaeological

¹¹³ Nappo 1997: 97-9, Geertman 1998: 23-5, Schoonhoven 2006.

¹¹⁴ Dr. James Andrews has provided much important information on the upper floors of *insula* IX.3, and this thesis draws heavily on his unpublished report (2011).

¹¹⁵ Pomponius *dig.* 41.1.28; Crook 1967: 143, Borkowski 1994: 149; but see Saliou 1994: 50, Pirson 1999: 68-70.

¹¹⁶ Unit IX.3.3 partly extends over Unit IX.3.4, Unit IX.3.5/24 extends over Units IX.3.4 and 6, Unit IX.3.10-12 extends over Unit IX.3.9, Unit IX.3.16 partly extends over Unit IX.3.15 and Unit IX.3.19-20 partly extends over Unit IX.3.17.

evidence and legal texts. As discussed in Chapters 3 and 5 below, shared utilities do not necessarily attest to common ownership. Roman law involved a device which enabled adjacent properties to share some of their structures. We might therefore be dealing with not only ownership but agreeable co-operation among neighbours of equal status. Through examining the whole body of archaeological data we can generate an aggregate understanding of the relationship between adjacent units and give a well-grounded view on their connections as stemming from mutual agreement or ownership.

To understand what common ownership meant, let us turn back to the inscription in the *Insula Arriana Polliana*. It is widely accepted that the owner of the *insula* lived in the largest house of the complex, the House of Pansa (VI.6.1/13) and gained income from the rest of the property by renting it out to tenants, who may have been, or became, his clients, forming a dependent relationship.¹¹⁷ Even more dependence was involved if the owner let an *institor*,¹¹⁸ possibly his slave or ex-slave, run his commercial enterprise. The benefits of this arrangement were that the owner received the profits of the trade, which were presumably higher than rental income although involving greater risks.¹¹⁹ This is not reflected in the inscription, however, as such arrangements would have been made without advertising it in public. What this means in terms of *insula* IX.3 is that small units probably belonged to the ownership of adjacent large units. The owner of Unit IX.3.5/24 may also have owned IX.3.3, 4 and 6; the owner of Unit IX.3.10-12 may have owned IX.3.7, 8 and 9; the owner of Unit IX.3.15 may have owned IX.3.14 and 16; and the owner of Unit IX.3.19-20 may have owned IX.3.17 and 18. Although this scenario seems the most probable one, it may be too simplistic. Economic realities may have made some people rent out their grand *domus* and occupy more modest dwellings,¹²⁰ even though, as discussed in section 1.3.1 above, the Romans wanted their homes to show them in the best possible light. It is moreover known that several persons, such as heirs, could own a property in common and, perhaps together with legatees, inhabit different parts of it.¹²¹ Nonetheless, although the actual owners of *insula* IX.3 remain unknown, the results of this thesis will add to and deepen our understanding of investments made in real estate and the role of urban property in the generation of wealth and social dependence in Pompeii.

¹¹⁷ Pirson 2007: 470.

¹¹⁸ Ulpian *dig.* 14.3.1; Aubert 1994: 1-39.

¹¹⁹ Aubert 2001.

¹²⁰ Suetonius *Vit.* 7.

¹²¹ E.g. Tellegen and Tellegen-Couperus (1989) discussing legal disputes as described in Cicero's *pro Caecina*.

1.5.3 The history of excavations in *insula IX.3*

Insula IX.3 was excavated in several parts over the years 1843, 1846-7, 1849-51 and 1870-1 (fig. 8).¹²² The available records describe how excavations advanced along streets. Entrances to units were cleared, and if deemed valuable, the units were entered and emptied, advancing horizontally across the rooms and removing the fill. The number of people employed in the excavation varied greatly from some tens to over a hundred men. The length of working days depended largely on the weather and the amount of daylight. Consequently, due to frequent rains and short days, excavations progressed slowly during the winter months.¹²³

Excluding small interventions at unit entrances along the Via Stabiana in 1843 and 1846,¹²⁴ *insula IX.3* was studied rather late in comparison to other nearby city blocks. For instance, the eastern part of *insula VII.2*, situated opposite *insula IX.3*, was largely excavated in 1843.¹²⁵ In 1847 the excavations concentrated again along the Via Stabiana, and, before commencing in *insula IX.3*, the early part of year 1847 was spent excavating the Central Baths (IX.4).¹²⁶ Finally, from the 3rd of March to the end of September 1847, Units IX.3.1-2, 5/24 and 25 were excavated (fig. 8).¹²⁷ Unit IX.3.5/24, currently known as the House of Marcus Lucretius, became known as Casa delle S(u)onatrici, thanks to distinctive paintings depicting flute-players on the walls of its entrance corridor. It seems probable that Units IX.3.3 and 4 too were emptied at this stage, had they not been already emptied during the first interventions, because they are located between the excavated parts.

Work in the city block was continued in 1849 by excavations in Units IX.3.7-9.¹²⁸ The shops occupying the south-west part of *insula IX.3* were used as the scene for a visit by Pope Pius IX. The Pope was to be present at the excavations and he was to be given the finds discovered as a gift, a practice which allowed him to establish a small collection at the

¹²² Reportedly also in 1879 and 1894 (CTP V: 500). However, instead of excavations, these dates more likely refer to restorations.

¹²³ For a first-hand description of the process of excavations, see *Giornale* (1861: 73-80) and Fiorelli (1873: 1-10); for the history of excavations in Pompeii, see Cooley (2003: 65-125).

¹²⁴ PAH II: 453-4, III: 192.

¹²⁵ PAH II: 423-8, CTP V: 500.

¹²⁶ PAH II: 454-7, CTP V: 500.

¹²⁷ PAH II: 457-74.

¹²⁸ *Ibid.* 482-5.

Vatican.¹²⁹ The excavators probably hoped to reveal finds of special interest, similar to those previously discovered in Unit IX.3.5/24. The shops in *insula* IX.3, however, only yielded mundane artefacts, and it seems that the excavations were soon moved to another location in *insula* IX.2 which in turn immediately yielded fine objects, supposedly reburied there to be discovered in the presence of the Pope.¹³⁰ As a result, Units IX.3.6-9 and IX.2.6 are, confusingly, known as ‘botteghe di Pio IX’.¹³¹

The Via Stabiana side of *insula* IX.3 may have been finished in 1851, simultaneously with excavations in the western part of *insula* IX.2.¹³² The fact that the two adjacent city blocks were emptied simultaneously results in further confusion. Based on the available records it is difficult to ascertain whether works were carried out in *insula* IX.2 or at the south-west corner of *insula* IX.3 since they were referred similarly as being located along the Via Stabiana, ‘after’ the Casa delle Sonatrici.

When the northern part of *insula* IX.2 was excavated in 1869-70, it yielded a great number of paintings which were received with excitement. On the other hand, works carried out simultaneously on the other side of the Via degli Augustali in *insula* IX.3 received less attention as their pictorial discoveries were scarce. The newly discovered premises in IX.3 were bluntly described in the following manner: ‘tutte quelle fabbriche non ispirano molto interesse, onde posso passarle sotto silenzio, toccando solamente le poche pitture che sono compranse nei pistrini’.¹³³ Nevertheless, when the excavations of *insula* IX.2 had been completed by the end of 1870,¹³⁴ efforts were made to empty the remaining part of *insula* IX.3. The last record of excavations in *insula* IX.3 is dated to the 16th of June 1871.¹³⁵ After the completion of excavations in the city block, excavations returned to the neighbourhood in 1877-82 when works were carried out in *insulae* 4-7 of Region IX.¹³⁶

In addition to excavations, the remains have been subject to several restoration campaigns, and from very early on artefacts and paintings were removed from their original places and

¹²⁹ Soprintendenza archeologica di Pompei and Biblioteca apostolica vaticana 1987: 17.

¹³⁰ *Ibid.* 17-25.

¹³¹ *CTP* II: 315, 318.

¹³² *PAH* II: 497-504.

¹³³ Trendelenburg 1871b: 206.

¹³⁴ Excavating through the year 1870 along the Via Augustali (*Giornale* 1871a), the crossroads of the Vicolo di Tesmo and the Via degli Augustali was reached in November (*Giornale* 1871b: 220).

¹³⁵ *Giornale* 1872a: 287.

¹³⁶ *CTP* V: 500.

transported to Naples, to the *Real Museo Borbonico* (later National Museum).¹³⁷ In the case of the House of Marcus Lucretius the removals took place as early as 1852-3.¹³⁸ The east side of the city block and its north-east corner in particular were damaged in September 1943 when an Allied bomb hit the Vicolo di Tesmo and sent its paving stones flying, partly into the city block.¹³⁹ Therefore, after the Second World War, restorations had to be carried out both at the bombed sites as well as in buildings which had deteriorated naturally. The city block contained damage of both kinds. Since the mid-20th century, work in Pompeii has concentrated more and more on restoration rather than on excavation. The last extensive restoration campaign in *insula* IX.3 took place in 2008.¹⁴⁰ Today the city block is being re-studied by a Finnish team, the aims and methods of which are discussed in Chapter 2 below.

1.6 Conclusion

This thesis operates on the level of a single city block. By understanding the arrangements made to secure the basic utilities and services, with frequent references made to comparative studies operating on the scale of units, regions or towns, we begin to touch upon the nuances of Roman urbanism which are forgotten when admiring its most visible and large-scale products. With the theoretical justification for this thesis made clear, house layouts and the distribution of architectonic and artefact evidence can be studied as meaningful records of past decisions involving desires and needs, constrained by material and immaterial preconditions.

The arrangements made for securing basic utilities have implications beyond understanding the living conditions in each individual unit, forming a basis for interpreting neighbourhood relations. The working hypothesis of this thesis is that the city block was divided into nine properties, each of which consisted of one to four units. By carefully analysing the archaeological record this hypothesis can be verified or refuted and questions of social dependence and independence addressed.

¹³⁷ *Giornale* 1861: 77, 79-80; Fiorelli 1873: 9.

¹³⁸ Archivist napoletani 1979: 129. The paintings that were left *in situ* were subject to more severe wear and tear, and hence the removal of paintings was applauded (e.g. Raoul-Rochette 1852)

¹³⁹ García y García 2006: 153. Pompeii was hit by 160 Allied bombs (Laidlaw 2007: 635).

¹⁴⁰ Because the restoration radically altered the appearance of some structures, the figures of this thesis contain information on the year in which the photos were taken.

It is surprising that *insula* IX.3 was ignored by modern scholarship until the early 21st century given its central position in the town. This is probably at least partly related to the difficulties in following the pace of excavations and hence identifying documents connected to it. With the new willingness to study not only the most lavish *atrium*-houses but all parts of the Pompeian building stock, and in a period of rapid increase in studies of city blocks, this thesis is well-connected to current scholarship.

CHAPTER 2: Sources and methodology

The purpose of the current chapter is to present the evidence used in this thesis, describe the processes involved in the collection and analysis of the data, and discuss the strengths and weaknesses of the material in answering the questions posed. The main focus is in the catalogue (part II) which forms an essential part of this thesis and on which the following chapters base.

2.1 Sources

2.1.1 *Expositio Pompeiana Universitatis Helsingiensis*

This thesis draws heavily on the 2002-2010 results of a research team entitled *Expositio Pompeiana Universitatis Helsingiensis (EPUH)*.¹⁴¹ Studies are needed because the initial excavation records are inadequate and the structures are deteriorating. Rigorous on-site re-documentation of all visible architectonic elements and off-site archival research is being carried out by three groups composed of archaeologists, art historians, cartographers and architects. The aim of the modern scientific recording is, following the principles set by the *SANP* and other teams, to clarify the state of the city block in AD 79. In addition to exposing the floor levels of AD 79 and documenting the extant structures, selective and small-scale excavations are carried out to clarify the urban development of the site. To date 12 trenches covering no more than 42 m² have been opened in the areas where AD 79 floors no longer exist.¹⁴²

¹⁴¹ The work was initiated by Prof. Emer. Paavo Castrén with funds granted by the Rector of the University of Helsinki. The work of the team of some 15-20 participants has been consequently made possible by grants from Academy of Finland, Finnish Cultural Foundation, Ella and Georg Ehrnrooth Foundation and Emil Aaltonen Foundation. In 2008 the team organised an exhibition at the Amos Anderson Art Museum in Helsinki, after which the leadership was taken over by Dr. Antero Tammisto. Currently the team is preparing its first publication on the House of Marcus Lucretius (IX.3.5/24) studied in the first phase of the project (2002-7), it is continuing to work on-site (2009-12), and is planning the eventual third phase (2013-6). For published preliminary results, see Castrén *et al.* (2005, 2008), Castrén (2008a).

¹⁴² Viitanen 2008: 173.

In order to achieve as thorough and well-traceable analysis as possible, the documentation process has been split into four parts. Firstly, all distinguishable units (*unita stratigrafica muraria* or feature *locus*) that can be considered as resulting from separate human-induced events within a structure (a composite feature), are, after being drawn and numbered, recorded in separate sheets. They are measured, described and analysed. Secondly, all feature *loci* are examined together to form an understanding of the composite feature and its relative phasing. Thirdly, the related composite features, such as the walls and the floor of a room, are studied in relation to each other in order to understand the development of the given space. Fourthly, the process is repeated in each of the rooms of a unit which leads into the phasing of the unit and eventually into the phasing of units in comparison to each other.¹⁴³

The given principles equally apply to the documentation of soil layers (matrix *loci*), revealed during the excavations. Diagnostic finds are numbered, drawn, photographed and analysed in forms. A total station is used to measure extant structures, lay out trenches and record the altitudes (m ASL) of key features found during the excavations, such as floor and paleosol levels. During post-season campaigns the plans and forms are digitized in order to develop a thorough database with eventual links to pictures and measurement information.¹⁴⁴ So far over 3,500 feature *loci*, ca. 300 matrix *loci* and almost 600 composite features have been documented. In terms of finds, over 1,300 pieces of pottery for example have been analyzed. An accurate plan of the city block has been created. This was much needed because the initial plan by Fiorelli (1873, fig. 9) is not accurate enough for modern research. Moreover, it contains features that were not explained by him and the presence of which cannot be supported in the light of the new plan (fig. 4).¹⁴⁵ In the process of developing the plan, it became clear that the traditional room numbering system based on Fiorelli and used in *Pompei: pitture e mosaici (PPM)*¹⁴⁶ had to be amended. Several rooms lacked an identification code while individual fixtures had occasionally been given one. As a result, each room was given an individual number, based on the longest continuous numbering scheme available in *PPM*.¹⁴⁷ This new scheme is used in the current thesis (fig. 10).

¹⁴³ *Ibid.* 170-1, 2010: 29-32.

¹⁴⁴ *Ibid.* 32-3.

¹⁴⁵ Such oddities are e.g. found in Units IX.3.4, 21-22 and 25.

¹⁴⁶ *PPM* IX, II.

¹⁴⁷ Viitanen 2010: 30-1.

So far around half of the entire city block has been studied in detail. Revealing the level of AD 79 from overlying soil and debris has brought to light structures which have never been documented before although they were undoubtedly visible during the initial excavations. These discoveries testify to the lack of interest in mundane architecture by the excavators, and, more importantly, they have enriched the data particularly important for this thesis. Excavations too have revealed structures pertaining to basic utilities and hence have provided data to study change and continuity in the organisation of life-sustaining essentials. As for the rest of the city block, our knowledge has been extended by an ongoing study of certain parts of Unit IX.3.19-20, carried out by a French team.¹⁴⁸ While the questions posed by the team are related to baking industry in particular, their working methods largely resemble those of the *EPUH*. As a result, 12 out of 19 units have been, at least partially, restudied. What follows is that their rich body of evidence will be overrepresented in the current analysis. Nevertheless, the results from the well-studied parts can tentatively be used to shed light on the less-known parts of the city block when their overall similarities and differences are thoroughly discussed.

The contribution of this thesis to the work carried out by the *EPUH* is to use the data collected to answer questions that would not be specifically studied in the general framework of the project. While the aim of the project is to produce a corpus of re-documented structures and to understand the general development of the city block, separate studies regarding more specific questions are needed to improve our understanding. Moreover, the material collected for this thesis provides background for other in-depth studies, facilitates further archival research, and can be used to plan further fieldwork campaigns and identify potentially informative areas for excavations. The relationship between the project and this thesis can hence be described as symbiotic: while it would not have been possible to write this thesis without the material provided by the project, the contribution of the project to Pompeian scholarship will come into full existence when the results of its work are put into different contexts and explored from a number of new points of view.

¹⁴⁸ Pistrina 2008, 2009.

2.1.2 Other sources

In order to acquire material concerning the less-known parts of the city block, this thesis draws on five different sources of information. These include the physical structures, archival material, published descriptions and plans of the site, and a cork model of the town. The evidence, together with the results by the *EPUH*, has been catalogued (part II of the thesis). Before explaining how the process of compiling the catalogue involved various decisions which had an impact on the outcome, the different sources of data, with their contribution to the catalogue, are described.

2.1.2.1 Extant structures

Beginning with the extant remains, the on-site inspection of structures visible above ground by the author (in August 2008, May 2009 and 2010) followed, as accurately as possible, the process used in the *EPUH*. This means that the 19 units were examined and documented, room by room. Beginning from the north¹⁴⁹ wall and working clockwise, the building techniques and materials used were described, and all cuts and anomalies noted. This was followed by the description of wall decoration, floor, fixtures, ceiling and upper floor when applicable. The description was completed by information on size and current condition: the heights of the structures as they stand today, and an estimate of the state of the remains as good, mediocre or bad.¹⁵⁰

Further information on size was retrieved from the ground plan. The catalogue contains information on the sizes of individual rooms (m²), measured from corner to corner, excluding thresholds. In addition to the sizes of individual rooms, two unit sizes are given: one is the count of usable (ground floor) room spaces, another indicates the maximum plot size needed for the unit and hence includes the full thicknesses of exterior walls.¹⁵¹ Moreover, because upper floors added space, an estimate of their extent in each unit is important for the total count of available space.

¹⁴⁹ The cardinal directions used in this thesis follow the Pompeian convention. Thus the north is towards *insula* IX.4 (which in reality is towards the north-east).

¹⁵⁰ Good=information on ancient walls, floor and fixtures was available; mediocre=information was partly available; poor=information was largely lost.

¹⁵¹ Because walls are single units, the two facings of which cannot be separated, the full widths of walls are included in the given sizes and hence in the figures of all units to which they border. I am grateful to BA Maija Holappa for size information.

Many of the structures are now covered by a thick layer of restoration plaster which renders them difficult to study. Furthermore, and more importantly, several structures have disintegrated or weathered beyond recognition since their discovery. Therefore, it has been essential to study documents produced soon after the structures were revealed, as they frequently contain information on now-gone, badly disintegrated or heavily restored structures.

2.1.2.2 Archival sources

The first-hand information on the excavated units derives from the hand-written *Giornale degli scavi* (hereafter *Giornale*) which are daily records of the progress of the work on site. What is remarkable in these records is the lack of information on structures as such. Instead, most of the descriptions deal with finds, together with some notes on wall paintings and general information on the progress of excavations. Records concerning the excavation process constitute metadata which is important in understanding how revealed structures and the connections between units were interpreted. Furthermore, the amount of time spent on a given site may indicate the carefulness of excavation. Therefore, each unit entry in the catalogue contains information on the number of available daybook records.

Because it is difficult to follow the progress of excavation, thanks to changing nomenclature and vague information on the exact place of excavations, cross-checking with several sources and previous studies is needed for reliable identifications.¹⁵² However, even when dealing with well-defined locations, it is possible that the descriptions of different *loci* simultaneously under excavation might have mistakenly been mixed up. Moreover, it was common to halt excavations at a given place and return, perhaps several times and over several years, which increases the risk of confusion.¹⁵³ Therefore, uncertainties remain, in particular regarding the excavations in the western part of *insula* IX.3, and there are a few day records related to *insula* IX.3 that cannot be associated with any given unit, although most of the records can be connected at least to a unit or two.

¹⁵² The interpretations are not always in line with those previously suggested by Dwyer (1982), Eschebach *et al.* (1993), Vitale (2005), Prisciandaro and Pagano (2006), and Carrella *et al.* (2008). In the cases of contradiction, the differences of opinion are noted and an explanation to the chosen view is given.

¹⁵³ Falkener 1860: 75, footnote.

When restorations became common, reports of reconstruction and restoration works were included in the *Giornale*. In the case of units with distinct names, restoration works in them can be identified, whereas the records concerning anonymous units cannot, in general, be traced. As a result, most of the restoration works that took place in *insula* IX.3 remain unfortunately unknown. This information would facilitate interpretation because restorations were typically carried out in a way best blending in with the ancient structures, ‘*muratura in opera incerta di tipo originario*’, using materials deriving from the fallen walls, which causes great difficulties in distinguishing them from the original wall after they have weathered for decades.

The original *Giornale*, which were customarily duplicated and later copied or typed up, are located in the archives of the SANP, partly in Naples and partly in Pompeii,¹⁵⁴ with some parts found in both archives and others missing altogether.¹⁵⁵ Therefore, the published transcripts of hand-written records constitute another significant source. The accounts of the early excavations (1748-1860) were published by Fiorelli in a three-volume work *Pompeianarum Antiquitatum Historia* (PAH, 1860-4), and the daybooks of the later part of the 19th century were published as a New Series of the *Giornale degli scavi di Pompei* (1868-79).

Based on an extensive comparison between the manuscript and published versions of the *Giornale*, it seems evident that generally speaking they contain the same information with only little variation in wording. However, occasional differences occur, and they repeat a certain pattern. The published versions are condensed forms of the original text from which something has been left out. Omissions typically consist of information on size. The published *Giornale* of the 1870s in particular tend to provide an indication of size only when the object in question was marble or bronze sculpture. The omission of sizes complicates the interpretation of function, in particular when dealing with everyday artefacts without distinct decoration. For instance, vessels of large and small diameter can have very different functions, even when their shapes bear resemblance to each other. In contrast, *PAH* tends to contain very accurate repetitions of the original hand-written *Giornale*. All mentions of artefact sizes that appear in the manuscripts are also given in

¹⁵⁴ In the archive of Pompeii, the *Giornali* are available from 1862 onwards.

¹⁵⁵ For instance, some records between the 1930s and 1950s are unavailable.

PAH. In only very few cases there are differences, which include omissions of an artefact or two or differences in the given sizes. What is notable, however, is that Fiorelli only chose to publish those day accounts which contained information on discoveries, excluding the data dealing exclusively with the progress of excavations.

The daily reporting was complemented by summaries of ongoing work at the end of each week. These, as opposed to the unnamed keepers of daily records, were written by persons in charge of the excavations in Pompeii (*soprastanti* or *architetti*) reporting to a *Soprintendente degli scavi* based in Naples.¹⁵⁶ The summaries, which contain limited information on structures, make it easier to follow the process of excavations as a whole. At the time of the initial excavations of *insula* IX.3 in the 1840s, the *soprastante* was an architect called Gabrielle Cirillo (1847-9) who reported to Francesco M. Avellino (1839-50). In addition, Carlo Bonucci, who had previously worked as an architect and director in the excavations, served as a local, reporting architect in 1828-48.¹⁵⁷

2.1.2.3 Published sources

The information deriving from reports kept for administrative purposes is complemented by separate articles which were published following the excavations. Edward Falkener's article (*Report on a House at Pompeii, excavated under personal superintendence in 1847*, 1860) is a particularly detailed description of Unit IX.3.5/24, with some additional remarks on the adjacent units. The account of this British architect-antiquarian gains particular value because he was allowed to witness the excavations personally and therefore offers help in tracking down the *Giornale* records which contain ambiguous information on the locations of excavations. Moreover, Falkener's description focuses more on structures and wall paintings than finds.

For Unit IX.3.5/24 in particular, and to some extent for other parts of the city block, Guglielmo Bechi, architect and director of the excavations in 1851-2, provides a valuable source in his *Relazione degli scavi* (1852), belonging to a sixteen-volume series of

¹⁵⁶ These unpublished reports are referred in the catalogue by their date and the number that was given to them when they were stored in the archive of the *Scavi di antichità del regno*.

¹⁵⁷ For a list of people holding different positions in different periods, see Laidlaw (2007: 633-4); for their tasks, see *Giornale* (1861: 74-6).

publications by the Royal Antiquarium (*Real Museo Borbonico*, 1824-57), where finds are listed together with long descriptions of wall paintings. Equally important accounts of wall paintings are Raoul-Rochette's *Notice des découvertes les plus récentes opérées dans le royaume de Naples et dans l'État romain, de 1847 à 1851* (1852) and Breton's (1855) *Pompeia décrite et dessinée*, in particular because such information is largely absent in the *Giornale*. Later descriptions of paintings already contain frequent remarks on their worn-out condition.

Further accounts of the excavations in the city block are found in periodicals such as *Bullettino Archeologico Napoletano*, especially by Avellino and Giulio Minervini, *Archäologische Zeitung*, by German scholar Theodor Panofka, *Bullettino dell'Istituto di Correspondenza Archeologica*, by Panofka and his compatriot, philologist-philosopher Adolf Trendelenburg, and *Bollettino Archeologia Italiano*, by Cavedoni for example. Their articles contain information on structures, epigraphy, finds and wall paintings in variable depth.

A more general, although brief description of the city block as a whole was written by Fiorelli in the 1870s. His *Descrizione di Pompei* (1875) is largely an extended version of *Gli Scavi di Pompei dal 1861 al 1872* (1873). Occasional, clear differences between these two publications two years apart are potentially informative on the pace of the excavations. We may assume that when finishing his 1873 work, some units were still under excavation and he had to resort to guessing. After the units had been fully emptied, he corrected the information in his 1875 work.¹⁵⁸ A further source for the city block as a whole is a massive four-volume work *Le case ed i monumenti di Pompei disegnati e descritti* (1854-96) written by brothers Fausto and Felice Niccolini. Although it contains information on structures, finds and wall paintings, it embodies the problems of early sources. It copies published sources with their contradictions and ambiguities without providing new information as such. Moreover, because the publication draws, in the case of *insula* IX.3, on *PAH* and the works by Bechi, Falkener and Fiorelli for instance, it must have been produced after the years given in the front cover (1854 for vol. I and 1862 for vol. II).

¹⁵⁸ For instance, there are marked discrepancies in Unit IX.3.13 descriptions while Unit IX.3.15 descriptions are identical.

2.1.2.4 Plans and the MANN model

In addition to descriptions, early plans provide much valuable information on structures now gone or remaining in a heavily restored or disintegrated condition. The plans, referred to in the thesis by the name of the person in charge of their publishing, are several: Bechi (tav. a-b, published in his *Relazione*), Raoul-Rochette ('plan de la maison de M. Lucretius', published in his *Notice*), Falkener ('plan of a house at Pompeii', published in his *Report*), D'Aloe ('maison de Marcus Lucretius', published in 1861 in his *Les ruines de Pompèi jusqu'en 1861*), two by Fiorelli [*Tabula Coloniae Veneriae Corneliae Pompeis* published in 1859(?), and 'insula III' in tav. XI of his *Gli scavi*], two by Niccolini and Niccolini [tav. I in 'Casa di M. Lucrezio' (vol. I) and tav. VII in 'topografia di Pompei' (vol. III, 1890), published in their *Le case ed i monumenti*], and Overbeck and Mau (fig. 170 on p. 314 of their 1884 publication *Pompeji in seinen Gebäuden, Alterthümern und Kunstwerken*).¹⁵⁹

However, it is unlikely that any of the available early plans were produced on site as this was largely banned. Indeed, only those who enjoyed the special favour of the royal family were allowed to take measurements and draw sketches.¹⁶⁰ The unification of Italy in 1861 brought no rapid improvements. As a result, Falkener drew his plan from memory and field notes,¹⁶¹ and the Niccolinis' plans contain notable differences because they drew directly on other plans that had been produced so far.¹⁶² In a similar vein, the plan of Unit IX.3.5/24 by D'Aloe is a nearly exact copy of Raoul-Rochette's. What follows is that one can expect inaccuracies in the plans which moreover contain less new information than what could be assumed. The use of these plans is further complicated by the lack of accompanying legend identifying the features displayed. While many of the features can be rather securely identified by comparing different plans and connecting them to available descriptions, as well as studying the presently available archaeological evidence, in some cases however identifications remain open.

While the early descriptions of *insula* IX.3 contain information on wall paintings in particular, and whereas plans have been useful to study structures, a miniature model of the

¹⁵⁹ In addition to early plans, a plan by Eschbach (1:1,000) published in 1970 has been consulted.

¹⁶⁰ Laidlaw 2007: 620.

¹⁶¹ Falkener 1860: 38, footnote.

¹⁶² The topographical plan is largely a copy of Fiorelli's (1859?), and the plan of the House of Marcus Lucretius is based on those of Falkener (1860) and Fiorelli (1873) at least.

town, produced between the years 1821 and 1939, held at the *Museo Archeologico Nazionale* in Naples (hence the *MANN* model),¹⁶³ combines both types of evidence. The model (scale 1:100) has been celebrated as an accurate copy of the structures as they were found,¹⁶⁴ and it undoubtedly deserves its position as a valuable source. Nonetheless, it has its own shortcomings. Occasionally entire walls have been omitted from the model, or the proportions, such as the widths of doorways or the heights of windows, seem to be wrong.¹⁶⁵ Moreover, as with plans, the model leaves room for interpretation: it is not always clear whether gaps in walls indicate collapses or windows for instance. Nonetheless, the plan has been particularly valuable as a visual source of information on wall paintings. It has been checked against the descriptions in *PPM* and *Pitture e pavimenti di Pompei*,¹⁶⁶ and the understanding has been augmented, in addition to consulting the work of the *EPUH* team,¹⁶⁷ by those of Sogliano, Mau and Schefold.¹⁶⁸

2.2 Cataloguing the evidence

The catalogue (part II of this thesis) which results from the reading of the evidence, presents, in a highly condensed manner, the following data:

1. Unit by unit description of size, estimated extension of upper floor, terrain, facade, list of finds lacking room-specific location information, summary of structural development, process of excavation and amount of time dedicated to it, proposed identifications and the most relevant bibliography (part I of the catalogue).
2. Room by room description of size, walls, wall heights, wall treatment/decoration, floor, ceiling, fixtures, finds and current condition. When available, the evidence for upper floor is discussed separately below each room entry (part I of the catalogue).

¹⁶³ García y García 1998: 884-7, no. 10.066.

¹⁶⁴ Fridell Anter 2006: 338, Murgatroyd 2008: 3.4.

¹⁶⁵ For example, the wall between Rooms 38 and 39 in Units IX.3.3 and 4 seems to be omitted and the window between Rooms 39 and 14 (Units IX.3.3 and 5/24) is on a disproportionately high altitude.

¹⁶⁶ *PPP* III.

¹⁶⁷ Tammisto and Kuivalainen 2008.

¹⁶⁸ Sogliano 1879, Mau 1882, Schefold 1957.

3. Short descriptions of street levels, rubbish pits and raising fill layers discovered in Unit IX.3.5/24 and the northern alley during the *EPUH* 2003-6 campaigns (part II of the catalogue).

The catalogue was collated for two main purposes. Firstly, in the process of writing this thesis it served as a database to carry out searches (using keywords). All plans and tables of this thesis are based on the evidence as presented in the catalogue. Secondly, the catalogue provides the reader with an accessible, edited record of the evidence discussed in the following chapters. It not only allows the reader to verify the basis of the arguments, but it also provides both contextual and more specific information on the evidence discussed below and minimizes repetition when discussing a particular piece of evidence in several places. In the catalogue each structure and find is described, with a related bibliography, under the room (or unit) in which they were discovered. Rooms on the other hand are arranged under units, starting with rooms closest to the front doorway and proceeding towards the rear. This means that, with a few exceptions, rooms are arranged in ascending order. The second part of the catalogue serves more specifically the purposes of Chapter 4 on refuse and its disposal. Because cataloguing involves simplifying and unifying evidence, it is more suited to some data sets than others. In particular finds evidence and dating evidence may be ill-suited to given categories, as discussed below.

2.2.1 The role of artefact studies

Before entering into the discussion on classifying artefacts, the formation processes of the available data must be identified. The evidence we have is primarily based on the *Giornale*.¹⁶⁹ This information is supplemented with records available in the early publications discussed above. When there are no contradictions between the sources on the identification of items as deriving from specific rooms, finds are given in the catalogue as a single list even if they are not mentioned by all sources. If the place of discovery of a particular find is controversial, as frequently is the case with Unit IX.3.5/24, this is indicated. Possible, but not securely identified finds in units are listed at the end of each unit entry to enable discussion of the impact of their inclusion and exclusion on the identification of the unit function. In the following chapters all finds evidence is taken into account,

¹⁶⁹ If published and unpublished versions differ, the manuscript version is followed.

because, as we shall see, finds evidence in *insula* IX.3 is relatively scarce and the comparative evidence too contains discrepancies. It is nonetheless fully acknowledged that had only the unambiguous evidence been included in the analyses, the emerging picture would be different.

In addition to the gaps of information concerning the overall find locations, the position of finds within the fill was not systematically recorded. When this information is available, it allows us to estimate whether items might have been located on a floor, shelf, cupboard, or table, or hung on a wall, or whether they could represent goods fallen from an upper floor. Records of finds deriving from altitudes more than 2 m above the floor level may represent finds from upper floors. However, studies of Pompeian storage facilities suggest that shelves were often placed higher than this,¹⁷⁰ and it is therefore important to combine the information on the place of discovery with evidence for racks or cupboards to establish whether the finds derived more likely from the ground or upper floor.

In addition to biases in records, many cultural and non-cultural processes affect the build-up of floor assemblages and therefore need consideration. Firstly, the burial process itself was highly destructive. Whereas the scale and sequence of destruction depended largely on local factors such as the layouts of units and their position within the urban matrix, some general tendencies have however been noted: the northern parts of units bear more evidence for damage than the southern parts, north-south running walls are in general terms better preserved than those running east-west, the mid-wall parts were more affected than the parts next to corners.¹⁷¹ Moreover, the deposits of pyroclastic material are thickest on open spaces, and the timing and scale of destruction of ceilings and roofs depended on their degree of inclination as well as their position in relation to the flow of pyroclastic currents, which followed certain channels, dictated by local topography. This means that whereas some spaces might have been severely damaged, close-by structures might have been saved.¹⁷² What follows is that artefacts were displaced in an inconsistent manner and that all finds evidence, including both broken and complete artefacts, must be taken into account,

¹⁷⁰ Kastenmeier 2007: 48-9. Finds found less than 2 m above the ground floor level might also have fallen from upstairs but this is even more difficult to establish.

¹⁷¹ Luongo *et al.* 2003: 216-7. It is difficult to verify this pattern in the case of *insula* IX.3 due to large scale reconstruction of the upper wall parts.

¹⁷² *Ibid.* 218-9.

because we cannot know when they got broken. After the initial deposition, taphonomic processes are the most important non-cultural factors that have shaped records.

There are several cultural factors to consider. Artefacts were carried around in the household, and temporarily or permanently stored elsewhere than used. Some artefacts may have been displaced by panicking inhabitants at the time of the eruption. Those fleeing might have taken some goods with them, such as their most valuable or cherished possessions (e.g. silverware), goods that were easily transportable, light-weight and valuable (e.g. jewellery), or goods that were considered as useful during and after their escape (e.g. small amulets for good luck, lamps, cooking vessels, water-bottles and food-containers). Preference for utilitarian artefacts is supported by a modern study of refugee behaviour during the eruption of the Mount Pinatubo and subsequent lahars and flooding in 1991. A survey made among the victims suggests that people fleeing tend to take appliances and kitchen utensils with them in addition to clothes.¹⁷³ Those fleeing in 1937 from the town of Rabaul in Papua New Guinea had broadly similar preferences.¹⁷⁴ Although these people were better informed about the catastrophe, the decisions they made can be used to approximate instinctive reactions, i.e. how people assess their possessions and collect those pieces they believe to be most useful when needing to flee for an unknown period of time, provided that they have time, as those reacting to the first signs of the catastrophe in AD 79 would have had.¹⁷⁵

After the eruption artefacts might have been moved and removed, either by outsiders or home owners, who tunnelled into the remains through roofs and walls, to collect possessions or acquire valuable materials.¹⁷⁶ It is very difficult, however, to trace these

¹⁷³ According to the study by Cola (1996) and including 143 households ($\frac{1}{6}$ of the households in the study area), the most common possession of refugees to take with them was clothes (90 households), followed by appliances (29), and kitchen utensils (24). Reportedly 16 households had not taken anything, and 11 had taken all household items. Those who reacted soon after hearing the warnings took more possessions with them.

¹⁷⁴ Johnson and Threfall 1985: 60-1.

¹⁷⁵ The known Pompeian victims were furnished with small and few artefacts, mainly jewellery or some utilitarian goods (Berry 1997a: 54-7, D'Ambrosio *et al.* 2004). It can be proposed that while those who fled successfully could have taken more valuables with them, those unsuccessful left too late and had no time to collect their possessions. If taking a cart at the beginning of the eruption, before the streets became obstructed by a nearly 3 m thick layer of pumice that fell during the 18 hour pumice-fall (Sigurdsson *et al.* 1982: 47-8), one probably would have been able to take large possessions, such as chests like the one found at the entrance to Unit I.8.14 (Berry 1997a: 137).

¹⁷⁶ This might explain the lack of marble veneer and statuettes in public places (Wallat 1995: 89). An inscription in the House of Numidius Popidius Priscus (VII.2.20), 'house tunnelled through' (*CIL* IV 2311), has been taken as an actual proof of tunnelling into the remains (de Vos and de Vos 1982: 192). Pompeian premises have moreover yielded late antique artefacts (Cerulli Irelli 1975: 295).

intrusions and disturbed fills in rooms. The *Giornale* records concerning *insula* IX.3 do not mention possible anomalies in the sequence of *lapilli* build-up, nor contain information on possible holes in walls. Only Falkener mentions holes pierced through walls in the courtyard area of Unit IX.3.5/24,¹⁷⁷ and when discussing a missing *impluvium* in Room 2, Bechi proposes that it was stripped out after the eruption.¹⁷⁸ In order to approximate the situation in the city block, we can draw on Berry's study of three city blocks, excavated during the 20th century. She was able to map disturbances through *Giornale* accounts, which made her conclude that post-eruption disturbance was not only widespread but also found in all types of units.¹⁷⁹ Nonetheless, even tunnelled units contained finds, including valuable and reusable materials, such as gold, silver, marble, bronze and glass.¹⁸⁰

The evidence for finds in *insula* IX.3 is rather limited, although very few units completely lacked reported finds.¹⁸¹ According to the available accounts, the House of Marcus Lucretius (IX.3.5/24) contained the largest number of finds, some 6-700 items.¹⁸² While this may seem a large number, some find categories are underrepresented. For instance, the figure includes no more than 40 ceramic vessels or vessel parts, excluding *amphorae*. In contrast, the House of Julius Polybius (IX.13.1-3), occupying a plot some 1.5 times larger than the House of Marcus Lucretius contained 166 ceramic vessels (837 including sherds), excluding *amphorae*. Because its contents were documented as accurately as possible when excavated in the course of the 20th century, the house provides a unique point of reference.¹⁸³ The significant difference in numbers between these two houses gives support to a suggestion that some vessels at least may have been left undocumented by the initial excavators of *insula* IX.3.

In addition to ceramics, glass too may have been left unreported.¹⁸⁴ The House of Marcus Lucretius reportedly contained no more than 40 glass vessels. The commonness of glass in the first century AD has made Morel argue that glass was used in great quantities, as a

¹⁷⁷ Falkener 1860: 43.

¹⁷⁸ Bechi 1852: 3.

¹⁷⁹ Berry 1997a: 56-63.

¹⁸⁰ *Ibid.* 64-5.

¹⁸¹ Units IX.3.3, 4, 9 and 25 in particular contained very few, if any, artefacts.

¹⁸² Artefacts or artefact parts.

¹⁸³ Castiglione Morelli 1996: 105-8, fig. 5. Altogether 2,910 inventory numbers were given to the finds, both complete and fragments.

¹⁸⁴ Perhaps at least some fragments. Being fragile, glass was most likely to break in AD 79 events and subsequent phases, including the excavations. However, Berry (1997a: 45) has argued, on the basis of her case study, that glass was rather accurately and consistently reported.

cheap alternative to vessels in other materials.¹⁸⁵ Bronze on the other hand seems to be overrepresented in the lists of finds. The House of Marcus Lucretius yielded up to 30 vessels in bronze¹⁸⁶ which presumably were normally relatively less common than those in pottery and glass.

In conclusion, it seems that the thoroughness of initial recording varied, largely according to the long-held attitude towards the excavations as a search for ‘objects of art’.¹⁸⁷ This is further reflected in the fact that elaborately decorated spaces were described in greater detail, and were perhaps more carefully excavated, than small plainly decorated premises that from the outset were deemed uninteresting. However, the elaborately decorated rooms did not contain the largest numbers of reported finds. Neither does the length of a finds list correspond with the size of a room. It is difficult to evaluate how significant these observations are and how much they reflect a real situation. Therefore, we must be careful when judging on the basis of recorded numbers and presence-absence of finds. The lack of interest in some finds is particularly fatal in the case of rooms which reportedly contained no finds. In reality however they may have contained some of the overlooked material types.

Notwithstanding these shortcomings, it seems that in general terms the documentation of *insula* IX.3 presents quite a broad-ranging record. In spite of overlooking ceramics in general, inscribed *amphorae* attracted more attention. Hinges, locks and metal parts of furniture were regularly listed and artefacts made of metal or stone were reported in detail. Berry has argued that lists of finds which contain abundant mentions of nails, studs and small pieces of metal probably indicate that a large portion of all finds was listed.¹⁸⁸ This would make the available evidence concerning *insula* IX.3 relatively thorough. The available records from the city block moreover contain occasional mentions of bones and substances like bread and sulphur, perhaps indicating interest in ‘curiosities’.¹⁸⁹ Not only

¹⁸⁵ Morel 1979: 255-62; also De Carolis 2004a. The House of Julius Polybius contained only 32 glass vessels (131 including sherds) (Castiglione Morelli 1996: 108, fig. 5).

¹⁸⁶ Including loose handles. The House of Julius Polybius contained no complete bronze vessels but 38 sherds (*ibid.*). The Pompeian storages contain 1,678 bronze vessels (Tassinari 1996).

¹⁸⁷ Castiglione Morelli 1996: 106, Foss 2007: 28.

¹⁸⁸ Berry 1997a: 29. In many other Roman sites too fasteners and fittings are among the most common finds (e.g. Spradley 2001: 106 on villas in Britain).

¹⁸⁹ In terms of *insula* IX.3, the records contain five mentions of charred wood and a mention of wicker basket, three mentions of charred bread, two mentions of charred barley, and a mention of charred olives and fruit kernels. In comparison, Berry’s (1997a: 54) study of three city blocks contained 11 records of organic material excluding foods, deriving mainly from a single unit (I.8.14). It therefore seems that such finds were often

complete objects but also broken ones were recorded, at least to some extent. Furthermore, corroded iron artefacts were frequently reported as lumps or pieces of iron even when their function had to be left unspecified, and counts of unidentifiable bronze fragments were given.

In order to make the best use of the finds data and present it in a meaningful way in the catalogue, finds were divided into categories. This unavoidably involved simplifications. Whereas artefacts could simultaneously or sequentially have served several purposes, classification restricts them to a single category.¹⁹⁰ Notwithstanding these limitations, artefacts were, on the basis of their form, divided into loose functional categories. While assuming a function based on form may likewise be simplistic,¹⁹¹ it is nevertheless more informative than the *Giornale* classification based on fabric which is fully artificial and does not bear much relevance to function.¹⁹² Finds were assigned to categories on the basis of their given names as they appear in the original find lists and which already reflect assumptions about their use.¹⁹³ The categories themselves were formed as a result of getting acquainted with the find lists and seeing, through trialling, which categories might be most suited. Because the context of each individual find was taken into account, the classification criteria vary from unit to unit and room to room. Hence, whereas single glass bottles or carafes for example were labelled as household utensils, the fact that Unit IX.3.6 probably contained over 30 of them suggests that they relate to its commercial function. The decisions were influenced by four studies of Roman material culture, namely Crummy (1983), Berry (1997a), Allison (2004, 2006), and Berg (2010). As a result, the finds were divided into a number of categories, the most common of which are related to household maintenance, locking, lighting, toilet, personal adornment, furniture and fixtures.¹⁹⁴ In many

ignored and reported in an uneven fashion. Only more recently has interest in flora sprang, mainly thanks to Jashemski (e.g. 1979, 1993) whose work has been followed by e.g. Robinson (2002) and Ciarallo (2004). Bone assemblages have now been studied by e.g. Richardson *et al.* (1997) and MacKinnon (2002, 2007).

¹⁹⁰ For reuse and its visibility in the archaeological record, see Schiffer (1987: 30-2), Allison (2006: 378-9), Peña (2007: 9-11). For further discussion of the ambiguity in defining the functions of artefacts, see Spradley (2001: 105, 108-9) who rightly notes that the ambiguity should be considered as a possibility rather than a drawback. For the overall variability of meaning of things, see Miller (1994, 1998), and for the social lives of artefacts, see Appadurai (1986), Kopytoff (1986), Gosden and Marshall (1999). Despite polyvalence, Eco (1980: 22) has emphasised that the normative function of an object is needed in order to make it widely usable and desirable.

¹⁹¹ Miller 1987: 116.

¹⁹² Tassinari 1996: 116-8. See Allison (1999) for further discussion of assigning labels and proposing functions in the context of Pompeian studies.

¹⁹³ Allison (1999, 2006: 16-27) for the nomenclature.

¹⁹⁴ While most of the categories are self-explanatory, a few clarifications should be made. Toilet refers to the care of the body, personal items are considered to be artefacts that were possibly used to show individual

cases however assigning a category was far from straightforward. Therefore, artefacts were placed under category ‘other’¹⁹⁵ or alternatives (e.g. fixture/furniture) were given to avoid over-interpreting the possible functions of artefacts.¹⁹⁶

The potential ambivalence of individual finds can be balanced by studying assemblages rather than single objects, although Schiffer in particular has criticized the fact that ‘the artifact groupings produced by spatial analysis of occupation-floor data are traditionally interpreted as directly reflecting the composition of tool kits or the residues of specific activities’.¹⁹⁷ According to him, floor assemblages should not be treated as room inventories. What follows is that we should not believe in the existence of the so-called ‘Pompeii Premise’ in Pompeii, thanks to the record-skewing factors discussed above.¹⁹⁸ Notwithstanding these biases, room contents have been studied in order to approximate functions that could have taken place there. As a result of her painstaking study of reported room contexts, Allison concluded that some of the rooms did not have typical contents, i.e. no clear functions can be assigned to them.¹⁹⁹ According to her, the non-conformity shows disrupted and changed room use.²⁰⁰ While this remains a possibility, her conclusions cannot be confirmed as long as we have no idea of the conditions which predated the alleged change and disruption, and were supposedly normal. Therefore, we should perhaps accept that spaces were used in various ways without an element of ‘crisis’ or turmoil.

Even when artefact assemblages alone cannot reveal how spaces were used, they can contain generic information on space use and behaviour.²⁰¹ Therefore, following Berry, we

status, and representative artefacts are seen as goods that could bring prestige to and show the status of the household. No attempt was made to separate artefacts of ritual importance from those of display functions.

¹⁹⁵ This category contains e.g. bells which could have adorned horse harnesses and carts, or they were hung on front doors (Berry 1997a: 110, footnote 353) or suspended above *catilli* to ring whenever a hopper became empty (e.g. Bakker 1999: 6, on the basis of French 18th century parallels). Furthermore, Beard (2008: 228) has discussed the possible uses of bells in bars when suspended from lamps.

¹⁹⁶ While translating terms from Italian, I have resorted to advice from Dr. Penelope Allison, Dr. James Andrews and Ferdinando De Simone, to whom I am indebted. However, in the course of this work, it was necessary to expand some meanings. For instance, when *scibba*, meaning ‘fitting’ in 19th-century Neapolitanian, was given additional attributes, it seems to have translated into a few different artefacts: *scibba a meccione* is a masking plate and *scibba per lo stante (di porta)* is a socket and valve pivot. Furthermore, while *billico* is generally translated as scales or balance, in the present material however it was frequently *billico di porta* which suggests a function related to closing and must therefore signify a (strap) hinge of a door.

¹⁹⁷ Schiffer 1985: 20.

¹⁹⁸ Schiffer (1985) for ‘Pompeii Premise’; Allison (1992a) for its invalidity in the study of Pompeii.

¹⁹⁹ Allison 2004: 121-2.

²⁰⁰ *Ibid.* 179.

²⁰¹ Berry 1997a: 4.

should focus on studying the available evidence in a single unit, rather than be too focused on the location of finds room by room.²⁰² While artefacts might have been moved with ease between rooms, they were less easily moved between units. Altogether, although an assemblage does not necessarily lend itself to interpretation, and interpretations can differ from scholar to scholar,²⁰³ assemblages can at least allow us to suggest a range of activities that might have taken place.²⁰⁴ Thanks to the work by Allison and Berry, comparative contextual studies of finds have become available and are widely used in the following chapters.

2.2.2 Dating phases and change

Archaeological records are often approached by trying to identify certain known historical events or phases, resembling our ambitions to form definite interpretations of functions and meanings. In the context of Pompeian studies, Fiorelli was the first to propose a chronology based on his assumption of a sequence of changing powers in control of the town, arguing that each of these ruling groups used distinctively different building materials and styles.²⁰⁵ His views soon became dogma, with some modifications, and long-lived.²⁰⁶ In a similar vein, the division of paintings into Four Pompeian Styles, as outlined by Mau in the late 19th century, has been much used as a dating method.²⁰⁷ What was shared by these two influential concepts is a belief in neat sequences: one style, material or form is replaced by another. Today it is well-shown that this was not the case. Instead, older styles, materials and forms remained in use after the arrival of new inventions,²⁰⁸ and therefore dates based on one dating method alone remain unreliable. Instead, the dating methods can be useful when used together.

Approaches based on sequences are understandable because certain events, such as the Sullan siege of Pompeii in 89 BC during which the town walls were damaged and buildings

²⁰² Berry 1997a.

²⁰³ Compare Laurence (2007: 149) with Allison (2004: 152-3).

²⁰⁴ Robinson 1999: 138.

²⁰⁵ Fiorelli 1873: ix-xi, 78-86.

²⁰⁶ E.g. Mau 1899: 35-44, Carrington 1933: 126-37, Richardson 1988: 376-81, Nappo 1998: 30-1, Berry 2007b: 68-9.

²⁰⁷ Mau 1882.

²⁰⁸ E.g. Nissen (1877: 35-6) on materials, Laidlaw (1985: 42-6) on the First Style.

destroyed,²⁰⁹ tend to be highly visible in the archaeological record. However, the precise situation at any given time is very difficult, if not impossible, to reconstruct due to the lack of evidence that can be dated accurately. Instead, evidence for different periods of time is exposed for us to understand at once, and we need careful studies to distinguish each phase. Even when we can reach a rather good, general picture of the developments concerning certain structures, it remains a challenge to synchronize differently phased evidence.²¹⁰ While the phasing of *insula* IX.3 is one of the main goals of the *EPUH* team, and the general developments of some individual units are today understood,²¹¹ the overall picture is yet to be achieved. The catalogue of this thesis involves a summary of the current understanding of the author regarding the development of each individual unit. This outline is based on published results of the *EPUH*, my own experience, and discussions with project members, foremost Dr. Eeva-Maria Viitanen. Drawing on these outlines, the tentative development of the city block as a whole can be summarized as follows:

1. During the 6th and 5th centuries BC a single unit, if not several, with *pappamonte* stone foundations and *pisé* walls was built on the land currently taken by *insula* IX.3. The archaeological remains of this phase, a wall of some 1.5 m long and two stone block courses high, are located roughly in the middle of the city block (Room 18 in Unit IX.3.5/24). The size and shape of a possible dwelling in this location cannot be reconstructed, but it is interesting to note that the wall alignment follows closely that of later walls.²¹²
2. The early structures fell out of use and the lack of evidence suggests a gap in occupation from the 5th to the 3rd century BC. As elsewhere in the town, finds datable to this period are few in the city block. Only a rubbish pit excavated in Room 12 of Unit IX.3.5/24 contained a small number of finds dating to the 5th-4th centuries BC.²¹³
3. Based on the observations of wall alignments and locations of framework and ashlar walls, together with homogeneous travertine and trachyte rubble-work walls, the

²⁰⁹ Jones and Robinson 2007: 395-6.

²¹⁰ See Jones and Robinson (2004, 2007) for a recent attempt to describe the sequential development of a city block, Newsome (2009a) for a unit and adjacent streets, and Poehler (2009) for Pompeii's street network.

²¹¹ E.g. Castrén *et al.* (2008: 333-7) on Unit IX.3.5/24, Viitanen (2009: 19-21) on IX.3.1-2.

²¹² Viitanen and Andrews 2008: 54-5.

²¹³ *Ibid.* 55-6.

earliest extant walls derive from a situation in which the city block had been divided into plots and largely built over.²¹⁴ The plots were occupied by rather small units, so-called row houses, which typically had a central space (courtyard) through which other rooms were accessed. They were built (and rebuilt) over a long period of time, from the 3rd century BC onwards.²¹⁵

In the northern part of the city block these types of units occupied the area of current Units IX.3.24 and 25, and the back part of Unit IX.3.1-2. While much of the original ‘front range’ of Unit IX.3.24 is still preserved today, showing its initial width, the division wall between Units IX.3.1-2 and 25 is mainly later and Unit IX.3.25 may have originally been somewhat wider. The original location of the rear walls of Units IX.3.24 and 25 remains unknown, and the original layout of Unit IX.3.1-2 can only be guessed at as it was largely altered in the following phase. Seemingly, however, it had a doorway opening onto the northern alley (fig. 7), as did the adjacent units.

In the southern part of the city block the shape and size of Unit IX.3.13 corresponds to those on the northern side. Even though many of the walls have been rebuilt, a remaining ashlar wall at the back of the unit points towards an early date. Further ashlar and framework walls are found both in the southern and eastern parts of the city block. Because they mainly consist of parts of facades, beyond showing that the Via degli Augustali and Vicolo di Tesmo were flanked by buildings, there is not enough information to reconstruct the floor plan of these units. The internal walls of the units behind these facades were heavily rebuilt in particular in the SW corner of the city block.

4. Perhaps already in the 2nd and 1st centuries BC, and in particular during the 1st century AD, these small units were split and combined. The changes meant greater differences in unit sizes.²¹⁶ To break down this broad time period, we have, for the first time, wall painting evidence. For instance, Unit IX.3.1-2 contains First Style paintings in Room 49-51 and Second Style mosaics in several rooms closer to its

²¹⁴ Compare Nappo (1997: 99) discussing *insulae* of Region I and II.

²¹⁵ Viitanen and Andrews 2008: 56-9.

²¹⁶ *Ibid.* 59-61.

front door. This suggests a housing unit in the 2nd-1st century BC that had annexed or developed from the unit of earlier phase.

The size and shape of Unit IX.3.5/24 at this point can only be guessed at, but excavations in the garden (Room 18) have unearthed fragments of the First Style paintings. The contemporaneity of the fragments with an *impluvium*-cistern pair found in the current *atrium* (Room 2) cannot be established as the fills of the cistern and *impluvium* were void of finds. Furthermore, the garden area may not have belonged to Unit IX.3.5 at this point. Nonetheless, along the Via Stabiana there seems to have been an *atrium*-house, the axis of which was slightly different from the current one. The discovery of another in-filled cistern in Room 14 suggests that there might have been a narrow unit, perhaps furnished with an impluviate *atrium*, at the place of current Rooms 37-39 (Units IX.3.3 and 4), 11-14 (Unit IX.3.5/24) and 54-55 (Unit IX.3.1-2), that was later divided up.²¹⁷ The division can only be dated to a very broad period of time, from the 1st century BC to the 1st century AD. It may have resulted in the creation of Unit IX.3.3 as we know it today. At least there are no blocked doorways in the wall between Rooms 14 and 39, made in rubble-work but possibly including reused material from a framework wall. When it comes to the unification of Units IX.3.5 and 24, this may have taken place in the very late 1st century BC or early 1st century AD. A plaster floor that postdates the unification is built on top of 1st century BC fill layers.²¹⁸

Second Style paintings in the front part (Rooms 81-96) of Unit IX.3.15 suggest that the unit has existed as such from the late Republican era onwards. The irregular plan moreover suggests that it resulted from the division of two to three former units along the Via Stabiana, with further rooms acquired from the east. A later addition to the unit may consist of the northern part of the garden (Rooms 88-90) at the back. It may have been annexed from the Unit IX.3.23 to the north.²¹⁹ This would explain the difference in the construction style of the gutter between the south part and the rest of the garden. As a result of this addition, a doorway between the *atrium* (Room 82) and Room 94 (*oecus*) was blocked and the garden became the main circulation

²¹⁷ *Ibid.* 58.

²¹⁸ See the catalogue and section 4.2.3.3 below.

²¹⁹ Compare Dickmann (1999: 191-2) according to whom all Rooms 85-96 originally belonged to Unit IX.3.23.

space in the house. Unit IX.3.23 also contains Second Style paintings and probably existed as an *atrium*-house in the 1st century BC. The fact that Room 133 of Unit IX.3.23 and the garden area of Unit IX.3.15 contain Third Style paintings may be taken as a proof of their previous connection, but the present division wall between the two units does not contain any indication of blocked doorways.²²⁰ Instead, the wall contains remains of several plaster layers on both sides of the units, some with Third Style paintings. This makes it unlikely that the wall had largely been rebuilt and consequently erased all traces of a former connection after the execution of Third Style paintings. Had there been an extension to the north, it must predate decorations of the Third Style and have involved considerable rebuilding.

The separation of Units IX.3.14 and 16 from Unit IX.3.15 is difficult to date. There are a number of doorways between the units (fig. 7) that attest to previous connections. Brick-block jambs between Rooms 78 and 83 suggest a late connection, as does the choice of materials used in the rubble-work wall between Rooms 80 and 97, but a doorway between Rooms 82 and 98 was blocked much earlier as it was sealed by Second Style plaster. Consequently, because there are no Second Style wall paintings in commercial Units IX.3.14 and 16, their use may have been separated from that of Unit IX.3.15 rather early on, but the units were connected through internal doorways until a much later era.

5. During the 1st century AD several units underwent large-scale restoration and rebuilding, probably largely as a consequence of AD 62 earthquake damage but also because of later earthquakes and independent redevelopment schemes. While some upper floors might have been built earlier, possibly only during the 1st century AD did a considerable proportion of the city block come to be covered by upper floors. Some restoration and remodelling works were incomplete in AD 79, and the NE corner of the city block was in ruins.

Most extensive was the rebuilding of Unit IX.3.5/24. Its western section and the surroundings of the garden (Room 18) were largely rebuilt and redecorated not only once but partly several times. This repeated rebuilding can be best explained by

²²⁰ Contra *ibid.* Taf. 4h.

earthquake damage.²²¹ Rebuilding was modest in the northern part of the unit (IX.3.24) but it was probably redecorated, by which time doorways that had connected Units IX.3.24 and 25, as well as Units IX.3.24 and 23, had been blocked (fig. 7). At this point only Room 35/40 (Unit IX.3.6) was separated from the direct access of Unit IX.3.5/24, and the same may apply to Room 36 (Unit IX.3.4). An upper floor now covered large parts of Unit IX.3.5/24 and partly extended over neighbouring units.

Third Style wall paintings at the back of Unit IX.3.10-12 probably predate the construction of the bakery in the south part of the unit. The extensive use of brick, block, and brick-block throughout the unit suggests large-scale alterations, possibly after AD 62, during which the unit may have been converted into baking facilities. There are no blocked doorways between Unit IX.3.10-12 and Units IX.3.7-9 (fig. 7), which suggests their independence prior to the last modifications. However, the partition walls between the units are all in rubble-work with a mixture of materials which cannot be dated particularly early. This prevents us from seeing the independence of Units IX.3.7-9 from Unit IX.3.10-12 as a long-lasting phenomenon. Despite this, there are detectable changes: a brick pier that remains in the lower part of the wall between Units IX.3.8 and 9 suggests a blocked doorway and a window between Units IX.3.7 and 10-12 seem to be a secondary addition. The functions of Units IX.3.7, 8 and 9 prior to AD 62 are unknown as their shop facades were built only after the earthquake.

Most of the shop facades along the Via degli Augustali were likewise rebuilt, either in full (IX.3.13) or in parts (IX.3.14, 16, 17 and 18), probably after AD 62. Hence it is difficult to be sure of their commercial character before AD 62. This can however be supposed, because, as argued by Gassner, only a small percentage (3 %) of all shops studied by her were clearly established after AD 62.²²² In addition to the blocking of some doorways already discussed, post-AD 62 alterations in these units include the construction of upper floors (Unit IX.3.16), or alterations in the existing upper floors (Units IX.3.13, 18 and possibly 17).

²²¹ Viitanen and Andrews 2008: 61.

²²² Gassner 1986: 25.

The development of Unit IX.3.19-20 into a bakery resembles that of IX.3.10-12. The unit was converted into a bakery after AD 62.²²³ This process moreover included the separation of Units IX.3.17 and 18 from direct access to the bakery, and repairs of earthquake damage, while the unit may have been newly decorated with paintings of the Fourth Style. Late changes in Unit IX.3.1-2 likewise included commercialization, but there is no particular evidence to suggest that this took place only after AD 62. The construction of upper floors in the unit began at the time when the ground floor was newly redecorated in the Third Style, thus in the late 1st century BC or early 1st century AD, and might have been completed in the commercialization process.

Because of the nature of the questions posed in this thesis, emphasis is laid on tracing processes which involve change. While dating, which is based on the combined use of ceramics, building materials, wall painting Styles and comparative studies, remains loose, it is extremely important to stress that alterations also took place during these broad time periods. Minor changes such as the blocking or opening of a doorway can make a big difference to how a space was used and where the property limits were located, which is particularly important in this thesis. The blockages of windows and doorways are typically made in rubble-work using a variety of recycled materials, including ashlar. When the covering plaster has fallen or weathered so that possible painting styles cannot be identified, and when the technique of a blockage does not fall into any of the distinctive categories of building materials or types, it is very difficult to date. In a similar vein, the opening of new doorways can be carried out discreetly without the need for considerable rebuilding, or the rebuilding is carried out by reusing old materials that render changes difficult to identify. Only rarely can we define the insertion of doorways as a secondary development e.g. on the basis of cuts in wall plaster or differences between plaster covering the walls and the jambs. Moreover, as many of the walls were rebuilt over time, it is impossible to know whether they contained doorways prior to the last rebuilding and hence whether the doorways were rebuilt too.

Indeed, comprehensive rebuilding projects meant that evidence from previous changes was erased from the archaeological record. Nonetheless, generic change can be inferred from indirect evidence. For example, the reuse of old materials, and the presence of

²²³ *Pistrina* 2009: 10.

stratigraphically and stylistically ‘new’ constructions, perhaps build on old foundations, indicate change. The use of old foundations on the other hand indicates permanence in layouts. Both phenomena are attested in *insula* IX.3.²²⁴ All in all, the available evidence suggests that there were different developments in different parts of the city block. The northern part contains evidence for permanence, together with structural change and limited rebuilding. This is attested by stylistically old walls and a number of blocked doorways and window openings. The units in the eastern parts of the city block contain fewer old walls but there too blocked windows and doorways suggest structural change. The evidence for rebuilding is particularly strong in the south-western part of the city block where blocked doorways and windows are much less common and walls are all stylistically new.²²⁵ The observations gain true importance when we begin to investigate processes, both inside the city block and in the town at large, which may have caused these outcomes.

2.3 Conclusion

While *EPUH*-based documentation forms the core of this thesis, more information was collected to enable the study of the city block as a whole. Indeed, this thesis has involved the cataloguing of evidence, and inspection of the physical remains, of 19 units with some 150 rooms. Going through archival sources has made it possible to understand how the initial information on *insula* IX.3 took shape, and an extensive comparison made between published sources has developed an understanding of their often repetitive nature. In addition to acknowledging the impact of cultural factors on the available record, the main concern related to the representativeness of the evidence is the impact of the cataclysm of AD 79, the mindsets of the excavators in recording finds and defining find spots, and the contradictions between different documents. By using as broad-ranging evidence as possible, biases present in one type of evidence are likely to be less dominant. Combining the evidence for structures and finds, while bearing in mind what we so far know of the urban development of the city block, allows us to focus on the broad-ranging questions pertaining to urban infrastructure set out in Chapter 1.

²²⁴ See the catalogue.

²²⁵ See also Castrén *et al.* 2005: 368. For similar observations elsewhere, see e.g. Jones and Robinson (2007) discussing *insula* VI.1.

When we look at the evidence as a whole, changes are evident. Because there is room for improving the understanding of the development of the city block, and *EPUH* is working towards it, the emphasis of this thesis is on change and continuity on a broad scale as it shows tendencies that prevail beyond individual choice. Because all changes nonetheless take place in time, a broad and general outline of the development of the city block has been provided above and is further discussed in the catalogue for the purpose of contextualising the evidence discussed below.

CHAPTER 3: The provision of basic utilities in *insula* IX.3

When spatial information regarding structures and finds is studied together with plans of units, it is possible to recognize tendencies and patterns in the arrangements made for basic utilities.²²⁶ Although ancient authors may discuss some general guidelines for the provision of basic necessities,²²⁷ the patterns have no reference as such in ancient texts, and hence archaeology plays a crucial part in the study of infrastructure and organisation of everyday life in the Roman world.²²⁸ Therefore, the current chapter is dedicated to the study of archaeological evidence for utilities in *insula* IX.3 including light, air, heat and water. It will be examined, how they were made available in each unit. Because we are dealing with the very life-sustaining essentials, it is safe to argue that the ways in which these utilities were secured were primarily connected to physical constraints and particular needs. Nonetheless, we may simultaneously deal with desires and social obligations. Consequently, an examination of the available evidence in the light of ancient sources and known tendencies in Pompeii and in the Roman world at large may allow us to find at least a partial explanation for given arrangements and understand the evidence in its social context.

A simple method of noting the presence or absence of evidence, and its relative abundance, while bearing in mind the biases of the data, is effective enough to establish differences and similarities between units. It is assumed that patterns are products of meaningful behaviour, because, as discussed in Chapter 1, some common logic and degree of order is presumed in human conduct in the organisation and use of space.²²⁹ In practice, patterns result from a process in which decisions are made, with a particular solution being chosen from the available alternatives. Therefore, as in consumption studies, we first need to define what the available alternatives to secure the four basic utilities were. If a certain solution is widely favoured, it becomes a pattern or norm. However, the preferred solutions may not have been put into practice in a uniform way but there might be variations to the pattern. Alternatively, choices were highly varied and there are no patterns or they are very weak. Furthermore, it is possible that some patterns are connected in one way or another. For instance, a certain choice in the provision of light may constrain choices involved in the arrangement of air and

²²⁶ Foss 1994, Jansen 1997, Allison 2004, Kastenmeier 2007.

²²⁷ Vitruvius 1.2.7, Pliny *Ep.* 5.6.

²²⁸ Allison 1997a: 322-3, Kastenmeier 2007: 13-4 for further discussion.

²²⁹ Also e.g. Columella (12.2.6, 12.3.2-4) on bailiff's wife overseeing that various items in a villa are stored 'correctly'.

heat. By combining different types of evidence and using different levels of grouping, the prevalence of noted patterns can be tested.²³⁰ Comparison to previous studies sheds further light on the patterns. They help us to evaluate whether patterns are strong or weak, real or accidental. Having established the range of alternatives and meaningful patterns, a discussion of the underlying reasons can yield important information on parameters such as building histories and ownership factors, the needs hierarchies of owners and inhabitants, their socio-economic position and ties.

3.1 The legal framework

3.1.1 Law and the provision of basic utilities

While the reciprocal relationship between ancient law and the society in which it was created has received attention,²³¹ the physical archaeological remains have so far not been fully integrated into the discussion. The works which do contain references both to law and archaeological evidence either have a primary emphasis on law and use an occasional example from archaeological remains to illustrate its concrete applications,²³² or focus primarily on archaeological evidence and every now and then use law as a possible way to explain some observed phenomena.²³³ Because of the heavy emphasis on property in Roman law, a more holistic approach has a great potential for linking written and archaeological evidence. However, these two types of evidence are not direct reflections of each other, or the society that created them.²³⁴ The prominence of certain phenomena in law, say succession or divorce, does not directly imply their real-life prominence but e.g. their complexity in legal terms.²³⁵ Although laws are formulated to have a certain impact on society, the impact may not be the one expected.²³⁶ Therefore, we must be very careful with our links. Nevertheless, it would be surprising not to have *any* correspondence between law and archaeological remains, even when we accept that some laws may have been

²³⁰ Wilk (1990: 41) on disobedience and exceptions to normative rules.

²³¹ Crook 1967, Johnston 1999, Aubert and Sirks 2002, Cairns and du Plessis 2007.

²³² Rainer 1987, 1988; Saliou 1994.

²³³ Hermansen 1981: 91-121, Boersma 1985: 234-7, Seiler 1992: 73, Ling 1997: 247-52, De Kind 1998: 79-81, Pirson 1999: 67-8, Allison and Sear 2002: 58.

²³⁴ Johnston (1999: 24-8), Aubert (2002), Watson (2007) on law; Wallace-Hadrill (1994: 60) on archaeological remains.

²³⁵ Johnston 1999: 27, Aubert 2002: 188.

²³⁶ E.g. Wyetzner 2002.

overlooked and the interpretation of the physical manifestation of law is always subject to interpretation.²³⁷

While agreeing that law can have some physical manifestations in archaeological remains, it remains to be discussed whether Pompeians would have followed laws and if so, which laws can we use in the study of the extant remains. There are good reasons to believe that law had significance in Pompeii. For example, the archive of Caecilius Iucundus discovered in the town itself, and the so-called Murecine tablets found at the outskirts, show that common transactions followed known formulae of legally binding procedures, and some cases involved the presence of a magistrate.²³⁸ When it comes to actual laws known to us, none of them derives directly from Pompeii. Therefore, we must use surviving laws in the Roman world at large, which necessitates discussion of their transferability over time and place.

The laws of importance here are those concerning municipalities and property. Of these, city laws refer to Rome or other Romanized cities.²³⁹ Because Pompeii was a Roman colony, it is justifiable to assume that the city law of Rome was used as the model for Pompeian municipal law and that they were in general terms comparable. In a similar vein, the extant municipal charters mimicked that in use in Rome,²⁴⁰ and hence can be used in Pompeian studies. Indeed, it has been observed that several remaining municipal charters contain identical formulae, which suggests that they reflect some general, widely applicable laws or customs.²⁴¹

Concerning law on property, the best source available is the *Digest*, issued in AD 533 as a part of the *Corpus Iuris Civilis* (the Body of Civil Law).²⁴² While being rich in information on questions pertaining to individual property, the compilation contains several caveats which render it difficult to use. In regard to the current thesis, there are three main

²³⁷ Compare Peachin 2002: 3, 8-9. The concepts of law and their applicability to this thesis were discussed with Dr. Georgy Kantor and Dr. Kaius Tuori to whom I am thankful.

²³⁸ Metzger 2007, Wolf 2010: 21, 30.

²³⁹ E.g. the *Tabula Heracleensis* (44 BC), the Edict of Augustus on the Aqueduct at Venafrum (18/11 BC), the Decree of the Senate on Rome's water supply (11 BC), (Johnson *et al.* 1961: 93-104, 114-5, 117-9); the Astynomic Law of Pergamum (2nd century BC/AD), (Klaffenbach 1954); also Frontinus' *De Aquaeductu Urbis Romae* written about AD 100 but referring extensively to the Augustan water legislation (Rodgers 2004).

²⁴⁰ Johnston 1999: 10-1.

²⁴¹ Zaccaria Ruggiu 1995: 187-9, 201.

²⁴² Mommsen *et al.* 1985.

problems. Firstly, it is difficult to evaluate whether jurists were referring to the cases of the real world or rather discussing the law on a theoretical level.²⁴³ Despite the uncertainty, however, we can argue that because laws are reactive by nature, even a discussion on a theoretical level would probably have been initiated by some real-life situations and the cases hence reflect reality, directly or indirectly.²⁴⁴ Secondly, even if jurists found their inspiration from real life, they did not always agree on matters and they felt no need to explain themselves.²⁴⁵ When the writings were taken from their original context and organised under the Digest headings, much information was lost.²⁴⁶ As a result, passages are applicable with difficulty to this thesis and any other studies. Thirdly, because the Digest contains a collection of texts from various points of time, locations and contexts which had both survived up to the sixth century AD and chosen to be included in the work, the compilation is hardly representative of Roman law throughout the centuries during which it was formulated and refined as a response to spiritual, political, social, material and technical changes in the society.²⁴⁷ It is therefore difficult to deduce, from this large body of legal texts, those passages that would have been applicable to first-century AD Pompeii.²⁴⁸ However, notwithstanding refinements, law is inherently conservative. Once a concept, a certain right or a ban for example, is developed it typically prevails for a considerable span of time.²⁴⁹ Hence, the Digest can be used as a basis of discussion and point of reference, as long as we have good reasons to believe that a certain concept had been developed by the first century AD, even if the remaining passages are later in date.²⁵⁰

²⁴³ Crook 1967: 10, 15; Johnston 1999: 24-6, Peachin 2002: 3-4.

²⁴⁴ Johnston 1999: 24, but see Aubert 2002: 184.

²⁴⁵ Johnston 1999: 5-7.

²⁴⁶ Rodger 1972: 11-2, Johnston 1999: 16.

²⁴⁷ Crook 1967: 14-5, Saliou 1994: 279-80.

²⁴⁸ For interpolations, see Johnston (1999: 17-22).

²⁴⁹ Crook 1967: 7, 30-1; Watson 1985: 119, Johnston 1999: 4, 26; Peachin 2002: 10. For example, Möller (2010) has, in her detailed study, described the development of servitudes (see below) from the first mentions in the Law of the Twelve Tables to the medieval sources. What characterizes them is that despite changes the basic concepts endured.

²⁵⁰ E.g. Laurence (1994), van Binnebeke (2007) on the use of *Digest* in Pompeian studies.

3.1.2 The key concepts in Roman property law

Although jurists were seemingly not preoccupied with what exactly people did inside their homes and properties,²⁵¹ and although there were no building regulations as we know them today,²⁵² jurists paid attention to issues regarding occupancy and properties themselves. Moreover, authorities and jurists were interested not only in physical property but also the relationships between neighbours and collective urban space. Hence, through legal means, the physical shape and size of buildings, the technical solutions used in their construction, and the relations between neighbours and city officials were defined. They had to be taken into account when buying, building or redeveloping a property, when seeking compensation for damaged property, or when aiming to ban the actions of neighbours.²⁵³

Particularly important in the following chapters are servitudes which were either rights (*ius*) to or restrictions on certain actions that concerned neighbours who shared the physical borders of their properties.²⁵⁴ For instance, one could cut construction costs by attaching structures to a wall owned by a neighbour who had to maintain the wall, or one could prevent the neighbour from altering his or her property in order to secure the current lighting conditions.²⁵⁵ Because units in Pompeian city blocks were separated from each other by a single wall,²⁵⁶ shared (but not necessarily owned) by the two neighbours,²⁵⁷ such servitudes could have existed. However, servitudes were aimed to cause as little nuisance as possible for the servient party.²⁵⁸ In practice the person under servitude (hence the servient owner) needed not to take action but to accept the acts of the servitude holder (hence the dominant owner) as well as to restrain him or herself from doing something.²⁵⁹ The

²⁵¹ Van Binnebeke 2000: 144.

²⁵² But see Suetonius *Aug.* 89.2, Strabo *Geog.* 5.3.7, Tacitus *Ann.* 15.43.

²⁵³ Vitruvius 1.1.10, 2.8.17.

²⁵⁴ Möller (2010: 17-21) who emphasises that while servitudes in the pre-classical period were intended to safeguard the enjoyment of a piece of land by securing access to basic utilities, in the classical Roman law servitudes were developed to define neighbourhood relations, i.e. the rights and restrictions attached to neighbouring lands.

²⁵⁵ Such actions were possible under the aegis of *servitus tigni immitendi* – right to insert beams, *servitus oneris ferendi* – right to support structures, *servitus protegendi* – right to extend a roof, *servitus prociendi* – right to extend a balcony, *servitus altius non tollendi* – restriction on building height, *servitus ne luminibus officiatur* – restriction on blocking light (*dig.* 8.2).

²⁵⁶ In contrast, some of the units in Ostia were separated by two walls belonging to different neighbours (Hermansen 1981: 112-3, fig. 43; Boersma 1985: 214, fig. 202). Moreover, after the fire of Rome in AD 64 it was ruled that each house must have its own external walls (Tacitus *Ann.* 15.43). This seemingly had no impact on buildings in Pompeii however.

²⁵⁷ Compare Pomponius *dig.* 10.3.22.

²⁵⁸ Paul *dig.* 8.2.24.

²⁵⁹ Pomponius *dig.* 8.1.15.1.

following presentation focuses on light, water and drainage servitudes, all of which were in use in the first century AD and, thanks to their importance, were protected by praetorian interdicts.²⁶⁰ Because the archaeological material is fragmentary and hence the evidence partial, it is the overall concept rather than specific technicalities and nuances related to these servitudes that is applicable.

Although involving owners and users, the servitudes were based on property (i.e. they were praedial) instead of being individual and were hence passed on when property was sold or inherited.²⁶¹ The sale and bequeathing of property could likewise involve the creation of servitudes,²⁶² as did procedures which involved the division of a formerly single property into separate units.²⁶³ When no changes in the ownership of properties were made, servitudes were created and abolished by payment or agreement.²⁶⁴ Moreover, a building may have been subject to servitudes from the very beginning of its construction, i.e., servitudes needed not have developed in the later evolution of the unit.²⁶⁵ For instance, when an edifice was built onto a vacant plot, the arrangements made for existing, adjacent units could necessitate that the new build was bound to servitudes. As a result, servitudes can shed light on building histories and hence supplement studies of construction phases.

Because servitudes were clearly developed to control neighbourhood relations, one is left to ask, whether a neighbour had an unrestricted freedom to build and carry out alterations when not bound by servitudes. While the question remains debated,²⁶⁶ scholars seem to agree however that people could, in the absence of a protective servitude, plead against harmful projects to protect their property.²⁶⁷ The stipulation may not have stopped the

²⁶⁰ *Servitus stillicidii* – right of rainwater (Ulpian *dig.* 39.3.1.17), *servitus aquae ductus* – right to draw a conduit of water (Pomponius *dig.* 8.3.15, Scaevola *dig.* 43.20.8, Ulpian *dig.* 43.21.3), *servitus cloacae* – right to draw a sewer (Ulpian *dig.* 8.1.7, Venuleius *dig.* 43.23.2), *servitus lumen* – right to light (Paul *dig.* 8.2.16); Watson 1968: 176, Rainer 1987: 74-9, Saliou 1994: 162, 167.

²⁶¹ Marcian *dig.* 8.1.1, Javolenus *dig.* 8.1.20, Ulpian *dig.* 8.4.1, Paul *dig.* 33.3.7; Möller 2010: 32-7. However, some rights could have been personal (Marcian *dig.* 8.1.1, Paul *dig.* 8.3.37; Borkowski 1994: 163). For the impact of servitudes on the price of property, see Rainer (2002: 39).

²⁶² Labeo *dig.* 8.1.19, Papinian *dig.* 33.3.6.

²⁶³ Africanus *dig.* 8.3.33.

²⁶⁴ Pomponius *dig.* 8.3.14.

²⁶⁵ *Ibid.* 8.2.23.1.

²⁶⁶ Rodger (1972: 34, 51) and Borkowski (1994: 150) on the lack of freedom to build; contra Ulpian *dig.* 8.2.9 (but see Rodger 1972: 9-10, 51-2), Rainer 1987, 2002.

²⁶⁷ Ulpian *dig.* 39.1.1.16-7; Rodger 1972: 38, Saliou 1994: 220-1, Johnston 1999: 73, Rainer 2002: 35-7. However, it has been argued by Möller (2010: 118, 182-4, 301) that after the urban servitudes were established, remedies including *cautio damni infecti* and *operis novi nuntiatio* were of limited use.

neighbour in question, but the suffering party would have received compensation.²⁶⁸ The aspiration to control is also present in jurists' discussion of jointly owned party walls (*paries communis*) between neighbours. Although the owners of these common walls had equal rights and obligations, Roman lawyers nevertheless saw limitations on what one could and could not do in regard to these walls.²⁶⁹ What follows is that a study of servitudes and rules governing the use of *paries communis* can inform us on the relations between neighbours and provide tools to explain certain patterning.

Before embarking on an attempt to interpret connections between units more closely, it is important to remember that servitudes could not exist between properties of single ownership.²⁷⁰ Instead, party walls were *paries communis*.²⁷¹ Of course, when owned in common, units could have shared basic utilities in a way similar to servitudinal relationship and therefore it is very difficult to pin down the precise reasons for visible arrangements. Instead, we need to talk about possibilities. Ownership simply allowed more than servitudes.

There are good reasons to believe that Pompeians and the residents of *insula* IX.3 were aware of servitudes. As argued in Chapter 1 above, the city block was divided into a number of ownerships. In these densely built surroundings the rights and obligations of neighbours must regularly have been negotiated. While neighbours could have had casual agreements to deal with issues covered by law, it nevertheless constituted the ultimate point of reference in the case of disputes.²⁷² This probably had an impact on the agreements they made at the first place. Moreover, because servitudes were praedial, not personal agreements, they provided continuity in neighbourhood relations, and hence facilitated everyday communal living.²⁷³ This was important when changes in ownership were common. Finally, a Pompeian inscription may point to the utilization of servitudes and petitions. It documents a case in which *duumviri* purchased a right to block light from a private property in order to expand

²⁶⁸ Rainer 2002: 36-7.

²⁶⁹ Gaius *dig.* 8.2.8, Paul *dig.* 8.2.40, Javolenus *dig.* 33.3.4; compare Papinian (*dig.* 8.2.36) on a shared roof. *Paries communis* was known as a legal concept in the first century BC (Rainer 1988: 493) and during the first century AD issues related to the maintenance and protection of *paries communis* were commonly brought up (Saliou 1994: 81). Crook (1967: 150) has suggested that the interest in *paries communis* may result from the fact that these walls were considered 'as servient and dominant on both sides'.

²⁷⁰ Paul *dig.* 8.2.30, Julian *dig.* 8.3.27, Ulpian *dig.* 8.4.10, Gaius *dig.* 8.6.1; Borkowski 1994: 159, 169.

²⁷¹ Saliou 1994: 225.

²⁷² *Dig.* 8.5 on the process of disputing.

²⁷³ Borkowski 1994: 149, 161; Rodger 1972: 3-5.

the Sanctuary of Apollo.²⁷⁴ Despite being ambiguous in expression, this inscription, dated to 10 BC, gives a testimony to an act which had a direct impact on the neighbouring unit. Importantly, however, it also suggests that compensation for loss was paid, or a servitude was purchased or nullified by a payment.

3.2 Light

Natural light can be acquired through light wells, windows and doorways. In *insula* IX.3 there are 17 (partly) unroofed spaces, ten windows and 25 doorways which opened onto flanking streets (fig. 11). Inside units 40 windows and over 120 doorways could divide light between spaces. The quality and level of lighting did not depend solely on the number of the sources of light, but the orientation of these openings in relation to the cardinal directions had an impact, together with light-obstructing elements inside and outside units.

Because natural light was essential for the use of all interior spaces prior to the advent of efficient artificial lighting, securing access to it was of high importance. Therefore, it is of no surprise that several laws and regulations dealt with the availability of natural light inside units.²⁷⁵ For instance, a tenant could walk out from a contract if the rented property became too dark.²⁷⁶ However, while for some functions the availability of abundant light was essential, other spaces could have been used for certain functions without much light. Consequently, reconciling the layout of a unit involved considerations of the amount and quality of light needed for different functions.²⁷⁷ Therefore, studying the distribution of the sources of natural light can reveal the ways in which the rudimentary level of lighting was

²⁷⁴ *M. Holoconivs Rvfvs Ilv(ir) i(vre) d(icvndo) tert(ivm),
C. Egnativs Postvmvs Ilv(ir) i(vre) d(icvndo) iter(vm),
ex d(ecreto) d(ecvrionvm) ivs lvminvm
opstrvndorvm HS ∞∞∞∞
redemervnt, parietemqve,
privatvm colo(niae) Ven(eriae) Cor(neliae)
vsqve at tegylas*

facivndvm coerarynt (CIL X 787). The property in question must have been VII.7.2. For somewhat different interpretations of the inscription, see Overbeck and Mau (1884: 99, 636-7 no. 43), Dobbins *et al.* (1998: 741-3, footnote 3).

²⁷⁵ It has been argued that in the absence of a protective servitude a reasonable amount of light, or at least the bare minimum of it, had nonetheless to be secured (Rodger 1972: 50, Borkowski 1994: 150). However, the definition of the reasonable or adequate amount is vague. According to the second-century AD jurist Marcellus (*dig.* 8.2.10), light had to be 'sufficient for reasonable daily use'.

²⁷⁶ Gaius *dig.* 19.2.25.2.

²⁷⁷ Vitruvius 1.2.7, 1.4.2; Pliny *Ep.* 2.17, 5.6; Varro *R.* 1.13.2.

secured as well as identify spaces which received more light, presumably for their special character.

Lighting became more nuanced with the advent of window glass in the first century AD.²⁷⁸ Because this glass was not fully transparent, it blocked some light and hence made rooms somewhat darker.²⁷⁹ However, it provided privacy and reduced draught, as well as cold and damp, without completely obstructing light. We should hence take the presence and effect of window glass into consideration in the studies of light and air, in particular because it seems that Pompeians were quick to adopt the new commodity. Windows were glazed both in private and public buildings.²⁸⁰ In terms of physical evidence in *insula* IX.3, a groove in the plaster covering of the jambs of a window between Rooms 118 and 119 in Unit IX.3.19-20 contains moderately transparent and thin window glass sherds *in situ*. As for archival evidence, only thrice is window glass, or plates of mica (given as *talco*) used as its substitute,²⁸¹ mentioned in the *Giornale*: sherds were found in Room 4 of Unit IX.3.5/24, in Room 69 of Unit IX.3.13, and in the upper floor Room 101 of Unit IX.3.17. On the basis of these accounts, it is conceivable that window glass remained rare in *insula* IX.3 in AD 79.

3.2.1 External windows

Windows in the extant ground floor facades are frequently small, tapering, and high-lying.²⁸² In contrast, upper floor facades frequently contained large windows.²⁸³ As for *insula* IX.3, ground floor windows tend to be located in rooms at both sides of entrance corridors, and because in most commercial units the facade is fully taken by their wide entrances, windows are naturally lacking (fig. 11). In terms of upper floors, the walls have only rarely survived above the lowermost portions and therefore we have no more than one (small) window which, at first-floor level, opened onto the Vicolo di Tesmo. What is remarkable in the distribution of windows is their scarcity in the facades along the northern

²⁷⁸ Sperl 1990: 65.

²⁷⁹ *Ibid.* 68-9.

²⁸⁰ Both the Forum and Suburban Baths had at least some of their windows glazed (Mau 1899: 198, Jacobelli 2009: 8), as did many private houses (Beretta and Di Pasquale 2004: 280-2, nos. 3.2-6). Large windows could have been glazed by combining several smaller panes together (Manderscheid 2009: 123, fig. 157).

²⁸¹ Beretta and Di Pasquale 2004: 281, no. 3.4.

²⁸² Jashemski 1979: 16, Adam 1994: 304-5, figs. 698-702; Hales 2003: 105, Hartnett 2003: 144.

²⁸³ Andrews 2006: *passim*.

alley and the Vicolo di Tesmo which, in the absence of shop doorways, could have accommodated many more windows.

While the scarcity and small size of ground floor windows may seem sufficient evidence to conclude that they were not important sources of light and hence not constructed in larger numbers, it must nevertheless be remembered that the overall amount of light from streets was more related to the availability of light outside units than the actual size of the facade windows. Vitruvius for instance urges his readers to select the location of external windows in relation to the height of the walls of neighbouring units.²⁸⁴ This light would have been blocked if the neighbour consequently decided to raise his or her building. As a protection, a servitude might have been available. *Servitus altius non tollendi* forced the servient neighbour to refrain from extending his or her edifice any higher.²⁸⁵ According to the early third-century jurist Paul at least, servitudes were applicable not only to immediate neighbours but also those separated by a street.²⁸⁶ Although the presence of such servitudes in Pompeii cannot be established, it has become evident that the heights of units merit consideration. According to Andrews, in AD 79 some 23 % of ground floor spaces in Pompeii were covered by an upper floor.²⁸⁷ In *insula* IX.3 the percentage seems to be larger, some $\frac{1}{3}$ at least (fig. 6).²⁸⁸ Although we can only guess at the total heights of these buildings, they could have extended at least 10 metres high.²⁸⁹ If the units of the adjacent city blocks were as high, if not higher, than in *insula* IX.3, it becomes clear that they limited light in streets and effectively blocked it from the narrow alleys.

In addition to extended building heights, protruding balconies could efficiently have blocked light at the ground floor level.²⁹⁰ According to Andrews, some 34 % of the excavated streets in Herculaneum were, in AD 79, shadowed by balconies extending above

²⁸⁴ Vitruvius 6.6.6.

²⁸⁵ E.g. Gaius *dig.* 8.2.2, Javolenus *dig.* 8.2.12, both of which were second century AD jurists. For further discussion on *altius non tollendi*, and *altius tollendi* which allowed to build higher, see Rodger (1972: 6-7, 100-2), Rainer (1987: 27-56), Saliou (1994: 218-21); also Möller (2010: 130-1, 148-66) who, together with Rainer (1987: 85, 96) suggests a possibility that the servitudes may already have been developed in the pre-classical period.

²⁸⁶ Paul *dig.* 8.2.1, 39.1.8; Borkowski 1994: 160.

²⁸⁷ Andrews (2006: 219-21) arguing on the basis of a sample study of four city blocks in Region I.

²⁸⁸ In the case of Unit IX.3.5/24 it probably was 35 % (Andrews 2011: 20).

²⁸⁹ The roof line of the first floor rooms above Rooms 21-25 in Unit IX.3.5/24 could have run at the height of 7 m (Andrews 2011: 20). A metre or two must be added to this figure to account for the roof top. As for Rome, Augustus limited the maximum height of edifices to some 20 meters (Strabo *Geog.* 5.3.7) and this rule was reinforced after the fire of AD 64 (Tacitus *Ann.* 15.43). However, the rule still allowed buildings of six floors (Zaccaria Ruggiu 1995: 196-7, footnote 60).

²⁹⁰ Ulpian *dig.* 43.8.2.6.

their pavements.²⁹¹ In Pompeii the evidence is much scarcer, but where the upper floor facades have been preserved, by no means insignificant.²⁹² For these two reasons it is perhaps not surprising that ground floor windows were small and few.

A decrease in the number of facade windows in *insula* IX.3 is evident along the northern alley, the narrowest of the streets flanking the city block. Out of nine window openings in the facade, four had been blocked (figs. 12-13).²⁹³ It is tempting to suggest that the blockings took place after AD 62 as a consequence of the construction of the Central Baths, which narrowed down the northern alley, contained upper floors, and the bathing compartments of which undoubtedly had high roofs. However, the process of blocking facade windows began much earlier. In Unit IX.3.24 this seems to have begun in the first century BC, in relation to rises in floor levels discussed below. In Unit IX.3.1-2 the blocking of windows preceded Third Style decoration in Room 52 (fig. 13) and the construction of an upper floor toilet (in Room 45) which probably took place prior to AD 62. The fourth blockage in Unit IX.3.23 cannot be dated, but nothing points to its being late. The blocked window is located in Room 128, decorated in the Second Style. Therefore, it seems best to explain the development as stemming from the gradual decrease of light in the adjacent alley thanks to growing building heights and increase in the number of balconies. As far as we know, upper floors were built in Pompeii as gradual piecemeal operations from the second century BC onwards.²⁹⁴

Despite the small number of facade windows in AD 79, they were not entirely insignificant. The tapering form common to these windows was a way to ameliorate the distribution of light: jambs served as reflection surfaces as well as softening the sharp contrast between luminous exterior and dark interior.²⁹⁵ Hence, lighting conditions in the rooms lit by these small windows may not have been as limited as it seems, especially if the walls opposite the windows served as additional reflection surfaces. Moreover, reflection might have been more important than the amount of direct light that came in through windows.²⁹⁶ Light servitude prohibited changes in building height if this altered the flow of light into a

²⁹¹ Andrews 2006: 221.

²⁹² *Ibid.* 75, 77.

²⁹³ Blocked windows are found in Room 31 (Unit IX.3.5/24), 45(?), 52 (Unit IX.3.1-2), and 128 (Unit IX.3.23). In Room 52 the window was possibly taken out of use when an upper floor was built. In Room 31 another window higher up was opened after the lower one was blocked.

²⁹⁴ Ling 1997: 243-4.

²⁹⁵ Ratzka 1990: 97-8, Boman 2005: 70.

²⁹⁶ Compare Watts 1987: 242.

neighbouring house by reflection.²⁹⁷ Furthermore, the higher a window was located, the more light it provided.²⁹⁸ Therefore, the height of the windows above the eye level was not perhaps only preferred for privacy, suggested by the fact that we have evidence for raised window heights in Unit IX.3.24 in conjunction with evidence for raised floor and street levels,²⁹⁹ but also, and perhaps foremost, for the amplifying effect it had. On the whole, however, light on the ground floor largely derived from internal sources.

3.2.2 Internal light wells

A *servitus altius non tollendi* could be employed to secure light not only from streets but also through internal light wells.³⁰⁰ Although Roman houses had light wells designed for lighting only, multipurpose spaces which doubled as sources of light among other functions were more common. Whenever space allowed there seems to have been a tendency to build, at least one centrally located room, around which other rooms were grouped.³⁰¹ While these rooms served as circulation spaces for movement, and are therefore considered as nodes,³⁰² they simultaneously distributed air and light. This is due to the fact that the walls of these spaces were, as a rule, higher than those of surrounding rooms, and because they were frequently unroofed, at least in part, they were better lit than the adjacent rooms.³⁰³ The larger the unit was, the more nodes or light wells it had.

Turning to our evidence in *insula* IX.3, nodes, which are either courtyards or gardens, are found in eight units (IX.3.1-2, 5/24, 10-12, 13, 15, 19-20, 23 and 25), that is, in units with close to 100 m² or more of ground floor space.³⁰⁴ If there was only one node, it was usually situated in the middle of the unit (IX.3.1-2, 13 and 23; fig. 11). In the case of two nodes, common in larger units (IX.5/24, 10-12, 15 and 19-20), placing one node at the front and the other at the rear of the unit enabled the lighting of the rest of the rooms by grouping them

²⁹⁷ Ulpian *dig.* 8.2.17.2.

²⁹⁸ Spertl 1990: 66.

²⁹⁹ Viitanen and Andrews 2008: 60, Holappa and Viitanen 2011: 173.

³⁰⁰ Rainer 1987: 84-5.

³⁰¹ For the development of so-called *atria* and *viridaria/horti/peristylia*, most common types of these circulation spaces, see Dickmann (1997, 1999), Wallace-Hadrill (1997, 2007), Gros (2006: 30-67, 94-110).

³⁰² Watts 1987: 117, 124; Grahame 2000: 57-8.

³⁰³ Watts 1987: 117, 132, 147.

³⁰⁴ Compare with Wallace-Hadrill's (1990: 169) survey in which the smallest unit with an impluviate *atrium* was 100 m² and with a garden 125 m². In the case of *insula* IX.3 the figures are in the region of 80-90 m², thus units with three to five small rooms on the ground floor lacked these sources of light.

around these spaces. In comparison to facade windows, windows between rooms were significantly larger, the biggest being found between gardens and rooms adjacent to them (fig. 11). By interconnecting rooms, light was distributed beyond the rooms that received direct light.

While the capability of unroofed gardens and light wells to provide light is clear, it is less evident in the case of partly unroofed *atria* and skylights. To gain some understanding of how extensively were these rooms unroofed and hence what was their capacity to bring in light, one must focus on *atria* where *impluvia* sizes can be used to suggest *compluvia* sizes. The three *impluvia* for which measurements can be taken in *insula* IX.3 are $\frac{1}{35}$ [Unit IX.3.13, Room 70 (fig. 14)], $\frac{1}{42}$ (Unit IX.3.15, Room 82) and $\frac{1}{51}$ (Unit IX.3.5/24, Room 29) of the area of the *atrium*. It is clear that the openings were small.³⁰⁵ Therefore, and because according to Mygind, *impluvia* were slightly smaller than their *compluvia*,³⁰⁶ it can be suggested that no more than some 3 %, if not much less, of these *atrium*-spaces lacked roofing, and that the capability of *atria* to provide light to flanking rooms was limited.³⁰⁷ The openings were much smaller than what was recommended by Vitruvius in his treatise of Roman architecture.³⁰⁸ Nonetheless, several surrounding rooms relied on light provided by *atria*.

Examining the use of circulation spaces and separate light wells as sources of light in *insula* IX.3 as a whole, the following can be observed (fig. 11). Units IX.3.1-2, 13 and 23 were lit by a single node in the middle of the unit onto which other rooms opened.³⁰⁹ However, because in Unit IX.3.1-2, Rooms 54 and 55 did not open onto the central space, they were probably lit by a separate skylight. Worth noting is that although the *atrium* (Room 43) of Unit IX.3.1-2 was of the fully covered type (so-called *atrium testudinatum*),³¹⁰ as suggested

³⁰⁵ Compare Ratzka (1990: 103) whose study of 21 Pompeian *atria* yielded a ratio of some 1:20.

³⁰⁶ Mygind 1917: 318, but see Wallace-Hadrill 2007: 282.

³⁰⁷ The lack of light may be indicated by the name of the room which probably derived from *ater*, dark (Servius A. 1.726, contra Varro L. 5.161) referring perhaps not only to sooty walls caused by smoky fires but also the lack of light.

³⁰⁸ Vitruvius (6.3.6) advises his readers to build a *compluvium* no smaller than $\frac{1}{4}$ and no larger than $\frac{1}{3}$ of the total width of the *atrium*. However, as previously noted (Ford Weiskittel 1979: 28-31; also Dwyer 1991: 37 discussing Unit IX.3.5/24), Vitruvius is not a guide to Pompeii, the proportions of houses in Pompeii conform extremely rarely to his measures.

³⁰⁹ Unit IX.3.1-2 contained a garden, Units IX.3.13 and 23 an *atrium*.

³¹⁰ For *atria testudinata*, see Vitruvius (6.3.1), Varro (L. 5.33.161); also Camaggio (1928), Hoffman (1979: 112-3; contra Nappo 1997: 100), Wallace-Hadrill (1997). However, the lack of *impluvia* does not necessarily mean that there were no *compluvia* (Zaccaria Ruggiu 1995: 360), or exclude the possibility that the room was

by the absence of an *impluvium* (fig. 15a), no additional light wells were needed at the front. This is due to the fact that the garden (Room 49-51), exceptionally situated next to the *atrium*, could, together with doorways in the facade, have provided necessary light to the front rooms (fig. 15b). In a similar vein, while the central *atrium* (Room 136) of Unit IX.3.25 was probably fully covered, the single, and seemingly sufficient, light well in the unit (Room 138) is found next to it. In the neighbouring Unit IX.3.5/24 there were three major nodes: Room 2 (*atrium*),³¹¹ 18 (garden) and 29 (*atrium*) through which light was distributed to adjacent rooms. However, because Rooms 11-14 did not open onto any of the nodes, they were supplied by a separate skylight (Room 12). A similar arrangement can be found in Unit IX.3.15, which is very long and narrow, and hence contained two nodes, Rooms 82 (*atrium*) and 90 (garden). Because Room 86 did not open onto either of the internal light wells, it had an additional window to Room 73 in neighbouring Unit IX.3.13 (see section 3.2.4 below). With regard to bakeries, both bakeries in the city block had their milling-baking room at the front partly unroofed,³¹² and another unroofed space at the back. These unroofed spaces would effectively have distributed light to the remaining parts of the unit.³¹³

The distribution of internal light sources allows further observations. The largest rooms in units either were sources of light themselves or they were found adjacent to unroofed spaces. Indeed, their artificial lighting would have required the greatest efforts. Moreover, if the identification of unroofed spaces is correct, there is not a single room in the city block which would have been located further than one intermediate room away from a light source, whether fully or partly unroofed space or street. However, most rooms opened directly onto a source of light. Such are all rooms with productive fixtures (fig. 16), if they were not unroofed spaces themselves. Although apparent efforts were made to secure the availability of daylight in commercial premises, it does not however signify that the tasks these places served for were halted in the evenings. Commercial chores, such as milling, probably took place after dark.³¹⁴

fully unroofed (Wallace-Hadrill 1997: 225). Nevertheless, both lighting and water collection (see below) in Units IX.3.1-2 and 25 could have been arranged without an opening in the roof of their *atria*.

³¹¹ Contra Camaggio 1928: 37.

³¹² Adam (1994: 322) on unroofed milling spaces in Pompeii. In rain and hot sun, canvas covers might have been in use (Mayeske 1972: 169). In contrast, later and larger bakeries in Ostia seem to have had their milling spaces covered (Bakker 1999: 57-60, plates 14-5; Wilson 2008: 406).

³¹³ E.g. Room 122-123 provided light to Rooms 102, 103-104, 120, 121, 124, and the upper floor above Rooms 102, 103-104 and 124.

³¹⁴ Moritz (1958: 89) on the basis of literary and pictorial evidence.

Special attention was paid not only to the lighting of commercial spaces; rooms of special importance or enhanced status too had multiple light sources.³¹⁵ For example, Room 16, so-called *triclinium*, in Unit IX.3.5/24 contains three windows and two doorways. A large window opened north-west onto the garden (Room 18) and two smaller, high-lying windows directed light from another garden (Room 68) located south-east in the adjacent Unit IX.3.10-12. However, in AD 79 the walls of Room 16 had been painted with expensive cinnabar which blackens when exposed to daylight.³¹⁶ The windows were therefore probably curtained to prevent direct sunlight, if not completely shut and opened only at sunset. Therefore, light should perhaps be considered as a part of ostentatious decoration: light, as well as other elements of nature, including water discussed below, was harnessed for display. They had been made available even if not in use.

In addition to increasing the number of windows, doorways or light wells, there might have been alternative ways to enhance lighting conditions. The choice of materials and colours had an impact. For example, the plaster layers currently covering the walls of *insula* IX.3 show significant differences in their composition. Being aware of the fact that in many cases the outermost layer has been destroyed, or its composition has altered greatly due to extended exposure to weather conditions, distorting the record, plaster nevertheless tends to contain light-reflecting quartz more frequently in the most lavishly decorated rooms.³¹⁷ Although it remains unclear how significant an impact quartz had, i.e. whether the painted layer on top of plaster outdid its reflecting effect, it needs to be stressed that plaster with high quartz content is often found in conjunction with other, potentially light-enhancing features. For instance, elaborately decorated rooms possibly had their painted surfaces polished for enhanced light reflection, damage protection and better preservation of colours.³¹⁸ Moreover, *cocciopesto* floors had polished surfaces, and all smooth stone surfaces, such as marbles and mosaics, could have been effective light reflectors.³¹⁹ Pools of water or wet surfaces likewise reflected light, the impact of which could have been

³¹⁵ Compare e.g. Watts (1987: 133-5) discussing the House of the Carbonized Furniture (V.5) and the House of the Beautiful Courtyard (V.8) in Herculaneum.

³¹⁶ Vitruvius 9.9.1; Knuutinen and Mannerheim (2008: 191) for further discussion.

³¹⁷ See the catalogue. For exceptions to the rule, see e.g. Room 59 (Unit IX.3.10-12) and Room 109 (IX.3.19-20) descriptions.

³¹⁸ The method of polishing the surface of wall plaster before and after adding paint *al fresco* was tested by the EPUH team and their collaborators. The glossiness was lost when paint *al secco* was added (Tammisto and Wassholm forthc.).

³¹⁹ Ratzka 1990: 96, Boman 2005: 71.

particularly significant in *atria*.³²⁰ The combination of these wall and floor treatments resulted in the spreading of light, the impact of which we can only guess at today. Although their overall effect might have been marginal in comparison to the significance of light wells, windows and doorways, together they could have made some rooms stand out.

3.2.3 Lighting shops

The smallest units in the city block are shops. They contain characteristically wide front doorways but lack *atrium* and garden. Instead of central circulation spaces, they have their rooms positioned one after another. At the front they were mainly reliant on the wide shop-doorways as the sole source of light. At the back, where light from the front door did not reach, these units were dependent on small light wells or windows opening onto neighbouring properties (fig. 11).

In the case of *insula* IX.3, the main source of natural light in Units IX.3.3, 4, 6, 7, 8, 9, 14, 16, 17 and 18 must have been the front doorway. For example, the lighting of Unit IX.3.14 was largely based on the wide shop doorway through which light was distributed to rooms set one after another, seemingly lacking doors and having wide doorways for an unobstructed flow of light. Furthermore, the rear (Room 79) was probably left unroofed (fig. 11), before or after its function as a water reservoir (see section 3.5.1.3 below) came to an end. In a similar vein, Room 73 at the rear of Unit IX.3.13 was left unroofed to provide light to the parts to which light from the *atrium* and the front doorway did not reach. Interestingly, this light well was not solely for the use of the unit but provided light to neighbours too (fig. 17). The arrangement, securing light at the rear of shops and involving neighbours, is paralleled in two further instances. Unit IX.3.7 had an additional window at the rear to Room 68 in Unit IX.3.10-12 which brought in important light, especially when the back was separated from the front part by a division wall.³²¹ Lastly, at the rear of Unit IX.3.17 (Rooms 102 and 103-104), two narrow slit windows brought in light from an unroofed space, Room 122-123, in the neighbouring Unit IX.3.19-20. This notion of shared light, evidently common, brings us to servitudes.

³²⁰ Andersson 1990: 213, Ratzka 1990: 96-7.

³²¹ The wall is not depicted in the plans because it remains as a very short stretch.

3.2.4 Light from neighbours

In terms of light and neighbours, one could not, as a general rule, pierce a common wall without mutual agreement.³²² However, if a wall was owned by only one of the two neighbours, this neighbour might have been allowed to pierce it.³²³ From the Republican era onwards, *ius luminis*, a right to light, was recognized in Roman law.³²⁴ While it is not clear what practical actions this right, or servitude, allowed, second and third-century jurists describe how the *servitus ne luminibus offiatur* made it possible to prevent the redevelopment of a neighbouring property from interfering with lighting conditions.³²⁵ In the archaeological record light servitudes might be manifested as windows, the locations of which, if not the extant windows,³²⁶ probably predate the construction of one of the neighbouring units, when the other property had a window onto a vacant plot. Alternatively, the windows may indicate walls of a single ownership, or they may be located between rooms formerly under a single ownership. These windows would hence have been left by the creation of a servitude, after the division had taken place.³²⁷ Consequently, although direct correlations between material culture and law may be difficult to ascertain, law can provide additional aspects in the study of the provision of light.

There were at least ten windows between various units in *insula* IX.3 (fig. 11).³²⁸ More windows between units might have existed on upper floors, because it seems to have been a fairly common arrangement.³²⁹ Although we know no more than one internal upper floor window in *insula* IX.3, which did not open onto a neighbouring property, several observations can be made on the basis of the windows between neighbours on ground floor level.

³²² The Pergamene Astynomic Law (*OGIS* 483: 128-32); Paul *dig.* 8.2.40.

³²³ Scaevola *dig.* 8.2.41.1; Möller 2010: 128.

³²⁴ Cicero *Orat.* 1.38.173, 1.39.179; Watson 1968: 181-3, Rainer 1987: 92, 96; Möller 2010: 166.

³²⁵ Paul *dig.* 8.2.4, Ulpian *dig.* 8.2.15, 8.2.17; Borkowski 1994: 150, Saliou 1994: 218.

³²⁶ Paul (*dig.* 8.2.20.2, 8.2.33) on the validity of servitudes even if structures are renewed.

³²⁷ Compare Pomponius *dig.* 8.2.23.

³²⁸ Single windows between Rooms 135 and 52; 14 and 39; 56/148 and 68; 24 and 73; 73 and 86; 8 and 68; 102 and 122-123; 103-104 and 122-123; two windows between Rooms 16 and 68. Compare e.g. Watts (1987: 50) discussing the House of the Stags (VI.21) and the House of the Fabric (VI.19) in Herculaneum; Ling (1997: 249-51) discussing a window between the House of the Smith (I.10.7) and adjacent Workshop I.10.6; Dickmann and Pirson (2002: 258-61) discussing the House of the Postumii (VIII.4.4/49) and its adjacent *tabernae*.

³²⁹ Andrews 2006: 117-9.

Firstly, windows between separate units could have been big or small, wide or narrow. In most cases they were located above eye level. Three windows at eye level or below a height of 2 m on both sides of the partition wall are found between Units IX.3.3 and 5/24, and between Units IX.3.17 and 19-20. They probably had a common ownership which may explain the arrangement. If it was possible to see in from only one side to another, i.e. the window was located below the height of 2 m on only one side of the two neighbours, this may have resulted from alterations in floor levels. Perhaps it became possible to see in from Unit IX.3.10-12 to Unit IX.3.7 after the level of Room 68 was raised by an artificial fill layer. Such a single-sided visibility would hence not have been intentional from the outset, even though the houses may have been owned in common. In a similar vein, the floor level of Room 135 (Unit IX.3.25) may have been raised while Room 52 was lowered (Unit IX.3.1-2).³³⁰ As a result, visibility from Room 135 to Room 52 was enhanced (figs. 18a-b). However, the possible rise in the floor levels of Unit IX.3.25 was not considerable enough to significantly alter the heights of windows. Therefore, the visibility must already have been established before these changes, provided that the window had existed in the ashlar framework wall. We have so far had no reason to believe that Units IX.3.1-2 and 25 were owned in common. Perhaps here we are dealing with a situation in which a window built onto a vacant plot was subsequently left between neighbours. On the basis of the analysis of the extant walls, Unit IX.3.25 seems to predate Unit IX.3.1-2.

Although privacy was not under the protection of any particular law in the classical era,³³¹ there were no particular rights that made it possible to see into a neighbouring house either.³³² Thus the arrangements probably stem, as suggested above, from common ownership or particular building histories which necessitated servitudes. What is interesting, however, is that apart from very narrow or partly blocked windows between Units IX.3.17 and 19-20, all the windows discussed above were wide enough (≥ 50 cm) to allow neighbours not only to see in from one unit to another but to interact and keep an eye on activities taking place on the other side. Consequently, while the windows were supposedly made to improve lighting conditions, they in effect allowed control over others, and take us from practical aspects to social ones. Being no less than 1.6 m wide and 0.8 m high, the window between Units IX.3.3 and 5/24 is particularly striking. Located between a kitchen

³³⁰ Viitanen and Andrews 2008: 60, Viitanen and Holappa 2011: 173.

³³¹ Saliou 1994: 225.

³³² Rodger 1972: 127.

and the back room of a shop, directly above a cooking podium, it might well have functioned as a serving hatch between the units. The only problem is that to reach the hatch from the side of Unit IX.3.5/24 one would have had to reach out over the 1 m deep cooking podium which presumably held hot charcoal. Perhaps because the cooking podium was exceptionally large (see section 3.4.2 below), cooking, even for a large number of people, did not necessitate the use of the entire podium surface for charcoal but a part of it functioned as a working table and service counter for both units. At any case we have been able to show that tracing shared utilities tells much more than first meets the eye. It is easy to imagine that Units IX.3.3 and 7 operated under the watchful eye of the residents in Units IX.3.5/24 and 10-12. Explaining the visual connection between Units IX.3.1-2 and 25 is much harder. Perhaps it was one of the inconveniences the residents of Unit IX.3.1-2 had to put up with thanks to its location next to Unit IX.3.25 which held a light servitude over it.

Secondly, it is notable how some rooms served as a light well for several properties. As already mentioned, at the rear of Unit IX.3.13, natural light was divided between Units IX.3.5/24, 13 and 15 (fig. 17). The arrangement belongs to the last, possibly post-AD 62 phase of the unit. Whereas Room 73 of Unit IX.3.13 had previously been covered by an upper floor, it was subsequently dismantled and the room left unroofed. At this point a servitude was created and windows between properties built, or an existing servitude was honoured by leaving windows that had previously opened onto the dismantled upper floor, untouched.³³³

Thirdly, some windows opened between rooms that were neither particularly light nor particularly dark, and hence the motivation for installing them is not evident. It seems that the windows between Units IX.3.1-2 and 25, and Units IX.3.3 and 5/24, opened onto rooms with fairly similar lighting conditions. Indeed, as far as we can tell from the available evidence, it seems that both internal windows between rooms in a single property and windows shared by two units were either clearly designed to distribute light from well-lit to dark spaces or located between rooms with more or less similar lighting conditions. In the case of Units IX.3.3 and 5/24 alone we can argue that the need for control, instead of light, could have been the primary reason for opening the window between the two units. It is more probable that other windows had initially served a different room arrangement and

³³³ Compare Murgatroyd (2008: 3.4) on the House of the Surgeon (VI.1.10/23) where a room might have been opened to the elements to provide light to an adjacent room.

hence the impression we have today is misleading. On the other hand, these observations, together with the evidence concerning Unit IX.3.13, remind us of how ubiquitous change and development were. Furthermore, what has been made clear is that light is an example of shared utilities between units. This meant shared infrastructure and arrangements that extended beyond conventional property boundaries.

3.2.5 Artificial light

If natural light was unavailable, or if its amount was deemed insufficient, artificial light was needed. Oil-lamps constituted the main source of artificial light in Roman times.³³⁴ They were at constant risk of being extinguished by excessive draughts, as well as being notoriously smoky.³³⁵ Moreover, as the light of these lamps did not reach far, their correct placing was important. They were unlikely to have been left on floors, but placed on tables and niches embedded in walls. The few known heights of *candelabra* (lamp holders) discovered in *insula* IX.3 were some 1-1.4 m, and hence would have provided light at standing eye level and above if placed on tables.³³⁶ In addition, lamps were frequently suspended and attached to fixtures in various ways. On the other hand, the prominent handles of lamps emphasise their roles as moveable goods. Their transportability probably also means that some of them were taken by those fleeing in AD 79, which reduces the available evidence.

Unit size 20-40 m ²	No. of lamps /candelabra	Unit size 40-60 m ²	No. of lamps /candelabra	Unit size 60-130 m ²	No. of lamps /candelabra	Unit size >130 m ²	No. of lamps /candelabra/lanterns
IX.3.3		IX.3.14	2	IX.3.13	6	IX.3.1-2	4 / 1-2
IX.3.4		IX.3.17	12-13 / 1	IX.3.23		IX.3.5/24	12 / 4-6 ³³⁷ / 2
IX.3.6	1 / 1	IX.3.18	7	IX.3.25	- / 0-1	IX.3.10-12	1
IX.3.7	4 < 20 ³³⁸					IX.3.15	4
IX.3.8	2					IX.3.19-20	9
IX.3.9							
IX.3.16	6-7						

Table 1. The distribution of lamp finds per unit in *insula* IX.3.

³³⁴ Some torches and candles too were used (Forbes 1966: 128-42).

³³⁵ Juvenal 7.22, Vitruvius 7.4.4.

³³⁶ Based on a table height of 59-68 cm given by Mols (1999: 49) for the tables of Herculaneum.

³³⁷ In *PAH* four or five *candelabra* are mentioned as deriving from the unit while Falkener records six of them.

³³⁸ The unit contained up to 16 lamp fragments. It is not clear whether they derived from different lamps.

In the excavation records concerning *insula* IX.3, lamps are mentioned regularly and they seem to have been found in all units which contained more than a few finds (table 1). In the *Giornale* their material, form, size, decoration, and state of repair was briefly described, suggesting that they were reasonably well-recorded. Nevertheless, no more than 99 finds related to lighting were listed: up to 74 terracotta lamps, 11 bronze lamps, three iron lamps, nine *candelabra*, and two lanterns. Given the size of the city block, this is a small number. Terracotta lamps seem particularly underrepresented. Indeed, *EPUH* excavations have revealed several terracotta lamps in trenches of highly restricted size. For instance, lamps were found in abundance in the garden soil and rubbish pits of Room 18 in Unit IX.3.5/24, where they were discarded, after a slight fracture that had made them weak or leak.³³⁹ This suggests that clay lamps were cheap, common artefacts that were repeatedly lost, broken and bought.³⁴⁰ Indeed, Peña has estimated that an average use-life of a ceramic lamp was less than a year.³⁴¹ While it is possible that some of the simplest forms of clay lamps may have been left unrecorded at the time of the excavations, although attention to the details of the ones listed speaks against general ignorance, comparative studies confirm that units in *insula* IX.3 contained relatively few reported lamps (table 2). For example, Berry's study of three city blocks with up to 45 units contained 432 terracotta lamps in 27 units. This gives ca. 16 reported terracotta lamps per unit, although there was a great variability in quantities, between 43 and one per unit.³⁴²

Source	Number of properties	Type of properties	Scale of lamp finds	Average or common amount
IX.3 (<i>Giornale</i>)	18	All types	0-20	6
Berry 1997	45	All types	0-50	16 in terracotta, 0-3 in metal
Castiglione Morelli del Franco & Vitale 1989	16	All types	0-20	1-2 or 6-8
Proto 2004	98	Shops	0-70	1-4 in small, < 10 in large
Peña & McCallum 2009 (based on Eschebach <i>et al.</i> 1993)	All listed in Eschebach <i>et al.</i> 1993.	All types	Up to 37 ceramic lamps in domestic circumstances, 33 and 40 in two shops.	Possibly in tens (but evidence suggests < 10)

Table 2. The number of lamps recorded in different studies.

³³⁹ Berg 2008a: 121. The lamps largely date to the late first century BC (Aho *et al.* 2006: 25).

³⁴⁰ A list of prices scratched on a wall of Unit IX.7.25 (*CIL* IV 5380) seems to suggest that a lamp cost an *as* (Morel 1979: 262, Peña and McCallum 2009b: 181). This was less than the cost of bread.

³⁴¹ Peña 2007: 56.

³⁴² Berry 1997a: 102.

Other comparative studies suggest slightly smaller numbers per unit. While Peña and McCallum, in their study of terracotta lamp finds on the basis of the listings in Eschebach *et al.*, have concluded that ‘given the low cost and probable short use-life of these items, it may not have been unusual for households, dining establishments, and workshops to keep as many as a few dozen [ceramic lamps] on hand’,³⁴³ the actual list of finds by Eschebach *et al.*, covering the entire excavated area, indicates that ten or more terracotta lamps were found in only 15 units. A similar situation emerges from the study of Castiglione Morelli del Franco and Vitale who focused on one of the city blocks included in Berry’s study.³⁴⁴ In terms of commercial units alone, a list of finds from shops in Region I by Proto seems to suggest that small units typically contained a lamp or a couple of them (1-4), occasionally together with a *candelabrum*. Only the bigger commercial units contained more lamps, typically fewer than ten however.³⁴⁵ The numbers are more in line with those of *insula* IX.3.

Focusing on lamps in metal alone, the evidence in *insula* IX.3 corresponds more favourably. For instance, Berry’s sample contained altogether 18 complete and eight fragments of bronze lamps, two iron lamps, 15 *candelabra* and three lanterns,³⁴⁶ hence relatively speaking fewer than in *insula* IX.3. On the whole, Pompeian storehouses contain 151 bronze lamps deriving from Pompeii and Herculaneum,³⁴⁷ and the collections of the Naples Museum contain some 400 metal lamps, most of which originate from these two cities.³⁴⁸ The relatively small number of bronze lamps in comparison to those in terracotta (1,200 in the Naples Museum)³⁴⁹ has led Conticello De Spagnolis and De Carolis to argue that they constitute an indicator of wealth.³⁵⁰ However, although some bronze lamps found in the shops may have been for sale instead of being used, and perhaps for this reason Unit IX.3.18 had more lamps in metal than in clay, bronzes in general seem to have been widely

³⁴³ Peña and McCallum 2009b: 189. We must however bear in mind the unreliability of Eschebach *et al.* (1993), evident in the case of *insula* IX.3 (see Chapter 1 above).

³⁴⁴ Castiglione Morelli del Franco and Vitale 1989.

³⁴⁵ Proto 2006: 22-7. Therefore, a single unit which contained 70 lamps most likely had them for sale. A similar picture emerges from a less systematic survey of lamps in *botteghe* by Spano (1920).

³⁴⁶ Berry 1997a: 104.

³⁴⁷ Conticello De Spagnolis and De Carolis 1988: 13.

³⁴⁸ Valenza Mele 1977: 157.

³⁴⁹ The collection contains 1,200 lamps presumably found in Pompeii alone (Caputo and Tamburrelli 2007: 67).

³⁵⁰ Conticello De Spagnolis and De Carolis 1988: 17. In contrast, the small number of iron lamps found in Pompeii has made De Carolis (2004b: 73-4) to conclude that they were produced occasionally, probably locally, as modest artefacts.

present in units of all sizes³⁵¹ and their absolute luxury value is therefore questionable. Nonetheless, there are grounds to interpret bronze lamps, together with lanterns and *candelabra*, as markers of elevated status and wealth in Unit IX.3.5/24. In addition to Unit IX.3.18 involved in metal-work, Unit IX.3.5/24 is the only unit in the city block in which lighting equipment in metal may have outnumbered terracotta lamps. Choosing to use metal lamps instead of those in clay would have had status implications.

Turning from numbers to the reported find spots of lamps (fig. 19), we can note that although these are variable, some tendencies can be observed. Patterns are easiest to recognize in Unit IX.3.5/24 where lamps were most numerous. Although the records concerning the precise find locations of some artefacts are contradictory, all accounts nevertheless suggest that small rooms around the two *atria* (Rooms 2 and 29) and the kitchen area of the unit (Rooms 11-14) contained lamps and *candelabra*.³⁵² Likewise, the kitchen area and a room off the *atrium* contained parts of lanterns – relatively rare pieces of lighting equipment in the first century AD.³⁵³ The distribution loosely resembles that in *atrium*-houses studied by Allison.³⁵⁴ In commercial premises lamps were found in rooms with wall decoration (Room 46 in Unit IX.3.1-2, possibly Room 70 of Unit IX.3.13), in a working room (Room 113 in Unit IX.3.19-20), and in a garden (Room 68 in Unit IX.3.10-12), but were most numerous in rooms fronting onto the street (Rooms 35/40, 56/148, 57, 69, 75, 97, 99, 105, 108). Lamps were also found, although rarely, in the rear rooms (Rooms 98, 101). In sum, lighting devices were found both in open rooms with more natural light as well as in closed rooms that were darker from the outset. The lack of distinct patterns is most probably due to the ease of transportation of these artefacts.³⁵⁵

Even if we accept that some lamps are missing from our records, it is still worth discussing, what the scarcity of them would have meant. If a household possessed only rarely, if ever, enough lamps to provide adequate illumination for all of the rooms after dark, people would probably have gathered together to spend their evening in a few artificially lit rooms. This

³⁵¹ Berry 1997a: 139, Wallace-Hadrill 2008: 390, 403.

³⁵² Other *candelabra* were found somewhere in Unit IX.3.1-2, in Room 35/40 of Unit IX.3.6, and in Room 101 of Unit IX.3.17, thus in different types of rooms and units.

³⁵³ According to Fiorelli (1873: 170), excavation between 1861 and 1872 yielded 15 lanterns or lantern parts as opposed to 85 *candelabra* or *candelabra* parts and 483 lamps or lamp parts.

³⁵⁴ Allison (1997a: 335, 345; 2004: 72, 102), also Caputo and Tamburrelli (2007: 78, fig. 24) for a similar, wide distribution.

³⁵⁵ As observed by Allison (2006: 391) who however argues that in general lamps were found in their place of storage.

behaviour is familiar to those who have read novels describing the lives of people before electric lighting – by Dickens, Brontë and Austen for example. In large units this could mean that some rooms, whether specific rooms on a permanent basis or different rooms day by day or season by season, were perhaps not used at all during the hours of darkness. Secondly, there is no reason to assume that Romans would have wanted to light an entire room.³⁵⁶ Instead, they would more likely have provided light for specific actions taking place after dark. Altogether, shadows and different levels of darkness were more or less omnipresent in Roman buildings, even in daylight. This calls into question the visibility and impact of decoration such as wall paintings or stucco ceilings.³⁵⁷ The level of lighting could have been used to indicate the function and importance of a space, and the play of light might have been important in the perception of some decoration. For instance, architectural sculpture frequently contains deep relief which suggests that a contrast between light and dark was desired.³⁵⁸

Nonetheless, if one was ready to invest heavily in artificial lighting, spaces could have been well-lit. Indeed, ancient authors tell us how public events such as triumphs, processions, games, theatre performances and bathing taking place at night were lit by large numbers of lamps.³⁵⁹ This implies ostentation. It has been estimated that a typical Roman lamp would have consumed some 8 g of oil per hour,³⁶⁰ if not much more,³⁶¹ for a small flame of 85 Watt. If the calculation is considered as representative, it means that a single lamp consumed nearly as much calories per day as an average adult, in the form of oil, if left burning throughout the day.³⁶² Furthermore, recent experiments in the use of Roman lamps

³⁵⁶ Contra Gonçalves *et al.* 2009: 13-6. According to their recent attempt to model the lighting capacity of Roman lamps, around a dozen lamps were needed in a (medium-size) windowless room to light it with soft and mellow, low intensity light.

³⁵⁷ *Ibid.* 18.

³⁵⁸ Nolte 1990.

³⁵⁹ Suetonius *Cae.* 37, *Cal.* 18, *Aug.* 31, *Vita Anto.* 26, *Dom.* 4; Lampridius *Sev. Alex.* 24; Tacitus *Ann.* 14.21, 15.44; Cassius Dio 43.22, 64.3.

³⁶⁰ Wunderlich 2003: 45.

³⁶¹ According to Held's (1990: 53) ambiguous expression, '[D]er Verbrauch belief sich auf 0.1 l Öl in 7 Stunden'. If he here gives the consumption rate of a single lamp, his figure is nearly twice as high as Wunderlich's. David Griffiths (D.Phil. candidate, pers. comm. 27.4.2010) has moreover argued, on the basis of experimental archaeology and studies of lamps from different dated contexts of Pompeian *insula* VI.1, that there was a significant variation in their efficiency. Efficiency depended on the grade of oil used, additives, and types of wick. Moreover, the design of a lamp was important. Had the wick of a lamp been controlled, and a good supply of air secured to the flame, the lamp could have consumed more oil per a time unit and hence produced more light. However, such mechanisms were not properly introduced before the advent of modern petrol lamps in the 18th century (Forbes 1966: 123-4, Wunderlich 2003: 47-50).

³⁶² A lamp consuming 8 g of oil/hour would hence consume 192 g of oil per day. The nutritional value of oil is some 885 kcal per 100 g, and the consumption would be ca. 1,700 kcal per day, close to modern guidelines (2,000 kcal for females, 2,500 kcal for males). Wunderlich 2003: 45-7 for further discussion.

have confirmed that through adding salt into oil the flame became brighter and more stable. Salt, another valuable commodity, might even have protected oil from overheating.³⁶³ Consequently, the cost of fuel, instead of the lamp itself, may have limited the use of lamps in everyday life.³⁶⁴

3.3 Air

A good circulation of air is needed to bring in fresh air, allow clean burning and raise fire temperatures for best efficiency. At the same time it removes unwanted smells, heat and humidity. The importance of fresh air was also acknowledged by Roman authors. Whereas the location of a building in regard to sun and winds was conceivably more important in the countryside,³⁶⁵ it was also thought of in urban conditions.³⁶⁶ However, instead of counting on salubrious winds, the circulation of air in urban houses, constrained by a densely built urban matrix, was secured by architectonic means.

3.3.1 Air and architecture

Some rooms of a Roman house frequently had high ceiling levels. The higher the ceiling, the better was the circulation of air. In the case of *insula* IX.3, upper floors were located between 2.5 and 5 m above the ground floor.³⁶⁷ Whereas the lower ceiling levels were found in small closable rooms, *atria* ceiling levels for example could have equalled those of the first floor. This corresponds with Watts' observations on how the largest and the more central spaces of a house were the tallest, and the smallest, most secluded rooms were the lowest.³⁶⁸

Because rooms were frequently interconnected, opening their partition doors created draughts. Hence, the axuality of houses, either conceptual or real, can be seen as a means to get air circulating, rather than, or as well as, creating aesthetic vistas and deliberate

³⁶³ Forbes 1966: 156, Goncalves *et al.* 2009: 10.

³⁶⁴ Forbes 1966: 125.

³⁶⁵ Pliny *Ep.* 2.17.

³⁶⁶ Vitruvius 1.6.

³⁶⁷ Andrews 2011. Many of the measurements were taken at the current ground level however.

³⁶⁸ Watts 1987: 145-9.

transparency.³⁶⁹ Whereas it is unlikely that all doors were open at the same time, at least for very long as it would have created considerable draughts and might have brought in dust or damp, cold or heat, noise and smell, it was possible to open up some parts of the house and consequently channel fresh air from them to the other parts. For instance, compluviate *atria*, gardens and any other rooms fully or partly unroofed could effectively bring in fresh air, presumably fresher than that available through windows and doorways from surrounding streets. Moreover, doors in Pompeian houses were typically two to four-part, or folding doors. This allowed them, like curtains, to be opened only in part, preventing extensive draught and sight, as well as smell, damp, cold or heat from entering or escaping. As a result, architectonic features enabled both enhanced circulation of air and increased insulation between separate rooms, both of which were needed over the course of a year.

In addition to seasonally changing needs, certain concerns were prevalent. The dispersal of fumes deriving from domestic kitchens and commercial operations including milling, baking, cooking, dyeing and metal-working had to be dealt with frequently, if not all of them on a day-to-day basis.

As far as we know, chimneys were not standard structures in Pompeian buildings. Although small outlets embedded in roof structures have been found,³⁷⁰ they are not proper chimneys as they are not located directly above the source of fumes. Instead, a few installations made of broken *amphorae*, protruding from baking ovens³⁷¹ or inserted in masonry hoods built over large domestic hearths,³⁷² may be considered as rudimentary chimneys. However, because there is no evidence for such structures in *insula* IX.3, aeration was probably taken care of by the combined use of unroofed spaces, windows and doorways.³⁷³ Therefore, what has been presented above in terms of light supply (fig. 11), is valid for air too.

Bearing this in mind, we can establish the meaningful architectonical configurations of spaces in which the major sources of fumes were located (fig. 16). Undoubtedly the greatest fume-emitters in *insula* IX.3 were the two baking ovens in Units IX.3.10-12 and 19-20. The

³⁶⁹ For axis as an ordering feature, see Watts (1987: 108); for axis as a visual element, see Hales (2003: 107-22).

³⁷⁰ Mygind 1921: 304-5, fig. 30; Salza Prina Ricotti 1987: 119, 1978-80: 255; Ling 1997: 33, plate 10; Kastenmeier 2007: 58.

³⁷¹ Mygind 1921: 307, Adam 1994: 264-5, fig. 623.

³⁷² Arthur 1997: 328, no. 33; Heres 1993: 98-9, fig. 84; Kastenmeier 2007: 59.

³⁷³ Compare Foss (1994: 134-6) on the ways to aerate cooking spaces in various size properties.

baking compartments of these ovens were encased in so-called smoke chambers. Hiding the beehive-shaped baking compartment, the chamber situated above it prevented heat from escaping. Between the encasing and the brick-vaulted oven mouth, a narrow space was left unroofed (fig. 20). It hence operated as a vent.³⁷⁴ More air was brought in through an additional opening which connected the space with the adjacent room. As a result, cross-draught was created, heat and smoke emitted into the open sky and dispersed into the partly unroofed spaces, Rooms 61 and 113, where turning mills created additional heat, smell and moisture. In Unit IX.3.1-2, fumes and heat from three cauldrons (dyeing vats) in Room 43 were dispersed, if the room itself was covered, as suggested above, though the adjacent garden (Room 49-51) onto which the working room extensively opened (fig. 15b).

Other installations probably engaged in production, and hence constituting potential sources of fumes, in *insula* IX.3 are characteristically small. In fact, the structures in Unit IX.3.16 (Room 97) and Unit IX.3.18 (Room 105), so-called furnaces, were not only small but also light because they have disintegrated since their excavation.³⁷⁵ Together with a structure of uncertain function in Room 99 of Unit IX.3.17 (fig. 21a), they were situated in front shops next to wide doorways. The third tentative furnace in Room 78 of Unit IX.3.14 (fig. 21b) is situated in a room that was possibly partly unroofed, next to a light well (Room 79). Whatever was the amount of fumes emitted from these structures, they were easily disposed of.

Finally, one must not forget cooking, which produces smells, steam and heat at least, if not smoke.³⁷⁶ Cooking podia (fig. 22) are found in rooms which were partly open to the sky or were aerated through openings onto adjacent rooms or streets. Consequently, Room 54 of Unit IX.3.1-2 probably had an air vent/skylight, which was particularly needed, if, as suggested, it contained a kitchen. Room 70 in Unit IX.3.13 had not only one but two hearths (fig. 23a). Aeration was arranged through the *compluvium*. In contrast, because the *atrium* of Unit IX.3.25 (Room 136) contained no *compluvium*, fumes from cooking (fig. 23b) escaped to the adjacent garden (Room 138) or street. In Unit IX.3.15 too the possible cooking podium (fig. 24a) is placed in Room 93 off the garden (Room 90). In the remaining

³⁷⁴ Mau 1899: 383, fig. 213; Mayeske 1972: 24, Curtis 2001: 366.

³⁷⁵ The structures might have disintegrated soon after the excavations. For instance, they are not depicted in the MANN model.

³⁷⁶ According to Salza Prina Ricotti (1987: 119, 1978-80: 252-5), the lack of soot on kitchens walls testifies that ready-produced charcoal was used instead of burning firewood to acquire charcoal.

two *atrium*-houses in the city block, aeration was taken care of by the combined use of doorways and windows. Room 14 in Unit IX.3.5/24 contained two windows and a doorway. Being the biggest kitchen with the largest hearth (fig. 24b) in *insula* IX.3, its aeration was well thought of.³⁷⁷ A window in the east wall opened onto a partly unroofed space (Room 12) and the west wall was pierced by the large window, discussed above, to Unit IX.3.3. This observation only strengthens the impression that the window served primarily other functions than lighting discussed above. Room 126 in Unit IX.3.23, possibly kitchen, had a similar arrangement including a window onto the northern alley and a doorway to the partly unroofed *atrium* (Room 127).³⁷⁸ Moreover, if Unit IX.3.17 contained a kitchen at the back, as previously suggested, two windows to the garden of Unit IX.3.19-20 would have taken care of aeration.

The worst conditions were in the small shops which had their front doorways as the sole sources of fresh air. In the absence of direct connection to a roofless space, Room 107 at the rear of Unit IX.3.18 was connected with another room (105), bigger and opening onto a street. Hence fumes from a hearth in the room could escape through this intermediate room. In a similar vein, Room 57 of Unit IX.3.8 was equipped with a cooking podium at the very back (Fig. 25a). With no additional openings, the narrow room itself was a fume-conducting corridor opening onto the Via Stabiana.

The situation was better in commercial units which were not dependent on front doorways alone. Room 64 in Unit IX.3.10-12 (fig. 25b) opened onto Room 61 which was to some extent unroofed. Room 59 in the same unit had both an opening to Room 61 and two wide front doorways which probably resulted in efficient aeration. Room 78 in Unit IX.3.14 may have been partly unroofed, and it opened onto an adjacent light well (Room 79).

3.3.2 Fumes and law

After having established the alternative ways in which aeration and the dispersal of fumes were arranged, it needs to be asked whether there were particular reasons why some

³⁷⁷ In contrast, according to Foss (1994: 136), the two largest kitchens in *insulae* I.4, I.6-10, VII.1, VII.14, IX.1, IX.2 (that is, Room 42 of Unit I.4.5/25 and Room 52 of Unit I.10.4) were the most poorly aerated.

³⁷⁸ This is the only possible kitchen in *insula* IX.3 which has a window directly onto a street. Compare Foss (1994: 134-6) who reports such windows in the kitchens of both commercial and private units.

solutions were chosen over others, whether the layout resulted from convenience or coincidence. After all, if the overall aim was to have, whenever possible, a source of fumes connected to a space in the open air, there could have been a number of other alternative ways to position the given installations. In Roman law both domestic and commercial fumes are briefly discussed. A new type of servitude, labelled as emission-servitude, appears in the writings of the first-century BC jurists. Fumes are covered by this servitude by the early second century AD.³⁷⁹ According to these texts, domestic fumes could not, when considered minor, be banned as a nuisance, unlike commercial fumes which could when they caused an obvious nuisance.³⁸⁰ Although jurists' attitudes towards domestic cooking on a large scale and commercial activities involving fumes on a small scale are unspecified, it seems that the scale of fumes was more relevant than the activities which produced them. Hence, for substantial fumes one would have needed to possess a servitude. Keeping this distinction in mind, we can examine whether the placing of small and large-scale fixtures were any different.

All but two³⁸¹ of the fixtures still standing are located next to walls between units. If pertaining to law, the arrangements may result from two factors. This could suggest that the owners of the units in question were the dominant owners of these walls. Alternatively, if the given walls were *paries communis*, none of the fixtures were seen as causing considerable nuisance. Indeed, one must ask how much fumes would have been affected the neighbouring property when there were no openings in the given walls. Although ancient literature contains mentions of polluting fumes,³⁸² they are embedded in the descriptions of the negative sides of urban living, such as crowdedness, filth and lack of morale. Behind these complaints is authors' disapproval of people who worked for their livelihood, and even worse, for economic success.³⁸³ Therefore, it is perhaps not the fumes as much as the people causing them that are being criticized. Interestingly, however, none of the productive apparatuses causing the most extensive amounts of fumes in the city block were located directly next to the street nor had windows directly next to them. The arrangements could suggest some rudimentary consideration for the amount of fumes emitted into public

³⁷⁹ Möller 2010: 272.

³⁸⁰ Ulpian (*dig.* 8.5.8.5) according to whom the second-century AD jurist Aristo condemned, without a servitude, fumes from an adjacent cheese factory. On the other hand, according to Ulpian, following another second-century jurist Pomponius, domestic kitchen fumes could not have been banned (Ulpian *dig.* 8.5.8.6; 9.2.27.10). See Crook (1967: 151), Watson (1968: 179-80), Saliou (1994: 268-9) for further discussion.

³⁸¹ Rooms 59 and 64 in Unit IX.3.10-12.

³⁸² E.g. Seneca *Ep.* 104.6, Martial 10.66, Plautus *Per.* 104.

³⁸³ Joshel 1992: 63-9.

spaces.³⁸⁴ In contrast, because of their commonness in open view and close to streets, it was seemingly not necessary to tuck away small, fume-emitting commercial installations.³⁸⁵

3.4 Heat

Heat was an essential element in households. Household gods presided over hearths and were therefore seen as directly related to the wellbeing of a household.³⁸⁶ In addition to heat for cooking and washing, artificial heating may have been needed during winter months. Furthermore, many of the commercial activities taking place in *insula* IX.3, including baking, dyeing and metal-working, required heat. Therefore, the archaeological evidence for the use of fire and heat in *insula* IX.3 can shed light on patterns related to domestic and commercial activities.

3.4.1 Fuel

It has been estimated that altogether at least a tonne of charcoal, which constituted the primary fuel (some 80 % of the total) in pre-industrial cities, was used per person per year in domestic circumstances.³⁸⁷ If we are to include the need for fuel in commercial activities, we should double the figure.³⁸⁸ The preference for charcoal lies in the fact that, in comparison to firewood, it is smoke-free and produces heat that is hotter and more enduring. Moreover, being light-weight in comparison to firewood, charcoal is easier to transport in bulk.³⁸⁹ Nonetheless, ancient authors describe the use of both charcoal³⁹⁰ and firewood,³⁹¹ firewood being the more commonly mentioned. Consequently, we can suppose that both charcoal and firewood were used in Pompeii, and the choice between the two was constrained by need, availability and cost, for example.

³⁸⁴ Compare Flohr (2003: 448) on the largest *fullonicae*.

³⁸⁵ Foss 1994: 134, Flohr 2007a: 134-5.

³⁸⁶ E.g. Plautus *Aul.* 1-8. Furthermore, ethnographic studies have shown that a building is frequently not considered as a house or home if it lacks a hearth (e.g. Janowski 1995: 92).

³⁸⁷ Veal 2009: 200 for discussion.

³⁸⁸ Dr. Robyn Veal, pers. comm. 29.3.2010; also Wikander 2008: 139.

³⁸⁹ Wikander 2008: 139.

³⁹⁰ Pliny *Nat.* 35.36.89; also *ibid.* 16.8.23, Cato *Agr.* 38 on production. To produce 1 kg of charcoal one needs some 6-7 kg of wood (Veal 2009: 200).

³⁹¹ Martial 1.49, 3.58, 8.40, Ovid *Fast.* 4.741, Pliny *Nat.* 12.40.81, Varro *L.* 6.66, *R.* 1.15, Cato *Agr.* 38, Columella 12.19.3.

As Pompeian kitchens, if separate, tend to be small and compact, there were no sizeable storage spaces in them. Indeed, if vaulted spaces frequently found underneath cooking surfaces (figs. 23a, 24a-b) were places to store fuel,³⁹² they could not have stored much more than the amount needed for a couple of cooking operations. Moreover, separate storage spaces in Pompeian houses were, when they existed, relative small and they seem to have been used for various types of supplies. Instead, storing frequently took place in various parts of a household, and due to lack of space, stocks had to be regularly replenished.³⁹³

In order to understand supply mechanisms, Veal has attempted, for the first time, to trace the patterns of fuel consumption in Pompeii throughout its history. Based on charcoal analysis, she has argued that beech dominated the available data throughout time, although some other mountainous taxa, fruits and vines gained popularity during the Roman era.³⁹⁴ This, according to her, suggests that while during the Roman era the available taxa were more profoundly exploited, the overall rarity of species present in the data, no more than ten taxa in any period, strongly suggests a highly selective behaviour and clear preferences.³⁹⁵ Notably for instance, species available along the banks of the River Sarno and vine and orchard cuttings were seemingly not exploited to a great extent, although they would have been most readily available. Instead, they might have been used as kindling and faggots, which would have resulted in their complete burning and consequent exclusion from the evidence.³⁹⁶ Moreover, the use of by-products or waste as fuel, at least to some extent, is suggested by a recent study according to which crushed olive pips were burned in bakeries.³⁹⁷

Without excluding the possibility that some houses might have had fuel delivered from their estates and there might even have been some possibilities to fetch fuel from communal woods, together with using easily accessible by-products and waste, the evidence as a whole nonetheless seems to suggest a sophisticated, commercial supply chain. Smaller households

³⁹² Mau 1899: 260, Salza Prina Ricotti 1987: 118.

³⁹³ Kastenmeier 2007: 51-2; also Foss 1994: 153-7, Allison 2004: 127-30, 150-2. It is possible that more storing took place in upper floors but it has been argued that the use of upper floor spaces largely resembled that of ground floors (Allison 2004: 120, 122; Andrews 2006: 101-3).

³⁹⁴ Veal 2009: 131-7, *forthc.*

³⁹⁵ Veal and Thompson 2008: 292, Veal 2009: 204. She (*ibid.* 105) notes that 70 % of her sample composed of beech, oak and hornbeam which are the best suited woods for firewood and charcoal production.

³⁹⁶ Veal 2009: 176-8.

³⁹⁷ Pistrina 2008: 54; see also Ciaraldi 2005: 198.

probably turned to fuel sellers in the town, while commercial units presumably received regular deliveries of larger size cuttings or charcoal of higher carbon contents to suit their needs.³⁹⁸ The supply mechanism would have involved labour-intense wood-cutting in a mountainous environment of abundant beech forests, charcoal production and haulage to the town, as well as retail.³⁹⁹ Veal and Thompson have further argued that since beech prefers calcareous or mildly acidic soils to clayey or wet lands, and thrives on high altitudes (over 800 m ASL), it was mainly available on the upper slopes of Vesuvius, the Lattarius Mountains and the Apennines. Sourcing would have meant travel of at least 15 kilometres to Pompeii.⁴⁰⁰ The argument compares interestingly with recent suggestions about the sources of basic raw materials, such as trachyte and travertine used in construction, and clay used in pottery production. While the raw materials could largely have derived from the direct vicinity of the town, some sources beyond its territory and so-called service area (where it served as the primary market place) may have been in use. This extended economic territory stretched several tens of kilometres outside the town gates.⁴⁰¹

3.4.2 Fixed fire installations

As bakeries were the largest industrial units in *insula* IX.3, they most likely consumed the largest amount of fuel. However, once the walls of the baking compartment had absorbed heat and the interior of the oven risen to a desired temperature, it is probable that it retained heat well, thanks to its considerable mass and the insulation provided by the smoke chamber.⁴⁰² As a result, several batches of bread could probably have been baked in one heating.⁴⁰³ The battery of three cauldrons in the Dye-workshop IX.3.1-2 could likewise have consumed considerable amounts of fuel. The rate of consumption, however, depended on the dye-methods used.⁴⁰⁴ Although the rest of the structures connected to the use of fire are much smaller in size, their capacity to consume fuel must not be underestimated. Evidence

³⁹⁸ Charcoal used in industrial contexts had been produced from old, slow-growth wood (Veal 2009: 140-1).

³⁹⁹ *Ibid.* 194-6; also Krell 1901: 4-5. *Lignari (plostrari)* are mentioned in some Pompeian *programmata* (CIL IV 485, 951, 960). They have been interpreted as wood workers or carpenters (Tanzer 1939: 60-1) but also as people involved in wood transportation or firewood retail (Meiggs 1982: 359).

⁴⁰⁰ Veal and Thompson 2008: 293, 295; Veal 2009: 168. Because the transportation costs of fuels were high in relation to their overall value per unit of volume, close by sources were preferred (Rehdel 2000: 61).

⁴⁰¹ Peña and McCallum 2009b, Kastenmeier *et al.* 2010.

⁴⁰² Mayeske 1972: 24, Curtis 2001: 366.

⁴⁰³ Current bread baking temperatures are some 200 °C. For approximates of time needed to heat an oven and bake a batch of bread, see Adam (1994: 324). The traditional baking ovens of Finland, made of brick and stone, retain heat for several hours after the ashes have been raked out.

⁴⁰⁴ See section 3.5.1.2 below for a related discussion on the consumption of water.

in Pompeii and elsewhere has shown that the melting of metals, which can require temperatures over 1,000 degrees Celsius and hence good quality fuel,⁴⁰⁵ is possible with small fixtures and a few utensils only.⁴⁰⁶ Whereas some small-scale industrial installations could have had a separate firing chamber (furnace proper), charcoal fires too were used in the process of heating crucibles to melt metals or alloys, and in forging, i.e. heating solid metals and treating them in various ways to acquire desired shapes and qualities.⁴⁰⁷ Therefore, domestic and commercial hearths and furnaces could have been very similar; in fact, they could have been used interchangeably.⁴⁰⁸ On the basis of these observations, the podium of so far unknown function in Room 99 (Unit IX.3.17, fig. 21a) might have held charcoal for smithing.

A Pompeian hearth is typically a tile-covered rubble-work structure (figs. 23a-b, 24b), the edges of which are occasionally raised (fig. 25b).⁴⁰⁹ It commonly measures some 0.8 m high and is some 1 m² in size both in domestic and commercial contexts.⁴¹⁰ This largely holds true for *insula* IX.3. However, some larger houses in particular contain podia which measure 4-5 m² in size. Their size suggests that the large houses in question accommodated a large number of people who had to be fed.⁴¹¹ Moreover, elaborate meals of several courses were, or could have been, cooked there at once.⁴¹² In *insula* IX.3 such a sizeable podium is found in Unit IX.3.5/24 (fig. 24b). In addition to catering for the unit itself, the large window between its kitchen (Room 14) and the shop next door (IX.3.3) suggests that the kitchen had even further functions. Described as a service hatch above, the window could have been used to transfer cooked food to be consumed and sold further in the adjacent unit. This possibility strengthens our impression of the common ownership of these units and that

⁴⁰⁵ Copper melts at 1085 °C, iron at 1538 °C, tin at 232 °C, lead at 327.5 °C, silver at 961°C, and gold at 1063 °C.

⁴⁰⁶ Graffs 1988, Dickmann and Pirson 2002: 271-2, fig. 26; Monteix 2006: 21-3 for evidence in Pompeii and Herculaneum. Compare Mattusch (2008: 421) who, discussing Greek evidence, notes that '[c]learly metalworking activities of all kinds could be carried out in a single shop'.

⁴⁰⁷ Forbes 1966: 73, Schröfer-Kolb 2004: 31, Mattusch 2008: 426-31.

⁴⁰⁸ For the sizes of ancient iron-working hearths, see Pleiner (2006: 126-9, 140-3). They are well within the size range of the hearths in *insula* IX.3. According to Schröfer-Kolb (2004: 31), domestic metal-working can be identified on the basis of finds rather than fixtures.

⁴⁰⁹ Fulvio 1879: 275, Foss 1994: 80-1.

⁴¹⁰ Fulvio 1879: 275-7, Salza Prina Ricotti 1987: 118; also Foss 1994: 79-80. In addition, there are some podia no more than some tens of centimetres high and it is questionable whether they can be considered as cooking podia. Kastenmeier (2007: 82) has argued for functions other than cooking, while Salza Prina Ricotti (1987: 118) and Foss (1994: 78) have labelled these structures as hearths. Such a structure is found in Unit IX.3.19-20. As no marks of fire are seen on it, and it has been labelled as a possible counter (Mayeske 1972: 132), it is omitted from further discussion.

⁴¹¹ Wallace-Hadrill (1991b) on large houses with large households.

⁴¹² Kastenmeier 2007: 61.

the shop operated under the direct control of Unit IX.3.5/24. Moreover, it suggests that through these arrangements Unit IX.3.5/24 maximized the production capacity of its kitchen (staff) and the income generated by its holdings. These observations take us from understanding the availability of basic utilities to studying social dependencies and income generation, discussed in full in Chapters 5 and 6.

If a podium contains a small domed oven on top, it is thought to have served for special cooking rather than baking.⁴¹³ A good example of such an oven is again found in Room 14 of Unit IX.3.5/24.⁴¹⁴ In addition to ovens, cooking podia may have been furnished with other fixtures too. Water-boilers were common features in commercial cooking establishments and bakeries, where tepid water was mixed with wine for sale⁴¹⁵ and needed in baking.⁴¹⁶ In domestic contexts they are altogether rare, but occasionally found in large houses where presumably more cooking, and consequently more washing-up, was done.⁴¹⁷ Following the definition by Monteix of the archaeologically distinct traces left by such fixtures currently lacking the metal receptacle,⁴¹⁸ there might have been up to three fixed water-boilers in *insula* IX.3: two in commercial properties (Unit IX.3.10-12, Room 59, and Unit IX.3.14, Room 78) and one in private premises [Unit IX.3.25, Room 136 (fig. 23b)].⁴¹⁹ It seems plausible that Bakery IX.3.10-12 would have possessed one. However, it is difficult to understand why the owners of Units IX.3.14 and 25 would have wanted to invest in a fixed boiler, in particular because hot water was not essential in metal-working carried out in Unit IX.3.14 and Unit IX.3.25 contained, as far as we know, no further artefact evidence for cooking, let alone on a large scale.

It is interesting that no ovens, furnaces, or domestic hearths, were placed along the exterior walls of the city block, although it would have been possible in many cases.⁴²⁰ Instead, the locations chosen might have led neighbours to suffer from transmitted heat. This apparently did not worry builders, who therefore did not perhaps commit an offence, at least in the case

⁴¹³ *Ibid.* 62. Of course, they might also have been used for baking.

⁴¹⁴ Mayeske (1972: 167) lists three (IX.1.28/29, VII.1.47 and VII.15.1/2) other units with ovens in Pompeii.

⁴¹⁵ Hermansen 1981: 190, Salza Prina Ricotti 1987: 121, Monteix 2007: 121.

⁴¹⁶ Borgogino 2006: 48-9, *Pistrina* 2008: 63.

⁴¹⁷ Kastenmeier 2007: 64.

⁴¹⁸ Monteix 2007: 121-2, figs. 3-4.

⁴¹⁹ Monteix (*ibid.* 123, fig. 6) too assumes that Unit IX.3.10-12 had a boiler, and the existence of a now-gone boiler in Unit IX.3.25 is suggested by Bechi (1852: 18).

⁴²⁰ E.g. in Room 59.

of common walls (*paries communis*).⁴²¹ However, in some cases the dividing wall between two neighbours must have belonged to one of them to legitimise certain arrangements. For instance, the oven in Unit IX.3.10-12 was partly embedded into, instead of built against, the party wall between Units IX.3.10-12 and 13. This must have heated up the party wall, and, as a response, might have resulted in the construction of a hearth in Unit IX.3.13 against this wall (fig. 23a). Alternatively, the properties might simultaneously, by agreement, have become engaged in commercial functions that involved nuisances such as heat and smoke.

3.4.3 Movable fire installations

While some units lacked fixed hearths, cooking might nevertheless have taken place as sources of heat could have been movable. It has been debated whether braziers discovered in Pompeii were used to warm rooms, or to keep ready-cooked dishes hot, or whether they were used in cooking as such.⁴²² In contrast, one can suspect they had multiple functions: in winter they provided warmth as well as being used in cooking, in summer they were exclusively used in food preparation.⁴²³ Braziers were made of terracotta, bronze or iron, and they measured between 0.75 x 0.64 and 0.60 x 0.35 m and were 0.17-0.47 m high. While metal braziers were raised on feet and often decorated, terracotta braziers had no feet. Their front part served for vessels to be placed directly on charcoal while the rear part had raised edges to support tall vessels (fig. 26).⁴²⁴ In addition to ready-made braziers, one of the several ways to reuse the top (neck) parts of *amphorae* was apparently to turn them into rudimentary braziers.⁴²⁵

It was long held that smaller units had only rarely fixed hearths but braziers instead.⁴²⁶ Looking at the distribution of cooking-related evidence in *insula* IX.3 (fig. 27), it is clear that both big and small units contained fixed hearths and braziers.⁴²⁷ Nonetheless, most of

⁴²¹ The first-century AD jurist Proculus argues, on the basis of the third-century BC Aquilian Law, that one cannot prevent people from having a hearth (*focus*) along a common wall. Ulpian seems to apply the rule to furnaces (*furnus secundus*) too and hence industrial-sized hearths, as long as one was prepared to pay compensation if the wall burned down (Ulpian *dig.* 9.2.27.10; Saliou 1994: 62-4, but see Foss 1994: 76).

⁴²² Kastenmeier 2007: 80-1. For the efficiency of braziers as heating equipment, see Krell (1901: 17-9).

⁴²³ Foss 1994: 19, Kastenmeier 2007: 81.

⁴²⁴ Foss 1994: 19, Kastenmeier 2007: 80, figs. 58-62.

⁴²⁵ Jashemski 1993: 105, Peña 2007: 149-50.

⁴²⁶ Salsa Prina Ricotti 1978-80: 239-40.

⁴²⁷ Compare Foss (1994: 66), Allison (2006: 388) for similar observations.

the few braziers, grids and tripods are found in small commercial units.⁴²⁸ For example, two braziers were found in the rear (Room 101) of Unit IX.3.17, and one in either Room 73 or 74 of Unit IX.3.13. Neither of these spaces contains fixed podia. In contrast, single-room Unit IX.3.8 contained a fixed cooking podium, an iron tripod, and an iron grid. In the case of larger *atrium*-houses elsewhere, braziers have been found in or near gardens suggesting that cooking was carried out outside fixed kitchens.⁴²⁹ Although *insula* IX.3 does not provide similar evidence, the possibility cannot be excluded, given that Unit IX.3.5/24 contained a moveable brazier. On the whole, the scarcity of braziers not only in *insula* IX.3 but also in general suggests that if they were used for additional heating, only rarely did houses contain such conveniences for winter months.⁴³⁰ Of course, there might have been other ways to heat spaces, such as filling buckets or broken *amphorae* with charcoal. Alternatively, cold and damp might largely have been kept away by thicker clothing and extra layers, as well as by keeping doors and windows shut, adding carpets, wall hangings and curtains. Only a few rooms rather than the entire house would probably have been kept warm in the winter. These rooms might have been located in upper floors which received more direct sunlight.⁴³¹

3.4.4 Cooking vessels

The descriptions concerning simple vessels are minimal in the *Giornale* and hence the form and function of these artefacts are rather difficult to ascertain. Typically they are called vases (*vasi*), bottles (*bottiglie*), or cups (*coppe* and *tazze*). Rarely are there mentions of substances found inside them. Nevertheless, their small size, if indicated, and given names suggest a function related to storing and serving rather than cooking. Instead, the presence of vessels labelled as *pignatte*, *pentole*, *marmitte* and *caldaie* in the *Giornale* suggest that we are more likely dealing with cooking vessels.⁴³²

⁴²⁸ Compare Foss 1994: 66.

⁴²⁹ Allison 2004: 126, 2007: 275; also Jashemski 1993: 102, 105.

⁴³⁰ According to Ruggiero (1879: 15), altogether 50 braziers were found in Pompeii and Herculaneum by 1879. By that time slightly over a half of the currently excavated parts of Pompeii were unearthed (Foss 2007: 30, fig. 3.1).

⁴³¹ Andrews (2011: 20) discussing possible differences in the use of ground and upper floor spaces in Unit IX.3.5/24.

⁴³² Some of these vessels were more common than others. For instance, Fiorelli (1873: 171) reports that between 1861 and 1872 the excavations yielded 151 *caldaie*, 34 *pentole*, 363 *pignatte* and 4 *marmitte*.

Pignatte, *pentole* and *marmitte* probably refer to pots and pans. Wide, flat-based roasting or frying pans with low walls (figs. 28a-b)⁴³³ could have been placed directly on charcoal. Cooking pots with round or small flat bases and straight or curvilinear walls (figs. 29a-b)⁴³⁴ were suspended above charcoal, or placed on tripods or reused *amphorae* feet. The cooking process was controlled by altering the height of vessels above the charcoal.⁴³⁵ Moreover, Pompeian kitchens frequently contained globular vessels with short vertical necks and wide flaring shoulders (fig. 29c). These *caldaie* were most probably used for boiling water as their shape would have made it very difficult to clean them had they contained sticky ingredients.⁴³⁶ In contrast, the small, steep-walled pans with flat bases and horizontal handles called *casseruole* in the *Giornale* contain no traces of blackening and are not saucepans.⁴³⁷

When it comes to mapping the find locations of the given cooking vessels (fig. 27), we need to remind ourselves of the problems already mentioned. Some vessels might have been found where they were used, others where they were stored. Some bronze artefacts, including cooking vessels, found in shops and workshops, were probably for sale.⁴³⁸ Moreover, the lack of kitchen utensils can result from various factors: the evidence was ignored by excavators, no cooking took place in the given space,⁴³⁹ or those fleeing took food and kitchen appliances with them.⁴⁴⁰

⁴³³ Annecchino 1977: 109-11, figs. 2.9, 2.16; Tassinari 1993a: 231, 1993b: 147-53, 1996: 118; Di Giovanni 1996: 66-7, 74-82.

⁴³⁴ Annecchino 1977: 108-9, figs. 1.1-4; Tassinari 1993a: 231, 1993b: 250-74; Di Giovanni 1996: 67-9, 88-96.

⁴³⁵ Salza Prina Ricotti 1987: 119, Alcock 2006: 104, 106.

⁴³⁶ Annecchino 1977: 109, fig. 1.5; Tassinari 1993a: 231-2, 1993b: 275-94.

⁴³⁷ Tassinari 1993a: 232.

⁴³⁸ Compare Berry (1997a: 138-9) whose sample contained, proportionally, the largest number of bronze vessels in shop and workshops.

⁴³⁹ Allison 1995: 187.

⁴⁴⁰ Chapter 1 on refugee behaviour; also Foss 1994: 61.

Size 20-40 m ²	cook podia (no.)	braziers/ tripod/ grid (no.)	cook pots (no.)	Size 40-60 m ²	cook podia (no.)	braziers (no.)	cook pots (no.)	Size 60-130 m ²	cook podia (no.)	braziers (no.)	cook pots (no.)	Size >130 m ²	cook podia (no.)	braziers (no.)	cook pots (no.)
IX.3.3				IX.3. 14	1		5	IX.3. 13	2	1	14	IX.3. 1-2			0-12
IX.3.4				IX.3. 17		2	2	IX.3. 23				IX.3. 5/24	1	1	11-23
IX.3.6			1	IX.3. 18	1			IX.3. 25	1		1-13	IX.3. 10-12	2		1
IX.3.7			1									IX.3. 15	1		2
IX.3.8	1	0 / 1 / 1	8									IX.3. 19-20			4
IX.3.9															
IX.3. 16			3												

Table 3. The distribution of evidence related to cooking in *insula* IX.3.

Nonetheless, the available evidence for cooking vessels, braziers and fixed hearths coincides to some extent which suggests a meaningful pattern (table 3, fig. 27),⁴⁴¹ with the cooking capacity of Units IX.3.8 and 13 particularly reinforced. Unit IX.3.8 probably contained altogether eight pans and pots, the majority of which being bronze would have allowed fast cooking as these vessels warmed up quickly. They were found together with oil-jugs and a mortar, further suggesting food preparation. Room 70 in Unit IX.3.13 also contained a wealth of vessels, including 14 terracotta pans of various sizes.

In terms of domestic cooking, evidence in Unit IX.3.5/24 seems to give further support to the possibility that gardens and probable dining areas surrounding them served as places for cooking.⁴⁴² The garden (Room 18), situated next to a so-called summer *triclinium* (north-facing Room 25), contained two cooking vessels. A further pot was found in adjacent Room 20. Outside *atrium*-houses, the garden (Room 68) in Unit IX.3.10-12 may have contained a pot together with an *amphora*. This tentatively suggests that also in Unit IX.3.10-12 cooking might have taken place in or around the garden, situated next to the kitchen and a room labelled as a *triclinium*.⁴⁴³ Cooking in gardens might have been favoured especially in summers, to escape the heat of kitchens and to cook closer to where food was consumed.

⁴⁴¹ Allison 2004: 101 for similar observations.

⁴⁴² *Ibid.* 126; also Seneca (*Ep.* 78.23) on cooking in dining areas.

⁴⁴³ Compare Jashemski (1979: 193) on cooking and eating in the garden of Shop I.20.5.

Comparing the evidence between different units (table 3), movable cooking vessels are more common than braziers and fixed hearths. However, podia and braziers of conventional forms may have been replaced by other structures of makeshift nature which were not recorded by the excavators. This might be the reason why some houses contained cooking vessels but no hearths or braziers. Moreover, instead of concluding that the units lacking all evidence related to cooking were uninhabited,⁴⁴⁴ several alternative explanations can be provided. As argued above, inhabitants of houses owned in common could share the use of their facilities. This might explain why Units IX.3.3, 4 and 9 contained no evidence for cooking: their inhabitants had an access to the facilities in Units IX.3.5/24 and 10-12. As for the remaining Unit IX.3.23 with no evidence for cooking facilities, its residents could have consumed cooked food on a small scale,⁴⁴⁵ and/or they relied on the services of a large number of food and drink vending shops spread around the town.⁴⁴⁶

The evidence as a whole suggests that food preparation could have taken place in various types of rooms, including small closable rooms without windows or air vents as well as large rooms (partly) open to the sky.⁴⁴⁷ Units had either fixed kitchens or movable braziers and cooking was mainly carried out with a few pans and pots. In larger units or units involved in commercial cooking these types were found in larger numbers but the range of types as such, as observed by Kastenmeier, was not higher.⁴⁴⁸ Hence, in everyday use the vessel forms of the poor and rich were the same. Only when it came to social fine dining, the rich had more specialized vessels in use.⁴⁴⁹ Finally, not only vessels for specialized functions but rooms too can be taken as markers of status. Kitchens as separate spaces can be considered as luxury. While in small units one space served for both cooking and eating, as well as various other activities, in larger units these functions could have been separated into various rooms.⁴⁵⁰ However, although the placing of kitchens differs between small and

⁴⁴⁴ Allison 1995: 187.

⁴⁴⁵ However, what is valid universally is that raw foods are less nutritious than cooked foods and since humans learned to control fire, they have preferred cooked foods (Brothwell and Brothwell 1969: 16).

⁴⁴⁶ Foss 1994, Ellis 2004, 2006, 2008; Monteix 2007, DeFelice 2007.

⁴⁴⁷ Compare Allison 2006: 388-9. In *insula* I.7 too artefacts indicating cooking and eating were found all over the units (Berry 1997a: 120).

⁴⁴⁸ Kastenmeier 2007: 75. In the House of Julius Polybius up to 11 cooking vessels of single type were found (Castiglione Morelli 1996: 111).

⁴⁴⁹ Kastenmeier 2007: 75-6.

⁴⁵⁰ Foss 1994: 5, 69; Kastenmeier 2007: 92. In contrast, Salza Prina Ricotti (1978-80: 247-9) saw the separation of kitchens into their own spaces as a time-bound phenomenon, which she dated to the second century BC. However, it seems that already in the third/second-century BC Pompeii kitchens were separated into own spaces (Nappo 1997: 101, 107) and some *atria* contained cooking podia in AD 79 (Allison 2004: 70).

large units, it has been shown that both of them could have served domestic and commercial purposes.

3.5 Water

Water being a necessity for life, securing its availability has been one of the greatest logistical challenges over time and hence much effort has been dedicated to it. Because the amount of water needed depends on its consumption rate, it is first worth discussing different needs for water in commercial and domestic contexts, as well as describing the available evidence for water-consuming installations (fig. 30).

3.5.1 Consumption

3.5.1.1 Domestic

In domestic contexts water is mostly needed, in addition to human and animal consumption, in cooking and washing. Some water might have been needed for watering plants, and it was used for recreational purposes. Whereas these water-features outside the realm of necessity are discussed below, *insula* IX.3 contains only one purely functional fixture related to water-use in domestic contexts. A shallow basin lined with hydraulic plaster is found adjacent to the cooking podium in Room 14 of Unit IX.3.5/24 (figs. 31a-b). According to Salza Prina Ricotti, such basins are common in Roman kitchens.⁴⁵¹ Had it a connection to a drain that ran underneath it, the basin could be labelled as a sink.⁴⁵² However, the connection cannot be confirmed due to the poor state of the remains.

3.5.1.2 Commercial

In industrial bread-making water is needed for various activities, such as moistening grain before milling, leavening and kneading, washing utensils, sprinkling loaves before and

⁴⁵¹ Salza Prina Ricotti 1978-80: 258-9; also Foss 1994: 349, fig. 2.23.

⁴⁵² As suggested by Breton (1855: 300) who also mentions a conduit.

during baking, and watering animals at work.⁴⁵³ While the two bakeries in the city block, Units IX.3.10-12 and 19-20, share similarities in terms of mill count and oven size, they differ from each other in two important respects. Firstly, interpreting the way in which different phases of bread-making were spatially separated in Unit IX.3.10-12 is not as straightforward as in Unit IX.3.19-20. For example, Unit IX.3.10-12 contains no apparent space where grain could have been treated with water, the process which facilitates bran fracture and the separation of bran and flour to produce the whitest, best quality flour.⁴⁵⁴ Although such a space does not belong to the common features in Pompeian bakeries and therefore its absence in Unit IX.3.10-12 is hardly surprising,⁴⁵⁵ it is a possibility however that a shallow basin found in the garden (Room 68, fig. 32) could have been connected to this or other functions involving water and related to commercial baking, if not related to the collection of water. Instead, according to Fiorelli, grain was ‘washed’ in Room 118 of Unit IX.3.19-20.⁴⁵⁶ This space contains two large vessels connected to mains water (figs. 33a-b, 34a). Likewise, in Unit IX.3.10-12 no distinct space for the mixing of water, flour and leaven for dough has been identified, although one of the two *podia* in Room 64 (fig. 25b) could have served water-related activities, domestic or commercial, or both. Instead, dough preparation was apparently done in two lead-lined receptacles of Room 120 (fig. 34b) in Unit IX.3.19-20.⁴⁵⁷ Secondly, the mills were not in use in Unit IX.3.10-12 in AD 79. Fiorelli describes how the *catilli* had been lowered down from their *metae*.⁴⁵⁸ However, because the *catilli* were left next to the *metae*, it seems that the disruption in milling was recent and it had probably had no impact on the means by which water was supplied to the bakery.

The process of dyeing involves a mixture of water and a dyeing agent, most commonly extracted from plants. This mixture is subsequently heated to attach colour to garments.⁴⁵⁹ In Unit IX.3.1-2, the three dyeing cauldrons in Room 43 (fig. 35a) measure some 0.90-0.77 m in internal diameter and are 0.95-0.75 m deep. They held a metal receptacle, probably in lead.⁴⁶⁰ The current sizes suggest that the overall capacity of the vats might have been some

⁴⁵³ Thurmond 2006: 52-72.

⁴⁵⁴ Pliny *Nat.* 18.20.87, Moritz 1958: 156.

⁴⁵⁵ Mayeske 1972: 40. This process is not depicted in the known images of baking and milling (Wilson and Schörle 2009).

⁴⁵⁶ Fiorelli 1873: 53.

⁴⁵⁷ The actual kneading took place in a separate machine located in the room (Monteix 2009: 5, fig. 7).

⁴⁵⁸ Fiorelli 1873: 51.

⁴⁵⁹ Forbes 1964: 132-9, Wilson 2000a: 144, Borgard and Puybaret 2003: 301-2.

⁴⁶⁰ Compare Borgard and Puybaret 2003: 307.

1,400 litres, and if half-filled, they would have consumed some 700 litres of liquids.⁴⁶¹ Altogether it is difficult to evaluate how many ‘cauldronfuls’ one dyeing process required. This depended on the chosen procedure: direct dyeing, mordant dyeing, or vat-dyeing. Some processes required several phases with different liquids whereas other processes were simpler and consumed more time than water.⁴⁶² Indeed, if the cauldrons in Unit IX.3.1-2 served re-dyeing of worn cloths, as previously suggested,⁴⁶³ the processes could have been relatively simple.⁴⁶⁴ In addition to the front part of the unit, the back part too may have housed commercial, water-consuming functions. A fixture found in Room 54 may be associated with the process of dyeing. In the north part of the *cocciopesto* floor there is a rectangular imprint with raised edges (fig. 35b). While the basin-like structure is too shallow to have been able to hold large quantities of liquids, it might be a water-tight base for other, perished installations. For instance, the room might have served as a place for preparing dyes or rinsing dyed garments.⁴⁶⁵

Whereas the overall identification of units connected to baking and dyeing is straightforward, thanks to distinct ovens, mills, and cauldrons, the identification of Units IX.3.14, 16, 17 and 18 as connected to metal-working is less evident and based on artefacts. However, the units do contain fixtures which can, at least partly, be considered commercial and can thus shed light on the function of these units as well as on their water-consumption rate.

Units IX.3.14 and 17 contain vats in Rooms 78, 99 and 101 (figs. 21a, 36a-b). The external sizes of these vats are roughly the same in height (0.50-0.65 m) and width (0.70-0.80 m) but variable in length (1.20-1.70 m). They are lined with hydraulic plaster and currently filled with soil. Assuming that they are at least as deep as their walls are currently high, they would be ca. 1 m³, 0.8 m³ and 0.4 m³ in volume.⁴⁶⁶ Moreover, inserted into the west wall of Room 105 in Unit IX.3.18 was a semi-circular terracotta vat surrounded by a masonry channel. The structure is now lost and hence no further information on it is available.

⁴⁶¹ Borgard and Puybaret (*ibid.* 309) provide a total of 1,290 litres. It is difficult to produce meaningful figures, however, because the vats are heavily reconstructed.

⁴⁶² Forbes 1964: 133-5.

⁴⁶³ Moeller 1976: 39.

⁴⁶⁴ Borgard and Puybaret 2003: 313.

⁴⁶⁵ As mordanting requires heat (*ibid.* 301, 313), the basin was not suitable for such use.

⁴⁶⁶ For similar vats in commercial context, see Devore and Ellis (2005: 6-7, fig. 19), Monteix (2005: 268-9); for vats in domestic-commercial context, see Dickmann and Pirson (2000: 454-5, figs. 3, 6); and for vats in domestic context, see Kastenmeier (2007: 21, fig. 5).

Despite our limited knowledge, one can nevertheless note that the vats are modest in size and they are not found in distinct groups or series. Comparing this information to an outline of the characteristic features of different vat-based manufacturing activities, as provided by Wilson, we can rather confidently exclude the use of these vats in fish-salting and *garum*-production, wine and olive oil production, tanning and fulling, and levigation of clay.⁴⁶⁷ In Pompeii other commercial activities which involved vats are perfume making and basketry at least, but there is no specific evidence to support such activities either.⁴⁶⁸

Therefore, it is important to look at the evidence as a whole. For instance, in Unit IX.3.14 the combination of a vat, a furnace and a hearth, and the fact that the unit contained several metal artefacts, some of which were mended in antiquity, does favour the identification of metal-working. These vats might consequently have been used in cooling (quenching) cast or forged artefacts,⁴⁶⁹ and, perhaps in conjunction with domestic use, they provided a water-source which was easily available in case a fire broke out. Such a risk is elevated when dealing with temperatures close to 1,000 degrees Celsius. Nevertheless, metal-working was not as clearly bound to water-consumption as were baking and dyeing. Instead, water-consumption rates remained relatively low. In line with these arguments, basins in Rooms 99 and 101 of Unit IX.3.17 might also have been related to metal-working.

3.5.1.3 Domestic or commercial

In addition to the ones described above, there are several other water-related structures which may have been commercial or domestic in function. Moreover, it is currently unknown whether these structures were used for water consumption or collection. The ambiguity in defining their function results from two factors. Firstly, some of them remain from older house and room arrangements and we hence lack their original contexts. Secondly, although structures might primarily have served one function, it is often artificial to define their function too rigidly as belonging to the domain of commercial or domestic,

⁴⁶⁷ Wilson 2003: 445-6. For Pompeian examples of these activities, see Borgard *et al.* (2005: 296-306), Flohr (2007a), Jones and Robinson (2007: 394), Peña and McCallum (2009a), Devore and Ellis (2010: 17). Fish-salting vats are typically sunk into the ground; the production of wine and olive oil requires the presence of presses and other additional equipment; fulling and tanning vats are typically found in a series; and the identification of vats used for the levigation of clay is assisted by the presence of kilns and kiln wasters.

⁴⁶⁸ Borgard *et al.* 2005: 306-14. A perfumery would have utilized a special type of press, and the single known soaking vat for wicker is several times larger than the vats in *insula* IX.3.

⁴⁶⁹ Compare Wilson 2000a: 142-3.

because, as we have already seen, spaces and functions were not necessarily separated on these grounds.

In terms of former structures, the floor of Room 14 in Unit IX.3.5/24 bears scant traces of a water-related structure (fig. 31b). The original context of this shallow basin is not known, but it is a possibility that it was commercial in character, and built in relation to a cistern currently between Rooms 14 and 13. Indeed, the cistern predates the current division of space between Rooms 13 and 14 and may belong to a phase in which the layout and functions of adjacent rooms were significantly different.⁴⁷⁰ Structures along the western wall in Room 29 (Unit IX.3.5/24) might likewise have been built for domestic or commercial use (fig. 37a). Before they were filled and turned into cupboards, they served to hold liquids. Stratigraphic relations may suggest that when a possible cistern in Room 29 was taken out of use (fig. 37b), these structures were built as above-ground water-tanks.

Furthermore, Room 123 in Unit IX.3.19-20 and Room 73 in Unit IX.3.13 contain a convex moulding in hydraulic plaster at the junction of walls and floor. The presence of such a ledge in a room typically suggests that the room was designed to hold liquids. Room 123 might originally served as a large water reservoir or tank, possibly to substitute an underground cistern. The structure was later altered and water was allowed to flow only in a gutter next to the walls. By AD 79 the gutter had also been filled in. In the case of Room 73 the situation is largely unclear and it can only be said that water was probably present in the room in AD 79, at least from time to time. It might simply have been well-waterproofed as it was open to the sky.

The association of a basin in Room 79 (Unit IX.3.14, figs. 38a-b) with liquids is supported by thick hydraulic plaster, and a channel-like groove in the northern wall suggests that water was brought in, through it, from above. Consequently, the basin had probably served as a water-tank.⁴⁷¹ However, its water holding capacity had been reduced at a later stage. From the height of a metre above the basin floor, which is the current height of its south wall, the hydraulic plaster on the walls was covered by a non-hydraulic one. In a further, subsequent phase the entire east wall was covered with coarse plaster. Therefore, it might be more

⁴⁷⁰ Castrén *et al.* 2008: 337.

⁴⁷¹ If we assume that the south wall of the basin in Room 79 was 1 m high, it would have held 2,000 litres which is very little on comparison to cistern capacities (see below).

appropriate to consider the structure as moisture-resisting rather than liquid-holding in AD 79. Moreover, it is notable that the basin was probably not connected to a cistern found next to it.⁴⁷²

As a result of the discussion above, it has become clear that water consuming structures in *insula* IX.3 differed, both in size and shape, between units. This implies that water consumption rates too varied considerably from unit to unit. In this light it becomes significant to compare the water supply strategies of different households. Before focusing on water-supply, however, it needs to be pointed out that the placing of the water-consuming structures in *insula* IX.3 follows the pattern already noted in the case of fire installations, i.e., they are mainly located along the partition walls between properties. Interestingly, in line with this observation, jurists treated dampness and fumes as similar nuisances. Jurists' discussion on the rights to wash and to build domestic baths seems to imply that while small-scale dampness of common walls had to be tolerated, on a larger scale it could have been prohibited.⁴⁷³ Humidity was labelled as emission, and causing a wall to become damp may have required a servitude.⁴⁷⁴ However, because the commercial water installations in *insula* IX.3 were relatively small, they would probably have caused less damage than private bath-suites and may not have required special concessions.⁴⁷⁵

3.5.2 Sourcing water

3.5.2.1 Cisterns

One of the earliest means used to provide water for households was to collect it from rain falling onto roofs or open yards, and conduct the collected water into underground cisterns.⁴⁷⁶ In AD 79, cisterns remained popular. Indeed, they are by far the most common water-related structures in *insula* IX.3 (fig. 39), up to 12 having so far been identified as in

⁴⁷² For a resembling structure (room f) in *Taberna* V.1.20-21, see Boman and Nilsson (2008a: 142).

⁴⁷³ According to the first-century AD jurist Proculus, one can build a bath along a party wall even if it made the wall damp. Instead, the second-century AD jurist Neratius bans the building of warm baths which make the wall constantly damp. (Paul *dig.* 8.2.19.)

⁴⁷⁴ Möller 2010: 272.

⁴⁷⁵ Compare Boersma (1985: 237) discussing a case in Ostia, in which a bath-house had its own perimeter wall built against the neighbouring house, which, according to him, was made to prevent damaging the neighbouring wall.

⁴⁷⁶ Wallace-Hadrill 1997: 231-2, Wilson 2008: 287. For the methods to make and keep water collected into cisterns as clean as possible, see Jansen (2005: 278).

use in AD 79.⁴⁷⁷ Moreover, there were at least nine cisterns out of use.⁴⁷⁸ All but one of these cisterns⁴⁷⁹ are found in kitchens, gardens, *atria* or commercial spaces, following a pattern previously noted.⁴⁸⁰ Hence, they were located both in roofed and unroofed spaces.

In an unroofed space water was collected into cisterns via gutters and *impluvia*. However, in contrast to the canonical view which stresses the importance of *impluvia* in *atria* as water-collecting basins, through which cisterns received their water,⁴⁸¹ in AD 79 *insula* IX.3 contained no more than one cistern-*impluvium* pair in operation.⁴⁸² Instead, the *impluvium* of Room 29 (Unit IX.3.5/24, fig. 37b) was not connected to a cistern but water was directly drained into the northern alley. Likewise, if Room 2 (Unit IX.3.5/24) contained an *impluvium* under repair,⁴⁸³ it had not been connected to a cistern (fig. 40a).⁴⁸⁴ Moreover, the connection between cistern and *impluvium* had been cut in Room 70 (Unit IX.3.13, fig. 14). The cistern had been filled with ash and organic refuse, probably representing waste from cooking activities in the room.⁴⁸⁵ While scholars have paid attention to the process in which the *atrium* lost its role in water-collection, they have also stressed its new role as a place of fountains and water display.⁴⁸⁶ In contrast, no evidence in *insula* IX.3 can, for certain, be connected to this embellishment process.⁴⁸⁷ Instead, the evidence in the city block emphasises the importance of gutters and wall-inserted pipes as the means by which rainwater was collected into cisterns outside *atria*.

In AD 79 gutters were in use in three to four rooms in the city block (fig. 39).⁴⁸⁸ Because two of these gutters have been newly studied, they best serve as illustrative examples. In Unit IX.3.5/24, a raised gutter ran inside Room 18, along its north and east walls (fig. 40b). Replacing two partly superimposed gutters (fig. 41a), it shows that the water collection

⁴⁷⁷ In Rooms 14, 37, 41, 49-51, 54, 65, 68, 78, 82, 97, 113 and 136.

⁴⁷⁸ In Rooms 2, 14, 29, 56/148, 58, 70, 118, 121 and 128.

⁴⁷⁹ In Room 128.

⁴⁸⁰ Mygind 1917: 320. However, akin to the situation in Room 14, other cisterns too may predate the current room layouts and functions.

⁴⁸¹ Jansen 2007a: 258, fig. 16.1.

⁴⁸² In Room 82 of Unit IX.3.15.

⁴⁸³ Recent studies by the *EPUH* confirm that in AD 79 the room did not contain an *impluvium* in operation but it may have been under repair (Castrén *et al.* 2008: 337). For further discussion, see the catalogue.

⁴⁸⁴ Contra Falkener 1860: 43.

⁴⁸⁵ On cisterns as dumps, see e.g. Ellis and Humphrey (1981) discussing examples in Carthage.

⁴⁸⁶ Maiuri 1928: 171, Dwyer 1979: 59-60, Andersson 1990: 213-4, Dickmann 1999: 301-8, Jansen 2001: 37.

⁴⁸⁷ Contra Falkener 1860: 43.

⁴⁸⁸ In Rooms 18, 49-51 and 90, possibly also in Room 127 which reportedly contained a *pluteus* and a canal. No remains are visible on the ground however.

structures were redone when larger changes in the garden area took place.⁴⁸⁹ In addition to water-collecting, it also served as a basis for a fountain niche and mains pipe leading there (fig. 41b). In Unit IX.3.1-2, the clearance of Room 49-51 revealed a gutter (fig. 42a) made in two parts, neither of which however had a visible connection to the cistern in the garden. Instead, the gutter was connected to a cistern in Room 54 at the rear of the unit (fig. 42b).

The example in Unit IX.3.1-2 illustrates how assuming a connection between two physically adjacent structures is simplistic. However, we must resort to these assumptions when, even after excavations, no detailed information on precise arrangements is available. For instance, at the north-east corner of Room 136 in Unit IX.3.25, a terracotta pipe runs vertically inside a wall next to a cistern mouth.⁴⁹⁰ The pipe must be associated, in the absence of known connection to drains, with the water supply mechanism of that cistern. Water would have been collected from the surrounding roofs, through the pipe, to the cistern. The identification is further strengthened when, on a closer inspection, the pipe is closer to 10 than 20 cm in diameter and its interior contains no calcium incrustation which would connect it either with the disposal of human waste or with calcareous mains water.⁴⁹¹

An unusual arrangement related to rainwater collection can be found between Units IX.3.14 and 15. A large diameter lead pipe without any signs of incrustation is embedded in the west wall of Room 80 in Unit IX.3.15 (fig. 43a).⁴⁹² At the point where the pipe meets the floor level it seems to have been divided into at least three secondary pipes, none of which remains today (fig. 43b). The socket holes for these secondary conduits however suggest that one branch led to Room 76 in Unit IX.3.14, one to the south towards the Via degli Augustali, and one to the north towards the rear of Unit IX.3.15. The alignments do not correspond with the locations of known cisterns.⁴⁹³ Therefore, for this major distribution

⁴⁸⁹ Compare with similar alterations in Bakery V.1.14-16 (Boman and Nilsson 2008a: 147-8), in the House of Caecilius Iucundus V.1.22-27 (Karivieri and Forsell (2008: 131) and in the House of the Greek Epigrams V.1.18.11-12 (Staub Gierow 2008: 109).

⁴⁹⁰ Another pipe is found in a similar location in Unit IX.3.23, Room 127, but without an adjacent *puteal*. A cistern has however been reported by Eschebach *et al.* (1993: 418). See Chapter 4 for pipes of rather small diameter and without incrustation, found in isolation from known water-containing structures.

⁴⁹¹ Andrews 2006: 58, Hobson 2009: 72. The pipes with diameters close to 20 cm and with deposits of calcium phosphate are discussed in section 4.1.2 below.

⁴⁹² For other lead pipes outside the mains water system, see Miele (1989: 169, 171, fig. 7) on House I.2.16, Flohr (2007b: 133) on *Fullonica* VI.15.3, Karivieri and Forsell (2008: 130) on the House of Caecilius Iucundus; also Jansen 2001: 38-9, notes 6, 26.

⁴⁹³ However, we cannot exclude the possibility that one branch led to the cistern in Room 82. Compare Andrews (2006: 85-7) who reports water tanks in the upper floors of Herculaneum and which drained to ground floor cisterns.

pipe to work, a large pool of water, most probably collected from the neighbouring roofs, was needed. In Roman law the concept of *castella privata* involves mutuality as opposed to servitudes: people who shared the same water source shared the responsibilities related to it.⁴⁹⁴ Perhaps this concept of shared water can be applied to the case of the pipe between Units IX.3.14 and 15. Moreover, because the upper floor of Unit IX.3.16 seems to have extended above Room 80 in Unit IX.3.15 (fig. 6), the roof of this unit too would have contributed to the collection of water.

In addition to the pipes described above, many more wall-inserted pipes were out of use in AD 79, and hence are unimportant in the understanding of the water-supply mechanisms of the last phase.⁴⁹⁵ Nevertheless, they constitute a significant manifestation of the importance of water supply that was constantly reworked and adapted to meet relevant needs. Moreover, the location of these pipes may indicate the ownership of the walls in which they were embedded. According to the jurist Proculus, one was not allowed to embed one's own pipes collecting rainwater into common walls.⁴⁹⁶ Alternatively, these pipes may have been placed there under the aegis of *servitus stillicidii*.⁴⁹⁷ Instead of directing rainwater into the neighbouring land, a dominant owner of this servitude might have been able to insert rainwater drain pipes into the wall of the neighbour.⁴⁹⁸

The discussion of cisterns in *insula* IX.3 can be summarized as follows. Whereas in AD 79 *atria* had lost their importance as a water source for a household, rainwater was still being extensively collected. Altogether, the available roof area determined the capacity of a unit to collect water internally.⁴⁹⁹ This notion gains true importance when we study roof areas available for individual units (table 4). Although, as shown above, some water falling onto a roof of a unit may have been diverted to or shared by a neighbour, the lack of information concerning the orientation of roofs renders it impossible to account for these factors. Therefore, and in order to make units comparable, we must resort to simplifications. For the purposes of this thesis and because the sizes of openings in roofs are unknown, rooms that

⁴⁹⁴ Saliou (1994: 139) on the basis of Frontinus *Aq.* 106.

⁴⁹⁵ A pipe out of use is found e.g. in Room 121, and infilled channels in walls are found in Rooms 122-123 and 128 for example.

⁴⁹⁶ Paul *dig.* 8.2.19.

⁴⁹⁷ Gaius *dig.* 8.2.2. The right was already mentioned by Cicero (*Orat.* 1.38.173).

⁴⁹⁸ Ling 1997: 249.

⁴⁹⁹ Hodge 2008: 59, Wilson 2008: 289; contra Foss (1994: 136, 138) and Jansen (1997: 130) according to whom the presence of an unroofed space alone determines whether a unit could or could not collect water internally.

were partly unroofed are considered as fully unroofed.⁵⁰⁰ As the results are highly speculative, given that *atria* for instance probably had only small openings in their roofs, as argued above, it is best to divide the units into rough categories of available roof area.⁵⁰¹

Roof area < 50 m ²	No. of cisterns	Roof area 50 < 100 m ²	No. of cisterns	Roof area 100 < 200 m ²	No. of cisterns	Roof area 200 < 300 m ²	No. of cisterns	Roof area > 300 m ²	No. of cisterns
IX.3.3	1	IX.3.7	(1)	IX.3.1-2	2	IX.3.10-12	2	IX.3.5/24	2 (+3)
IX.3.8	(1)	IX.3.13	(1)	IX.3.23	(1)	IX.3.15	1	IX.3.19-20	1 (+2)
		IX.3.14	1						
		IX.3.16	1						
		IX.3.17							
		IX.3.18							
		IX.3.25	1						

Table 4. Roof area and cistern counts of units in *insula* IX.3. Cisterns out of use in AD 79 are in brackets.

On the basis of this table, two important observations can be made. Firstly, only four of the seven smallest one or two room units in the city block are listed. The reason for the omissions is simple. Units IX.3.4, 6 and 9 had no direct access to roof area because neighbouring properties had extended over these units and taken up their upper floor space (fig. 6). Therefore, we can assume a common ownership of these units, and propose that units of common ownership may have shared the use of cisterns which received water from the entire roof area of the property. On the other hand it is worth emphasising that those small units which had a direct access to the roof had all been equipped at some point with their own cisterns.⁵⁰² There was seemingly a tendency to construct cisterns whenever possible. If we take the annual mean precipitation in Naples between the years 1851 and 1950, 867 mm,⁵⁰³ a roof of 50 m² could already yield some 43 m³ of water per year. Interestingly, this is in line with the average capacity of cisterns so far excavated in Pompeii,⁵⁰⁴ perhaps indicating that the owners of the smallest units could have been prepared to take full advantage of rainfall had that poured down in a short period of time. As for *insula* IX.3, the cistern in Room 14 (Unit IX.3.5/24) is the only one that has so far

⁵⁰⁰ As discussed above, in AD 79 unroofed spaces mainly collected water from the surrounding roofs, not water falling onto the unroofed area.

⁵⁰¹ The calculations include circumference walls as they would naturally be roofed too.

⁵⁰² Compare Foss (1994: 136) according to whom none of the workshops in his sample contained cisterns.

⁵⁰³ Usai 2008: 25.

⁵⁰⁴ Jansen (2002: 77 no. 88) gives the capacities of eight cisterns which vary from 12 to 75 m³ (av. 45 m³). This fits to the range of average cistern capacities in the Roman world at large, which, according to Wilson (2003: 444), is 15-50 m³.

yielded enough information to estimate its capacity. Measuring some 36 m³ in size it is below the average but falls within the mid-range of known cistern capacities.

Secondly, the number of cisterns in different units is telling. Although the cistern capacities in *insula* IX.3 remain unknown beyond the single case, and the chronology of cisterns is not understood, it is nevertheless important to note that the three commercial establishments with over 100 m² of roof area and known water-consuming function had at least two cisterns. This suggests that a single cistern was deemed inadequate or its supply too unreliable.⁵⁰⁵ Consequently, perhaps because in AD 79 Unit IX.3.19-20 contained only one cistern in use, it had been connected to mains water supply, discussed further below. In comparison, only a single domestic residence, with over 300 m² of roof area, had more than one cistern. The figures seem to reflect differences of scale in domestic and commercial water use.

3.5.2.2 Public water provision

Wells were the first man-made constructions which allowed artificial water-supply.⁵⁰⁶ However, because the bedrock underneath Pompeii is difficult to dig through, and because the groundwater level is at the depth of 20-30 metres, the number of wells remained small.⁵⁰⁷ Moreover, several of the wells were out of use by AD 79.⁵⁰⁸ Likewise, the closest public well to *insula* IX.3, situated at the north-west corner of adjacent *insula* IX.2, was filled in and during the Roman era it served as a communal *compitum*.⁵⁰⁹ The most important element in the public water supply was, by far, an aqueduct connection.

It was long held that Pompeii was connected to an aqueduct roughly at the time of Augustus at the end of the first century BC,⁵¹⁰ and that the supplier of this water was a branch of the

⁵⁰⁵ Compare Vann (1981: 31) and Wilson (2003: 444) on the adequacy of cisterns in terms of different water uses. Furthermore, Vann (*ibid.* 37) has noted that two or more cisterns made it possible to clean and repair a cistern at a time without cutting internal water supply.

⁵⁰⁶ Wilson 2008: 285.

⁵⁰⁷ Jansen 2005: 278, 2007a: 257. Wells in the Roman world are rarely more than 25-30 m deep (Hodge 2008: 53, Wilson 2008: 286).

⁵⁰⁸ See e.g. Arthur 1986: 37.

⁵⁰⁹ Van Andringa 2000: 61, no. 25; Coarelli and Pesando 2006b: 5. For other close-by wells, see Eschebach *et al.* 1995: 137, fig. 44.2.

⁵¹⁰ Jashemski 1979: 32, Zanker 1998: 118, Ling 2007: 123.

Aqua Augusta (also known as the Serino-aqueduct and Claudian aqueduct) sourcing its waters from the Apennine Mountains.⁵¹¹ However, besides this dominant view, arguments for an earlier date of communal water supply have been made since the 19th century. According to Mau, Pompeii had its public water provision installed between the Second Punic War and the Social War.⁵¹² Maiuri on the other hand postulated a date in connection with the establishment of the colony.⁵¹³ This view has recently been supported by Ohlig,⁵¹⁴ whose work is by far the most thorough study of Pompeian mains water supply and hence forms the basis of our current understanding.⁵¹⁵ According to Ohlig, Pompeii was connected to an aqueduct between 80-40 BC, but most likely at the time of Sulla. As a result, a large number of the extant water towers and public fountains had already been constructed in the Late Republican period, i.e. the entire infrastructure needed to provide running water into the various parts of the town can be dated early.⁵¹⁶ While this early mains water supply served public uses, if not individual units, it gave the residents the possibility of supplementing cistern (and well) water with that available in fountains.⁵¹⁷

However, according to Ohlig, the water supply system was altered when the Augustan aqueduct was built. Whereas the previous connection had sourced its water from the mountains near the town of Avella in the Apennines, 10 km north-east of Nola,⁵¹⁸ around 20 BC it was incorporated into the Aqua Augusta.⁵¹⁹ As a result, the Avellan aqueduct became a tributary of the system. This, according to Ohlig, had a major impact on Pompeii's water supply. Although the changes decreased the overall amount of water reaching the town, because water was divided between several destinations, the flow became steadier and had less seasonal variation.⁵²⁰ The available evidence indicates that from this point onwards

⁵¹¹ The course of the Augustan aqueduct is not fully understood, in particular when it comes to its secondary branches, such as the one that possibly led to Pompeii. After AD 324 (or 232) the restored conduct served the towns of Puteoli, Neapolis, Nola, Atella, Cumae, Acerrae, Baiae and Misenum (Sgobbo 1938: 76-80). Pompeii, having been buried for 150 years, is missing from the list.

⁵¹² Mau 1899: 227.

⁵¹³ Maiuri 1960: 27.

⁵¹⁴ Ohlig 2001: 83, 2004: 104-5.

⁵¹⁵ Further work on the sources and dating of the aqueduct is presently being carried out. While these studies have not been published in full, they may provide alternative views to Ohlig's (Matsui *et al.* 2009; Dr. Duncan Keenan-Jones, pers. comm. 8.1.2010).

⁵¹⁶ Ohlig 2001: 83-4, 2004: 104.

⁵¹⁷ *Ibid.* 2001: 84. In general, it seems that only in the late Republican water legislation the concept of having water made available not only to public uses but private too emerged (Saliou 1994: 185, Bianco 2007: 125).

⁵¹⁸ Murano 1894, Ohlig 2001: 50-4.

⁵¹⁹ Ohlig 2001: 84.

⁵²⁰ *Ibid.* 75, 277; 2004: 77.

private water consumption in Pompeii increased markedly.⁵²¹ Individuals could, and desired to, tap into the system. In this light the evidence in *insula* IX.3 too should be examined and asked where and when connections were made.

However, the evidence in *insula* IX.3 reflects the situation in AD 79. Today, scholars are abandoning the view that public water provision had been cut after AD 62, as proposed by Maiuri and widely accepted ever since. According to Maiuri, the damage of the AD 62 earthquake was so severe that the entire internal network of pipes in the town had to be renewed.⁵²² Indeed, if the intensity of the AD 62 earthquake reached the degree of ‘violent’ (IX on the Modified Mercalli Intensity Scale), as suggested,⁵²³ it is likely that some underground pipes burst.⁵²⁴ However, the chronology of separate buildings shows that constructions relying on the availability of mains water were built between the years AD 62 and 79.⁵²⁵ While some pavements were removed in AD 79, seemingly to carry out water maintenance works,⁵²⁶ we must remember that water pipes were repaired and altered without crises. In addition to damage repair, they were dug up for chosen structural changes in units, and they had to be renewed or cleaned to avoid clogging by accumulated *sinter* inside them.⁵²⁷ Therefore, there are grounds for assuming that in AD 79 the public water supply was not at a standstill.

3.5.2.3 Water distribution from the aqueduct

From the main *castellum aquae* water was distributed to the different parts of the town through fourteen water-towers. Multiple towers allowed water to run at a relatively low pressure, important when water flow was based on gravity and variations in local

⁵²¹ De Haan (2001: 46) on private baths, Jones and Robinson (2007: 398) on the decoration scheme of the House of the Vestals (VI.1.7) based on fountains connected to water mains.

⁵²² Maiuri 1942: 90-4.

⁵²³ Guidoboni *et al.* 2007.

⁵²⁴ Compare U.S. Geological Survey 2011.

⁵²⁵ Andersson (1990: 232) on summer *triclinia* built after AD 62 to utilize elaborate water features; Richardson (1988: 19) on the construction of the Central Baths. Maiuri (1942: 92) suggested that a part of the communal water supply system may have been repaired to supply these structures.

⁵²⁶ Maiuri 1931: esp. 557-8, Nappo 1996. In addition to assuming that the pavements were opened to repair AD 62 damage, the ongoing works could indicate that the water supply system was prepared after AD 62 by digging pipes just below the ground level and in AD 79 the system was opened in order to dig new pipes deeper into the ground (Ling 2005: 91). Alternatively, they could indicate that further tremors between AD 62 and 79, some of which could have been very recent, had created a new need to repair and replace pipes.

⁵²⁷ Compare Frontinus *Aq.* 122. For example, it has been calculated that every year some 1 mm of sinter accumulate inside the famous Nîmes aqueduct (Hodge 2008: 228).

topography were considerable.⁵²⁸ Therefore, these water towers were not evenly distributed throughout the town, but concentrated along its N-S axis and in the central areas of the town where changes in topography are most prominent.⁵²⁹ Available written sources from the Roman world describe how, for a fee, private citizens could gain a connection to a water tower.⁵³⁰ However, private connections were not allowed to limit the availability of free public water.⁵³¹ Furthermore, whereas the emperors, from Augustus onwards, granted the permission for a citizen in Rome to tap into aqueduct-borne water,⁵³² in other Roman cities it was the duty of city officials.⁵³³

A mains line closest to *insula* IX.3 ran along the Via Stabiana (fig. 44). In terms of secondary lines, there seems to have been no pipe-line along either the Via di Nola or the Vicolo di Tesmo, but a pipe-line possibly ran along the Via degli Augustali.⁵³⁴ It is very probable that the private connections to the city block derived from the closest water tower at its south-west corner. The tower was a secure provider of water as it was the third tower on the mains. Thus, even at times of water shortage it might have been in operation.⁵³⁵ Although the tower is situated (at ca. 28.5 m ASL) some 3-4 m below the ground level of the middle, northern, and north-east parts (some 31-32 m ASL) of *insula* IX.3 (fig. 39), it is still some 6 m high.⁵³⁶ Consequently, water rose to a level higher than the city block, and hence water could have been taken from the tower to all parts of the block.⁵³⁷ Producing enough pressure to the fountain nozzles some 1 m above the ground level of the garden in Unit IX.3.5/24 (Room 18), which is located close to the highest point of the city block,

⁵²⁸ Peleg 1996, Jansen 2000a: 113, 2005: 279, 2007a: 260; Wilson 2008: 303.

⁵²⁹ Eschebach 1979: 40-2, fig. 10.

⁵³⁰ Frontinus *Aq.* 94-95, 118; the Edict of Augustus on the Aqueduct at Venafrum (*CIL* X 4842: 38); also Mygind (1917: 334, 336) and Peleg (1996: 35) for evidence indicating that new connections to Pompeian water towers were added piecemeal.

⁵³¹ Vitruvius 8.6.2. Moreover, in the Decree of the Senate on Rome's Water Supply (Johnson *et al.* 1961: 118) it is highlighted that the curators of the water supply had to make sure that water ran steadily, day and night, at public fountains.

⁵³² Frontinus *Aq.* 88, 99, 103, 105; Bianco 2007: 95. However, the *uis aquae ducendae* was to a certain amount only (Frontinus *Aq.* 94, 103, 105; Bianco 2007: 129). Despite rules and regulations, Frontinus (*Aq.* 69, 75-6, 87, 106, 115) describes how illegal tapping took place.

⁵³³ The Edict concerning the Venafrum Aqueduct (*CIL* X 4842: 38-42) specifies that *Ilvir(i)*, by a decree of a majority of the *decuriones* of the colony, was responsible for allotting and distributing water rights by sale.

⁵³⁴ A water tower at the corners of *insulae* 9-12 of Region IX has been postulated by Wiggers (1996: 29, fig. 1).

⁵³⁵ Because water running in a mains line was circulated through each of the towers (Wiggers 1996: 30, Peleg 1996: 34, fig. 1; Jansen 2007a: 260, fig. 16.3; Hodge 2008: 237), at times of water shortage it might have run out at the extremities of these lines.

⁵³⁶ Wiggers 1996: 30, table 1; Peleg 1996: 34-5, table 1. The tower would have been topped by a lead distribution tank.

⁵³⁷ In a closed system water could rise to nearly the same level from which it departed. For inverted siphons, see Hodge 2008: 147-60, Wilson 2008: 295.

could have been secured by decreasing pipe diameters.⁵³⁸ There is no sound evidence for the use of pressurized water in upper floors,⁵³⁹ although Falkener interestingly mentions that ‘two pieces of lead pipe, for supply of fountain on first floor, were found in the *tablinum* [Room 15 of Unit IX.3.5/24]’.⁵⁴⁰ The benefit of having a tower close by was significant. It reduced costs as fewer *fistulae* were needed for a connection. In Pompeii the pipes were taken in through main entrances, much more rarely through rear or side rooms,⁵⁴¹ although, as we shall see, the location of units in relation to water-towers had an impact on how water was brought in.

3.5.3 Connections to piped water

In our current, limited knowledge, around a hundred units in Pompeii were connected to mains water supply.⁵⁴² Although many more connections probably remain to be found, the available evidence at least indicates that a decision to invest in running water was made relatively rarely, given that the excavated parts of the town contain some 1,000 units.⁵⁴³

The overall picture seems to be supported on a smaller scale in the case of *insula* IX.3.⁵⁴⁴ As far as we know, mains water was used for certain in only two and at the most four properties in the city block (fig. 39). A pipeline was found in Unit IX.3.5/24 running between Rooms 17-19-20-41-18 to serve two fountains in the garden (figs. 45a-b).⁵⁴⁵ Another connection in *insula* IX.3 was taken through Rooms 105 and 107 in Unit IX.3.18 to Room 121 in Unit IX.3.19-20. From Room 121 it forked underneath the floor to Room 122-123 to serve its fountain (figs. 46a-b), and climbed above-ground to Room 118 to serve baking and milling activities there (fig. 33a).⁵⁴⁶ When the pipeline into Unit IX.3.19-20 was taken through Unit IX.3.18, this too might have acquired a connection. A distribution box, indicative of a

⁵³⁸ Jansen (2001: 31) on the ways to decrease and increase pressure inside houses.

⁵³⁹ Andrews 2006: 113, Dessales 2007: 133.

⁵⁴⁰ Falkener 1860: 70.

⁵⁴¹ Jansen 2001: 37, 2007a: 261; Dessales 2007: 131.

⁵⁴² Jansen 2001: 27. The connections were not evenly distributed throughout the town. Instead, some city blocks had many more connections than others (Dessales 2007: 130, fig. 1). Private water connections in Pompeii seem to have been much more common than in some other cities, in particular in Rome (Bianco 2007: 206).

⁵⁴³ Wallace-Hadrill 1991b: 204.

⁵⁴⁴ In Dessales’ (2007: 130, fig. 1) classification, *insula* IX.3 is not among the city blocks of many connections.

⁵⁴⁵ Moreover, Falkener’s plan indicates a branch to the kitchen (Room 14) through Rooms 9 and 11 but no evidence has been found for it.

⁵⁴⁶ Pistrina 2009: 10-1.

division point of pipes, was found in the unit (fig. 47a-b).⁵⁴⁷ Furthermore, the evidence suggests that piped water from Room 122-123 was evacuated through Unit IX.3.17 (fig. 46b) which might also have had a connection of its own, especially since a tap was reportedly found in it. However, because taps were not exclusively used in structures connected to mains water,⁵⁴⁸ the situation remains uncertain.

If all Units IX.3.17, 18 and 19-20 had running water through a single connection to the water tower, two conclusions pertaining to water-supply mechanisms and ownership can be made. Firstly, it becomes clear how Units IX.3.17 and 18, both of which lack cisterns, arranged their water-supply. Secondly, pipes entering a unit through its neighbour may be a manifestation of water servitude.⁵⁴⁹ Hence, the rustic praedial servitudes, which included a right to draw water from or through someone else's property, had been adapted to city conditions by equating water pipes with the actual drawing of water.⁵⁵⁰ However, servitudes would only have allowed the dominant owner to have a connection through the servient owner who would not have been allowed to tap into it. Moreover, although Roman law recognized an arrangement in which a mains water connection was shared,⁵⁵¹ there was no mention of the possibility that it would have, by default, allowed the connection to cross the property of one stakeholder to another.⁵⁵² Therefore, we most likely deal with common ownership. It was a natural choice for the owner of the property to install pipes through shops which were closest to the water tower from which the pipes departed. In addition to the savings made by minimising the distance to the water tower, the sharing of water between the units enabled the maximal utilization of the costly commodity.

It has been estimated that even the smallest diameter pipe (*quinaria*) could have delivered some 40 m³ of water per day,⁵⁵³ which is a large amount in comparison to cistern capacities

⁵⁴⁷ The box currently contains only one outgoing pipe but there might have been another one attached to the upper, currently broken, part of the box. In addition to water distribution, no other functions are known to these boxes (Jansen 2002: 51).

⁵⁴⁸ Jansen 2001: 38-9, note 6.

⁵⁴⁹ Elsewhere in Pompeii, a pipe to the House of the Grand Duke (VII.4.56) ran through the adjacent House of the Coloured Capitals (VII.4.31) (Sear 2004: 165), a pipe to the House of the Lyre Player (I.4.7) ran through adjacent Fullonica I.4.7 (Flohr 2007b: 132), and a pipe to the House of Caecilius Iucundus ran through an adjacent shop (Karivieri and Forsell 2008: 128-9, fig. 14).

⁵⁵⁰ Ulpian *dig.* 8.3.1, 8.4.2, 43.20.1.6-7, 43.20.1.11, 43.20.1.39; Paul *dig.* 8.3.9, 39.3.17.1; also Saliou 1994: 134-6, 151; Bianco 2007: 117-20.

⁵⁵¹ Julian *dig.* 43.20.4, also Frontinus *Aq.* 27.

⁵⁵² Instead, the Edict of Augustus on the Aqueduct at Venafrum (*CIL* X 4842: 46-7) specifies a need of consent if a water pipe connection is brought in through a third party.

⁵⁵³ Hodge 2008: 327.

discussed above and may therefore have sufficed to fulfil the requirements of several units. However, the network of pipes inside units may have been built in such a way that opening one tap or stopcock necessitated its closure in some other parts of the network.⁵⁵⁴ Had there been such a system, it required close co-operation between all parties. Because no stopcocks or taps in the network of Units IX.3.17, 18 and 19-20 have been found *in situ*, the arrangement remains unknown, but it is striking how common these fixtures are in units where the system has been well-preserved, suggesting their overall importance.⁵⁵⁵ Therefore, although the possibility of a mutual agreement cannot be excluded, the arrangement involving interdependence in a way or another strengthens the impression of common ownership.

The known connections in *insula* IX.3 are not only few but also notably late. They can be dated to the last couple of decades prior to AD 79. For instance, as far as we know, the biggest and most luxurious unit in the city block, Unit IX.3.5/24, acquired a connection no sooner than a century after aqueduct-borne water became available for private use. Although we know little of the unit prior to the first century AD, and it is fully possible that there simply is no evidence left for earlier connections, it is still worth discussing, what such a late connection could have meant. The garden layout of the unit was altered, the ground level apparently lowered and pipes laid during the second half of the first century AD.⁵⁵⁶ We can speculate for instance that only through this remodelling did the unit acquire an ornamental garden as its centre-piece. In this setting fountains were fundamental – an additional need for water had been created. Consequently, the connection could have related above all to changes in style and design.⁵⁵⁷

Moreover, the situation in Unit IX.3.5/24 in AD 79 is in striking contrast to the situation at some other units. After the earthquake of AD 62, entire systems based on pressurized water were removed or remodelled to the extent that on-site water collection could better meet their needs. For instance, the reliance on aqueduct-borne water to serve water display structures was abandoned and reliance on cisterns re-established after AD 62 in the House

⁵⁵⁴ Compare Jansen 2005: 279.

⁵⁵⁵ E.g. the House of the Bull (V.I.3/7) contained no less than 16 stopcocks to operate its many fountains (D.Phil. candidate Thomas Staub, pers. comm. 8.2.2011).

⁵⁵⁶ Viitanen and Andrews 2008: 67-9; compare Dickmann (1999: 350) on the House of the Lyre Player, Sear (2004: 151-60) on the House of the Grand Duke, Jones and Robinson (2004: 117) on the House of the Vestals for similar developments, earlier in date.

⁵⁵⁷ For motives behind these water elements, see Glaser (2000).

of the Vestals (VI.1.7),⁵⁵⁸ and modifications were made in the House of Trebius Valens (III.2.1) to complement mains water with cistern water.⁵⁵⁹ Moreover, at least one third of private baths were taken out of use and many more downsized after AD 62.⁵⁶⁰ However, these changes may at least partially be explained by changes in social practices, instead of concluding that the water mains were not functioning properly. Public baths had probably become increasingly important.⁵⁶¹ Hence, even if there had been some problems in the water supply provided by the town, and if the house owners in the areas most susceptible to these problems had consequently opted for private solutions to secure their water maintenance, the supply had remained good in some other parts of the town. Areas most likely affected by water shortage were those farthest away from the *castellum aquae* (such as the House of Trebius Valens) and those at an altitude close to that of the *castellum* (such as the House of the Vestals). Instead, Unit IX.3.5/24 owners relied on mains water supply.

Moreover, the water supply in Unit IX.3.5/24 was damaged, probably in further tremors between AD 62 and 79, and it had to be repaired. In AD 79 the *atrium* had been stripped out, i.e., its *impluvium* had been removed together with a part of the floor.⁵⁶² In contrast, the fountain complex with two nozzles in the garden was left as it was. It is possible that the lead pipe found *in situ* in Room 17 was in operation and took water to Room 18, i.e. the connection to the mains water was kept, while the rest of the system including supply, sewage and storing of water in and around the courtyard was being rearranged. Hence, pipes were chosen to be repaired rather than the water supply system itself altered. The house owner kept counting on the town infrastructure.

3.5.4 The uses of piped water

Acquiring a connection to the water mains was, in the case of Unit IX.3.5/24, an act of conspicuous consumption and display. It is striking that running water served aesthetic needs – i.e. it was meant to be seen and heard, not consumed. Once used in the fountains,

⁵⁵⁸ Jones and Robinson 2007: 401.

⁵⁵⁹ Dessales 2007: 134-5.

⁵⁶⁰ De Haan 2001: 46.

⁵⁶¹ Zanker (1998: 131), De Haan (2001: 46) on Pompeii; Fagan (1999: 43) on Rome.

⁵⁶² Castrén *et al.* 2008: 337, 339.

water was simply discarded outside the premises.⁵⁶³ There was no intention to reuse it.⁵⁶⁴ In contrast, piped water was used in baking and milling in Unit IX.3.19-20. Moreover, spills of running water might have been collected in the cistern of Room 113.⁵⁶⁵ However, it is revealing that Unit IX.3.19-20 is the only commercial unit which had, without doubt, a water mains connection. This shows that industries, even those with a high rate of water consumption, were run without direct access to the water mains. Indeed, adequate amounts of water could have been supplied in various ways. For instance, all the *fullonicae* in Timgad contained wells.⁵⁶⁶ Likewise, not all of the *fullonicae* of Pompeii had a connection to the aqueduct.⁵⁶⁷

Despite all this, we need to ask why Units IX.3.1-2 and 10-12, both of which were engaged in commercial activities characterized by water-consumption, were not connected to the mains, and why Unit IX.3.19-20, of roughly the same production capacity as Unit IX.3.10-12, had a connection. In order to provide an answer, we need to pay further attention to the overall need for water, the internal capacity to collect and store water, and the locations of units in relation to public water sources.

Bearing these three factors in mind, we can propose that perhaps because Unit IX.3.10-12 contained two cisterns and was located directly next to a public fountain, its water supply was efficient enough without mains water, especially considering that the unit had no fountains. In terms of comparative studies, the French team currently studying 21 Pompeian bakeries have so far found traces of piped water in only one third of them.⁵⁶⁸ Unit IX.3.10-12, therefore, was not exceptional in this regard.

Likewise, and seemingly for similar reasons, Unit IX.3.1-2 managed without a connection to the water mains. The capacity of the dyeing vats was in hundreds rather than thousands of litres,⁵⁶⁹ and hence a connection was probably deemed unnecessary when the unit was

⁵⁶³ Compare Jones and Robinson (2004: 117) for similar observations concerning the House of the Vestals.

⁵⁶⁴ Contra the situation e.g. in the House of the Grand Duke (Sear 2004: 162, 166) where it was diverted to flush a toilet. Of course, fountain water could have been collected into buckets etc.

⁵⁶⁵ Dr. Nicolas Monteix, pers. comm. 27.4.2011; also *Pistrina* 2009: 10-1.

⁵⁶⁶ Wilson 2003: 444.

⁵⁶⁷ Jansen 2001: 38-9, note 6; Flohr 2007a: 133.

⁵⁶⁸ Monteix 2009: 9.

⁵⁶⁹ According to Borgard and Puybaret (2003: 309-10), establishments with vats of thousands of litres in capacity were connected to water mains. The current size of the vats in Unit IX.3.1-2 falls within the range of 'high heated vats' and present an average in the scale of Borgard and Puybaret (*ibid.* 306, footnote 30).

furnished with two cisterns. Indeed, this amount of water could probably have been regularly available in the cisterns of Rooms 54 and 49-51. The adequacy of cisterns was important because a source of free public water was not as easily accessible as in Unit IX.3.10-12. Instead, Unit IX.3.1-2 was located over 50 m from a public water source, more than was customary in Pompeii (fig. 48).

Therefore, perhaps because Unit IX.3.19-20 too was located over 50 m away from a public water source, and because a fountain was desired, its owner estimated it worth investing in running water, especially when a cistern in Room 118 had been damaged, probably as a consequence of the AD 62 earthquake, and because, for an unknown reason, the cistern in Room 121 had been left out of use.⁵⁷⁰ Consequently, the connection to the water mains resulted from inadequate or unreliable supply by internal cisterns, a new need for water for recreational purposes, and the fact that the use of free public water required some effort because of its distance.

3.5.5 *Artefact evidence of domestic water use*

So far differences in the scale of water consumption have been established both between domestic and commercial units, and between different commercial units. However, neither was domestic water consumption at a same level between units. While it is difficult to establish these differences, one can approach the question by examining the distribution of finds related to water use in domestic circumstances.

In addition to water needed in kitchens, bath suites and gardens for instance, some amount of water was needed to maintain personal hygiene. The wealth of toilet artefacts such as *strigiles*, *spatulae* and tweezers indicate that the body was cared for and attention was paid to the appearance. Hence, washing belonged to probable routines, as did the cleaning of ears for example.⁵⁷¹ It is notable that in private houses there were no rooms, other than latrines and bath suites, specifically designed for washing and toilet. Therefore, and in particular

⁵⁷⁰ Pistrina 2009: 10-1.

⁵⁷¹ Ear-cleaning implements suggest that toilet was of concern even when it was not as an obvious sign of the care of the body as e.g. make-up or hairstyle was. Furthermore, even if ear-cleaners were too small to be of actual use, as sometimes claimed, their presence nevertheless demonstrates that the care of the body was considered relevant. See Hill 1997: 101 for discussion.

because *insula* IX.3 contains no bath compartments, we need to trace artefacts that can be connected with the maintenance of personal hygiene.

While vessels of any open and deep form can be used in washing, lists of finds contain rarely enough details to allow the identification of deep enough and open enough vessels. Luckily, however, the terminology of bronze vessels is rather versatile, at least in comparison to that of glass and ceramics for example, with certain open vessel forms labelled as *conca*, *patera*, *forma di pasticceria* and *casseruola* (figs. 49a-d). Based on the suitability of their form and size, as well as references to written and visual sources, they may have been used for toilet activities.⁵⁷² The vessels have in particular been connected to washing prior to dining and hence they may have had social importance too.⁵⁷³ However, thanks to their open, bowl-shaped form, these vessels could have served several functions, such as serving and storing, dosing or drawing, pouring and measuring, and by no means should we conclude that they were exclusively used for washing.⁵⁷⁴ Nonetheless, by mapping the find locations of these vessels, we might be able to gain *some* indication of water-usage in *insula* IX.3. As these vessels were frequently decorated, their presence in a unit was probably well-recorded in the *Giornale*.

⁵⁷² For *conca*, used in ablution, and *forma di pasticceria*, used in toilet, see Tassinari (1993a: 232-3, 1993b: 169-73, 176-80) and Berg (2010: 102-3, 112-4); for *casseruola* used in toilet, see Nenova-Merdjanova (2002); for *patera* as belonging to ritual activity, perhaps together with everyday washing, see Tassinari (1993a: 232-3, 1993b: 129-46) and Berg (2010: 116-8).

⁵⁷³ Tassinari 1993a: 232-3, also Wallace-Hadrill 2008: 405.

⁵⁷⁴ Compare Tassinari 1996: 116-8. E.g. *conce* were vessels of 20-30 cm in diameter and *forme di pasticceria* were some 10-20 cm in diameter which can reflect their different functions both in washing and other uses.

Unit number	No. of <i>casseruole</i> /Room	No. of <i>conce</i> /Room	No. of <i>forme di pasticceria</i> /Room	No. of <i>paterae</i> /Room
IX.3.1-2				1/Room 46
IX.3.3				
IX.3.4				
IX.3.5/24	2/Rooms 30 and 18 or nearby	2 /Rooms 4 and 18		5/Rooms 2, 9, (11-14), 20, 29, (30) ⁵⁷⁵
IX.3.6			1/Room 35/40	
IX.3.7				
IX.3.8		1/Room 57		
IX.3.9				
IX.3.10-12		1/Room 66		
IX.3.13				
IX.3.14	3/Room 75 upper floor	1/Room 75 ground floor	3/Room 75 ground and upper floor	
IX.3.15				
IX.3.16	2/Room 98			
IX.3.17		1/Room 101	1/Room 101	1/Room 101
IX.3.18	8/Room 105	1/Room 105	1/Room 105	1/Room 105
X.3.19-20	1/Room 113			1/Room 108
IX.3.23				
IX.3.25				

Table 5. The distribution of *casseruole*, *conce*, *forme di pasticceria* and *paterae* in *insula* IX.3. Artefacts which may have derived from two or more neighbouring units are omitted (compare fig. 50).

Both figure 50 and table 5 indicate a relatively wide distribution of these vessels. They were therefore possible for many households to obtain. Nevertheless, they were not found in large quantities and they were perhaps completely absent in at least five units.⁵⁷⁶ This suggests that other types of vessels served washing in these units, or that people washed in public baths instead. Moreover, excluding Units IX.3.5/24, 14 and 18, no more than three of these vessels were, for certain, found per unit. This implies that, if used for washing, these vessels were used communally.⁵⁷⁷ The overall rarity of these vessels⁵⁷⁸ further suggests that Units IX.3.14 and 18, which contained a higher number of them, had these vessels as a part of their merchandize. Moreover, Unit IX.3.5/24 contained at least nine of these vessels. It is the only unit in the city block where lavish dinners might have taken place, and, prior to it,

⁵⁷⁵ The sources are contradictory. Falkener mentions a *patera* in the kitchen area (Room 11-14) while *PAH* records may suggest that a *patera* was found in Room 30.

⁵⁷⁶ Units IX.3.7, 9, 13, 15, 23.

⁵⁷⁷ Allison (2006: 394), Berg (2010: 304) for similar conclusions.

⁵⁷⁸ The vessels were not relatively rare in *insula* IX.3 alone. Fiorelli (1873: 171) reports that between 1861 and 1872 excavations in Pompeii yielded 88 *casseruole*, 48 *patere*, 62 *forme di paste*, and 108 *conche*. The numbers are clearly smaller than those of cooking and lighting utensils discussed above.

washing in social context could have been carried out. Elsewhere these vessels must have been used in other contexts. As their find locations inside units varies, there were seemingly no clear principles governing their place of use or storage. For instance, the vessels were not more commonly found in rooms with sources of water than in those lacking them, relating to the observed variability of the find contexts of other toilet artefacts.⁵⁷⁹ Hence, it remains open as to whether such artefacts were found in so many different room types due to their transportability, or their different functions in different contexts.

3.6 Conclusion

The current chapter has focused on the availability of life-sustaining essentials, including light, air, heat and water, in *insula* IX.3. It has been shown how the location, shape and size of a building resulted in different solutions in the provision of these utilities. The decisions were moreover influenced by special requirements related to functions, status, ownership, and, perhaps, law. The factors thus represent physical, social and economic concerns, all of which, as outlined in consumption studies, are intricately interlinked.

In small and compact units a single source of light was sufficient. Private units relied on light wells and commercial units on wide shop-doorways. Larger units, or those of long or irregular shape, were in need of multiple sources of light. However, even with several light sources, rooms could still have remained relatively dark. The data presented above suggest that a large proportion of *insula* IX.3 was covered by upper floor which blocked light out of ground floor spaces. The increasing height of buildings may in particular have led to the decrease in the number of windows in ground floor facades, but it also had ramifications inside units, reducing light in rooms relying on internal light wells. The relative scarcity of lamp finds moreover suggests that units were not particularly well-lit in the hours of darkness. It seems more likely that lamps were moved around in units to provide light where needed and people were assembling to a few spaces with artificial lighting.

Because light wells, windows and doorways provided not only light but air too, the availability of light and air were closely linked. The data presented above has shown that aeration was thought of both in commercial and domestic units. Fume-emitting installations

⁵⁷⁹ Allison 1997a: 335, 338, 341, 343-4, 347; 2004: 137-9.

were placed in similar locations in both types of units although commercial installations were located closer to air vents than were domestic fixtures. Similarities in their placing suggest that no distinction between commercial and domestic sources of fumes were made. Instead, there may have been some attempts to limit the potential nuisance by placing the largest fume-emitting installations at some distance from the streets.

The fume-emitting installations doubled as sources of heat. While it has already been argued that fuel supply to Pompeii was a highly organised activity, the need for efficient supply is emphasised by evidence in *insula* IX.3. Indeed, fixtures related to the use of fire are found in all but six units. Even a larger number of units contained evidence for cooking vessels. While the artefact evidence partly coincides with the evidence for cooking podia, deviations may suggest that food was prepared outside fixed kitchens.

The discussion on the use and supply of water has shown how different needs and the availability of alternative supply mechanisms resulted in case-specific solutions. However, in terms of patterning, one can note that water collection and distribution structures are frequently found in the largest rooms or in locations which were easily accessible from other parts of the unit. These are typically courtyards and gardens. Water-consuming structures on the other hand were found in various locations, including those off the nodes.⁵⁸⁰ In contrast, the possible artefact evidence for water consumption is not patterned.

Examining the supply strategies further, the rarity of mains water connections indicate that units had frequently resorted to internal water supply mechanisms even when mains water would at least in principle have been available. Indeed, out of the units which were capable of collecting water internally, only two small units, Units IX.3.17 and 18, contain no evidence for cisterns. The tendency has been noted in the Roman world at large. Cisterns and wells continued to serve as important sources of water for households even after the introduction of aqueduct-borne water.⁵⁸¹ On the other hand, we cannot undermine the evidence for internal water supply mechanisms which, in AD 79, were out of use or their capacity had been reduced. Most notable is the abandonment of *impluvia* in water-collection. Whatever had caused these outcomes, the decrease nevertheless suggests

⁵⁸⁰ Also Allison 2004, Flohr 2007a.

⁵⁸¹ Hodge (2000: 29, 2008: 48-51) for a general discussion; Schwartz (1981: 52-3) and Shaw (1991) for examples in North Africa.

growing reliance on public water. In contrast to acquiring a connection, which was costly and, as we have seen, acquired for specific purposes, fetching water from close by public fountains may have been a convenient and sufficient solution for many households. In a similar vein, because the construction and upkeep of cisterns involved costs, people might have been willing to abandon their cisterns if they assessed public water sources as adequate and reliable enough for their needs. Abandoned cisterns and fountains connected to the water mains in *insula* IX.3 speak for adequate and reliable water supply by the aqueduct.

Finally, it needs to be stressed that contrasting the archaeological evidence for cisterns and mains water causes unnecessary simplifications.⁵⁸² Although a unit contained a cistern or two in use, no-one prevented householders from fetching water from public fountains too. Indeed, the relatively poor quality of cistern water⁵⁸³ had presumably made fountains the hubs of the neighbourhoods.⁵⁸⁴

By collating the available data concerning the supply of some basic utilities, the multitude of factors which contributed to the layout of domestic space has become evident. It has been shown how supply mechanisms were frequently interlinked, i.e. certain spatial configurations served various purposes. For instance, unroofed spaces brought in light, air and water, and made the dilution of fumes and humidity possible. Moreover, frequent changes in these systems are striking. They were contested and altered, probably because of changes in specific, household-related needs and changing financial situations, general changes in the choice of means by which utilities could have been made available, and the availability of laws and agreements that enabled neighbours to negotiate specific solutions. This exemplifies the reciprocal relationship between humans and their built surroundings, as outlined in Chapter 1 above. Excluding immaterial light and air, other utilities discussed above produced unwanted end-products, the disposal of which will be discussed next.

⁵⁸² Compare Wilson 2008: 308-9.

⁵⁸³ Pliny *Nat.* 31.21.34.

⁵⁸⁴ See also section 6.2 below.

CHAPTER 4: Waste management

4.1 *The disposal of liquid matter*

4.1.1 *Drainage*

As much as water was a necessity, excessive amounts of it were harmful to structures and sewage had to be disposed of. Water used in various commercial and domestic activities was evacuated through channels to the adjacent streets, if not thrown out there directly,⁵⁸⁵ or disposed of by absorption through unpaved parts of the house. The inclination of paved streets has been studied to formulate how discharge, composed of rainwater, water originating from the overflows of public fountains and discarded from private or public premises, found its way outside the town gates (fig. 51).⁵⁸⁶ Poehler has suggested that Pompeii was divided, by the natural topography of the site as well as with the help of raised curbs and paved streets, into eleven runoff catchments. The catchments collected water into certain routes that led outside the town.⁵⁸⁷ At gates this water was channelled into drains which cut through the town walls and prevented these access points from becoming flooded.⁵⁸⁸ In addition, separate drains were used to remove excess waters accumulating in different parts of the town. For instance, at the so-called Tetrapylon of the Holoconii, to the west of the junction of the Via Stabiana and the Via dell'Abbondanza, street-borne water was taken into an underground drain to dispose of it outside the town.⁵⁸⁹

The drainage pattern around *insula* IX.3 is quite straightforward: the Via Stabiana drains from north to south; the Via degli Augustali, in the part fronting *insula* IX.3, drains from east to west; and the Vicolo di Tesmo drains from north to south and discharges onto the Via degli Augustali. As a result, the south-western corner of *insula* IX.3 forms a converging

⁵⁸⁵ Juvenal (3.276-7) complains about waste water falling from above when walking on the streets of Rome.

⁵⁸⁶ Tsujimura 1991, Koga 1992, Jansen 2000b, Poehler 2009. This waste water could have transported rubbish on streets with it (compare Frontinus *Aq.* 88.3, 111 on Rome). However, it is unlikely that it constituted the sole way to clean streets, because, as we shall see below, law frequently specified the responsibilities of different parties in the cleaning of streets.

⁵⁸⁷ Poehler (2009: 58-60) who elaborated the concept first introduced by Koga (1992). *Insula* IX.3 belongs to the so-called Central Basin.

⁵⁸⁸ Devore and Ellis (2005: 8-9, fig. 29) on a drain at the Stabian Gate, Poehler (2009: 58) at the Nolan, Sarno and Nuceria Gates.

⁵⁸⁹ Mau 1899: 223, Koga 1992: 64-5, Jansen 2000b: 41, 2002: 68, fig. II.96.

point of discharge from three directions: the Via Stabiana from the north and the Via degli Augustali from the east and the west.⁵⁹⁰ In contrast, in the absence of paving, the soil coverage of the alley on the northern side of the city block probably absorbed most water.

Whereas the overall amount of discharge on streets varied between seasons and times of day, *insula* IX.3 clearly contributed to its accumulation. This is shown by the presence of channel mouths in front of different units (fig. 52). For instance, the front of Unit IX.3.10-12 contains a channel that conducted water from the premises (or the roof) through the pavement to the Via Stabiana (fig. 53a). The curbs in front of entrances number 2, 6, 8, 10, 13 (fig. 53b), 14, 18, 20 and 21 are pierced, presumably to form outflows of channels from the unit interiors. Two further channel mouths are visible at the entrance to Unit IX.3.5/24: a channel ran under a relieving arch at the facade of Room 3 (fig. 54a), and possibly connected to a channel below Room 17, while another ran from Room 18, through Rooms 15, 2 (fig. 40a), 1 and the front doorway to discharge water through a hole in a curb-stone. In a similar vein, in the northern part of the unit, a channel directed water from Room 41 (or Room 18) to the northern alley through Rooms 27, 34 (fig. 54b), 29 and 28.⁵⁹¹ On the way, the *impluvium* in Room 29 was connected to it (fig. 37b). A trench excavated in Room 26-27 revealed a further channel, out of use in AD 79 (fig. 52). Even though the starting and end points of this channel are unknown, its alignment parallels the orientation of the later channel and shows that while the two channels were in use, Units IX.3.5 and 24 had been connected to form an L-shaped complex, in the eastern part of which water had been drained, following the same principles, into the northern alley.

There are two further channels that can shed light on connections between units. These, probably in use in AD 79, ran from Unit IX.3.19-20 to Units IX.3.17 and 18. Firstly, water displayed in the fountain of Room 122 was probably evacuated through Unit IX.3.17 (fig. 46b). Secondly, a channel runs from Room 121 to Unit IX.3.18, discharging through the hole in the curb (fig. 52). While it had previously functioned as an overflow channel of the cistern in the room, the drain was seemingly kept in use, and repaired after being damaged,

⁵⁹⁰ Koga 1992: 61, fig. 4. The flow patterns can be studied further on a micro-scale. The surface of the Via Stabiana is convex and the western side lies on a lower level than the east side, resulting in greater water flows along the western side (Tsujimura 1991: 79), undoubtedly for the convenience of the inhabitants of *insula* IX.3.

⁵⁹¹ A resembling arrangement is found in Unit IX.3.25.

after the cistern was left out of use.⁵⁹² There are two conceivable explanations to these arrangements between units. They either indicate that the properties belonged to a single ownership, or Unit IX.3.19-20 held *servitus cloacae* over Units IX.3.17 and 18.⁵⁹³ It is worth emphasising, however, that we have already observed shared facilities between the given units and the channels provide a further testimony to their close connections.

Although only a fraction of all drainage channels in *insula* IX.3, in or out of use in AD 79, are known to us where they have been revealed during excavations, their brief description shows that drainage constituted a concern no less important than the sourcing of water. Indeed, these water evacuation structures were frequently renewed when new water supply structures were introduced or the old ones remodelled. Despite their disparity, some general rules seem to apply to the drainage structures. Channels in use in AD 79 are typically not found running below walls (fig. 52). Instead, under-floor drains ran through corridors and nodal spaces.⁵⁹⁴ Avoiding walls and running under thresholds they were easier to install, maintain and replace. It is also worth noting that while it is common to find holes in the curb-stones in front of larger units, they are less common in front of smaller units.⁵⁹⁵ This may suggest that while larger properties tended to have channels running from their interiors to the streets to drain the structures, smaller units could manage with other, simpler forms of drainage. For instance, excavations elsewhere in Pompeii have revealed *amphorae* necks placed upright and embedded into floor structures.⁵⁹⁶ Reminiscent of soakways, the earliest form of drains,⁵⁹⁷ they might have served as sufficient and economical means to drain accumulated moisture, as well as to dispose of unwanted liquids. Although the evidence is so far lacking in *insula* IX.3, one must bear in mind that the clearance of floors by the *EPUH* has been limited and usually concentrated along the walls. As a result, we might have missed such features located towards the middle of rooms.

⁵⁹² Pistrina 2009: 11.

⁵⁹³ For the servitude, see Ulpian (*dig.* 8.1.7, 43.23.1), Neratius (*dig.* 8.3.2); also Saliou 1994: 162-7.

⁵⁹⁴ Compare Tibbott and Devore (2007: 122), Karivieri and Forsell (2008: 128, fig. 14) for similar situations.

⁵⁹⁵ I am grateful to Dr. Eeva-Maria Viitanen for pointing this out.

⁵⁹⁶ E.g. Boman and Nilsson (2008a: 150) on Unit V.1.14. For structures out of use in AD 79, see Anniboletti and Pender (2005: 175-6, figs. 12-3) on Unit VI.2.16-21, D'Auria (2005: 180, fig. 18) on Unit VI.5.5, Giglio (2005: 203-4, fig. 49) on Unit IX.7.21, Zaccaria Ruggiu (2006: 57, fig. 5) on Unit VI.7.23, Ray and Ellis (2007: 120) on Unit VIII.7.1-2.

⁵⁹⁷ Wilson 2000b: 152-3.

4.1.2 Latrines

It has been suggested that every house in Pompeii contained a latrine,⁵⁹⁸ and studies of the frequency of private toilets in Ostia and in Herculaneum have shown that they were not a luxury but rather a standard facility.⁵⁹⁹ These facilities were composed of small rooms, the walls of which were covered by hydraulic plaster while the floors were of *terra battuto*, *cocciopesto*, *lavapesta*, or tile (figs. 55a-b, 56a). As a result, the structures were easy to keep clean and had some water-resistance.⁶⁰⁰ The ground floor toilets contained wooden seats on masonry podia and they frequently fitted several people.⁶⁰¹ Latrines were likewise present in upper floors. They can be best identified on the basis of small, single-occupancy niches placed directly above a downpipe (figs. 56b, 57a).⁶⁰²

Pompeian cess pits were dug into soft volcanic soil and therefore operated like leach-fields: liquids were absorbed by porous walls, solids were left to accumulate at the bottom. Hence, emptying was conceivably infrequent but probably took place from time to time,⁶⁰³ especially since toilets, both in ground floor and upstairs, were also used for dumping kitchen waste.⁶⁰⁴ An inscription found in Herculaneum, *EXEMTA. STE(R)CORA A(SSIBUS)XI*, suggests that excrement was removed for a fee.⁶⁰⁵ However, because Herculaneum contained communal sewers, to which several houses were connected,⁶⁰⁶ unlike in Pompeii, direct parallels between these two cities cannot be drawn.⁶⁰⁷ Another source referring to the disposal of domestic waste comes in the form of an inscription of laws concerning the urban space of Pergamum, known as the Pergamene Astynomic Law.⁶⁰⁸ Using this inscription, probably Hellenistic in origin although inscribed during the Trajanic

⁵⁹⁸ Mygind 1921: 309, Jansen 2007b: 167.

⁵⁹⁹ Jansen 1991: 156, Stevens 2005: 120.

⁶⁰⁰ Kastenmeier 2007: 23.

⁶⁰¹ For criteria on the basis of which ground floor toilets can be identified, see Jansen (2002: 59), Hobson (2009: 49-51). All latrines identified in *insula* IX.3 meet one or more criteria.

⁶⁰² Jansen (1997: 128) reports nine, Hobson (2009: 74) reports 15 and Andrews (2006: 53) reports 20 latrines in the upper floors of Pompeii.

⁶⁰³ Jansen 1997: 132.

⁶⁰⁴ The fill in the downpipe of upper floor Room 14 latrine contained bone and egg shell fragments that had no signs of having been digested (MacKinnon 2007: 43). For evidence elsewhere in Pompeii, see Hobson (2009: 47); in the ancient world at large, see e.g. Small *et al.* (1994: 201), Ault (1999: 556-7).

⁶⁰⁵ *CIL* IV 10606.

⁶⁰⁶ Jansen 1991: 156, Guidobaldi *et al.* 2006: 118.

⁶⁰⁷ As for Pompeii, Mygind (1921: 315-6) lists four private toilets connected to a sewer, and Jashemski (1977: 217, footnote 5) gives a further example.

⁶⁰⁸ *OGIS* 483.

or Hadrianic rule, and therefore possibly still valid,⁶⁰⁹ to understand the disposal mechanisms in use in Pompeii, is not without problems either.⁶¹⁰ Nonetheless, the inscription strengthens the notion that fees were involved as well as adding officials and contractors to the picture. It indicates a system of associations formed by householders who shared the responsibility and costs for removing their domestic sewage. This waste had to be deposited into statutory dumps which were regularly emptied, at the expense of property owners. Officials oversaw these operations but private contractors took care of them in practice.⁶¹¹ It remains a possibility at least that a system of this kind might have been in use in Pompeii.⁶¹²

In AD 79 *insula* IX.3 contained at least 11 ground floor toilets in operation (fig. 52).⁶¹³ The locations of these latrines generally follow well-established patterns: they are found in association with kitchens [Rooms 13, 55(?), 74(?), 107, 125(?)], near courtyards (Room 23, the south-east corner of Room 138) or under staircases (Rooms 56/148, 57, 81, 104).⁶¹⁴ Whereas the most openly displayed toilet seats, such as that in Room 107, might have been located behind a light screen,⁶¹⁵ none of the thresholds to separate latrines currently contain indications of a door.⁶¹⁶ Likewise, the walls of these rooms contain no marks of a window.⁶¹⁷ Therefore, air and light to these spaces must have come from the adjacent rooms.

Furthermore, in *insula* IX.3 there are eight terracotta pipes that run vertically inside a wall and feature one or several of the following characteristics: a diameter closer to 20 than 10 cm, interior covered with calcareous incrustation (fig. 57b), a wall-embedded niche located above or a pit located below the pipe. Whereas these characteristics should allow us to define the pipes as downpipes of upper floor toilets,⁶¹⁸ some identifications remain open.⁶¹⁹

⁶⁰⁹ Oliver 1955; also Saliou 1994: 10-1.

⁶¹⁰ Saliou (1994: 10-3) on the general applicability.

⁶¹¹ *OGIS* 483: 79-84; Owens 1983: 44-5, Liebeschuetz 2000: 55-6.

⁶¹² Compare Scobie 1986: 413-4.

⁶¹³ In Rooms 13, 23, 55, 56/148, 57, 74, 81, 104, 107, 125 and 138.

⁶¹⁴ Mygind 1921: 313-4, Jansen 1997: 128, Kastenmeier 2007: 55-6. However, other locations for toilets have also been attested (Allison 2004: 136-7).

⁶¹⁵ Compare Mygind 1921: 313, Ling 1997: 152, Hobson 2009: 51.

⁶¹⁶ According to Mygind (1921: 314), this is common in Pompeii; contra Hobson (2009: 82). However, the thresholds are altogether more or less lacking in *insula* IX.3.

⁶¹⁷ According to Mygind (1921: 314), windows in latrines were generally speaking rare. However, see Jansen (1997: 126), Hobson (2009: *passim*) on their existence.

⁶¹⁸ Compare Andrews 2006: 58, Hobson 2009: 72.

The pipes which can be studied more in detail are clearly later additions in the wall matrix. These observations could be seen as evidence supporting Hobson's thesis on the increase in the number of upper floor toilets in the first century AD,⁶²⁰ but so far the relative chronology of the latrines in *insula* IX.3 remains unknown. What we know, however, is that at least one of the upper floor toilets had fallen out of use by AD 79.⁶²¹ Moreover, some other pipes were blocked during restorations or their present state of preservation is poor, so that we cannot be fully confident that they were in use in AD 79.

Despite uncertainties, observations on the placing of these pipes can be made. Firstly, all latrine pipes ran in property-bordering walls, and in the case of Room 45, in the exterior wall of the city block. The location of this pipe made it possible to extend the underground cess pool into the northern alley (figs. 52, 58), and consequently enabled its maintenance from there.⁶²² Cess pools under pavements were common in Pompeii, and it is not surprising to find them particularly on side streets, such as the northern alley, instead of the main thoroughfares.⁶²³ However, not all pipes in exterior walls belonged to latrines. Pipes in the facades of Units IX.3.21-22 and 23 (fig. 52) are more likely to be rainwater drains than sewage pipes, because they are no more than 10 cm in diameter and contain no calcareous incrustation.

The placing of downpipes may moreover relate to law or ownership. Pipes from upper floor Room 14 in Unit IX.3.5/24 and upper floor Room 38 in Unit IX.3.3 led to a cess pool under Room 13 in Unit IX.3.5/24, which again indicates shared infrastructure between units.⁶²⁴ Although *servitus cloacae* might have applied to toilet downpipes,⁶²⁵ it seems that the servitude would not have allowed the use of a neighbouring cess pool.⁶²⁶ Therefore, and thanks to the principles of *superficies solo cedit*, it seems more and more evident that these

⁶¹⁹ The identification of pipes in Rooms 14, 23, 38, 56/148 and 101 is rather straightforward while the identification of pipes in Rooms 45, 77 and 89 is more problematic (see the catalogue).

⁶²⁰ Hobson 2009: 53.

⁶²¹ In Room 56/148.

⁶²² For maintenance, see Jansen (1997: 132, 2000b: 38); for other possible reasons to place cess pools along facades, see Hobson (2009: 166).

⁶²³ See Varone (2005a: 319) for a cess pool in an alley between *insulae* IX.12 and 13, Karivieri and Forsell (2008: 123) in an alley between *insulae* V.1 and 2, Anniboletti (2007: 108) in an alley between *insulae* IX.8 and 9.

⁶²⁴ Compare Dickmann and Pirson (2001: 342) for a shared cess pool between *Tabernae* VIII.4.47 and 48.

⁶²⁵ Also Pirson 1999: 68. In the *Digest* (Ulpian 43.23.1.4) *cloaca* is defined as 'a hollow place through which certain waste matter should flow'.

⁶²⁶ Ulpian *dig.* 43.23.1.

units were owned in common, together with Unit IX.3.4 to which the ground floor space of Room 38 belonged.

In addition to aspects pertaining to technical solutions and jurisdiction, the placing of toilets may reveal some aspects of the social organisation of the respective households. For instance, Flohr has suggested that a distinction between the occupants of a house can be visible on the basis of toilet locations. According to him, if toilets and kitchens were located next to or in a commercial part of a unit, people who worked in the unit also lived there.⁶²⁷ This would imply that if further toilets were attached to living quarters away from working areas, some lived while others worked in the unit. Looking at *insula* IX.3 with this classification in mind, it is first worth pointing out that in AD 79 four units at most, including both purely domestic residences (IX.3.5/24, 15) as well as those involved in commerce (IX.3.1-2, 17), had more than one latrine. Excluding Unit IX.3.5/24, other units did not have a clearly discernible division of space at the extant ground floor level between separate areas (or zones) for living and working. Likewise, a clear division is lacking in units with a single latrine.⁶²⁸ This would, at the outset, suggest that people living and working there were largely the same.

Further analysis bears out this first impression. Unit IX.3.1-2 possibly contained one upper floor toilet in the front part of the unit and one ground floor toilet at the rear of the unit. If both of these structures were in use in AD 79, a hypothesis of household members of two kinds may be applied to it, but it is notable that although the front part of the unit was commercialized, the upper floor may have been private throughout the property. Consequently, the upper floor toilet at the front would not have been available for workers (or customers) although there possibly was access to it from Room 45. Therefore, although there are two toilets in different parts of the house, it is hard, if not impossible, to assign them to different groups of users. It is interesting that Unit IX.3.1-2 is the only example of units involved in large-scale production in the city block which contained, for certain, at least one toilet. Indeed, neither Unit IX.3.10-12 nor 19-20, the largest of the commercial units, contain any straightforward evidence for toilets at all.

⁶²⁷ Flohr 2007a: 141. Compare Jansen (1997: 129) who has argued that if toilets in a single house are found close to each other, they served different groups of people.

⁶²⁸ See section 5.5.1 below for further discussion.

Bearing these factors in mind, it is interesting to ask why Shop IX.3.17 would have had two latrines, one on the ground floor and one on the upper floor. Perhaps the upper floor of adjacent Unit IX.3.19-20 extended further south than so far assumed (fig. 6) and the upper floor toilet thus served this unit, offering a further example of a shared cess pool between units and providing a latrine that has so far been lacking from Unit IX.3.19-20. This toilet would consequently be located in the private rather than commercial part of the unit.

When multiple latrines in large domestic units are found, some toilets may have been used by servants and slaves, and others by family and guests. For instance, Unit IX.3.5/24 contained at least four toilets, two on the ground floor and two on the first floor. Whereas the contexts of the first floor toilets are unknown, the locations of the ground floor toilets are distinctively different. Room 23 (fig. 55b) is located next to the garden, the possible summer dining room and a small *cubiculum*-type of closable room. They were all, including Room 23, decorated. The toilet probably accommodated one person at a time.⁶²⁹ Room 13 (fig. 56a) on the other hand is located next to the kitchen and possible storage rooms. It was notably ample, perhaps accommodating up to four persons at a time. In this case the presence of multiple toilets indeed suggests social stratification. Moreover, the toilets, together with the fact that some of them were multi-seaters, strengthen our impression of a large household in Unit IX.3.5/24.⁶³⁰

The multitude of toilets both in the ground and upper floors of Unit IX.3.5/24 may indicate more than social stratification between residents and their servants which together constituted an extended family-group. Wallace-Hadrill and Pirson have discussed the possibility that a large unit housed several of these family-groups. Lodgers could have occupied upper floors or some parts of the house without the need to isolate these rooms architectonically from the rest of the unit.⁶³¹ Just as some utilities were shared between units, they could also have been shared between different resident groups within units. Only in Unit IX.3.5/24 there are enough latrines to suggest that they might not have been shared by all the inhabitants. Although there are no means of verifying that Unit IX.3.5/24 did indeed house several family-groups, this discussion serves as a reminder of the possibility of a number of social realities we may be dealing with.

⁶²⁹ On the basis of assuming that a seat less than 1 m long was for a single user, longer seats seated more users (Jansen 1997: 126, footnote 11; but see also 2003: 148, footnote 12).

⁶³⁰ Compare Jansen 1997: 126, Ling 1997: 140.

⁶³¹ Wallace-Hadrill 1994: 110, Pirson 1997: 178.

On the whole, while most of the latrines in *insula* IX.3 cannot be clearly divided between different use groups, they nevertheless constitute a common fixture in units. Nonetheless, some large and small commercial units seem to have lacked toilets altogether. Perhaps their residents relied on public latrines, some of which seem to have been available close by. For instance, across the Vicolo di Tesmo, there may have been a small detached latrine (IX.6.6)⁶³² which was easily accessible for people residing in the south-east part of the city block, including Unit IX.3.19-20 if it did not have a latrine, or one that was not accessible for all household members. Moreover, the Central Baths would eventually have provided a public latrine across the northern alley and there were public toilets in the neighbouring city blocks along the Via Stabiana and Vicolo di Tesmo.⁶³³ Secondly, if units were in common ownership, their residents may have used the facilities next door. This would resolve the problem of the lack of a toilet in Unit IX.3.10-12: their residents might have used toilets in Units IX.3.7 and 8 if the units were owned in common. Moreover, instead of fixed toilets, urine jars at street crossings, chamber pots, commodes, or quiet back streets could have been used to relieve oneself.⁶³⁴ Indeed, the use of fixed toilets may not have depended solely on their availability but it also had to do with gender, status, age and personal preferences for instance.⁶³⁵ Therefore, the distribution of fixed toilet facilities tells more about the general availability of this utility but less about their specific users.

4.2 The disposal of solid matter

Before turning to the evidence for the disposal of solid matter in *insula* IX.3, defining the concepts of refuse and reuse makes it clear how the evidence can contribute to the discussion on not only disposal but supply strategies too.

⁶³² *L'informatica*: 175, contra Eschebach *et al.* 1993: 427.

⁶³³ Eschebach *et al.* 1993: 246, 263, 421.

⁶³⁴ For urine jars, see Della Corte (1925: 34, fig. 9); for other unfixed toilet facilities, see Koloski-Ostrow (1996) and Scobie (1986: 417) who further lists doorways, tombs and statuettes.

⁶³⁵ Kastenmeier 2007: 56, Hobson 2009: 133-46.

4.2.1 Defining refuse and reuse

4.2.1.1 The concept of refuse

The amount of refuse and the rate of its accumulation results from three factors: the size of the population in question, its ability to produce waste and its capacity to reuse it. Furthermore, three different activities, construction, production and occupation, produce different types of refuse in very different quantities.⁶³⁶ While some types of refuse accumulate steadily, the amount of other refuse types fluctuates between seasons and years.⁶³⁷ Finally, what is classified as rubbish depends not only on cultural and social aspects but also on the individual. In general terms, however, the use-life of an artefact is defined by its physical durability as well as cultural concepts of its worth, usability and effectiveness.⁶³⁸

Ethno-archaeological and ethnographical studies have shown that the majority of accumulating household waste is not deposited in the premises where it is formed but taken elsewhere, either within the unit or further away. Hence, only small amounts of small-size refuse is left behind in normal cleaning operations.⁶³⁹ Although the sites studied by ethno-archaeologists undeniably differ from Pompeii, their observations seem to reflect, to some extent, very general patterns of human behaviour. In addition to more or less regular clean-ups, it is striking that all of these studies stress the reluctance of humans to make a great effort to dispose of refuse, even when it might involve acting against regulations. As a result, people dump in remote corners of house, backyards, unused land close by, public roadsides and areas directly outside their settlements to dispose of unwanted material with as little effort as possible.⁶⁴⁰

⁶³⁶ Manacorda 2000: 66.

⁶³⁷ Compare Hayden and Cannon 1983: 124.

⁶³⁸ Schiffer 1972: 159-60, 1987: 47-50; Kamp 1991: 26.

⁶³⁹ Hayden and Cannon 1983: esp. 125-6, Schiffer 1985: 25, Deal 1985: 260.

⁶⁴⁰ Hayden and Cannon 1983, Deal 1985, Kamp 1991, Staski 1991. Moreover, Peña (2007: 316) has concluded, on the basis of De Caro's work (1994), that similar behavioural patterns can be traced in the Villa Regina outside Pompeii: refuse was piled outside villa's entrance and spread onto adjacent vineyard where it might have been used as fertilizer. Furthermore, Hobson (2009: 91-2) has discussed a deposit discovered below a remote staircase in the House of the Vestals, which, according to him, could have been intentionally left there for good.

These observations can be used as a starting point for a study of the disposal systems employed in *insula* IX.3. More importantly, however, they help us to understand what can be learnt from disposed materials in excavation trenches, as presented in part II of the catalogue. Hence, primary refuse, i.e. artefacts that were discarded in the premises they were used, is probably scarce. Instead, dumps which contain secondary refuse, i.e. artefacts discarded outside the premises where they were used, may contain material from all over the city block, as well as beyond its limits.⁶⁴¹ Therefore, the contents of excavated dumps cannot be interpreted as revealing the functions of rooms where dumps are found, although the material may certainly help to date construction phases as well as provide information on the general activity level and material culture of the circumstances in which the dumps were formed.

4.2.1.2 The concept of reuse

In his influential work on the life cycle of artefacts, Schiffer placed primary emphasis on the procurement, manufacture, use, maintenance and discard of artefacts in social contexts.⁶⁴² Later scholars have completed our awareness of the intricate formation processes of the archaeological record by adding more aspects, and by having different emphases in their studies of material culture. For instance, Peña has recently emphasised the importance of distribution, recycling and reclamation, in addition to distinguishing between primary use and reuse.⁶⁴³ Reuse and recycling are particularly important factors which shape the archaeological record. For instance, there might have been itinerant collectors of certain refuse types, like glass or *amphorae*, perhaps travelling from door to door and simultaneously reducing the overall amount of waste.⁶⁴⁴ In the present examination the impact of reuse in construction requires particular attention because of three main reasons which made it popular: reused pieces had already been put to test by time and shown durable,⁶⁴⁵ their use lowered construction costs, and they made the launch of a new construction project faster as material was readily available.⁶⁴⁶ Recycled pieces were used

⁶⁴¹ Compare Schiffer 1972: 162.

⁶⁴² *Ibid.* 158.

⁶⁴³ Peña 2007: 7-16; also Schiffer (1987: esp. 27-46, 99-120) for reuse, recycling and reclamation.

⁶⁴⁴ Martial (*Ep.* 1.41, 10.3) for barbers of broken glass. Because the excavations carried out by the *EPUH* team have not yielded significant amounts of metal and glass in the pit fills and raising fill layers, their quantities have been omitted from part II of the catalogue.

⁶⁴⁵ Vitruvius 2.8.19; Zaccaria Ruggiu 1995: 221.

⁶⁴⁶ Barker 2011.

either to serve the purpose they were made for or employed in a secondary function. For example, old roof tiles continued to serve as roof tiles or were used as bricks and channel covers. Pieces of plaster, *amphorae*, *tubuli* and *cocciopesto* floor were inserted into mortar in *caementa* or used in wall facings. *Cocciopesto* floors contained large quantities of pottery sherds and pulverized terracotta which produced a chemical reaction resulting in water-resistance.⁶⁴⁷ All these practices are well-attested in *insula* IX.3.

Second-hand building materials were sold, and not only used by the proprietor of the demolished structure for a new construction. A painted sign on the facade of *insula* III.7, fronting onto the busy Via dell'Abbondanza, advertised roof tiles, cover tiles and gutter-tiles for sale.⁶⁴⁸ Whereas the advertisement, believed to refer to salvaged parts, has been dated to the Republican era,⁶⁴⁹ it is explicitly described in the *Digest* how building parts, *domum partemve domus*, were sold.⁶⁵⁰ Moreover, several legal texts, dating from the early Republican era to the Byzantine period, were formulated to limit the demolition of buildings, or to ban the detachment of parts belonging to them.⁶⁵¹ While the primary reasons for the formulation of these laws may have changed over time,⁶⁵² they nevertheless imply that second-hand building materials were widely used, to the dissatisfaction of authorities. What this means in terms of studying the still standing walls of *insula* IX.3 is that the provenience of reused building parts remains unknown.

4.2.2 The evidence for reuse

In terms of the extant Pompeian walls themselves, reuse is visible already in the Republican structures,⁶⁵³ hence complementing the epigraphic evidence. Reuse increased when building techniques based on the use of concrete instead of ashlar masonry became dominant. Rubble-work construction was long favoured in Pompeii, first as a part of limestone framework walls, and, from the beginning of the second century BC, as the dominant

⁶⁴⁷ Siddall 2006: 209, Peña 2007: 11-2.

⁶⁴⁸ *Tegvla cumylar(ia)*

opercvla, colliqvia

ven(iant?), convenito

indide(m). Della Corte 1936: 333, Fant 2009: 7.

⁶⁴⁹ Frank 1938: 224-5.

⁶⁵⁰ Marcian *dig.* 39.2.48; also Ulpian (*dig.* 30.41.9) on bequests.

⁶⁵¹ Zaccaria Ruggiu 1995: 200-19.

⁶⁵² *Ibid.* 220-5.

⁶⁵³ Laidlaw (1993: 230) on the House of Sallust.

concrete-core based building method.⁶⁵⁴ Although brick was introduced in Pompeii already at the end of the second century BC, until after the earthquake of AD 62 the bricks in use were composed mainly of reused roof-tiles.⁶⁵⁵ Reticulate walls were built in Pompeii from the early first century BC onwards,⁶⁵⁶ but this type of construction was never highly popular and there are no such walls in *insula* IX.3. Perhaps there never was enough easily accessible tuff at the site to be reworked into reticulate blocks, as many ashlar walls were long lived, and travertine was ill-suited to the making of reticulate blocks. Newly quarried reticulate blocks were consequently not acquired from outside the town.⁶⁵⁷ In contrast, the very common use of travertine in rubble-work walls, both in *insula* IX.3⁶⁵⁸ and elsewhere, most likely results from the reuse of material from travertine ashlar, broken up when damaged, possibly after being reused several times. The overall variety of building materials particularly in late rubble-work walls such as those in the southern part of the city block⁶⁵⁹ may partly be related to the fact that a demolished rubble-work wall would not have yielded enough material for a similar rubble-work wall, thanks to losses involved in the dismantling process.⁶⁶⁰ Instead, supplementary materials had to be acquired. The heterogeneity of building materials further suggests that builders used what was easily and abundantly available at a given time rather than using certain materials only, the procurement of which might hence have needed some time and planning for a sufficient stock to be accumulated.⁶⁶¹ The only requirement seems to have been size: while pieces used as core aggregate typically were at least the size of a fist,⁶⁶² pieces used in Pompeian rubble-work facings tend to be somewhat larger.⁶⁶³

Altogether, the scale of reuse is difficult to evaluate as most reused material is hidden below plaster and inside core-concealing mortar. Moreover, the ratio of mortar to aggregate in concrete structures might have varied considerably,⁶⁶⁴ and bedding and foundation layers

⁶⁵⁴ Adam 2007: 106.

⁶⁵⁵ Ling 1997: 18; contra Carrington 1933: 133-4.

⁶⁵⁶ Adam 2007: 107.

⁶⁵⁷ DeLaine (2001: 244) has proposed that the replacing of reticulate in Ostia and Rome with brick as facing material was partly due to the decreased availability of reusable tuff inside the town to be chopped into reticulate pieces.

⁶⁵⁸ See the catalogue.

⁶⁵⁹ *Ibid.*

⁶⁶⁰ Barker 2011.

⁶⁶¹ Compare Peña 2007: 256.

⁶⁶² DeLaine (2001: 237, table 11.2) discussing Roman and Ostian concrete walls, Peterse (2007: 374) discussing Pompeian framework walls.

⁶⁶³ In *insula* IX.3 they are typically between 10 and 30 cm in diameter.

⁶⁶⁴ *Ibid.* 237-6, table 11.2.

typically contain material in secondary positions.⁶⁶⁵ Nevertheless, on the basis of visual inspection, the majority of walls in *insula* IX.3, say in the region of 80 %, are in rubble-work (fig. 59).⁶⁶⁶ They are typically either walls that were built from scratch in rubble-work or walls that were originally built in ashlar framework or ashlar blocks and over time partly rebuilt in rubble-work. Rebuilding in rubble-work especially took place inside units while facades more frequently retained their original form or were rebuilt in brick.⁶⁶⁷ In addition, many utilitarian rooms in the city block have socles which contain crushed pottery.⁶⁶⁸ Although most of these rooms were probably not engaged in functions where water-resistance was crucial, the ability of this type of plaster to resist humidity as well as wear was certainly beneficial, at the same time as the reuse of ceramics reduced the need of further aggregate in plaster and decreased quantities of waste, though crushing pottery involved cost which could have partly reduced savings made.

4.2.3 The evidence for dumping

4.2.3.1 Refuse removal outside the town

Despite reuse, it is clear that more waste was accumulated in Pompeian houses than households could reuse or recycle. Some of the solutions opted for the removal of unwanted waste are manifested archaeologically in Pompeii by heaps of rubbish found at several locations along the exterior of the town wall. A large dump (250 m long and some 1.5 m thick) between the Herculaneum and the Vesuvian Gates, excavated by Maiuri, covered both an extramural road as well as several tombs. The midden contained construction waste, including First- to Third-Style painted plaster, as well as domestic waste. Maiuri interpreted the dump as a product of clean-up operations that followed collapses of AD 62.⁶⁶⁹ Smaller dumps were found along the wall to the west of the Nolan Gate. Three middens that were

⁶⁶⁵ See section 4.2.3.3.1 below.

⁶⁶⁶ A database developed during the *EPUH* field work presently contains information on the building techniques of some ¼ of the extant walls of the city block. Up to a half of wall-related feature *loci* are reportedly in rubble-work. However, as the volume of rubble-work parts is usually greater than of brick and brick-block for example, and voluminous ashlar masonry and framework walls are rather rare, rubble-work is proportionally more common than what the numbers as such indicate.

⁶⁶⁷ Facades were rebuilt in brick especially along the west and south sides of the city block, probably only after AD 62.

⁶⁶⁸ See the catalogue; compare Arthur (1997: 327-30, nos. 18, 40-2, 43, 48, 49, 56) on the *Insula* of the Menander.

⁶⁶⁹ Maiuri 1944.

fully excavated measured 4.8-13 m long, some 3 m wide and 0.6-0.9 m thick. They likewise contained domestic waste and building rubble, with pottery datable to the Julio-Claudian and early Flavian eras, which led to the excavators to conclude that they too represent material dumped outside the town walls after the earthquake of AD 62.⁶⁷⁰ In contrast, detritus had conceivably been accumulated over time against the town wall outside the assumed Capuan Gate.⁶⁷¹ A further midden with seven discernible layers of bone, rubble and ceramics was found outside the Stabian Gate. This dump some 3 m deep had sprawled to cover an extramural grave.⁶⁷²

The placing of the middens vividly illustrates how disposal was done as conveniently as possible. Their considerable size encourages an interpretation of dumps composed of refuse from various sources, although it is not impossible that single households could have produced the majority of materials in the unstratified dumps, if structures were demolished to their foundations. It remains open, as to whether these dumps were legitimate or illegal. The related legislation is not helpful as it deals generally with waste removal inside the town gates. The middens impeded extramural traffic and limited the space available for cemeteries, and it is therefore hard to imagine that they were officially approved. Perhaps the sharp increase in waste after the earthquake of AD 62 resulted in some makeshift solutions, especially if the officially organized and controlled disposal system had proven ineffective to deal with the abrupt situation. However, the stratified dumps suggest disposal over an extended period of time, public space had been violated in this way already before AD 62. Furthermore, the builders of tombs seemingly were aware of disrespectful practices. Inscriptions banning littering and defecating were publicly displayed for a good reason.⁶⁷³

It was not necessary for residents in *insula* IX.3 to dispose of all their waste outside the town walls. In AD 79 the north-eastern part of the city block was in disrepair and the area of a formerly prominent private house had become a dumping ground. Indeed, *insula* IX.3 provides a prime example of what occasionally happened, and still happens, to unused pieces of land.⁶⁷⁴ According to Remolà, intra-urban dumping sites testify weaknesses or

⁶⁷⁰ Romanazzi and Volonté 1986: 57, also Peña 2007: 279-82.

⁶⁷¹ Etiani *et al.* 1996: 61-2.

⁶⁷² Sogliano 1890: 330.

⁶⁷³ See Varone 1993: 53, note 18.

⁶⁷⁴ See Hayden and Cannon 1983: 146; Remolà 2000: 112, footnote 16.

malfunctions in the urban system.⁶⁷⁵ However, although the north-east corner of *insula* IX.3 did not constitute the only intramural dump in the town,⁶⁷⁶ it would very likely have remained temporary. Without the events of AD 79, the plot would probably have been built on again. Therefore, we must look for other, more permanent mechanisms that were in use to dispose of rubbish inside the town walls.

4.2.3.2 Streets as dumping places

Two trenches excavated in the northern, unpaved alley by the *EPUH* team provide good examples of such mechanisms.⁶⁷⁷ Trenches DA and DB (table 6) contained at least four distinct street levels.⁶⁷⁸ Numerous rises in street levels constitute a clear indicator of the accumulation of debris which was not, or at least not entirely, cleaned away but left to be trampled, slowly raising the level of the carriageway. The refuse, which mainly contained pottery and bones together with some small-size building debris, indicates, as e.g. noted by Berg, that kitchen refuse was thrown out regularly, and when building projects were undertaken, some small-size building rubble could have been deposited onto unpaved streets.⁶⁷⁹ In fact, some rubbish might have been deliberately deposited into ruts for levelling purposes.⁶⁸⁰ These practices violated the word of law. Written sources such as the Pergamene Astynomic Law and the *Tabula Heracleensis*, which is the municipal charter of the southern Italian city of Heraclea,⁶⁸¹ describe how people should dispose of their waste properly and keep streets flanking their property in good condition.⁶⁸² Moreover, the two trenches revealed altogether six rubbish pits,⁶⁸³ the digging of which was likewise banned.⁶⁸⁴

⁶⁷⁵ Remolà 2000: 117-8.

⁶⁷⁶ E.g. Fiorelli (1875: 431) for another dump inside the town walls, adjacent to the Herculaneum Gate.

⁶⁷⁷ See part II of the catalogue.

⁶⁷⁸ Compare e.g. with six street levels found in the Vicolo della Fullonica (Befani 2005: 184) and some ten in the alley between *insulae* IX.12 and 13 (Berg 2005: 211).

⁶⁷⁹ Berg 2005: 211; also Petronius *Sat.* 79.

⁶⁸⁰ Boman and Nilsson 2008b: 162-3.

⁶⁸¹ Crawford 1996: 355-91. The *tabula* has traditionally been dated to the Caesarean period.

⁶⁸² *Tabula Heracleensis* (*CIL* I 206: 20-3, 53-5), the Pergamene Astynomic Law (*OGIS* 483: 30-2), Papinian *dig.* 43.10.1.3.

⁶⁸³ For parallels, see Arthur (1986: 38) discussing the Via Marina, Befani (2005: 184-5) discussing the Vicolo della Fullonica, Berg (2005: 200-15) discussing the alley between *insulae* IX.12 and 13.

⁶⁸⁴ Papinian *dig.* 43.10.1.2.

Location	Trench	Size	Main contents	Dating
Room 2, SE side	AA	1 x 1.5 m, max depth 1.3 m	Building waste dump (pit?)	Post AD 62
Room 12, W part	BB	1 x 2.8 m, max depth 2 m	Two waste pits	5 th -4 th century BC, 1 st century AD (?)
Room 14, SE corner	BA	Irregular, max 1.7 x max 0.9 m; max depth 0.9 m	Cistern fill	Imperial
Room 17, W part	AB	1.4 x 1.8 m, max depth 0.45 m	Raising/bedding fill layers	1 st century AD
Room 18, NE part	BC	Irregular, max 2.3 x max 3 m; max depth 3 m	Garden soil, four waste pits	Re-deposited/residual 2 nd -1 st century BC to AD 70s
Room 18, SW side	BD	Irregular, max 5 x max 1.3 m; max depth 2 m	Garden soil, three waste pits, fill of a foundation trench	Mixed 6 th and 2 nd century BC, 2 nd /1 st century BC to AD 70s
Room 26-27, middle	CB	1 x 4.7 m, max depth 1.6 m	Building waste pit, three plaster and one possible earthen floor level, fill layers between the floor levels	1 st century BC- 1 st century AD
Room 29, middle	CA	2 x 4.3 m, max depth 2.4 m	Cistern fill (?), waste pit, two plaster floor levels, fill layers between, above and below the floor levels	1 st century BC-1 st century AD (post-AD 62)
Room 31, SE side	CC	1.1 x 1.1 m, max depth 0.85 m	Small <i>loci</i> related to construction, repair and decay	1 st century BC-1 st century AD
N alley, middle	DA	2 x 2.8 m, max depth 1.8 m	Three street levels, packed soil matrixes between the street levels, two rubbish pits	1 st century BC-AD 70s
N alley, W end	DB	2 x 2 m, max depth 1.6 m	Four street levels, packed soil matrixes between the street levels, five rubbish pits	Republican-AD 70s

Table 6. The location, size, main contents and dating of the trenches so far excavated by the *EPUH* team in Unit IX.3.5/24 and the northern alley.

Altogether, the body of rules and regulations dealing with public space, in particular streets, is considerable. These bans and regulations were frequently re-established and tightened, which adds to the notion of disobedience. On the whole, however, such bans left some room for interpretation: as long as the actions of householders had no major impact on traffic, concerns over the free flow of which constituted the impetus for the bans, their violations were less severe. Refuse throwing was separately banned, but in this case the main concern was not on littering as such but conceivably again on the flow of traffic and the safety of people using streets.⁶⁸⁵

⁶⁸⁵ Papinian *dig.* 43.10.1.5. For objects falling from adjacent buildings and harming passers-by, see *dig.* 9.3, Juvenal 3.268; also Crook 1967: 165.

Whereas town officials were concerned, above all, for the condition of the main thoroughfares, unpaved back and side streets in particular may have occasionally been left to the whims of their occupants.⁶⁸⁶ Indeed, MacKinnon has concluded, on the basis of comparing bone evidence from various parts of the town, that alleyway rubbish contexts are typically larger than street contexts.⁶⁸⁷ Nonetheless, only ca. 4 % of NISP bones retrieved from the northern alley contained gnawing marks that suggest the exposure of bones to stray animals.⁶⁸⁸ It can therefore be proposed that when dumping remained modest, refuse was rapidly trampled into the street matrix and hence sealed off. In a similar vein, pits excavated were soon filled and left unnoticed. As a result, the disruptive effect of dumping was limited and short-term, and most of the household and construction waste had to be disposed elsewhere. For instance, the clearing of the ground for the Central Baths in *insula* IX.4 had undoubtedly produced rubble in abundance, but the last phase street matrixes are not significantly thicker than those underlying them. Alternatively, the amounts of rubbish on streets might have been larger but most of it was regularly removed.

Although much responsibility was assigned to property owners by law, it remains disputed whether town officials or property owners carried out the construction, maintenance and cleaning of streets in practice.⁶⁸⁹ While the uniformity of basalt slabs covering paved carriageways speak for shared construction, certain changes in paving have been observed between houses,⁶⁹⁰ and the evidence for under-pavement cess pools suggest that property owners had some say and responsibility in the construction and upkeep of pavements. With this evidence available to us the question of cleaning, however, remains open.

⁶⁸⁶ It was apparently possible to pile a temporary dump of ceramics, probably waiting for its removal, against a wall opposite the House of the Vestals on the sidewalk of the Vicolo di Narcisso (Hobson 2009: 92). However, although the emphasis in written sources is on main arteries, the remaining statutes concerning road maintenance applied to all types of streets (Zaccaria Ruggiu 1995: 247-50).

⁶⁸⁷ Dr. Michael MacKinnon, pers. comm. 8.1.2010.

⁶⁸⁸ MacKinnon 2007: 23. For literary accounts of stray animals, see Scobie 1986: 418.

⁶⁸⁹ Panciera (2000: 102-3) argues that the city of Rome at least was actively involved in the cleaning of its streets and there was a distinction between maintenance (*tuitio*) and cleaning (*purgatio*), both mentioned in the *Tabula Heracleensis* (CIL I 206: 46-52). He argues that while property owners were in charge of *tuitio*, II- and IIIIviri were in charge of *purgatio*. Other scholars have suggested that the statutes preserve outdated information on the *cura viarum*: while the construction and maintenance may initially have been the responsibility of property owners, it was replaced by an obligation to pay for the town to take care of the roads (Mommsen 1894: 169-70, Owens 1996: 29), probably by the time of issuing the *Tabula* (Zaccaria Ruggiu 1995: 248).

⁶⁹⁰ Tsujimura 1991: 65, Geertman 1998: 22, Saliou 1999, Boman and Nilsson 2008b: 162, Sorriento 2010.

4.2.3.3 Domestic dumping

In terms of logistics, dumping was most conveniently done inside houses. However, only small amounts of refuse could be dumped discreetly into the existing structures, such as toilets, remote corners, garden soil or earthen floors. Instead, the dumping of larger quantities involved labour-intensive digging and levelling to conceal the dumps if avoiding overall squalor. Nonetheless, whereas digging a pit consumed time and labour, and was conceivably carried out only in unpaved spaces or in rooms under renovation, it might at least in principle have provided both a means to get rid of waste as well as acquire sand and cruma needed in construction.⁶⁹¹

To date, nine trenches have been excavated in Unit IX.3.5/24 by the *EPUH* team (table 6). Despite the fact that the trenches are modest in size, that is, rarely extending beyond several meters in width and length, and not always excavated to the virgin soil due to time constraints or safety issues, their contents help us to understand what was deliberately discarded in the interiors of units, and to identify some behavioural preferences. As in the case of the northern alley, an insight into the relative duration of the depositional process can be gained on the basis of bone evidence.⁶⁹² The deposition of domestic waste in *insula* IX.3 was seemingly rapid after its creation because the bone evidence from Unit IX.3.5/24 contains only occasional marks of wear and tear.⁶⁹³ Furthermore, it has been suggested that the relative scarceness of land snails found deposited in the trenches of the unit, in comparison to other investigated urban sites, might at least partially be connected to a relatively high degree of cleanliness which prevented the growth of snail populations.⁶⁹⁴ Therefore, the amount of loose rubbish lying around might have been small. It was easily trampled into earthen floors and hence sealed off, or regularly removed.

Table 6 shows explicitly how common are raising fill layers and pit fills.⁶⁹⁵ Because large-scale dumping would have been difficult if no large floor surfaces were exposed, the largest

⁶⁹¹ For acquiring *pozzolana*, see Carrillo *et al.* (1998: 42), Peris Bulighin (2006: 63); for accessing cruma, see Lancaster (2006: 214).

⁶⁹² The *EPUH* excavations have so far (2003-2006) yielded over 5,000 bone/shell pieces from 12 trenches in Units IX.3.5/24, 25 and the northern alley. All bones were studied under the supervision of Dr. MacKinnon in 2007 by MacKinnon himself, Elan Love and the author.

⁶⁹³ Less than 5 % of all bone material contained marks of carnivore or rodent gnawing, charring or burning, wind or water erosion, sun bleaching or mineral staining (MacKinnon 2007: 5).

⁶⁹⁴ *Ibid.* 33.

⁶⁹⁵ Also Berg 2008b: 158-60 for discussion.

size courtyards and floorless gardens tend to contain the largest pits and thickest raising fill layers. When the contents of all these pits and fill layers are examined, we can recognize certain characteristics which help us to understand how dumping was done and what factors relating to the quality of the material at hand was taken into account. Because pits and raising fills are likewise ubiquitous elsewhere in Pompeii, the evidence in *insula* IX.3 is put into its context by providing parallels and contrasting evidence in the footnotes.⁶⁹⁶ Both similarities and differences are likely to be found because each dumping event is unique, resulting from different needs in different situations. Therefore, no two dumps or fills were exactly alike.

4.2.3.3.1 Beddings and raising fill layers

For a bedding of a floor or other construction, a degree of compaction and solidity was needed. Therefore, dumping bulky waste into these layers was largely avoided. Instead, the beddings tend to contain waste that is homogenous and relatively small in fragment size,⁶⁹⁷ compared with those of pit fills and street matrixes, assessed by dividing the total weight of finds of a certain category with their overall count. Because fragment sizes vary greatly within a single finds category, i.e. a single bulky piece may significantly alter the average, this approach can only be used to give a very rough idea of depositional preferences. Nonetheless, the bedding and raising fill layers had least variation in the weight ratio. This applied to pottery, bone and painted wall plaster evidence alike.⁶⁹⁸ In addition to uniformity, the smallness of the required fragment size seems to explain why the pottery in beddings directly below floor levels were composed more of fine wares than of *amphorae*, as *amphora* fragments would have been too bulky for a thin fine layer of materials that had to be packed together to produce an even surface.

⁶⁹⁶ The general abundance of pit fills and raising layers can be observed e.g. by going through the reports of recent excavations carried out in Pompeii, published in the *Rivista di Studi Pompeiani*.

⁶⁹⁷ Compare e.g. Guiducci (2005: 236, fig. 24) discussing the foundation layers discovered in the garden of Unit IX.8.3/6.

⁶⁹⁸ The hypothetical figures are as follows: between 10 and 20 g per pottery sherd, between 2.5 and 3.3 g per bone fragment, and between 23 and 36 g per painted wall plaster fragment in Room 18 (garden) bedding/raising fill layers; 8-23 g per pottery sherd and 2.5-6 g per bone fragment in street layers; 9-63 g per pottery sherd, 1.4-8 g per bone fragment and 30-40 g per painted wall plaster fragment in pits fills of the northern alley; 12-45 g per pottery sherd, 0.3-8 g per bone fragment, and 15-143 g per painted wall plaster fragment in pit fills of Unit IX.3.5/24.

In contrast, fills which served for the purpose of raising floor levels or are found below the topmost beddings contain bulkier construction materials.⁶⁹⁹ However, there seem to be differences between the topmost (late) raising fill layers and those discovered deeper down above the first plaster or *terra battuto* floors. The lowermost raising fill layers mainly contain soil and unworked stones with modest amounts of building rubble, bone and pottery. Towards the topmost layers the amount of building rubble and occupational debris increases. Household waste present in the fills may have been accumulated over some time during normal household operations and, after being collected into an intermediate dump, deposited as fills.⁷⁰⁰ This waste had initially been mixed with soil that may have been transported to the site or acquired when digging rubbish pits.⁷⁰¹ In the first century AD it was increasingly mixed with building debris at hand.

4.2.3.3.2 Pit fills

The pit contents are much more variable than are those of bedding and raising fill layers. Pits in *insula* IX.3 seem to have been dug with some unwanted refuse in mind as they contain layers of very different contents possibly deriving from various contexts and resulting from various activities.⁷⁰² For example, because wall plaster fragments were only rarely reused as building material, they were mostly disposed of. They are found in great quantities in the pits excavated in *insula* IX.3.⁷⁰³ While wall plaster from a single wall might be found in various *loci* of a rubbish pit, the largest fragments tend to be located on the lowermost layers and the size of the fragments decreases towards the uppermost *loci*. This being the case, the pits probably contained the left-over refuse from a single demolition event, i.e. building rubble ill-suited for reuse, dumped after most recyclable materials had been retrieved. Indeed, although the pits contain larger than fist-size building materials, hence material that could have been used in concrete-core walls, no ashlar or other

⁶⁹⁹ For large levelling and raising fills, see e.g. Tibbott and Devore (2007: 122) on Unit VII.7.9-11, Ellis and Devore (2010: 11-2) on Unit VIII.7.14.

⁷⁰⁰ Although a large proportion of bone evidence derived from pit dumps, bone evidence was nonetheless common in fill layers too, suggesting that because of steady accumulation, there were always some bones to dispose of (MacKinnon 2007).

⁷⁰¹ Compare Fulford and Wallace-Hadrill (1998: 137) for a fill of occupational debris, possibly transported from elsewhere.

⁷⁰² For pits of various fill layers, see e.g. Vitali (2005: 227), Guiducci (2005: 235), Berg (2008c: 111-2, fig. 15); for pits of uniform fills in Pompeii, see e.g. Berg (2005: 201-3, 206, fig. 5).

⁷⁰³ Castrén *et al.* 2008: 336, Tammisto and Kuivalainen 2008: 82-5.

regularly cut pieces were found.⁷⁰⁴ The demolition material was mixed with household waste at hand.

Around a thousand Dressel 2-4 *amphorae* fragments discovered in a single pit vividly demonstrate the main purpose of digging the pit as well as the abundance of pottery that fell out of the reuse cycle. The fragments were perhaps deemed too bulky for a compact raising fill layer, nor were such large pieces deposited onto streets.⁷⁰⁵ Indeed, the pits overall contain the largest amount of, and the bulkiest, pottery revealed in the excavations. In line with this observation, bulkier bones too, if disposed of inside units, were deposited in pits. In Pompeii the largest bones are predominantly found in garden pits.⁷⁰⁶ However, large long bones or bones from a bovine torso for instance are rare. Instead, small tarsal bones dominate assemblages,⁷⁰⁷ suggesting that the bulkiest bones were removed from the site altogether,⁷⁰⁸ never brought into units at the first place, or processed for objects such as bone hinges which are common artefacts in finds lists.

4.2.3.3.3 Dating domestic dumping

Turning lastly from fill and pit contents to the question of dating, it is altogether notable that all raising fill layers and pits of considerable size largely contain material of the first century BC or later in date (fig. 60). Consequently, dumping increased in the first century BC and continued to be frequent in the first century AD. This implies that the post-AD 62 situation followed an existing trend, that is, people actively rebuilding and remodelling properties.⁷⁰⁹ Rebuilding in post-AD 62 Pompeii, accelerated by the needs created by unforeseen destruction(s),⁷¹⁰ is manifested by the largest fill layers and pit-dumps which typically cut earlier pits. It demonstrates, in a very tangible manner, the long continuation of change and remodelling. To put it another way, the earthquake of AD 62 did not start a construction

⁷⁰⁴ Compare e.g. Berg (2008c: 111-2) on irregular pieces of stone some 20-30 cm in size dumped in a pit in Unit III.2.1.

⁷⁰⁵ But see McCallum and Manfredi (2007: 125) on a wealth of chunky, broken pieces of *amphorae* in a levelling fill below the last phase floor of Unit VIII.7.14-15, not in a separate dump.

⁷⁰⁶ Dr. Michael MacKinnon, pers. comm. 8.1.2010.

⁷⁰⁷ MacKinnon (2008) on Unit IX.3.5/24.

⁷⁰⁸ Ciaraldi and Richardson 2000: 79, MacKinnon 2007: 3.

⁷⁰⁹ For further evidence concerning increased building activity in the first centuries BC and AD, see e.g. Dobbins (2007) on public building, Jones and Robinson (2004, 2007) on domestic building.

⁷¹⁰ 'Violent' earthquakes (IX on the Modified Mercalli Intensity Scale) cause significant damage to well-built houses, including collapse (U.S. Geological Survey 2011).

boom, but continued it. Indeed, a relatively small proportion of all extant walls, in *insula* IX.3 and in Pompeii at large, were built before the first century BC.⁷¹¹ Arguing that older walls have not survived simply because they had to be demolished as they became structurally weak is unconvincing. The oldest masonry walls are very solid ashlar or framework walls,⁷¹² found today in Pompeii frequently in a better condition than the later rubble-work walls. Thanks to the prominence of building materials in pits fills, we may suggest that the reason for the smaller size of earlier pits may simply be due to the fact that the disassembling of a wall largely made of ashlar blocks does not create significant amounts of waste. Instead, the blocks become readily reusable. Although later interventions must, at least to some extent, have corrupted and destroyed earlier layers, and hence skewed the record, the earliest raising fill layers too contain only modest amounts of building rubble in comparison to the last phase raising fills. While no raising fill layers so far excavated by the *EPUH* team can be securely dated to the pre-first century BC era, the contrast between these lowermost and first-century AD raising fills is remarkable, emphasising that more building rubble was disposed of during the last alterations. This shows how the demolition of rubble-work walls produced rubble that was unsuitable for reuse. Reusable pieces in these fill layers and pit contents may moreover suggest that the overall amount of rubble exceeded its reuse capacity, at least in local building projects, and the markets for its resale may not always have operated efficiently. There might even have been some oversupply because although the earthquake(s) left several buildings in ruins, the rebuilding of some units had not been commenced by AD 79 and particular buildings or parts of them were, in post-AD 62 Pompeii, as previously, chosen to be made in newly quarried or produced materials.⁷¹³

When floors were built one on top of another one, digging pits became more laborious as it involved breaking through several former floor levels and fill layers between them. The evidence moreover shows, how one frequently hit another pit when excavating a new one. As a result, instead of sand and stone, new pits brought up old waste which had likewise to

⁷¹¹ Traditionally ashlar framework walls have been dated old, up to the early fifth century BC (e.g. Adam 2007: 98, Berry 2007b: 68, Peterse 2007: 377). However, it now seems that we do not have surviving framework walls that old. Instead, structures standing in AD 79 have been dated to the beginning of the second century BC (Carafa 2007, Jones and Robinson 2007: 392, Wallace-Hadrill 2007: 281).

⁷¹² Such as the facades of Units IX.3.24 and 25. The foundation trench of the facade of Unit IX.3.24 contained some ceramics of the early third century BC (Castrén *et al.* 2008: 333-4, Viitanen and Andrews 2008: 56).

⁷¹³ For instance, the Central Baths under construction in AD 79 was largely built in new brick. Compare DeLaine (2001: 246) discussing Rome and Ostia.

be disposed of. Consequently, fills became to contain re-deposited material from a notable time-span. Notwithstanding increased inefficiency, digging pits remained popular.⁷¹⁴

4.3 Conclusion

The abundant evidence for waste disposal and reuse in *insula* IX.3 has showed how people coped with their refuse, both on a day-to-day and irregular basis. This process involved choosing between different alternatives for disposal or recycling. The choices were, as outlined in the discussion of consumption in Chapter 1 above, influenced by physical constraints, such as topography, as well as economic and social realities. Moreover, the existing architectonic configuration made some alternatives more feasible than others.

Drainage was of major importance and hence drainage pipes and channels are ubiquitous, at least as common as are water collecting and conserving structures. Drainage was aided by the topography. The middle part of the city block was on a higher level than the streets to which channels drained, and the streets all sloped. Latrines too were common but it is striking that, as far as we know, several of the largest units in the city block lacked toilets. We therefore need to account for the use of public, neighbouring and portable facilities. In addition to human excrement, fixed latrines were used for disposing of other waste too.

The evidence discussed above has shown, and a reading of the catalogue confirms, that building was frequently carried out with reused materials. This undoubtedly had several advantages related to cost, convenience and the pace in which new construction projects could have been launched. This was important when buildings had to be repaired not only once but several times thanks to repeated earthquakes, and when the construction of upper floors increased the overall need for building materials. The increased reuse should therefore be seen as an economically sound solution to making building materials more readily and cheaply available, instead of an emergency action by people trying to put things together in a haphazard way.⁷¹⁵ However, some refuse was ill-suited for reuse and materials that could potentially have been recycled were nevertheless disposed of, perhaps because

⁷¹⁴ Staski (1991: 36) too observed reliance on old-fashioned and ineffective disposal systems in El Paso, Texas, in the late 19th century.

⁷¹⁵ Compare Barker (2011) discussing the Roman world at large.

they were too ubiquitous in relation to what was needed or wanted. Dumping took place both outside and inside the city block. The unpaved northern alley has provided a prime example of how public space was used for dumping despite the fact that it breached the statutes formulated to keep streets as obstacle-free as possible. The most abundant evidence for dumping inside units comes in the form of pit fill and raising fill layers. While the contents of these layers shows differences related to time and location, their sheer number demonstrates their overall commonness. Despite these disposal practices, the evidence shows that they were not adequate to deal with all waste and a part of it was removed outside the city gates. Altogether, what characterizes disposal is that the methods used remained the same for long. The long history of reuse, sequence of street levels, pits cutting one another, and drains along the same alignment all attest to this.

CHAPTER 5: Utilities, social dependence and living conditions in *insula* IX.3

The first part of this chapter takes the discussion of choice and patterns further, and, by building on the concepts of consumption studies and the dialogue between humans and their built surroundings, as outlined in Chapter 1, highlights the contribution of this thesis to the discussion of these phenomena in the ancient world. The second part focuses on the observed connections between units, discussed in Chapters 3 and 4 above, to validate or reject the hypothesis that the city block consisted of nine properties. In addition, it explores what the common ownership of some units might mean in terms of the everyday life of their inhabitants. This deepens our understanding of the social dependence and power relations in *insula* IX.3. Finally, while social dependence may have had an impact on everyday life, we need to pay further attention to the evidence attesting to living and working in each individual unit to gain a thorough understanding of the conditions of daily life. To this question we will turn at the end of this chapter.

5.1 Consumer choice

The variety of the ways in which basic utilities were made available results from specific conditions under which decisions were made. While the evidence taken as a whole can help us identify some of the contributing factors, we need to recognise the many variables involved in individual decisions, many of which can no longer be isolated, and to treat all examples on a case by case basis. Notwithstanding these shortcomings, the multitude of possible factors resulting in different solutions is highly revealing of the complexity of situations in which all decisions were made to meet needs and fulfil desires, even those dealing with basic sustenance.

The decisive factors can be divided, as observed before, into three groups: physical limitations set by available technologies, local topography and surrounding urban matrix; economic constraints; and social factors.

Physical limitations:

1. *The availability of alternatives.* The ways in which a utility could have been made available were limited. For instance, natural light was made available through windows, doorways and unroofed spaces. The choices constrained, and were constrained by, house layouts.
2. *Reliability of different alternatives.* It mattered if some ways to secure a utility were more reliable than others, in particular if the utility was of high importance. For example, internal light wells might have been preferred, as opposed to lighting based on windows in spaces requiring abundant and reliable lighting, because light through ceiling was perhaps not as easily obstructed than through windows. Moreover, servitudes that prevented any obstruction of light may have been desired even if they were costly.
3. *Differences in quality of the utility.* Different alternatives to secure a utility might have entailed differences in the quality of the utility. How important was the quality of the utility again depended on the unit in question. For instance, piped water was undoubtedly of better quality than cistern-water. This was more important in units where water was largely used for human consumption, such as commercial cooking, instead of production.

Economic constraints:

4. *Cost-efficiency.* This depended on the consumption rate, and on what was the most efficient (volume) and economical (initial costs and maintenance costs) way to access a utility. For instance, a connection to the water mains was relatively costly as it required investment in a system of pipes which was prone to damage and clogging, but if the availability of water was of particularly high importance, it might have been deemed worthwhile as building and maintaining cisterns likewise involved costs together with the risk that they might run out of water.

The economics of certain choices remain difficult to estimate, however, not least because we tend to put much weight on the maximization of a utility by the least

human effort, although the wide availability of cheap labour in the Roman world meant that solutions which required the input of several persons may not have been rejected in favour of those needing fewer personnel. In fact, the ability to select solutions requiring a considerable amount of manpower may have been used as an ostentatious display (see ‘Social factors’ below). Streets congested with slaves on errands for their masters may have been intended to be an impressive sight.

5. *Self-sufficiency*. Self-sufficiency brought independence from neighbours and the town but usually entailed some cost. Therefore, if a utility was ranked low in the list of priorities, self-sufficiency may not have been seen as worthwhile. For example, owners of units where water was consumed on a domestic scale alone might have seen no reason to invest in the maintenance of their own cisterns if public fountains, and baths for that matter, were accessible within a reasonable distance. On the other hand, however, larger units and those with water-consuming commercial function typically had their own cisterns to secure their supply.

Social factors:

6. *Dependence*. Some ways to secure a utility required a permit from town authorities, and some others needed a neighbour’s approval or required co-operation between neighbours. The need for a permit or agreement could have meant possible delays in the acquisition of the utility, additional costs, or rendered later changes difficult. Some arrangements based on dependence or sharing could have been prone to disputes. Alternatively, they could have cut costs and added efficiency. As a result of this balancing between advantages and disadvantages, some units had and others did not have shared utilities, or a connection to the water mains.
7. *Ownership and servitudes*. Thanks to specific building histories, some alternatives were rendered more or less feasible than others. For instance, probably because Units IX.3.3 and 5/24 were under single ownership, they shared the products of the kitchen (Room 14) of Unit IX.3.5/24.

8. *Law.* Rules and regulations may have limited variety and promoted conformity. For example, the placing of large commercial fixtures that produced fumes follows a certain pattern, possibly to avoid the banning of these fixtures as nuisances.
9. *Display and ostentation.* Utilities were not only made available due to need but also due to the fact that they could have been made available. For example, some representative rooms received more light than was necessary for the social activities being carried out there, some mains water was not used for consumption but for display.
10. *Status.* A utility may not have been equally accessible to all social classes. For example, acquiring a connection to the water mains did not only entail costs that might have been prohibitive but it also involved a petition in which the social status of the petitioner might have been of some importance.⁷¹⁶ For instance, the only examples of small units that might have been connected to the water mains, Units IX.3.17 and 18, could have acquired their connections in conjunction with the installation of running water to Unit IX.3.19-20.

Although the factors that caused certain arrangements were many and cannot be listed in full, it is important to bear in mind that when particular solutions were chosen, they might have had an impact on the way in which other utilities were made available. While so far the connection between the supply of light and air has been established, we can trace further connections both within individual units and within the city block as a whole. Indeed, what has largely been omitted from previous discussions in the scholarship is that patterns can be recognized not only on a household scale but also on a city block level. To these patterns we will now turn.

⁷¹⁶ Compare van Binnebeke 2000: 147.

5.2 Patterns and groups

5.2.1 Light and air

Two important observations on the ways in which light and air were made available inside the city block can be made. Firstly, the importance of windows between units was significant. In *insula* IX.3, one fourth of windows shared by two rooms were found between units (fig. 61).⁷¹⁷ Consequently, piercing a division wall was not exceptional, and light servitude, if not ownership, could frequently have bound neighbours. Secondly, there seems to have been a tendency to group internal light wells/air vents. Because unroofed spaces inside units tended to be located in the middle or at the rear, it is not surprising that on a city block scale several of these rooms are found either next to or very close to each other, on both sides of a division wall between neighbours (fig. 61).⁷¹⁸ For example, spaces which were at least partly unroofed are clustered around the division wall between Units IX.3.1-2 and 5/24. The arrangements could have had some practical advantages e.g. in the orientation of roofs and ensuring unobstructed lighting conditions.

5.2.2 Air, light and water

The role of *atria* and gardens as providers of light, air and water has already become evident. In contrast, light wells had no role in the supply of water. As far as we know, they were not furnished with water collecting structures in *insula* IX.3. Nonetheless, while several unroofed rooms were supplied with water-collection structures, they likewise were spaces for water use (fig. 61). Humidity resulting from the use of water would have been less of a problem in spaces open to the sky. Furthermore, the play of light on water made water features stand out even more.

⁷¹⁷ Comparative studies are lacking but Pirson (1999: 75) for instance has suggested that out of all pairs of rentable *tabernae* and adjacent *domus* to which they belonged, only 3 % were connected with windows. In the case of *insula* IX.3, only one window is of this type. Instead, shared windows were more common between other types of units.

⁷¹⁸ The pattern can be observed in other Pompeian city blocks. For instance, Jashemski's (1993) catalogue of gardens in Pompeii shows how gardens and impluviate *atria* were frequently grouped. Were light wells also indicated, the grouping might be more pronounced.

The connection between water use and collection exists beyond unroofed spaces. It is striking, although not surprising, that all structures which have been identified as related to water consumption are found in close vicinity to the available water sources in the given property (fig. 61). All units with water-consuming commercial activities contain evidence for water supply, of which the most important are cisterns. Private houses likewise relied largely on their cisterns. In contrast to some known examples in Pompeii, however, none of the ground floor cisterns in *insula* IX.3 seem to have been shared by neighbours.⁷¹⁹ Nonetheless, some other solutions pertaining to water supply in the city block might have crossed unit borders. The single possible upper floor water tank and one of the two known connections to mains water may have been shared. Finally, irrespective of the supply method itself, the given structures are found together with drains which dealt with overflow and excess. This emphasises Jansen's observations on how important it was to have both water supply and disposal mechanism in full operation.⁷²⁰ One could not operate effectively without the other.

5.2.3 Water and fire

In terms of water and fire structures, both patterning and obvious lack of patterns can be observed. To begin with, there seems to have been a tendency to group fire and water installations (fig. 61).⁷²¹ Such pairings had two benefits. Firstly, several functions required both heat and water. In domestic context such activities were cooking and washing for instance. Therefore, evidence in *insula* IX.3 supports Allison's observations on the grouping of hearths and cisterns.⁷²² Moreover, several commercial functions, including cooking, baking, metal-working and cloth dyeing, all of which took place in the city block, likewise required the presence of both water and heat. Therefore, a structure which made use of water is always found in, or in the adjacent room to, a space which is occupied by a fire

⁷¹⁹ For Pompeian evidence concerning shared cisterns, see e.g. Foss (1994: 137) on Units I.9.9 and 10, Pirson (1999: 28-30) on the House of Pansa and adjacent *tabernae*.

⁷²⁰ Jansen 2002; also Leander Touati 2008: 118.

⁷²¹ Compare Kastenmeier (2007: 28) on grouping kitchens and baths. In *insula* IX.3, Rooms 14, 78, 97 and 136 contained both a hearth and a cistern. The cauldrons in Room 43 and a cistern in Room 49-51 are located close by, and the oven in Room 115 is close to the cistern in Room 113. Rooms 99 and 105 seem to have contained both fire and water-using structures. On the whole, however, most of the water and fire installations in Unit IX.3.10-12 are not grouped and grouping is not particularly evident in Unit IX.3.19-20. Grouping neither exists in Unit IX.3.15. Moreover, one must remember that although Room 57 in Unit IX.3.8 and Room 70 in Unit IX.3.13 contained hearths and cisterns, the cisterns were out of use in AD 79.

⁷²² Allison 2004: 100, table 5.14a.

installation. The two installations served for different parts of production, and were frequently associated with a nearby cistern. Secondly, fire safety might have been thought of. Water and fire installations were possibly grouped as a precaution against fire outbreaks. Indeed, the importance of water in places susceptible for fire outbreaks is noted in ancient sources,⁷²³ and stressed by modern scholars alike.⁷²⁴

In contrast, fire-using structures alone seem to group less clearly (fig. 61). Fire safety, in terms of having fire in one rather than several places, was apparently not thought of. In units of multiple fire installations the convenience of having wood or charcoal taken only to certain locations within buildings was likewise not considered as important. However, it is possible that different preferences prevailed in the placing of furnaces, ovens and hearths in relation to each other, as opposed to those concerning hearths and *praefurnia* of domestic baths, which are frequently found together in Pompeii.⁷²⁵ Grouping hearths and *praefurnia* which consumed much fuel and were labour-intensive to run may have had superior synergy which made it worthwhile.

In the case of *insula* IX.3, which lacks bath suites, only once or twice were two fire installations placed in a single room.⁷²⁶ The lack of clustering might be taken as evidence for the intentional dispersal of fire installations to the various parts of properties where they could have provided additional heat, beneficial in winter months, and prevented individual rooms from becoming too hot. However, if they were to heat these units effectively, they would have been placed in the middle parts of the units. This is the case in around a half of the 11 units with fire installations in the city block (fig. 61).⁷²⁷ The fact that the installations were mainly placed along the external walls,⁷²⁸ instead of being placed in the middle of rooms, nevertheless suggests that their placing was selected to avoid heating the rest of the property. Consequently heat, with related fumes and smell, emitted from these installations, seems to have been primarily considered as a nuisance. The pattern conforms to observations made by Boman on *insula* V.1.⁷²⁹

⁷²³ Paul *dig.* 1.15.3.4.

⁷²⁴ Boman 2005: 66.

⁷²⁵ Salza Prina Ricotti 1978-80: 256, Dickmann 1999: 267, Kastenmeier 2007: 19, 28.

⁷²⁶ Room 70 of Unit IX.3.13 and Room 78 of Unit IX.3.14.

⁷²⁷ In Units (IX.3.1-2), 10-12, 13, (16), 18 (and 25).

⁷²⁸ Except in Units IX.3.10-12, 16 and 18.

⁷²⁹ Boman 2005: 64-5.

Fire installations do not group on the city block level either. Even if we accept the conventional identifications of Rooms 54, 102 and 126 as kitchens (fig. 61), although they did not contain braziers or cooking podia but were placed in locations supposedly typical for kitchens, and examine them together with rooms which contained cooking apparatus,⁷³⁰ these spaces do not seem to cluster to any significant degree. As for the connection between toilets and kitchens which has often been given special attention,⁷³¹ *insula* IX.3 contains eight units which seem to have had both a latrine and a cooking podium. Out of these, no more than three units had the two structures placed either in the same room or in two well-connected, adjacent rooms (fig. 61).⁷³² The number of units with combined latrine-kitchens is increased by three if we take the supposed kitchens in Rooms 54, 102 and 126 into account, strengthening the otherwise weak pattern in *insula* IX.3. Although the concept of latrines and kitchens as closely connected may seem foreign to us, water use and the accumulation of waste connected these spaces and made their grouping pragmatic.⁷³³ For example, in some Pompeian houses water used in kitchens was taken to latrines.⁷³⁴ While the amount of water needed to operate toilets remains disputed,⁷³⁵ the evidence gathered together during the *EPUH* excavations shows undisputedly the use of toilets as dumping ground for household waste. In terms of the overall placing of latrines, they do not cluster inside the city block. For this reason cess pools were not frequently shared by units. Instead, the single cess pool shared by Units IX.3.3 and 5/24 constitutes the only well-established example in *insula* IX.3 for shared facilities in waste disposal.⁷³⁶

The patterns, more or less evident, come from a single city block alone and hence have a limited value in wider generalizations. Nevertheless, they cannot be explained away as insignificant. As shown above, many of them have been recognized in comparative studies. Although clustering of functions was partly necessary in small units, thanks to the overall lack of space, clustering likewise took place in larger units where the overall amount of

⁷³⁰ Rooms 14, 57, 59, 64, 70, 73/74, 78, 93, 101, 107 and 136.

⁷³¹ Salza Prina Ricotti 1978-80: 244, Foss 1994: 136, Jansen 1997: 128, Allison 1997a: 345-6, 2004: 99, 103; Boman 2005: 65, Kastenmeier 2007: 19.

⁷³² In Units IX.3.5/24, 8 and 18.

⁷³³ Kastenmeier 2007: 100.

⁷³⁴ Ling (1997: 92-3) on the House of the Menander, Karivieri and Forsell (2008: 129) on the House of Caecilius Iucundus.

⁷³⁵ According to Hobson (2009: 166), all toilets were flushed. Instead, according to Jansen, flushing was needed only (1997: 127) or mainly (2007b: 167) in toilets where the seats were not situated directly above the downpipe. The importance of flushing is supported by possible mains water connections in the latrines of the House of the Centenary (IX.8.3/6), Julia Felix (II.4.2) (Jashemski 1979: 53), Faun (VI.12.2/5) and Silver Wedding (V.2.1) (Jansen 2001: 40, note 42).

⁷³⁶ Unless a cess pool was shared between Units IX.3.17 and 19-20 (see Chapter 4 above)

space would have allowed the segregation of functions and institutionalizing of spaces for specific uses.⁷³⁷ Therefore, the patterns must have been important, that is, they had some significance to the builders and users of these units. This highlights our need to organise space in a certain, predicable way.

Groupings unquestionably added efficiency. Moreover, in addition to apparent practicalities, other motives may have played a part. Interesting arguments have been put forward by Foss on domestic fumes, and De Haan on smoke from domestic baths.⁷³⁸ Although these emissions were undoubtedly considered as nuisances, they could also have been used and perceived as symbols of wealth. Smells of cooking food and smoke from domestic *praefurnia* could make people aware of dinner banquets and private bathing taking place in the adjacent residence. The line between annoyance and admiration may have been particularly fine. The practical and social meanings embedded in the spatial organisation of functions were highlighted in Chapter 1 when humans' innate approach to space was dealt with, and will be discussed further below.

5.3 Servitudes and common ownership in insula IX.3

5.3.1 The ownership of insula IX.3: a revision

Roman law probably had a real significance for the builders and users of units in *insula* IX.3. Chapters 3 and 4 above have shown that archaeologically visible connections between units can be explained, in addition to assuming common ownership, as an indication of servitudinal relationship or other arrangements known by the law. This section evaluates which of the connections are more likely to stem from voluntary agreements between neighbours and which attest to common ownership. Through this assessment we can finally reject or validate the hypothesis of the division of the city block into nine properties. With regard to the four clusters of units that were supposedly owned in common, the situation in AD 79 appears as the following:

⁷³⁷ Compare Kastenmeier 2007: 99.

⁷³⁸ Foss 1994: 77 on the basis of Seneca *Ep.* 64.1; De Haan 2010: 71.

1. Units IX.3.3 and 5/24 shared light and a cess pool. Moreover, their upper floors extended above the ground floor of Unit IX.3.4 (fig. 62). This strongly suggests their common ownership. When the unit currently occupied by Rooms 11-14, 37-39 and 54-55 was divided sometime in the 1st century BC or AD,⁷³⁹ the ownership of space composed of Rooms 11-14 and 37-39 was kept together although the space itself was divided between three units (IX.3.3, 4, 5/24). In contrast, Rooms 54-55, now belonging to Unit IX.3.1-2, ceased at some point to have any interaction with the rest of the rooms. There were no servitudes created between Units IX.3.1-2 and 5/24. The past connection between Rooms 12 and 54 is seen by a drain out of use, as well as a blocked doorway which once connected the spaces (fig. 62). Furthermore, in AD 79, Unit IX.3.5/24 upper floor seems to have extended above the ground floor of Unit IX.3.6. Hence, whereas during the post-AD 62 rebuilding Unit IX.3.6 was separated from the body of Unit IX.3.5/24 to which it had belonged, as shown by the number of closed windows and doorways (fig. 62), the units were kept under common ownership.
2. Although Units IX.3.7, 8 and 9 were ‘carved out’ of Unit IX.3.10-12, there is not enough evidence to confirm that they were all under common ownership in AD 79. Unit IX.3.9 probably belonged to Unit IX.3.10-12 which extended above it (fig. 62). Instead, there is no firm evidence for the common ownership of Units IX.3.7, 8 and 10-12. Only light was definitely shared between Units IX.3.7 and 10-12 but this may have been due to a servitude between the two, even if the inhabitants of IX.3.10-12 could see into IX.3.7. Moreover, it was speculated above that the inhabitants of Unit IX.3.10-12 might have used the latrines of IX.3.7 and 8, and the people in Unit IX.3.7 used the cooking facilities of IX.3.10-12, but there are no means of establishing this. Of course, the units *may* nonetheless have been owned in common, because, as observed in Chapter 1 above, ownership does not necessitate archaeological manifestations. Alternatively, and perhaps more likely, the ownership of the units was separated when the division walls were largely rebuilt in the 1st century AD.⁷⁴⁰

⁷³⁹ See the catalogue and section 2.2.2 above.

⁷⁴⁰ *Ibid.*

3. Units IX.3.14, 15 and 16 once probably belonged together. This is indicated by a number of closed doorways (fig. 62). In AD 79 Unit IX.3.16 probably extended above Unit IX.3.15 which suggests their continued common ownership. Units IX.3.14, 15 and 16 perhaps remained connected by a shared water tank which may, however, have existed by mutual agreement. Continued ownership was not necessary although possible.
4. Units IX.3.17, 18 and 19-20 had several shared utilities in AD 79 (fig. 62). Firstly, there are blocked windows and doorways indicating former connections. The separation of Units IX.3.17 and 18 from the body of Unit IX.3.19-20 was recent, having only taken place in the later part of the first century AD. Secondly, Unit IX.3.19-20 had previously extended over IX.3.18, and in AD 79 it did extend over IX.3.17.⁷⁴¹ Thirdly, in AD 79 light at least, if not a cess pool too, was shared between Units IX.3.17 and 19-20, and all three units probably shared water supply and drainage. Common ownership instead of a complex servitudinal relationship seems a more probable explanation for such connections.

As a result of this discussion, it seems that the number of properties in *insula* IX.3 in AD 79 should be increased from the hypothetical nine. If the city block contained four clusters of units owned in common (i.e. Units IX.3.3, 4, 5/24 and 6; Units IX.3.9 and 10-12; Units IX.3.14, 15 and 16; and Units IX.3.17, 18 and 19-20), and all other units were separately owned, the city block would have contained 11 properties. Assuming that the ownership of Units IX.3.14 and 15 was also separate in AD 79, the number would grow to 12. However, because of the remaining uncertainties, the hypothesis that the city block was divided into nine properties cannot be rejected outright. It seems best to talk about a range of nine to twelve properties in *insula* IX.3 (fig. 63). Despite this, it has become very clear that observations based on the plan of the city block alone, even aided by an understanding of the extent of upper floors, cannot resolve the question of ownership in a reliable way. More information is needed. Focusing on the arrangements made for securing basic necessities has shown to provide ample information on connections between individual units. Through this, we have been able to generate a more reliable picture of the ownership in AD 79.

⁷⁴¹ *Ibid.*

The second achievement of the analysis is that we have been able to trace former connections, some of which were echoed in AD 79 in the form of servitudes between adjacent properties. For instance, if the ownership of Units IX.3.7 and 10-12 had indeed been separated by AD 79, the window between the two was left to provide light to the rear of Unit IX.3.7 even if this meant that the neighbour could see in. However, servitudes did not always follow the separation of ownership. For example, even though there are several, now blocked, openings in the division walls between Units IX.3.25, 5/24 and 23 (fig. 62), there is no evidence that would suggest their common ownership or even a servitudinal relationship in AD 79. Consequently, it is probable that they had been owned in common at some point of time. After the separation which took place before the redecoration of Unit IX.3.5/24 in the Fourth Style, no servitudes remained or were subsequently established.

As for arrangements between units that had no history of common ownership, they can all be explained as stemming from servitudes. The connection between Units IX.3.1-2 and 25 seems servitudinal because no other utilities than light cross their borders. The servitude may have been created when Unit IX.3.1-2 acquired the shape it has retained until today. As a result, it had to provide light to IX.3.25 which would otherwise have lost a source of light.⁷⁴² This and later changes in floor levels resulted in a peculiar situation in which a neighbour could see in. Despite this, the owner of Unit IX.3.1-2 had not taken an action to abolish the servitude. Likewise, because there are no further utilities shared by Units IX.3.13, 5/24 and 15 (fig. 62), it seems that Unit IX.3.13 was the servient owner of a light servitude between these units and there were no ownership issues involved. The same can be said of the relationship between Units IX.3.10-12 and 5/24, in which Unit IX.3.10-12 was obliged by servitude to provide light for Unit IX.3.5/24.

As far as we know, some extant division walls between units had never been pierced by doorways or windows (fig. 62). For instance, the E-W division wall separating Units IX.3.1-2 and 3+5/24 contains no indication of any former connections. The same can be said of the N-S walls between Units IX.3.10-12 and 13, Units IX.3.13 and 14, and Units IX.3.15+16 and 17+19-20. While some parts of these walls seem to have been rebuilt in rubble-work with a mixture of building materials, perhaps replacing sections of walls where there had been openings, other sections are clearly older constructions in framework and rather

⁷⁴² *Ibid.*

homogenous rubble-work (fig. 59). Therefore, we are not dealing exclusively with late walls and there is some permanence in the lack of openings in the given walls. These observations strengthen the impression that certain neighbouring units belonged, and had always belonged, to different owners. Installations inserted in or built against these division walls are either found on one or both sides of the given walls (fig. 61). For example, installations in Units IX.3.17 and 19-20 were built in or against the division wall to Units IX.3.15 and 16 which contain no fixtures on their side of the wall. In contrast, the installations in Units IX.3.1-2 and 5/24 for instance are found on both sides of the division wall. It is difficult to pin down exactly whether the differences are due to the fact that some walls were *paries communis* and others owned by one of the two neighbours, with or without servitudes. Nonetheless, the overall differences suggest differences in the status of these walls.

5.3.2 The importance of individual initiative, neighbours, town and law in the arrangement of life-sustaining essentials in insula IX.3

In her influential work on water supply in Pompeii, Herculaneum and Ostia, Jansen argued that inhabitants had primarily been in charge of their own supply. Only when private arrangements were not possible or were inadequate, were communal solutions sought.⁷⁴³ In a similar vein, Rainer has stressed that there was no overarching and specific, state-induced building legislation to control construction from the outset, but new rules were formulated in the aftermath of catastrophic events such as large-scale fires.⁷⁴⁴ The present thesis has shown, in line with these observations, that most of the shared solutions resulted from common ownership rather than people being active in finding shared solutions. In other words, self-sufficiency was indeed favoured. Only in some instances, which moreover seem to represent late developments in the city block, were people happy to rely solely on the town infrastructure. This self-supply probably had largely to do with people avoiding reliance on a second party in life-sustaining essentials. Had the use-right of a shared utility become disputed, or had the town-wide provision failed, considerable problems could have been caused.

⁷⁴³ Jansen 2002: 200; also Schwartz (1981) for a discussion on self-supply and aqueduct-reliance in North Africa where the situation seems to have differed from town to town. Nevertheless, she too stresses the role of individual households in the supply of domestic water. Interestingly, the Pergamene Astynomic law (*OGIS* 483: 190-5) describes how town officials kept records of the individual cisterns in houses, and made occasional checks on their condition – emphasizing the role of individuals in supplying fundamental water.

⁷⁴⁴ Rainer 2002: 34.

In line with these observations, written sources suggest that there was little direct involvement of the town in providing basic utilities in-house. Town authorities were largely relying on property owners, or groups of owners, to sustain themselves, and possibly even to take care of the public space onto which their properties fronted. A limited number of units had, or were granted, a connection to the water mains. Moreover, property law provided a code of conduct to deal with neighbourhood relations and to prevent possible disputes by defining rights and obligations. As long as private constructions did not violate public space or the rights of their neighbours, and as long as properties were maintained habitable, i.e. they did not violate the townscape, officials were not to intervene. However, because remedies for suffering neighbours were much discussed in the law, and because bans and regulations were rephrased and reformulated to produce a stricter version, enforcing was evidently needed. Archaeological evidence too suggests violations of rules dealing with public space. Perhaps officials had to be more involved in the everyday maintenance of basic utilities and services, together with neighbourhood disputes, than the texts let us believe.

Servitudes have shown to constitute a useful tool for approaching neighbourhood relations in a city block because the physical manifestations of these rights and obligations are typically found in the partition walls between two properties. These servitudes could have helped to secure the availability of life-sustaining essentials. However, whereas the *Digest* has been a helpful source in understanding the relationship between neighbours in arranging basic utilities, it has not been much help in the process of understanding what limitations might there have been to control the impact of commercial functions in the neighbourhood.⁷⁴⁵ Indeed, as the distribution of heat, smell and fume-emitting commercial installations in the city block have shown, there were no general bans of trades which caused nuisances and involved high risks of fire, in the centre of the town.⁷⁴⁶ What seems to have been the case is that some tolerance of the actions of neighbours was expected. The by-products of activities related to everyday life had to be put up with. Instead, activities, either domestic or commercial, that caused nuisances on a larger scale, i.e. above the

⁷⁴⁵ Saliou (1994: 64) observes that only twice is the term *furnus* (industrial fireplace) used in the *Digest*.

⁷⁴⁶ Compare Goodman (2007: 106-8) who has interpreted the ban of large kilns producing more than 300 roof tiles per day from the centre of Osuna in Spain (*CIL* II 5439: II, 24-28) as an attempt to have an impact on economy rather than improve fire safety. After all, no other furnace types were banned.

‘normal’ level, required a servitude.⁷⁴⁷ Defining the line between normal and excessive was dealt with in the *Digest* without separating domestic and commercial sources of those nuisances. Altogether, as long as one was the sole owner of walls surrounding one’s property, regardless of its use, one could embed in them and build against them whichever structures one wanted, at least as long as the acts did not render neighbouring units uninhabitable or cause major losses. However, when the given walls were connected to servitudes or their ownership became shared, acts became constrained. This brings us back to the notion with which the entire discussion on servitudes was begun: lawyers did not care what people did inside their properties as such. Instead, they were occupied with the integrity of borderlines between neighbours.

5.4 Social dependence

Taking the conclusion that the city block was divided into nine to twelve properties as our starting point and examining what this would mean more closely, we can deepen our understanding of the social relations in *insula* IX.3. The owner of Unit IX.3.5/24 probably had much control over adjacent Units IX.3.3, 4 and 6. Although in AD 79 none of these units had doorways between them, which at the outset suggests their relative autonomy,⁷⁴⁸ in-depth analysis of the archaeological material generates a different interpretation. The exceptionally wide and low-lying window between Units IX.3.3 and 5/24 suggests that they had extensive co-operation. Perhaps the kitchen staff of Unit IX.3.5/24 catered for not only the given household but their dependants and paying customers of Unit IX.3.3 too. In this light it must be asked, whether the surgical implements found both in Units IX.3.5/24 and 6 could have belonged to a single person who lived in Unit IX.3.5/24 and carried out domestic healthcare when needed, but also worked for a fee in Unit IX.3.6.

Focusing on the two properties of up to three units, namely those of IX.3.14, 15, 16 and IX.3.17, 18, 19-20, it is interesting that the commercial function in all of the rentable small workshops was metal-working. This clustering of certain trades is not unknown in Pompeii.⁷⁴⁹ The workshops, which seem to have been involved in production, repair and

⁷⁴⁷ Möller 2010: 291-2.

⁷⁴⁸ Pirson 2007: 469.

⁷⁴⁹ Robinson 1999; also Laurence 2007: 67-73.

sale on different scales, might have both competed as well as complemented each other. A customer heading to these workshops along the Via Stabiana could have felt assured that at least some of these units, if not all, could provide the service or items needed.⁷⁵⁰ It remains unknown whether the specialization of these units was a conscious decision by the two owners to rival each other in business ventures, or tenants who had seen their neighbours do well in metal-work and followed suit. The connection between the workshops at the facade and the unit to which they presumably belonged is in any case not as strong as in the examples discussed above.

Our evidence tells us unfortunately little about the practical and social functions of upper floors. In AD 79 *insula* IX.3 contained no separate stairs from the street to self-contained apartments (*cenacula*) above commercial or private units. It has been shown that the number of such units grew in Pompeii in particular in the first century AD, suggesting that there was both an increased need for them and property owners saw it lucrative to build them.⁷⁵¹ Even if different family-groups inhabited ground and upper floors in *insula* IX.3, as speculated above, the connecting staircases were located inside units. This does not necessarily mean that the respective family-groups were significantly more closely connected than those inhabiting adjacent, architectonically distinct units,⁷⁵² because, as we have seen, inhabitants of units owned in common, although being independent entities, could well have shared utilities.⁷⁵³ Social dependence connected the people who used these common facilities and made them directly accountable to each other. This undoubtedly lowered the risk of abuse of common resources and played out social capital which, as we will see, may have been as important for the owners as monetary profit.

5.4.1 Changes in social relations over time

These observations on social power and generation of wealth lead into the question of changes over time. As suggested in the outline of the development of *insula* IX.3 in Chapter 2 above, commercialization did not taken place only after AD 62. Although Units IX.3.10-

⁷⁵⁰ Compare Robinson (1999: 160-1) who stresses that clustering ‘would ensure that no single retail outlet gained a competitive advantage over its rivals through its location’.

⁷⁵¹ Pirson 1999: 172-3, Andrews 2006: 214-5.

⁷⁵² Contra Pirson 1999: 83-4.

⁷⁵³ Thus it is perhaps unnecessary to make a distinction between stairs that were located close to front doorways and those found deeper inside the units, both types of which are found in Units IX.3.1-2, 5/24 and 19-20

12 and 19-20 were turned into bakeries only at this point, Unit IX.3.1-2 may have already operated as a dye-workshop before AD 62.⁷⁵⁴ In a similar vein, shops were not established only after AD 62. Unit IX.3.3 probably existed as today prior to AD 62, and Unit IX.3.4 too probably housed commercial functions, even if it may have been accessible from Unit IX.3.5/24. The same can be said of Units IX.3.17 and 18 which opened onto the Via degli Augustali through wide shop-doorways, and were connected to Unit IX.3.19-20 at the back prior to AD 62. The situation was probably similar in Units IX.3.14, 15 and 16, although the rebuilding of Unit IX.3.15 facade makes the judgement difficult. The situation is even more unclear with Units IX.3.6, 7, 8, 9 and 13. Because their shop-doorways date to post-AD 62 rebuilding, we cannot know whether they previously had had shop-doorways or whether their commercialization was a late phenomenon. Given the importance of the Via Stabiana as the main north-south thoroughfare and the role of the Via degli Augustali as a partly two-way street leading to the Forum,⁷⁵⁵ we can suspect their commercial role prior to AD 62. Altogether, what the evidence seems to suggest is not the commercialization of the city block after AD 62 but the separation of small commercial units from direct connection with larger units to which they belonged. This is probably what happened to Units IX.3.7 and 8 too. Their separation from Unit IX.3.10-12 went perhaps beyond the examples discussed above, however, because (as argued before) the ownership of these two small commercial units may also have changed hands. At least we have no sufficient information of their common ownership in AD 79. The other examples in the city block only suggest a tendency to close the physical doorways connecting the units of common ownership. This trend is related to wider phenomena. According to Pirson who studied all *tabernae* in fully excavated city blocks, 45 % of them could be identified as parts of larger complexes although they were not spatially connected in AD 79.⁷⁵⁶

This closing of doorways between different units did not necessarily mean increased independence, as the example of Units IX.3.3, 5/24 and 6 has shown. Nor does it seem to be a sign of the desire of the owner living next door to shops to distance himself, at least visually, from commercial enterprises. Although much has been written concerning the negative attitude of the elite towards business enterprises,⁷⁵⁷ recently it has been shown that

⁷⁵⁴ Compare e.g. Pirson (2007: 458) on the commercial installations in the House of the Postumii prior to AD 62.

⁷⁵⁵ Poehler 2009: 382, map 3.6.

⁷⁵⁶ Pirson 2007: 469.

⁷⁵⁷ See Wallace-Hadrill 1991a.

in reality the Pompeian upper class was actively involved in commercial ventures.⁷⁵⁸ Their regime of economic control, which undoubtedly equated with social power, extended beyond the front doorways of the largest units, and was made visual.⁷⁵⁹ For instance, the southern jamb of the front doorway to Unit IX.3.5/24 continues seamlessly as the northern jamb of Unit IX.3.6, and the jambs of Unit IX.3.15 are shared by adjacent Units IX.3.14 and 16. The given jambs are all in brick, rebuilt in the second half of the first century AD. This very act made sure that the facades followed the very same alignment. The visual continuity was enhanced further by the treatment of the facade which continued uninterrupted from one unit to another. As if these clues were not enough, a painting with Minerva in arms and Mercury carrying a money bag adorned the shared jamb of Units IX.3.14 and 15. A goddess of artisans and a god of traders depicted at the entrance perhaps made clear the source of income for Unit IX.3.15.⁷⁶⁰

If most of the commercial units in *insula* IX.3 existed prior to AD 62, one would want to know how old they were by then. It is very difficult however to establish their date. As pointed out in Chapter 2 above, several of the shop facades along the Via degli Augustali are partly in ashlar block or framework, but because the walls behind these facades are not as old and the facades themselves contain evidence for heavy rebuilding, it cannot be established that the units were built as shops from the outset. As far as we know, Unit IX.3.3 acquired its current form in the first century BC or AD, and others probably no sooner than this. Therefore, although it is tempting to suggest that thanks to the wealth accumulated over time through successful business, the largest of the units in the city block were able to grow even larger,⁷⁶¹ there is so far no sound basis for it. Thus Units IX.3.5 and 15 perhaps did not extend to the north in the first century BC because of the economic success of adjacent shops. In addition to the uncertainty of their expansion at this point, their ownership of commercial units in the first century BC is not certain. Despite this, it is clear that in AD 79 when Units IX.3.5/24 and 15 were the largest in the city block and among those with the most abundant decoration and the largest number of high-status finds (see section 5.5.2 below), they were owned in common with adjacent commercial units, the profits of which could have been directed into maintaining and enhancing luxurious living.

⁷⁵⁸ *Ibid.* 1994: 135-41, Robinson 2005.

⁷⁵⁹ Compare Pirson 1997: 174-5, 2007: 470; Robinson 1997: 142-3, 2005: 101-2 and Moormann 2002: 435.

⁷⁶⁰ In a similar vein, a depiction of Mercury carrying a money bag next to the main entrance to the House of the Beautiful Impluvium (I.9.1) has been interpreted 'to underline the commercial origin of its prosperity' (Wallace-Hadrill 1998: 49).

⁷⁶¹ Compare Jones and Robinson (2007: 398) discussing the House of the Vestals.

To support an argument that some units might well have been built as commercial from early on and hence generated wealth needed for growth, we must turn to comparative evidence elsewhere in Pompeii. Units VII.12.10, 11, 12, 13 and 14 have all more or less similar ground plans including a shop followed by another room and a corridor further to the rear where there is more space. The same pattern is repeated in Units IX.3.14, 16 (including Room 80 of Unit IX.3.15), 17 and 18 with their rears now belonging to Units IX.3.15 and 19-20. According to Pirson, the units in *insula* VII.12 were built as commercial from the outset, either by private or public initiative, independently from adjacent edifices, and thanks to their tuff ashlar facades, they can be dated to the Republican period.⁷⁶² While in AD 79 Units IX.3.14, 16, 17 and 18 belonged to at least two different owners, their history may indeed begin as commercial units thanks to their location along the important Via degli Augustali, which had made it worthwhile to built similar units in *insula* VII.12. While this remains a possibility, the regular form of Units IX.3.14, 16, 17 and 18 should not be considered as an absolute proof of their co-ordinated beginnings since their layout is very common, natural to small workshops.

Despite remaining uncertainties, the evidence for commercial structures in the city block prior to AD 62 is nonetheless strong. Therefore we can argue that only in a few cases owners may have decided to commercialize, even sell off a part of their property to cover the fees caused by the disastrous earthquake.

5.4.2 The impact of streets to unit types and social relations

The commercial units of *insula* IX.3 have all their main entrances on either the Via Stabiana or the Via degli Augustali, the widest and busiest of the streets flanking *insula* IX.3⁷⁶³ and hence those with the greatest commercial potential which was exploited in full. The importance of these streets was increased after AD 62 when the northern alley become

⁷⁶² Pirson 1999: 159.

⁷⁶³ A place is considered busy when there is much traffic moving through it (Newsome 2009b: 33). The relative business of Pompeian streets has been estimated on the basis of the depth of ruts (Tsujimura 1991: 64, fig. 5) and frequency of doorways along them (Laurence 2007: 103-8, maps 6.1-4). Laurence (*ibid.* 111-3, maps 6.5-8) moreover used the frequency of *programmata* and graffiti along the streets as a further indicator of street use, but acknowledged (*ibid.* 1995: 69) that with fewer doorways there was more space for graffiti along certain streets which were not well-trafficked according to the two classification schemes above and may cause discrepancies.

inaccessible for carts (fig. 58) and the Vicolo di Tesmo was blocked from wheeled traffic at its northern end. As a result, traffic in the remaining part of the street altered from northbound to southbound.⁷⁶⁴

The importance of the Via Stabiana and the Via degli Augustali as places to generate wealth is reflected in the scale of alterations and rebuilding along these streets. There are many more facades made of ashlar along the northern alley and Vicolo di Tesmo (fig. 59) while such facades are fewer and remain only in short stretches along the Via Stabiana and the Via degli Augustali, where they had been replaced by rubble-work and brick facades. The differences suggest that ashlar facades were demolished in the areas that were most eagerly regenerated, while they were more commonly left standing there where the land was not as much in demand.⁷⁶⁵ Therefore, it seems that the relative importance of the northern alley and the Vicolo di Tesmo was modest well prior to AD 62. Perhaps already in the first century BC the owner of Unit IX.3.5, and possibly the owner of IX.3.15 too, found it possible to extend their properties to the north where the potential for revenue from land was much weaker than in the south and east. In this light it is easy to explain why the north-east corner of *insula* IX.3 was left unrepaired in AD 79. Its location had little economic potential.

The situation might, however, have changed had the next-door Central Baths been opened. Pedestrian traffic would have perceived the northern alley, together with the Vicolo di Tesmo, as a beneficial shortcut route to reach the bathing venue. The secondary entrances and public latrines of the Baths, which opened onto the northern alley, would have attracted traffic had they been in use. Supplies to the Baths would mainly have been delivered, presumably by pack-animals, to the doors opening onto the Vicolo di Tesmo, increasing traffic on it. Undoubtedly already in AD 79 the construction of the public building had placed emphasis on the area. The increased activity gives grounds to suggest that the neglected north and east sides of *insula* IX.3 could have become places to locate businesses. Some of the units there would perhaps have been altered, and the ruins rebuilt to house commerce. However, as the converting and building of small commercial units takes considerably less time than building a complete bath-house, no developments had yet been launched.

⁷⁶⁴ Poehler 2005, 2009: 111.

⁷⁶⁵ Compare Leander Touati (2008: 119-23) discussing *insula* V.1.

What the discussion of the impact of streets on the development of different parts of *insula* IX.3 has shown is that such external factors had a considerable role in the internal organisation of space and that a city block cannot be studied in isolation from its direct surroundings. The importance of flanking streets will be explored further in Chapter 6 in which *insula* IX.3 is compared to other city blocks. Because of the attractiveness of streets, it was most beneficial if properties could flank not only one but two. Indeed, five of the properties in *insula* IX.3 flank two streets, and three of the five had doorways to both streets. This notion too is further explored in Chapter 6 below.

5.4.3 Social dependence beyond individual city blocks

Despite our careful examination of the data to tease out connections attesting to common ownership, the reality may have been, and probably was, more complex. It is possible for example that the property portfolios of landed elites comprised landholdings in a number of city blocks in a number of different cities.⁷⁶⁶ The economic and social power generated through real estate was turned into political power that was predominantly used in the city council of their home towns and in public offices. On the basis of reported find locations of electoral *programmata* painted on facades, it has been shown that although advertisements were concentrated along the busiest streets, certain candidates for public posts were widely advertised in particular areas of Pompeii.⁷⁶⁷ This suggests that they were men of special social weight among the residents of these areas. Such weight could have been gained by a network of dependants who rented or otherwise occupied the property belonging to the given candidate. It would however be a gross oversimplification if the common ownership of two units were assumed on the basis of a name appearing on both facades. Indeed, Mouritsen has argued that *programmata* were painted on facades without a permit from, or the involvement of, the residents.⁷⁶⁸

In his influential work *Case ed abitanti di Pompei* (1954), Della Corte focused primarily on the people who appeared as supporters (*rogatores*) of the *programmata* candidates instead

⁷⁶⁶ See e.g. Frier (1978) discussing Cicero's urban properties, Robinson (2005: 102) discussing the phenomenon in Pompeii; also section 6.4 below.

⁷⁶⁷ Mouritsen 1988: 50-6.

⁷⁶⁸ *Ibid.* 59.

of the candidates themselves. He used *rogator*-names, together with other written evidence and a basic understanding of the architectonic remains, to draw up a list owners or occupants of each unit. His views were soon heavily criticized as far-fetched,⁷⁶⁹ obviously for the same reasons that equating the house owner with the name of a candidate appearing on a facade is problematic.⁷⁷⁰ However, because of the persistent impact of Della Corte's work on modern scholarship, his views should be briefly mentioned. In terms of our discussion of possible owners of *insula* IX.3 but who lived outside its confines, Della Corte linked the ownership of Unit IX.3.1-2 with that across the street at VII.2.11. His judgment was based on their proximity, similarities in *programmata*, and the fact that both units were involved in dyeing.⁷⁷¹ Unit IX.3.10-12 was likewise connected to another bakery across the street in VII.2.6. While the benefits of owning several bakeries or dye-workshops would probably have created synergy that brought lower material, transportation and personnel costs, we have no clear evidence for this in Pompeii. As argued above, the clustering of certain trades in particular areas made sense in other terms, and it may also have been pushed by town officials who shared the ideological and moral concerns of the elite.⁷⁷² Moreover, we have no reason to assume that Units IX.3.1-2 and 10-12 could not have operated on their own: the bakery of four mills is the size of a typical Pompeian bakery⁷⁷³ and the dye-workshop could presumably function with three cauldrons, in particular if the dyeing process carried out there was a relatively simple one. Thus, what this discussion has been able to show is that the ownership issue of *insula* IX.3 could be far more complex than what has been sketched above, but there is nothing that would make our reconstruction of nine to twelve owner-occupied properties impossible.

5.5 Living and working conditions

The individual architectonic entities in *insula* IX.3 have so far been labelled neutrally as units. Now it is time to examine whether they could also be called houses, i.e. dwellings for one or several persons, perhaps a family. For an edifice to operate efficiently as a dwelling, one would assume that there was enough space to simultaneously accommodate (sleep) all

⁷⁶⁹ E.g. Moeller 1973, see also Mouritsen 1988: 14-27, Franklin 2007: 519.

⁷⁷⁰ Mouritsen 1988: 18-9 for further discussion.

⁷⁷¹ Della Corte 1954: 129.

⁷⁷² Wallace-Hadrill 1995.

⁷⁷³ Flohr 2007a: 133, table 3.

residents, as well as access to utilities discussed above. For instance, the modern Housing Health and Safety Rating System (HHSRS) by the British government pays attention e.g. to hazards caused by cooking and heating appliances, ventilation, drainage, refuse and water supply.⁷⁷⁴ This implies that they are assumed to be standard facilities in a modern dwelling.

Examining the evidence for utilities in *insula* IX.3 (table 7), only one small one-room shop of unknown function (Unit IX.3.9) seems to lack all possible evidence concerning the availability and use of artificial light, water, heat and fixed toilets. Remembering that artefact evidence concerning Units IX.3.3, 4, 9 and 25 is practically non-existent, and that we have very limited information on upper floors which could have contained further fixtures,⁷⁷⁵ the evidence as it is suggests that generally speaking most of the basic utilities were provided in-house. The wide availability is hardly surprising, given that we are talking about life-sustaining basics, needed in present and past dwellings, but previous studies have failed to pay as much attention to it as it deserves. This may be due to the fact that many of the fixtures crucial for the identification of the availability of a utility are not visible on the ground, marked in plans or mentioned by early documentation.⁷⁷⁶ Excavations, or clearance at least, are needed to access this information. In the case of *insula* IX.3, many of these fixtures were only found during the *EPUH* clearance.

⁷⁷⁴ Hammersmith and Fulham City Council 2011.

⁷⁷⁵ For example, evidence for water tanks and fixed kitchens has been found in the upper floors of Herculaneum (Andrews 2006: esp. 85-7, 112-3).

⁷⁷⁶ Compare (Pirson 1999: 96) according to whom tenants of *tabernae* and *cenacula* lived in ‘bescheidene, nicht aber ärmliche Lebensverhältnisse’. According to his analysis (*ibid.* 90), only 15 % of rentable *tabernae* contained cisterns and 28 % had ground floor toilets.

Unit	lighting equipment	finds related to water use	fixtures related to water supply	hearths and braziers	finds related to cooking	toilets
IX.3.1-2	5-6	1-9	2		0-12	2
IX.3.3		0-1	1			1
IX.3.4		0-1				
IX.3.5/24	18-20	9-17	3 (+3)	2	11-23	4
IX.3.6	2	1			1	
IX.3.7	4<20		(1)		1	1
IX.3.8	2	1	(1)	1	10	1
IX.3.9						
IX.3.10-12	1	1	2	2	1	
IX.3.13	6		(1)	3	14	1
IX.3.14	2	7	1	1	5	1
IX.3.15	4		1	1	2	2
IX.3.16	6-7	2-3	1		3	
IX.3.17	13-14	3-4	1	2	2	1-2
IX.3.18	7	11	1	1		1
IX.3.19-20	9	2	2 (+2)		4	0-1
IX.3.23			(1)			1
IX.3.25	0-1	0-8	1	1	1-13	1

Table 7. The presence of fixtures and finds related to the availability of water, cooking facilities and artificial light in *insula* IX.3. Brackets indicate fixtures out of use in AD 79.

The sharing of utilities between units owned in common would be a way to explain the lack of archaeological evidence for particular utilities in certain units. Of course there are other possibilities too, already discussed above, but it is worth pointing out that within the units of common ownership there is evidence for the availability of nearly all utilities even if the evidence is lacking in some individual units.⁷⁷⁷ The properties composed of several units would hence have been self-sufficient.

In addition to basic utilities, other elements also contributed to the quality of living. Focusing on these elements allows us to contextualize the evidence for basic utilities. Moreover, we can begin to touch upon questions pertaining to social status. As Boersma for instance has argued, discussing toilets in Ostian city blocks, ‘the presence or absence of a latrine in a domestic building is *one of the instruments* to gain insight into the social standards of a building and the status of the people who lived or worked in it’.⁷⁷⁸

⁷⁷⁷ Only the property composed of Units IX.3.9 and 10-12 would lack a toilet if Units IX.3.7 and 8 did not belong to it.

⁷⁷⁸ Boersma 1996: 151, my emphasis.

5.5.1 Architectonic and finds evidence

If no large-scale differences between units can be observed in the availability of basic utilities, do they appear when material culture is examined more extensively? An examination of evidence concerning personal belongings, religious or decorative sculpture, furniture and activities such as food consumption or storage, working and playing, shows an equally wide distribution (table 8). As with other artefact evidence, Units IX.3.3, 4, 9 and 25 again seem to have been devoid of finds which is probably more due to the omissions in records rather than their abandoned state in AD 79. As for Unit IX.3.6, the finds evidence contradicts the proposition of its function as a mere clinic.⁷⁷⁹ Although it is possible that the given finds had fallen from the upper floor belonging to Unit IX.35/24,⁷⁸⁰ this notion brings us to the question of combined working and living. After all, most of the evidence in table 8 comes from units engaged in commerce or production.

⁷⁷⁹ See section 5.4 above.

⁷⁸⁰ The discovery height of finds in the fill was not recorded.

Table 8. The presence of certain personal utensils, household goods and evidence suggesting food consumption in *insula* IX.3.

Unit	personal appearance	gaming	seals/ writing imp.	coins	statuettes	tools	furniture parts	household vessels	foods
IX.3. 1-2	an engraved cameo-stone			2 silver and 5 bronze coins	5 bronze statuettes and a terracotta statuette	a bronze needle	bronze fittings, decorations, hinges, and a stud	a glass carafe, a bronze oil-jug, terracotta cups and plates	
IX.3.3									
IX.3.4									
IX.3. 5/24	a golden ring, a bronze pin and a bronze bracelet with silver decoration	a bone dice and engraved token	a bronze inkwell	3 terracotta coin-banks, 41 bronze coins	20 marble statues, 13 terracotta statuettes	2 iron hammers and billhooks, an axe and scarper, a bronze fire shovel	bronze fittings, decorations, pivots, hinges, nails and studs, bone hinges, silver and bone decorations	a bronze colander, 2 strainers, glass carafes, cups, bottles, vases and plates, terracotta cups, vases, jugs, plates, 3 <i>amphorae</i>	charred barley and olives
IX.3.6	a bronze bracelet		a bronze seal	5 bronze coins		a bronze needle, 2 iron axes, a hammer, dagger, sickle and knife	bronze decorations	bronze vases and bronze/glass cups, a glass plate and two trays	
IX.3.7		an engraved bone <i>tessera</i>		3 bronze coins		2 bronze needles, 2 iron knives and hammers, a hoe, shovel, axe, scraper, pitchfork	bronze decorations, fittings and nails, bone hinges	a bronze cup (gilded), glass bottles, terracotta, alabaster and bronze vases	
IX.3.8						an iron shovel	bronze decorations, nails and a stud, bone hinges	a bronze and a terracotta oil-jug, 2 bronze vases, a glass bottle	2 petrified fruit kernels
IX.3.9									
IX.3. 10-12	a bronze <i>fibula</i>	a bone dice, 3 <i>astragali</i> , 2 counters /beads		2 bronze coins	a marble and a terracotta statuette, a statuette (material unspecified)	iron fire tongues and a hoe, a bone needle	bronze fittings, rings, nails and a stud, bone decorations	terracotta and bronze vases, a glass bottle, an <i>amphora</i>	
IX.3. 13		3 counters /beads, a bone dice		a bronze coin	a bronze statuette	2 iron hoes and an axe	bronze studs, 102 bone hinges, iron strips	glass bottles, terracotta plates, 3 <i>amphorae</i>	2 pieces of bread

IX.3. 14	a silver ring and an iron ring with an engraved stone		a bronze seal and inkwell	a bronze coin		an iron sword, shovel and 2 axes		bronze vases, an <i>amphora</i> , glass bottles, carafes and jugs, a terracotta flask, vase and plates	
IX.3. 15	a silver ring	a bone dice		23 bronze coins	an ivory and an alabaster statuette	a mason's level and an iron knife	bone and bronze hinges, bronze nails	a terracotta plate and bottle, a bronze jug, 2 <i>amphorae</i>	
IX.3. 16	2 bronze <i>fibulae</i>		a bronze seal	33 bronze and 2 silver coins	a marble statuette	an iron bill-hook and axe	tens of bone hinges	bronze cups and a jug, a terracotta <i>amphora</i> , oil-jug, plates and flasks, a glass chalice, plates and bottles	
IX.3. 17	a silver needle		a bronze seal	a bronze coin	a marble statuette	2 iron hoes, a shovel and knife		4 <i>amphorae</i> , a glass cup, jug, plates and bottles, a bronze bottle and vases	a piece of charred bread
IX.3. 18	2 bronze <i>fibulae</i> and 3 brooches	20 counters /beads, 10 carved <i>tesserae</i>	a bronze seal and inkwell	3 coins	2 bronze statuettes	an iron knife, dagger, sword, hoe and shovel		a bronze vase and flasks, a glass bottle and a terracotta plate	charred barley
IX.3. 19-20		a bone dice		8 bronze coins	a marble statuette	a bronze chisel and compasses, an iron bill-hook and shovel	bone hinges, bronze decorations and studs	a bronze vase and cup, glass vases and bottles, a terracotta vase, cup, oil-jug, flasks and plates	dried beans
IX.3. 23				10 bronze coins	a marble statue	an iron hammer			
IX.3. 25									

We may begin to unravel the possibility of combined living and working by evaluating whether individual units had enough space for both functions. Some scholars have extrapolated ancient populations on the basis of assuming that a certain amount of space was needed per person.⁷⁸¹ The estimates of the minimum living space per person are highly variable because they are cultural constructs instead of being purely based on satisfying our need for privacy and security. Statistics show this clearly. In late 19th and early 20th century Finland living conditions were considered cramped when there was less than 6 m² of space per person.⁷⁸² However, a working class family of six could well have lived in one-room apartment with some 20-25 m² of living space.⁷⁸³ Today the average living space per person in Finnish homes is 39.1 square meters⁷⁸⁴ and it is the common consensus that this is little.⁷⁸⁵ Therefore, while units much below 20 m² of ground floor space are rare in Pompeii, this cannot be convincingly considered to reflect the minimum space for individuals, but rather for separate units that could not function if any smaller. Workers could spread their mattresses on floors after business hours with living and working essentially interlinked.⁷⁸⁶ There was no need for separate working and living spaces, provided that persons living and working there were the same.

The smallest units in *insula* IX.3 are one or two-room shops along the Via Stabiana, each with some 20-30 square meters of ground floor space. Based on the statistics above, they could well have housed some individuals even if some floor space was reserved for working equipment. Excluding three units (IX.3.4, 6 and 9), all other shops contained an upper floor (fig. 6).⁷⁸⁷ Moreover, mezzanines added space (fig. 57a).⁷⁸⁸ The shops with 40 to 60 square meters in two storeys are even better suited for several persons, perhaps a family to work and live, and to store goods that were not needed for functions taking place, especially when there were no large-scale commercial fixtures that would have considerably reduced the

⁷⁸¹ Packer 1967: 84, Kolb 1985, Wallace-Hadrill 1991b: 200 for discussion. The figures discussed in these works range from less than 5 m² per person in Mesoamerican peasant societies to some 20-30 m² in Ostian buildings. Moreover, Packer (1967: 86) and Strocka (1984: 49-50) have taken the number of possible bedrooms as a basis for their estimate of the number of inhabitants in Ostian and Pompeian houses.

⁷⁸² Lankinen and Lönnqvist 2010: 7.

⁷⁸³ Laakso-Tolkkio 1996.

⁷⁸⁴ Statistics Finland 2011.

⁷⁸⁵ Lankinen and Lönnqvist 2010: 5-6.

⁷⁸⁶ Berry 1997a: 126, Pirson 1999: 53, footnote 220; Flohr 2007a: 142; Ulpian *dig.* 50.16.183.

⁷⁸⁷ For the commonness of upper floors in the shops of Pompeii and Herculaneum, see Pirson (1999), Andrews (2006).

⁷⁸⁸ Andrews (2006: 62-70) on the overall commonness of mezzanines in Herculaneum, and (2011) on their commonness in *insula* IX.3.

usable floor space.⁷⁸⁹ As Flohr has noted, establishing a small workshop to be run by a household was possible in a limited space and with limited funds, whereas larger workshops with complex production processes could only be established by those with the significant funds needed for larger spaces, elaborate equipment and specialized workforce.⁷⁹⁰

Not only small but larger commercial workshops too seem to have lacked a rigid physical division between domestic and commercial. Firstly, it is notable that in large commercial units rooms with productive fixtures are typically located next to rooms lacking them. Doorways between these rooms may be wide (fig. 64) and lack all evidence for doors. As the rooms containing no productive fixtures were frequently decorated with wall paintings similar to those in purely residential units, they most likely were designed to serve as living quarters. The direct proximity of rooms with assumed different functions was an outcome of property development. The units in question were originally domestic properties which later turned to housing commerce. The implementation of commercial fixtures could have been carried out together with other alterations, including redecoration of living spaces. Hence, houses were not simply downgraded, but could have been embellished too. For instance, Unit IX.3.19-20 was probably partly redecorated in conjunction with, or after, the establishment of the bakery.⁷⁹¹ Secondly, the proximity of so-called living and working spaces was seemingly not considered a disadvantage. It is notable for instance that these decorated, presumably residential, areas did not contain kitchens. Instead, residents probably used hearths in the commercial parts of these units.⁷⁹² Thirdly, the impression of mixed functions is strengthened when looking at finds distribution. For instance, personal and domestic utensils, gaming pieces, statuettes and parts of furniture were found in shops and rooms that contained either productive or utilitarian fixtures, or both (fig. 64).⁷⁹³ This suggests the lack of purely commercial and purely domestic spaces.⁷⁹⁴ The observations can

⁷⁸⁹ Compare Pirson (1997: 173) who focused not on unit sizes but their room counts. According to his classification, only *tabernae* with either a mezzanine or two or more rooms were 'habitable'.

⁷⁹⁰ Flohr 2007a: 132.

⁷⁹¹ Compare Flohr (2007a: 139) discussing Fullery VI.14.21-22.

⁷⁹² Compare Allison (2006: 297) discussing Unit I.10.2-3.

⁷⁹³ Figure 64 is produced on the basis of all available evidence, as presented in the catalogue. All rooms without visible or reported decoration are grouped under the label undecorated. Moreover, the category contains rooms which have socles of different colour (usually red) than the rest of the wall. Instead, walls with socles (of one colour) separated from the rest of the wall (of another colour) by a band (of a third colour) are labelled under the category decorated. A room is considered as decorated when there is some evidence for it, even if it contradicts other sources.

⁷⁹⁴ Compare similar observations on finds by Allison (2004: 112) concerning shops attached to *atrium*-houses, Mols (1999: 167) concerning a room at the rear of Shop *Ins Or.* II.10 in Herculaneum, and Flohr (2005: 60) concerning the workshop part of Fullery VI.14.21-22.

be connected to the discussion on toilets and their placing in households, which was found to have little to do with different user groups.

Although we must remember that artefacts were stored, either temporarily or permanently, in places in which they were not used, thus skewing our picture, it is worth pointing out that in the whole of *insula* IX.3, only Unit IX.3.5/24 contains a cluster of rooms which are, unlike others, undecorated and in which the majority of utilitarian fixtures were concentrated (fig. 64). Elsewhere in the city block rooms with productive or utilitarian fixtures are more spread out, and wall-painted rooms were not always next to each other (fig. 64). Thus, while in the House of Marcus Lucretius servants could have been hidden out of sight in Rooms 10-14 consisting of kitchen, toilet and storage spaces, those working in other units had a more visible role. Elsewhere in Pompeii too, the finest and largest houses had well-defined service quarters separated from the most elaborately decorated rooms in which visitors were presumably received. For example, in the House of the Labyrinth the western strip of the unit is occupied by a complex of rooms consisting of kitchen, food preparation and storage spaces, bath compartment, and bakery with related toilet and stable,⁷⁹⁵ and in the House of the Menander there are two narrow corridors which, on both sides of the peristyle, open onto service quarters. One is composed of kitchen, toilet, kitchen garden, baths and bakery in the cellar under the baths, the other contains stable yard, stable, toilet and storage and/or bedrooms of domestic servants.⁷⁹⁶ Hence, the physical separation of servants and their masters is distinguishable, although in reality servants must have been present in the rooms of their masters to serve them.⁷⁹⁷ In contrast, in the units in which a considerable proportion of space was taken by productive fixtures, this spatial separation, even if it was breached in everyday life, cannot be identified. This holds true in *insula* IX.3, both in *atrium*-houses and those with more irregular layout, and other examples are found in Pompeii.⁷⁹⁸ As suggested above, it may partly stem from their background as domestic properties. The existing architectonic configuration posed certain limitations for the arrangement of new functions. Alternatively, and perhaps more likely, the dichotomy between living and working was not important in social terms.

⁷⁹⁵ Strocka 1991: 85-96.

⁷⁹⁶ Ling 1997: 92-5, 106-115

⁷⁹⁷ George 1997: 317, 2007: 539.

⁷⁹⁸ Flohr (2007a: 139-43) gives examples of *atrium*-houses, *tabernae* and units with irregular plan.

Our difficulties in understanding the flexibility of space use derives from the late 18th and early 19th century when the locus of production largely shifted from homes and workshops to factories, and spaces for living and working became more clearly separated than ever before.⁷⁹⁹ Therefore, whereas there might have been a clear division of activities,⁸⁰⁰ the division was not necessarily spatial but cognitive and temporal. The factors are easily forgotten in wider cross-cultural generalizations, according to which space is more compartmentalized by functions in complex societies and spaces are more multipurpose in societies with lower socio-political complexity.⁸⁰¹ Instead, while the Pompeian society was evidently complex, the physical segmentation of a space depended on its socio-economic functions. While the members of a household probably knew borders and divisions without their physical manifestation, in units frequently visited by outsiders, such as customers, clients, or dependents, there might have been some need to make them physical.⁸⁰²

Altogether, there seems to be evidence both for living as well as working in the majority of units, even in the smallest ones, but in the end it is very difficult to pinpoint precisely which artefacts discovered were used in domestic activities and which were used in production or formed a part of commercial stock. In addition, depending on the particular property in question, evidence for living is more or less pronounced.⁸⁰³ This relates to the number of people living there, as well as their social standing.

5.5.2 Beyond necessities: the distribution of luxury goods

Having established that basic utilities were frequently available in-house, and that most if not all of the units in *insula* IX.3 were lived in, we can turn to the question of status and social standing. As discussed in Chapter 1, goods are socially ranked and the acquisition of a certain good is a means to get across messages pertaining to the status of the purchaser.

⁷⁹⁹ Goldstone 2009: 130.

⁸⁰⁰ Compare O'Sullivan (2006: 133-5), Laurence (2007: 154-66) on the routines of the elite.

⁸⁰¹ See Kent (1990) and Rapoport (1990) discussing the reflection of social systems in architecture, with some notions of the dangers of drawing direct conclusions.

⁸⁰² Compare Watts 1987, Wallace-Hadrill 1994, Hales 2003.

⁸⁰³ Compare Monteix (2006: 42-4) discussing shops in Herculaneum.

It has been a long-held view that workers and occupants of small workshops had their surroundings devoid of luxuries.⁸⁰⁴ Artefacts with elaborate ornamentation or of valuable materials, admired today in museum showcases, did not belong in their everyday lives. This notion could be re-examined by returning to the artefact evidence. Studying whether small shops only contained the necessary domestic artefacts, if distinguishable from goods related to commerce and production, and whether large domestic properties were lavishly equipped, could indicate status differences.

It is generally difficult to identify what is luxury and what is utilitarian. The definition of luxury emphasises high cost and rarity, both of which are relative. Indeed, the precise definition of what constitutes luxury depends on person, time and context.⁸⁰⁵ Hence, the limits of luxury are fluid and constantly reshaped: when former luxury becomes widely available, it is no longer luxury.⁸⁰⁶ In archaeological practice it is often suggested that rare artefacts, so-called ‘fringe items’, were luxuries in a given site, whereas goods found in abundance were standard utensils. This approach underlines the definition of luxury as always site-specific.⁸⁰⁷ Moreover, it emphasises the need to look at a whole range of different ways to consume in order to fully understand the spending power of a household.

Beginning with artefacts, the evaluation of their status value is here based on their commonness in finds lists and the available descriptions of them. Certain artefacts were listed much more rarely than e.g. cooking vessels discussed above. Moreover, in the early excavation reports some artefacts were described more carefully than others. They were of valuable materials, usually bearing elaborate decoration, and can be considered as statement pieces.⁸⁰⁸ Collections of coins, as well as their containers, are ambiguous indicators of wealth and status as they may have been needed for the running of businesses and thus do not evidence wealth needed for high-status living. Therefore, in the table below coins are only taken into account when ten coins at least were found in one stack.⁸⁰⁹ Furthermore, coins of high value in particular, as well as jewellery and other easily transportable artefacts

⁸⁰⁴ Maiuri 2000: 82; implied e.g. in Packer 1975.

⁸⁰⁵ Pliny *Nat.* 36.24.110; *OED* definition emphasises luxury as costly and comfort-providing but not indispensable.

⁸⁰⁶ Wallace-Hadrill 1990: 149, 2008: 324; Greene 2008: 69.

⁸⁰⁷ Fincham 2002: 41-2, Ray 2006: 36.

⁸⁰⁸ Utilitarian artefacts of valuable materials, such as marble mortars and weights, are omitted from table 9.

⁸⁰⁹ We have no information on the value of each individual coin.

of value, were most likely taken away at the time of a disrupted use of space, either in AD 79, or before or after. Caution is needed in interpretations.

Unit	marble	fine bronzes	silver	cluster of ≥10 coins / coin-banks	gold	ivory	gemstone
IX.3.1-2		5 statuettes	2 coins				a cameo
IX.3.3							
IX.3.4							
IX.3.5/24	20 statues, 5 <i>oscilla</i> , a table, 2 statue bases/supports	a <i>patera</i> and bracelet with silver inlay, a decorated bucket, lamp and balance	a case, furniture decorations	23 coins and 3 coin-banks	a ring		a green stone (glass paste)
IX.3.6		furniture decoration, bracelet					
IX.3.7	8 statue bases, a pillar, pieces of a cornice, figurine and columns	furniture decorations, a gilded cup					
IX.3.8							
IX.3.9							
IX.3.10-12	a statuette	a decorated <i>conca</i>					
IX.3.13	parts of a table and floor, a pillar	a statuette, a decorated vase and lamp					
IX.3.14		a decorated <i>conca</i> and 3 vases	a ring				a <i>pietra cammiola</i>
IX.3.15	a statue		a ring	18 coins		a statuette	
IX.3.16	a statuette	a decorated lamp	2 coins	33 coins			
IX.3.17	a statuette and pillar	a decorated vase, bottle and <i>patera</i>	a needle				
IX.3.18		2 decorated lamps and a <i>conca</i> , 2 statuettes					
IX.3.19-20	a mask and statuette	furniture decoration					
IX.3.23	a statue			10 coins			
IX.3.25							

Table 9. The distribution of valuables in *insula* IX.3.

The distribution of finds suggests differences in wealth (table 9). The largest unit in the city block (IX.3.5/24) had the greatest variety of different valuable and highly decorated

artefacts. Furthermore, and more importantly, the distribution table also suggests that such artefacts were widespread. As discussed in Chapter 3, some artefacts were probably for sale, such as the bronzes of Units IX.3.14, 17 and 18. In a similar vein, the marbles in Unit IX.3.7 were most likely for sale. However, other valuable finds were frequently found as single items in the given units, which suggests that they did not belong to the merchandize. Stacks of coins were found in four units: two of the biggest, one medium-sized and one of the smallest. However, the number of coins discovered is altogether small. In comparison, nearly all of around hundred commercial properties in Region I contained more coins per unit than in *insula* IX.3.⁸¹⁰

In addition to acquiring highly decorated or decorative artefacts, properties were embellished with fixed decoration. Wall paintings are a particularly distinctive part of Pompeian architecture. Although they probably served various purposes, arguably an important function of paintings was to please as well as transmit messages on the social status of the unit and thus its owner or occupant.⁸¹¹ They are the best examples of conspicuous consumption in Pompeii. Without dwelling on the iconography of wall paintings in *insula* IX.3, the distribution of wall paintings may indicate the amount of space in which additional investment was made. Furthermore, combining architectonic and artefact evidence balances out biases present in one or the other type of evidence.

Wallace-Hadrill has quantified the luxury of wall paintings and made them comparable by assessing their colour schemes, layout and inclusion of images.⁸¹² According to his categorization, the most luxurious decorations contained images with mythological characters.⁸¹³ Applying his classification scheme loosely to *insula* IX.3 paintings, decoration can roughly be divided into two categories. Some walls had been divided into different colour zones by lines and bands. The zones could have been further divided into panels and the walls might have had simple stucco mouldings. Alternatively they contained single figures on white background. Other walls had been divided into various colour zones and panels by columns, pilasters, *candelabra* and tapestry borders. The panels could contain elaborate architecture, still lives or mythological characters, and the upper parts of these walls frequently contained elaborate stucco cornices.

⁸¹⁰ Proto 2006: 22-7.

⁸¹¹ Allison 1992b, Wallace-Hadrill 1994.

⁸¹² Wallace-Hadrill 1994: 149-69.

⁸¹³ *Ibid.* 150.

However, a serious flaw is encountered if paintings which contain human figures, still lifes or architectural vistas are single-handedly considered as the finest. It undermines the quality of some paintings, in particular of the First and Second Pompeian Style which mainly contained no figures at all but which were held in high regard also after the introduction of other painting styles.⁸¹⁴ Therefore, in order to understand *insula* IX.3 in AD 79 as a whole, paintings without images but of rare colour combinations and several zones and panels forming a complex pattern should be assigned to the second, instead of the first, category. In *insula* IX.3 such exceptions to the given classification are walls painted with a combination of black and either blue or green,⁸¹⁵ imitating ashlar blocks, found as single examples in Units IX.3.1-2 and 15. Thanks to the distinction, Unit IX.3.15 can be shown to have had both types of decoration (fig. 65).

As figure 66 shows, decoration was not entirely restricted to larger units and the elaborateness of decoration did not directly relate to unit sizes. Whereas the more elaborate forms of decoration were only found in larger units, less elaborate decoration was found in large and small units alike. Neither were all paintings restricted to the back parts of commercial units, generally taken as more private, although no more than three front shop-rooms were reportedly decorated.⁸¹⁶ If these shop-rooms were used privately after business hours, their decoration could have pleased both the residents and customers. At the rear they were exclusively for the enjoyment of the inhabitants. Furthermore, thanks to their limited elaboration, many shop decorations may in fact have been left undocumented, and we may hence be dealing with fewer paintings in the smallest units than once existed. Nonetheless, it is important to stress that even according to our partial records, small commercial units had decoration.

Altogether in the light of architectonic and artefact evidence it seems that while *insula* IX.3 was divided between properties of various sizes and functions, as well as social status, the richness of material culture was widely shared.⁸¹⁷ Although the means available in different households to make these purchases were undoubtedly variable, they nevertheless were not

⁸¹⁴ Strocka (2007: 305-7) on the First Style, Laidlaw (1985: 43-6) on paintings of the First Style made after the advent of other styles.

⁸¹⁵ The most common colours in the wall paintings of the city block are white, red and yellow. This conforms to Wallace-Hadrill's (1994: 116) observations. For Roman pigments, see e.g. Fridell Anter (2006: 336).

⁸¹⁶ Compare Wallace-Hadrill 1994: 155-9; also Pirson (1999: 91-5) discussing elaborately decorated *tabernae*.

⁸¹⁷ Compare Packer 1975: 142, Pirson 1999: 166.

insignificant. While small units may have possessed a showcase piece or two, most commonly a marble statue or an intricately decorated bronze artefact, perhaps together with a wall-painted room, they were generally more common in larger units. Interestingly, however, the number of these finds and wall-painted rooms did not increase in proportion to increase in unit size. The means of the lower echelons of society to consume must not be overlooked. They could choose not to consume on necessities alone.

5.6 Conclusion

The current chapter has dealt with patterns and the lack of them. In the first part some concerns involved in the process of choosing between the ways to secure different utilities were identified. These concerns probably related to physical, economic and social realities. The observations paved the way for the discussion of the ways in which the utilities were made available in practice at the city block level. While unroofed spaces inside units were typically located far apart, they were grouped at the city block level. Water collection or conducting structures and water consuming structures were clustered inside units, as were water and fire structures, and, to some extent, kitchens and toilets. These clusters undoubtedly had functional advantages, and reflect a cultural concept of how space should be organised.

These observations led to the hypothesis of nine properties in *insula* IX.3 being revised. A careful reading of the archaeological data suggests that the city block was more likely divided into a larger number of properties although the original hypothesis cannot be fully rejected. The reading shows that, while certain units had been connected at some point, there is not enough evidence to establish common ownership in AD 79. Moreover, certain arrangements between units are best explained as deriving from servitudes (mutual agreements), and, as far as we know, some units had never shared any utilities. Altogether, there was limited sharing of utilities. Residents seemingly desired to be, and were perhaps made to be, responsible for their own supply.

Although it is not straightforward to combine written evidence and archaeological sources, a discussion including both types of information can be fruitful. As showed above, this discussion can proceed to a level not available by looking at one type of evidence alone.

Indeed, even though we cannot identify the actual owners of properties, it is likely that at least some of them lived in the city block and exerted control over their tenants and dependents. Their control may have been very visible and it extended to the level of everyday life, or it was more subtle. Although there is a clear tendency to close off doorways connecting units owned in common, this does not necessarily mean that from this point onwards the units were more independent. Instead, in AD 79 basic utilities, such as cooking facilities and water supply, could have been shared.

The earthquake of AD 62 necessitated rebuilding projects, the results of which had a great impact on our archaeological record. Nonetheless, we have no strong evidence for the wholesale commercialization at this point. Already before this, *insula* IX.3 had contained commercial units, probably thanks to its prominent location along important streets. At this point several of the connections between units were closed, but this did not generally involve changes in ownership.

The wide availability of basic utilities in units of small and large size suggests that they were both living and working units. This notion is further supported by artefact and wall painting evidence. With ample space at disposal in some units, it would have been possible to segregate domestic and private functions. However, the extant evidence does not give strong support to such divisions. This may be due to various factors, some of which may relate to biases in the record but others of which may result from the lack of need to create physical borders in favour of conceptual ones. In this regard both large and small units operated similarly.

Finally, what the present chapter has shown is that not only the evidence for the bare minimum needed for sustaining life has been found throughout the city block, but other evidence too, adding up our understanding of living conditions at large. Differences in terms of scale and volume, however, show that the living conditions were far from similar.

CHAPTER 6: *Insula IX.3* as a case study in Roman urbanism

While the previous chapters have focused on patterns and lack of them in *insula IX.3* and explained the situation as a result of unique decision processes in which physical limitations, economic constraints and social factors played a part, this chapter moves on to study how these factors affecting choices may be identified at the level of other city blocks in the immediate vicinity of *insula IX.3* as well as elsewhere in Pompeii, and then in other parts of the Roman empire. The first section explores the city block in the context of its immediate neighbourhood, to assess what other choices the inhabitants had for fulfilling their everyday needs beyond the *insula*, and to understand how the physical, economic and social factors identified could have affected the availability of utilities on a broader scale. This leads us to ask questions about the importance of neighbourhoods in the lives of their inhabitants, and whether their significance was greater or less than that of individual city blocks. Outside its immediate neighbourhood, *insula IX.3*'s characteristics are clarified by comparing it with two further Pompeian city blocks, the building histories of which are well-known and hence provide useful parallels. Suggestions made about ownership relations in these two city blocks allow us to evaluate the social and economic realities in *insula IX.3* in relation to wider phenomena. Moreover, because the two city blocks are located in different parts of the city, away from *insula IX.3*, and are of different size and shape to *insula IX.3*, comparing the three allows us to deepen our understanding of the impact of physical limitations on the development of individual city blocks. Finally, after having identified the force of physical limitations, economic constraints and social factors in these Pompeian city blocks, their role in the development in other cities in the Roman world is explored to form the final conclusion on the extent to which *insula IX.3*, and Pompeii at large, can bring new depth to our general understanding of Roman urbanism.

6.1 *Insula IX.3* in its neighbourhood

In order to understand the process of allocating spaces for different uses in the city blocks surrounding *insula IX.3*, it is natural to begin with facades across the flanking streets. One immediately notes that what has been said above about the grouping of commercial units along certain streets in *insula IX.3* is valid more widely (fig. 67). Only a small number of

doorways opened onto the Vicolo di Tesmo in *insulae* IX.2, 5, 6 and 7. These typically led to narrow entrance corridors which characterize domestic units. Many of the units possess an *atrium* or a peristyle, or both, and are considerable in size. In a few instances the units contain a room with a wide front doorway suggesting its commercial nature. Interestingly, however, none of these doorways led to the Vicolo di Tesmo but to the Via degli Augustali or Via di Nola instead (fig. 67). These observations, combined with the fact that most of the facades are in ashlar instead of brick, confirm the conclusions of section 5.4.2 on how the land along the vicolo was not eagerly regenerated and was hence less in demand, undoubtedly due to its weaker economic potential.

In contrast, the Via degli Augustali and Via di Nola are flanked by wide shop doorways side by side (fig. 67). The situation is the same along the Via Stabiana. Amongst the wide front doorways there are narrower doorways to units from which the commercial ones were ‘carved out’; that is, these residential units continue behind and to the side of the commercial units along the street. This phenomenon was already observed in *insula* IX.3. Moreover, akin to the situation in *insula* IX.3, most of the commercial units were not, in AD 79, connected to the units behind them through internal doorways.

The identification of certain units as pertaining to particular trades was shown to be problematic in the case of *insula* IX.3, and we must therefore assume that identifying reliable evidence for particular commercial activities elsewhere is as difficult. While new rigorous studies of specific trades have been made in recent years,⁸¹⁸ improving our understanding of the commercial landscape of Pompeii, no thorough and up-to-date understanding of the whole is yet available. Therefore, in order to understand *insula* IX.3 in its entire commercial landscape, we must accept current uncertainty and use the work of Eschebach *et al.* in which the traditional identifications of all excavated units are given.⁸¹⁹ In contrast to other similar listings,⁸²⁰ the work by Eschebach *et al.* lists the evidence on which each identification is based and hence gives some indication of its reliability.⁸²¹

⁸¹⁸ E.g. Ellis (2004) and Monteix (2007) on bars; Wallace-Hadrill (1995: 51-5), McGinn (2002, 2004) and Varone (2005b) on brothels. With different criteria, their results differ.

⁸¹⁹ Eschebach *et al.* 1993.

⁸²⁰ CTP II, *L'informatica*.

⁸²¹ Figure 67 is based on the proposed identifications in Eschebach *et al.* (1993). If the description of the remains and finds do not support the given identification, it should be questioned and the colour-coding of the unit in question is toned towards white. See also Robinson 1999: 135, table 16.

On the basis of this work, it seems that *insula* IX.3 was surrounded by a versatile commercial landscape. Bars, grocers, fruit-sellers, meat and fish-sellers, metal-workshops, carpenters, jewellers and retailers of household goods seem to have been present in the surrounding city blocks. They typically occupied small shops or workshops.⁸²² In contrast, as discussed above in relation to *insula* IX.3, the better-identified baking and textile industries were situated in larger units where the fixtures were installed at a secondary stage (fig. 67). This phenomenon, also clearly seen in *insula* IX.3, probably results at least partly from the fact that a battery of milling and baking equipment, as well as dyeing, fulling and felting vats with related rinsing basins, drying spaces and other facilities, required space that was not easily available in smaller units, at least not without compromising some stages of production or living spaces.⁸²³ It also shows that, as argued in previous studies, the owners of larger units did not find it difficult, or morally dubious, to have these functions in-house.⁸²⁴ On the contrary, they embraced the profits these trades could bring.

What however is different between the bakeries and dye-workshop of *insula* IX.3 and those across the street is that in *insula* IX.3 the commercial fixtures take up a larger proportion of the overall floor area in each unit than in *insulae* VII.1 and 2. This is understandable because the unit size of Dye-workshop VII.2.11 across the street is twice the size of Unit IX.3.1-2, and out of seven nearby bakeries, only two⁸²⁵ are smaller than Bakery IX.3.10-12, the smallest one of the two in *insula* IX.3 (fig. 67). This trend is repeated in Pompeii at large. In only five Pompeian units which contained a bakery with mills there was less overall space than in Unit IX.3.10-12. Instead, 13 other bakeries were larger.⁸²⁶ Undoubtedly in these larger units the borders between private and public, largely absent in *insula* IX.3, could have been easier to establish thanks to fewer spatial limitations.

⁸²² Eschebach *et al.* 245-71, 404-36; Robinson 1999: 151-3, figs. 19-21.

⁸²³ For instance, bakeries without mills needed less space, as did units involved in textile industry on a small scale and with simple methods (compare Flohr 2007a: 132-3).

⁸²⁴ Robinson 2005, Flohr 2007a.

⁸²⁵ VII.2.22 and IX.5.4.

⁸²⁶ The size information used in this chapter derives from the catalogue of Robinson (1999: appendix) instead of the *EPUH* studies or statistics available in different publications focusing on the city blocks under discussion, because, as argued in Chapter 2 above, measurements are taken in different ways and are only comparable when based on common criteria. For instance, there are considerable differences of up to several tens of square meters between the size information catalogued by Schoonhoven (2006: appendix 1) and that of Robinson. What is more striking is that in several instances they have defined the limits of individual units very differently. Robinson's catalogue was chosen for the sake of coherence because the discussion on the distribution of different trades in the surroundings of *insula* IX.3 and Robinson's thesis are both based on Eschebach *et al.* (1993). The most significant problem in using Robinson's statistics for the current thesis is that he has erroneously counted Units IX.3.5/24, 25 and 10-12 as one, necessitating corrections.

It has been argued above that metal-workshops could operate in cramped spaces and retail needed no more space than its stock required. Therefore, it was not necessary to locate these ventures in large units. Nonetheless, some large units did house them (fig. 67), presumably for the economic profit they could yield. More common was to have these functions in an adjacent (work)shop directly or indirectly attached to the unit. Much has been written in relation to the connection between elite residences and bars, labelled in Roman literature as places of vice and avoided by the elite.⁸²⁷ It has been argued by Robinson that although the Pompeian upper class seems to have been involved in what he calls the ‘hospitality industry’, the bars belonging to them were not positioned next to the main entrances to their homes but, space permitting, around the corner or on the other side of the property.⁸²⁸ In *insula* IX.3 and in its direct vicinity there are bars and *hospitia* next to or inside *atrium*-houses (fig. 67) but these hardly qualify as elite dwellings. Instead, if Unit IX.3.3 served as a bar directly linked to the House of Marcus Lucretius, it was located very close to the entrance but not directly adjacent to it. The act of placing the bar in Unit IX.3.3 instead of Units IX.3.4 or 6, also owned by the house, can be interpreted, if we wish to, as a means of visually separating the house and its trade.⁸²⁹ Further separation was not possible thanks to property’s limited amount of street frontage on the Via Stabiana and for the time being it made no economic sense to locate the bar along the northern alley.

Whilst so far the situation observed in *insula* IX.3 is paralleled in other city blocks on the other sides of the Vicolo di Tesmo, Via degli Augustali and Via Stabiana, the situation is completely different across the northern alley. The change took place after AD 62 when the Central Baths were built, before which the street had been flanked by *atrium*-houses,⁸³⁰ perhaps roughly similar to those over the street in *insula* IX.3. The sides of the Central Baths flanking the Via Stabiana and Via di Nola were occupied by small shops (fig. 67). Most of them were not connected to the baths at the back and could presumably operate independently, although it is evident that these rentable units were built simultaneously with the baths and were owned in common. It is telling that no shops were built along the sides flanking the Vicolo di Tesmo and the alley between *insulae* IX.3 and 4. Although it has been argued above that the construction of the Central Baths brought new life to these streets and *could* have encouraged the commercialization of some units in *insula* IX.3, their

⁸²⁷ Wallace-Hadrill 1995, Ellis 2004, 2006; Robinson 2005: 98-101, Laurence 2007: 92-101.

⁸²⁸ Robinson 2005: 101.

⁸²⁹ *Ibid.*

⁸³⁰ De Haan and Wallat 2008: 22-3.

economic potential remained far lower than that of the Via Stabiana and Via di Nola, and was evident to the builders of the baths. For this same reason the north-east corner of *insula* IX.3 was left last in the priority list of repairs and regeneration after it had been partly destroyed in the 60s and possibly damaged further later on. This delay in regeneration was not unique in any way. For instance in Rome, several plots had not been rebuilt for years after the fire of AD 64.⁸³¹

What the discussion has shown is that the situation in *insula* IX.3 is largely paralleled in its direct vicinity. The economic potential of flanking streets had a great impact on developments inside individual city blocks. Moreover, the examination of the direct surroundings of *insula* IX.3 shows how Units IX.3.10-12 and 19-20 form a part of a concentration of bakeries along the Via Stabiana. In a similar vein, Dye-workshop IX.3.1-2 is next door to other establishments involved in the textile industry.⁸³² The location of these other dye-workshops and bakeries across *insula* IX.3 is best interpreted as a product of competition which promotes clustering instead of common ownership. The most striking difference so far identified is the contrast between the Central Baths and *insula* IX.3. However, this represents late, post-AD 62 development that was in stark contrast with the previous situation. Finally, a less remarkable but still an interesting difference that can be identified by studying plans and the identifications of units composing each city block is that while surrounding *insulae* VII.1, 2 and 3, and *insulae* IX.2, 4, 5 and 6, all had at least one separate front doorway for a staircase to a *cenaculum* (fig. 67),⁸³³ the evidence is lacking in *insula* IX.3.

6.2 Neighbourhood as a social entity

The division between the east and west part of *insula* IX.3 on one hand, and south and north part on the other hand has been a recurring theme in this thesis. The dichotomy has been shown to exist by looking at the availability of basic utilities and services, and the development of different parts of the city block. While the aspects that speak for a

⁸³¹ Laurence 1994: 80, on the basis of Suetonius Ves. 8.5.

⁸³² Robinson 1999, Laurence 2007.

⁸³³ Pirson 1999: 224-6, 235-7.

dichotomy have so far been practical, further evidence may be put forward to suggest that the east-west and north-south division also had some further, conceptual meaning.

It has been argued that small shrines placed at street crossroads constitute either the centres or borders of Roman neighbourhoods (*vici*).⁸³⁴ There seem to be well over 40 street-side shrines in Pompeii⁸³⁵ and their uneven distribution across the town does not allow a straightforward division of Pompeii into different *vici* (fig. 68). Therefore, it may be more fruitful to approach the question of *vici* by paying attention to the distribution of these shrines primarily in relation to streets. According to Varro, writing in the first century BC, the shrines for the local cult of the *Lares Compitales* were located at the crossroads of major streets.⁸³⁶ This suggests that a section of a street with a crossroads altar was flanked by the houses of the *vicus* to which the altar belonged.⁸³⁷ Therefore, regardless of the precise division of *vici*, the notion of the importance of streets and street crossings implies that primary streets divided neighbourhoods. Indeed, this is reflected in the distribution of the shrines which cluster along certain routes (fig. 68). In the vicinity of *insula* IX.3 altars are found along the Via Stabiana and Vicolo di Tesmo. This suggests that the city block was divided into two *vici*. The east side of the city block may consequently have belonged to a *vicus* which was either centred on or bordered by the shrine at the south-east corner of the Central Baths along the Vicolo di Tesmo,⁸³⁸ and the inhabitants of the west part of the city block congregated to venerate their *Lares Compitales* at a shrine at the north-west corner of *insula* IX.2 along the Via Stabiana (fig. 68).⁸³⁹

However, because for instance the adjacent *insula* IX.2 is flanked by three of such shrines (fig. 68), it should be asked whether it is possible that some city blocks were divided between more than two *vici*. Moreover, it needs to be asked how we should interpret city blocks that are flanked by no shrines at all. The uneven distribution may partly be due to the partial preservation of the evidence and because, as Anniboletti has recently suggested, there were possibly two kinds of street shrines. According to her, *sacelli vicinali* were built by particular house owners and frequented by close neighbours, and they operated alongside

⁸³⁴ Laurence 2007: 42.

⁸³⁵ Van Andringa (2000) catalogued 39 shrines, Anniboletti (2010) added eight more.

⁸³⁶ Varro *L.* 6.25; also Festus *L.* 460=507.

⁸³⁷ Van Andringa 2000: 71-6, Lott 2004: 13-4.

⁸³⁸ Van Andringa 2000: 51, no. 7. According to Laurence (2007: 44), the altar was left out of use in AD 79 but I see no reason for that – the incorporation of the altar into the structures of the Central Baths, instead of demolishing it, suggests that it remained in use.

⁸³⁹ Van Andringa 2000: 61, no. 21.

official *sacelli compitali* which were venerated by the entire neighbourhood.⁸⁴⁰ This notion opens up a possibility that alongside official *vici* there were smaller communities, the people of which felt close to each other. Some of these entities may have centred on particular houses, but others may well have focused on crossroads regardless of whether they did or did not have a street shrine. This focus on crossroads is evident in *insula* IX.3 where, as we have already seen, the four corners were occupied by larger properties. In fact, with an exception of the property composed of Units IX.3.(14,) 15 and 16 located in the middle of the city block, all other properties clearly gravitated towards one of its corners. As a result, *insula* IX.3 can be roughly divided into four. The importance of crossroads can be inferred from other architectonic clues too. Pompeian street intersections were broadened, furnished with porticoes and public fountains.⁸⁴¹ In the direct vicinity of *insula* IX.3, the north-west corner of *insula* IX.2 contains a portico and there is a fountain across the street. Moreover, shops clustered around crossroads.⁸⁴² This made them natural hubs of neighbourhoods. Arguably thanks to their appeal as natural meeting places, their walls were eagerly painted with *programmata* and scribbled with graffiti.⁸⁴³

There are over a hundred crossroads in the excavated parts of Pompeii. If we assume that all these were surrounded by their own ‘communities’, they would be relatively small entities. Based on a hypothetical population count of 10,000⁸⁴⁴ and assuming a relatively even population density, a single crossroads would have been closest to some 100 inhabitants. This calculation is undoubtedly a gross oversimplification because the city blocks are not in a strict grid plan and we know that the central areas were much more densely populated than the outskirts,⁸⁴⁵ but it gives a rough basis for discussion. In communities of some 100 persons all people probably knew each other, at least superficially, which undoubtedly facilitated their informal interaction.

A *vicus* would have been larger in size and played a different role in the life of their inhabitants. In addition to being places to fulfil civic duties in state religion, they were

⁸⁴⁰ Anniboletti 2010: 120-2. Other examples too indicate that certain house owners were active in embellishing street space. Some house fronts were equipped with benches (Hartnett 2008) and it has been suggested that particular fountains (Fiorelli 1875: 304, Richardson 1988: 58, Newsome 2009a: 126) and stepping stones across streets (Poehler 2009: 416, map 6.22) were commissioned by the owners of adjacent properties.

⁸⁴¹ Westfall 1997, 2007.

⁸⁴² Ellis 2004, 2006.

⁸⁴³ E.g. Franklin (1986) on the intersection of the Vicolo del Lupanare and the Via degli Augustali.

⁸⁴⁴ 10,000 is the most commonly given figure today. See Wallace-Hadrill 1991a: 203.

⁸⁴⁵ *Ibid.* 204.

places of social and political visibility. For instance, Mouritsen has suggested that candidates targeted their electoral campaigns to their own neighbourhoods and those of their running-mates.⁸⁴⁶ Moreover, because the largest and most prestigious units in the city were widely distributed, they could have had prominent roles in their neighbourhoods even if other houses outshone them in the adjacent neighbourhoods.⁸⁴⁷

As a result, it seems probable that *vici* and smaller crossroad communities were meaningful to the inhabitants of individual city blocks, and they could even have mattered more than city blocks did. This is indicated by the fact that inscriptions mentioning people of certain districts (probable electoral wards)⁸⁴⁸ and *vicini* (neighbours),⁸⁴⁹ as opposed to those dealing with city blocks, are more numerous in Pompeii. Consequently, whereas the practicalities of life meant that the neighbours with whom one shared physical property borders, and perhaps some utilities, had significance in the lives of the resident in the city block, people across the street could have mattered in a very different way.

6.3 *Insula IX.3 in comparison to insulae VI.1 and I.10*

While the focus has so far remained in the direct vicinity of *insula IX.3*, it is time to expand our scope and compare the city block with two examples from different parts of the town. This gives a wider context to evaluate the conclusions made about the ownership of *insula IX.3*, and the impact of the economic and social factors identified above at the level of its immediate neighbourhood.

Insula VI.1 is located in the north-western tip of the town, next to the Herculaneum Gate. Its triangular shape is very rare in Pompeii (fig. 69), and it seems to stem from the constraints set by the pre-existing Via Consolare in the initial division of the land into individual city blocks.⁸⁵⁰ There are no *pappamonte* walls in *insula VI.1* but traces of *pisé* walls with associate finds dated to the fourth century BC have been found. These were followed by some third-century BC constructions and prominent houses still standing were first built at

⁸⁴⁶ Mouritsen 1988: 56.

⁸⁴⁷ Compare Robinson 1997: 142.

⁸⁴⁸ Castrén (1975a: 79-82) on *Forenses*, *Campanienses*, *Salinienses* and *Urbulanenses* and who interpret them as *vici*; contra e.g. Van Andringa (2000: 75).

⁸⁴⁹ Mouritsen 1988: 67 on *vicini*.

⁸⁵⁰ Schoonhoven 2006: 163-4.

the beginning of the second century BC.⁸⁵¹ In AD 79 the city block measuring 2,700 m² was divided into nine units and three to six properties.⁸⁵²

Insula I.10 is located along the Vicolo di Tesmo and close to the Stabian Gate in the southern part of the town. Its shape is closer to a square than that of *insula* IX.3 (fig. 70) and it is slightly bigger in size (3,400 m² as opposed to 3,100 m²). However, because their sizes and shapes are close to each other, it has been suggested that similar factors contributed to their formation as individual city blocks.⁸⁵³ The history of *insula* I.10 has been traced to the late third-early second century BC when the area was, at least partly, divided into fairly small, rectangular and nearly same-sized plots.⁸⁵⁴ As in the case of *insulae* IX.3 and VI.1, subsequent developments brought several changes which were characterized by heterogenization and intensification: the land was newly divided, over and over again, between units of different size and shape, and intensively exploited by constructing upper floors.⁸⁵⁵ In AD 79 *insula* I.10 composed of 11 units and four to six properties.⁸⁵⁶

What first catches the eye when examining the plans of the three city blocks is that *insula* IX.3 clearly contained the largest number of units even though it was not the largest one overall. This is probably due to its location. It has been shown that land was parcelled into smaller plots in the centre of the town where it was at a premium and in high demand.⁸⁵⁷ This moreover is at least one of the factors that explain the relatively small size of the House of the Marcus Lucretius although, thanks to its status architecture, decoration and finds, it was undoubtedly one of the luxurious residences of the town. Indeed, it is only some 60 % of the size of the House of the Vestals (VI.1.7) and some 35 % of the size of the House of the Menander (I.10.4/14-17).⁸⁵⁸ Secondly, nearly 70 % of *insula* IX.3 was taken up by units which are characterized by wide front doorways and hence presumably planned

⁸⁵¹ Jones and Robinson 2007: 389-93, Jones 2008:141-2.

⁸⁵² Units VI.1.1, 2-4, 5 and 6-8/24-26 were owned in common, as were Units 9-10/23 and 11-12. Units 13/22, 14-16/21, 17 and 18/20 were owned in common or not. See Jones and Robinson 2007: 400-2.

⁸⁵³ Geertmann 2007: 88, Holappa and Viitanen 2011: 182.

⁸⁵⁴ Ling 1997: 223-5, 242-3.

⁸⁵⁵ *Ibid.* 225-37, 243-5. For *insula* IX.3, see section 2.2.2 above; for *insula* VI.1, see Jones and Robinson 2006, 2007.

⁸⁵⁶ Units I.10.4/14-17, 5-6, 12 and 13 were probably owned in common and Unit I.10.7 may also have belonged to this property in AD 79 (Ling 1997: 251). Units I.10.8 and 9 were owned in common and Unit I.10.10-11 was an entity of its own. Because the space of current Units I.10.1, 2-3 and 18 was redivided at several instances (*ibid.* 224-30, figs. 14-17), it might be taken as a proof of their common ownership in AD 79 although this is by no means necessary.

⁸⁵⁷ Robinson 1997: 141, Mouritsen 2001.

⁸⁵⁸ On the ground floor level.

as commercial, whereas the percentage is much lower in *insulae* VI.1 (slightly over 30 %) and I.10 (below 20 %). This seems to reflect their location in the town: *insula* IX.3 had the most prominent location with the greatest economic potential, *insula* VI.1 was located along one of the thoroughfares the frontage to which was commercially exploited, and *insula* I.10 was located off the main arteries which meant that it was occupied by fewer commercial units and more medium to large-size domestic units.⁸⁵⁹

If we examine the composition of the city blocks further, it is striking how each is dominated by a single unit. While in *insula* IX.3 the House of Marcus Lucretius takes up a fifth of the entire city block, the House of the Vestals occupies 40 percent and the House of the Menander over a half of their city blocks. The figures tell very clearly why there usually are no more than one or two large units in a single city block (fig. 71). Space constraints necessitated that the largest units were spread across the town;⁸⁶⁰ it was not only a matter of choice and the elite's wish to create its own circles of social power. What is moreover striking is that although the House of the Menander occupies the central space of its city block, so that each of the four flanking streets borders it, it nonetheless occupies none of the corners. Being a domestic unit by nature, its position at crossroads was not as important as for commercial units which take up three of the city block corners. Indeed, Ellis has shown that a half of commercial units which he defined as bars were located at street intersections or a few meters away.⁸⁶¹ This importance of street intersections for commerce is apparent in all three city blocks under discussion but it is interesting that in each of them one of the corners is not occupied by a commercial unit. This takes us to the relative importance of streets. All the city block corners free from commercial units are at places which were presumably least busy. Both of the streets which meet at these corners contain far fewer shop doorways than those on the other side of the city block.

Not only shop doorways concentrate along the main thoroughfares but entrances to the largest units too.⁸⁶² The largest houses of the city block, those of Marcus Lucretius, Menander, and Vestals all have their main doorways on the busiest street and secondary entrances onto the less busy streets. These observations highlight the potential for economic and social success through property development which was clearly not being wasted. In all

⁸⁵⁹ Compare Robinson 1997: 141-2.

⁸⁶⁰ Schoonhoven 2006: 176-82.

⁸⁶¹ Ellis 2006: 380.

⁸⁶² Robinson 1997: 142.

three city blocks the largest units were owned in common with adjacent commercial units. This can be interpreted in two ways, both of which probably have some truth in them. It shows that the owners of even the largest units could not afford to abstain from generating some profit from their urban property, or that profits from successful enterprises were ploughed into maintaining, embellishing and enlarging properties (at the expense of less successful ones). Although it has been shown difficult to demonstrate that units in *insula* IX.3 grew larger thanks to profits generated through commercial property, the evidence for this phenomenon is stronger in *insulae* VI.1 and I.10. In these two city blocks large units were connected to commercial units before some, although not all, developments which allowed them to grow even larger.⁸⁶³ While in *insula* VI.1 commercial spaces belonged to the ownership of adjacent domestic units already in the second century BC,⁸⁶⁴ shops were established in *insula* I.10 only in the first century AD.⁸⁶⁵ This undoubtedly reflects the economic potential of these areas. Spaces along natural thoroughfares were primary locations for business. Remote areas lagged behind, their commercialization a secondary development set off by growing population and changes in traffic patterns.⁸⁶⁶ These observations promote the possibility that the first commercial units in *insula* IX.3 were established prior to the first century BC even though our current evidence is inadequate to verify this. What is, however, clear is that all the largest units in the three city blocks were newly decorated after AD 62,⁸⁶⁷ the funding for which, we can imagine, derived at least partly from the profits of their urban holdings.

6.4 The emerging picture of Pompeii in relation to other sites

Although *insulae* VI.1, I.10 and IX.3 were all unique in composition and there are variations in the processes in which they acquired their final form, the dominance of a single unit over all the others in each *insulae* and the intensive exploitation of economic potential were identified as factors that could explain particular developments and choices in all of them. This section examines, whether these factors are found in further examples outside Pompeii, and hence had universal importance in the Roman world. To do this, simplifications and

⁸⁶³ Ling 1997: 134-5, 143; Jones and Robinson 2007: 397-401.

⁸⁶⁴ *Ibid.* 394.

⁸⁶⁵ Ling 1997: 245.

⁸⁶⁶ *Ibid.*

⁸⁶⁷ *Ibid.* 135, 143; Jones and Robinson 2007: 401.

assumptions must be made based on records which are far more limited than those of Pompeii. By focusing on particular examples, first from mainland Italy and then from North Africa and Roman Britain, to discuss the questions of site development, ownership and wealth accumulation both in *insula* IX.3 and Pompeii at large in a wider context, we can deepen our understanding of these themes that make an important contribution to the discussion of Roman urbanism.

6.4.1 Architectonic configurations and social structures

Beginning with sites closest to Pompeii, Herculaneum and Ostia provide the best-studied examples of urban housing stock. In second-century AD Ostia apartment blocks became to contain, together with more traditional *domus*, rentable domestic units of both luxurious and modest type. They followed modular arrangements. Although this did not inhibit slight variations in their plan, it shows that the units on several floors were built together.⁸⁶⁸ In contrast, our Pompeian evidence is characterized by piecemeal developments and the common ownership of a few heterogeneous units. This gave the basis for highlighting the contrast between Pompeii and second and third-century AD Ostia in Chapter 1. However, the contrast may have been drawn too deeply, because the discussion above has shown that in Pompeii many of the units were, or at least could have been, rented out, even when the town did not feature purpose-built apartment blocks.⁸⁶⁹ The commonness of rentable units immediately implies something about social structures: many of the inhabitants were dependent on their landlords.

However, as discussed in section 1.5.2 above, the degree of dependence may have varied. Wallace-Hadrill links the development of apartment blocks with different assets a property can bring. Purpose-built tenement blocks brought income, while large houses and adjacent shops with a mixed population of family members, tenants and dependents generated social power together with more modest monetary profit.⁸⁷⁰ In this light we may try to explain the lack of *cenacula* in *insula* IX.3. The importance of social power outweighed the potential growth of income. Moreover, developments in the first century AD in *insula* IX.3 concentrated along its western and southern parts, which presumably already generated

⁸⁶⁸ DeLaine in press.

⁸⁶⁹ As already observed by Overbeck and Mau (1884: 266), and more recently by Pirson (1997, 1999, 2007).

⁸⁷⁰ Wallace-Hadrill 1994: 117.

healthy profits through involvement in commerce. With all space available along the Via Stabiana and Via degli Augustali covered by upper floors, the properties were put to efficient use.

Interestingly, the building stock of Herculaneum seems to have been a step closer to the ‘Ostian’ model of habitation. The complex of *Insula Orientalis II* in Herculaneum best exemplifies the most important difference between Herculaneum and Pompeii in this context. This multi-level block does not contain any *atrium*-houses but other types of residences, some of which are luxurious.⁸⁷¹ According to Wallace-Hadrill the city block was probably owned by the municipality, constructed to offset the costs caused by the monumentalization of the adjacent Palestra.⁸⁷² Built in the first quarter of the first century AD, it originally comprised of 15 purpose-built units including four apartments and 11 shops with attached living spaces.⁸⁷³ Another building of a similar kind, only partly excavated, was built in the first part of the first century AD along the *Cardo V* but with new architectonic solutions, such as porticoes in front of shop entrances to support upper floors extending over pavement, paralleled in Ostia and Rome.⁸⁷⁴ The fact that in post-AD 62 Pompeii no similar developments took place even though much was being rebuilt, may suggest that units of traditional type met the contemporary economic and social requirements.

Pompeii compares easily with Cosa which had no apartment blocks. Studies have shown that already in the second century BC *atrium*-houses of the ‘Pompeian type’ probably had their narrow entrances flanked by two shops.⁸⁷⁵ One of these, the recently re-studied House of Diana, was rebuilt on several occasions, just as were some of the units in *insula IX.3*. Interestingly, however, the house seems to have retained this architectonic configuration at the front for a considerable period of time – until the collapse of the building in the Claudian period.⁸⁷⁶ Thus we have an example of the long marriage of domestic and commercial spaces in Cosa, something that has been attested in Pompeii although this is so far not evident in *insula IX.3*. The Cosan example moreover exemplifies the longevity of architectonic configurations even when the spaces acquired new functions. In *insula IX.3*

⁸⁷¹ Andrews 2006: 121.

⁸⁷² Wallace-Hadrill 1994: 117.

⁸⁷³ Andrews 2006: 182-3.

⁸⁷⁴ *Ibid.* 190-2.

⁸⁷⁵ Fentress *et al.* 2003: 21-3.

⁸⁷⁶ *Ibid.* 14-5, fig. 5; 20-1, 34-6, 36-40, 62.

productive fixtures were installed as secondary features in wall-painted rooms and new walls were built in place of old walls,⁸⁷⁷ but remains of demolished walls in shops so far cleared by the *EPUH* suggest greater changes in spatial configurations.⁸⁷⁸ Indeed, the increased pace of regeneration and construction of upper floors in *insula* IX.3 and Pompeii at large suggests that space had become a more and more valuable commodity even when it did not lead into the construction of apartment blocks. In Cosa instead there was no similar pressure, which explains the longevity of architectonic forms and why there were no apartment blocks or developments towards comparable arrangements.

The direct connection between large and small units located next to each other is also clearly identifiable in several North African cities. As in Pompeii, the city blocks of Utica housed both commercial and domestic functions side by side. It has moreover been argued that there too, as in Pompeii, the city blocks were first divided into regular size plots which were later on split and combined to increase heterogeneity.⁸⁷⁹ For instance, the House of the Cascade which dates to the imperial period occupies several of these plots.⁸⁸⁰ Examining the plan of *insula* 2 in which the house is located, several familiar features can be identified. House fronts are repeatedly pierced by several doorways. Some of them are wide and suggest the commercial function of the premises behind these doorways.⁸⁸¹ Connecting doorways between neighbouring units show dependence, as do connections at first floor level.⁸⁸²

In Volubilis too there are a number of houses with elite architecture, the facades of which are, when flanking a thoroughfare, divided into shops.⁸⁸³ In fact, thanks to the large sizes of these third-century AD houses, their facades could accommodate rows of shops, resembling the situation in the *Insula Arriana Polliana*. Moreover, in addition to the shops along the facade, a majority (i.e. 55) of the town's buildings that can be labelled as elite houses were equipped with an oil-press or two.⁸⁸⁴ This is remarkable and it is not paralleled in Pompeii. Although, as already observed, several large houses in Pompeii were furnished with

⁸⁷⁷ See e.g. Unit IX.3.1-2, 5/24 and 10-12 entries in the catalogue.

⁸⁷⁸ See Unit IX.3.7, 8 and 10-12 entries in the catalogue.

⁸⁷⁹ Lézine 1968: 108.

⁸⁸⁰ *Ibid.* 113.

⁸⁸¹ *Ibid.* 82, fig. 2.

⁸⁸² *Ibid.* 125.

⁸⁸³ Such as the Palace of Gordian (Thouvenot 1958: 48, fig. 8), the Houses of Flavius Germanus, Golden Coin, Marble Bacchus, Sundial, Two Presses and Portico (Étienne 1960: pls. 5, 10-13, 16).

⁸⁸⁴ Akerraz and Lenoir 1981-2, Wilson 2002: 259.

productive fixtures, we cannot talk about the majority.⁸⁸⁵ Moreover, there is no undisputed evidence for oil-presses in use in 79 AD inside the city walls.⁸⁸⁶ Even though a large number of pruning knives were discovered in the House of the Menander,⁸⁸⁷ which might suggest that some household members worked outside the city walls during the day and returned in the evening,⁸⁸⁸ and large horticultural plots occupied several *insulae* in the eastern part of the town,⁸⁸⁹ it seems probable that intensification in the use of space had largely shifted crop processing outside the city gates of Pompeii,⁸⁹⁰ and agricultural tasks, such as oil and wine-pressing and the storage of oil, wine and grain were carried out in the villas and farms outside the town.⁸⁹¹ Volubilis and Pompeii hence possessed very different productive characters.

The link between commercial and domestic is repeated in Roman Britain, where, according to MacMahon, shops commonly front units which ‘appear to be large residential buildings’. He refers to examples in Colchester, Verulamium, Silchester and Caerwent, all of which prospered in the first four centuries AD.⁸⁹² In all of these examples from Cosa, North Africa and Britain it is easy to envisage the common ownership of commercial units and the large residences they flanked. Although the discussion concerning *insula* IX.3 has shown that this assumption may be too simplistic and we need further evidence to establish their relationship, it has also been shown to hold true in many instances. Similar detailed investigation of the evidence, which is outside the scope of this thesis, would be necessary to confirm this interpretation, but on first examination at least the arrangements do appear to be comparable. One can easily imagine that the city blocks in these towns were occupied by a mixture of large and small units, the dependency of which was played out through architectonic means.

⁸⁸⁵ For instance, on the basis of Robinson’s (1999: appendix) list of unit sizes in Pompeii, combined with the information from Eschbach *et al.* (1993) on their functions, there are 27 units in Pompeii that are over 1,000 m² in size (as the houses in Volubilis commonly are) and can, on the basis of their architecture, labelled as elite houses. Out of these, only three were engaged in production which required a battery of fixtures.

⁸⁸⁶ But see Borgard *et al.* 2005: 306-10.

⁸⁸⁷ Allison 2006: 329.

⁸⁸⁸ Jashemski 1993: 48-9.

⁸⁸⁹ Jashemski (1973) on vine cultivation, pressing and storage on these plots.

⁸⁹⁰ For 4th century BC crop-processing evidence in the town, see Jones 2008: 141.

⁸⁹¹ Jongman 1988: 113-9.

⁸⁹² MacMahon 2005: 52-3.

6.4.2 The scale of economic investment in urban property

The connections between social and economic power in different housing arrangements discussed above may be explored further with the help of an inscription and architectonic remains of Timgad where a new market was built by a local resident, M. Plotius Faustus Sertius in the late second-early third century AD when the town had grown out of its initial plan and new land outside the original city walls was taken into use. This development not only saw the construction of the market but also a number of city blocks, one of which contained his gigantic residence, while others were characterized by shops and workshops.⁸⁹³ It seems highly likely that they were all developed by this wealthy individual who held the highest civic office in the town. It is easy to imagine how the scheme, including the market, his house and the adjacent city blocks, both resulted from and further increased his political and economic power.⁸⁹⁴

What differentiates Sertius' probable role as a property developer from the previous examples in Cosa, North Africa and Britain is that there is large-scale evidence for investing in rentable urban property outside the limits of the city block in which one lived. While the apartment blocks first discussed in Ostia also present, at least partly, such investments,⁸⁹⁵ the examples of these practices so far discussed in the Pompeian context are frequently related to public buildings⁸⁹⁶ and the Herculaneum evidence presented above may result both from public and private investments. However, Sertius' investment at the level of several city blocks operates on a scale previously unparalleled. The impression of large-scale property speculation in Timgad is strengthened by a more detailed examination of the archaeological evidence for fulleries, 22 of which have so far been identified. Interestingly, they are chiefly found in a few adjacent city blocks,⁸⁹⁷ suggesting the clustering of trades already discussed above. The fulleries occupy units of some 200 m² in size, i.e. about a half of the size of their city blocks.⁸⁹⁸ This suggests that, as with the bakeries in Pompeii, they were owned by people who had sufficient means to acquire this amount of space, establish enterprises requiring a set of tubs and have personnel to operate them. On the other hand,

⁸⁹³ Ballu 1903: 81-9, Wilson 2002: 261.

⁸⁹⁴ Lassus 1966, Wilson 2002: 261.

⁸⁹⁵ However, DeLaine (2004:171) has suggested that the high-status *medianum* apartments of the Casa a Giardino complex may have been built for a group of *socii* as their seasonal residences and by their joint investment.

⁸⁹⁶ Pirson 1999: 145-52; see also section 5.4.1 above on *Tabernae* VII.12.10, 11, 12, 13 and 14.

⁸⁹⁷ Wilson 2002: 240, fig. 4.

⁸⁹⁸ *Ibid.* 258.

the fact that the city blocks in which fulling took place had first been divided into smaller units of 50 m² and only secondarily amalgamated into larger units to serve this particular trade,⁸⁹⁹ suggests the possibility that the units were built together with public funds or by a property developer who had decided to invest in rentable property. Owned in common, their amalgamations and wholesale conversion into fulling establishments could have been swift. Instead, were the units individually owned, either by middle-class citizens or army veterans who inhabited the colony,⁹⁰⁰ such processes would arguably have taken more time if successful at all. The similarity of the establishments speaks for their broad contemporaneity,⁹⁰¹ and perhaps co-ordinated beginnings.

A somewhat similar situation is found in Sabratha, where 18 pairs or groups of vats that can be interpreted as relating to the fish-salting industry and three pairs or single tubs that probably attest to dyeing have been found in a number of city blocks around the forum.⁹⁰² While the city blocks were not dedicated to a particular industry alone, the workshops did not function either inside or next to larger units as so often found in Pompeii. Instead, the city blocks in which they are located were occupied by small units (below 100 m²), either domestic or commercial,⁹⁰³ which may again suggest that they were built as a property investment meant to house the lower classes of the town and bring money to a person or group with means to carry out large-scale construction projects. Alternatively, we are dealing with owner-occupied ‘plebeian quarters’ unparalleled in Pompeii.⁹⁰⁴

6.4.3 Pompeii as a case study in Roman urbanism

As a result of the discussion above, we can argue that the Pompeian landscape of mixed land-use within single city blocks is present in other sites too, both across time and regions. City blocks with units repeating a single plan seem to represent a rarity. Even if city blocks were first divided into plots of roughly similar size, later developments resulted in greater variation. The importance of local constraints is moreover evident in examples discussed

⁸⁹⁹ *Ibid.*

⁹⁰⁰ Le Bohec 1979-80: 109-113.

⁹⁰¹ Wilson 2001: 280.

⁹⁰² *Ibid.* 1999: 29-46, 2002: 242.

⁹⁰³ *Ibid.* 258.

⁹⁰⁴ Although in Pompeii too some of the city blocks surrounding the forum contain, in average, smaller units than the other city blocks of the town, most of them nonetheless contain elite dwellings too (fig. 71; Robinson 1999: appendix, Schoonhoven 2006: 177-80).

above. Indeed, as Fentress has observed, in her discussion of the anomalous plan of a building discovered near the forum of Cosa, that '[t]he man who received the plot may have simply chosen to sacrifice his *tablinum* to more profitable shops'.⁹⁰⁵ This highlights the marriage of domestic and commercial, evident in examples discussed above. Cities were places to produce and consume, and all the city blocks discussed above fulfilled a significant role in this.

This section has moreover dealt with significant variations between towns. As the example of Herculaneum shows, they cannot be explained by temporal differences alone. Indeed, in imperial Ostia too the city contained a large variety of building types. Some city blocks were dominated by large units (*domus*) with upstairs *cenacula* and shops flanking their sides, others were occupied by apartments built together according to a certain architectonic blueprint.⁹⁰⁶ This shift from the 'Pompeian' mode of habitation to the 'Ostian' one has been explained as a consequence of pressure by growing population and desire for larger, independent houses which necessitated the full exploitation of upper floors.⁹⁰⁷ This probably is true for cities which could or did not grow laterally but instead took advantage of vertical growth. In North Africa our examples are from towns that did expand laterally and, as far as we know, exploited the upper floor space only to a limited extent.⁹⁰⁸ There too, however, some of the city blocks can be tentatively labelled as tenements. While the development towards purpose-built tenements had begun in Pompeii, thanks to the growing number of rentable *cenacula* and shops that could operate independently, the shift from city blocks dominated by owner-occupied units to purpose-built apartments was only at its infancy. Although apartment blocks made better use of the available land, social dependence through physical proximity that underpinned Pompeian society was lost with them.

6.5 Conclusion

This chapter began by examining *insula* IX.3 in its neighbourhood. Similarities in location were shown to have resulted in similar developments inside individual city blocks.

⁹⁰⁵ Fentress 2000: 18.

⁹⁰⁶ E.g. DeLaine 2004, in press.

⁹⁰⁷ Pirson 1999: 170-2, Andrews 2006: 119-21.

⁹⁰⁸ The fulleries of Timgad contain no indication of upper floors but the small houses of Sabratha usually had upper floors (Wilson 2002: 258).

Secondly, evidence was put forward to suggest that in addition to official *vici* which had administrative roles in the lives of citizens, there were smaller, more informal crossroads communities that mattered more on a day-to-day level. These communities constituted the people to socialize with when met during the day on the way to the forum, theatre or baths for example, or when running the errands and fetching water from the public fountain. The city block was inhabited by people of various social levels, some of whom could find their peers across the boundary walls of their homes, while others, in particular those of the upper echelons of the society, were more likely to find their counterparts across the street or in the wider neighbourhood.

The later part of the chapter focused on comparative evidence from Pompeii and beyond. It showed how city blocks are often dominated by one or two large residences that seemingly had some social and economic power over adjacent units. Other examples show situations in which there are no apparent (owner-occupied) units that would dominate city blocks, and we must consider other models of ownership and dependence to explain these arrangements. The differences are not simply temporal or geographic, and, as the examples above have shown, not town-specific either. City blocks in Herculaneum for instance are, by and large, dominated by large *domus* as in Pompeii, and these towns are only to some extent different. It seems that the increase in the number of independent units is both real and a result of taking upper floor spaces into efficient use and thereby increasing the overall amount of space for habitation both in Pompeii and Herculaneum. Moreover, as far as we know, the examples of North Africa discussed above relate to developments in which entire new areas were built for the first time at once and therefore probably necessitated involvement of either a wealthy citizen or the municipality to succeed. Other North African city blocks conform to the 'Pompeian' model and there is no evidence to suggest that the apartment blocks of Ostia and Herculaneum were all developed under one scheme.

CHAPTER 7: Conclusions

This thesis set out to investigate how the basic, life-sustaining utilities were made available in *insula* IX.3 and whether inhabitants themselves were responsible, perhaps together with their neighbours, for all arrangements, or whether the town and state were also involved in securing these necessities. The same questions lie behind the investigation of disposal strategies. Hence, the emphasis of this thesis was on identifying the range of alternatives and conformity, and the possible reasons behind them. Through understanding the reasons behind patterns, the emphasis was shifted from technical aspects to social ones. The findings are based on the combined use of various types of archaeological data presented in the catalogue. This was interpreted with the help of comparative studies and, importantly, Roman property law that was studied on a level unprecedented in Pompeian scholarship.

7.1 Achievements

It has been shown that people were largely self-sufficient although increasingly some relied on the town for water. Moreover, neighbours and the laws affecting the borders between adjacent units seemingly had an impact on the ways in which utilities were arranged. Consequently, it was not insignificant who one's neighbours were. Neighbours within a city block could have had common projects including light (and air) supply, water supply, rubbish disposal, and, perhaps, street maintenance. Some mutuality was based on law, some arrangements resulted from common ownership, and some were perhaps based on mutual agreements and decisions to co-operate. Despite all this, it was shown that most of the shared arrangements stem from common ownership, as independent neighbours only rarely sought, or were made by law, to have shared utilities. This is probably due to the nature of the utilities as crucial for basic sustenance which made property owners reluctant to rely on a second party. The role of officials was in principle to ensure that citizens fulfilled their responsibilities in maintaining their properties, adjacent public spaces and structures shared with their neighbours. In reality however officials may have had a more active role in safeguarding basic utilities and services.

Units owned in common may have had further co-operation that first meets the eye. Their residents could have shared the use of kitchen and toilet facilities for instance. The same

applies to situations in which different family-groups may have accommodated different parts of a single unit. It is difficult to verify that such arrangements did indeed take place in *insula* IX.3 but this should not prevent us from taking it into account. As the discussion of privacy with regard to windows has shown, the ancients' concepts of private versus public differed from those of ours.

The arrangements were naturally not fixed but adapted according to new needs, changes in spatial arrangements, ownership, and in response to what happened in the neighbouring units and in the town at large. Although people seem to have been traditional in the sense that the same strategies to acquire life-sustaining essentials and dispose refuse were in use for generation after generation, at the same time opportunities that allowed increase, ease and convenience were utilized. These tendencies seem both to favour the idea that choices and layouts resulted from economic rationality, and that certain socially constructed concepts of appropriateness or effectiveness were persistent, despite their increasing inefficiency or redundancy.

The tracing of shared utilities has allowed us to gain an insight into the social relations between inhabitants. It has been shown that the city block consisted of fewer properties than the number of architectonically separate units. The number of properties however seems to be greater than what we may assume on the basis of studying regularities in the plan and mapping the unit borders at the upper floor level. However, because the archaeological record available to us does not necessarily represent the situation in AD 79 accurately, and the evidence allows multiple interpretations, the exact number of properties cannot be confirmed. Nonetheless, it is clear that, without the profound marrying of legal and archaeological evidence, the reconstruction of legal boundaries within city blocks remains intuitive. This thesis has shown the unquestionable benefits of the in-depth approach. Although open questions remain in the resulting reconstruction of property boundaries, it is grounded at a level previously unparalleled.

While it has previously been emphasised that internally unconnected units owned in common could and probably did operate more-or-less-independently, the examples above have shown that this was not necessarily always the case. They could share utilities that presumably necessitated interaction on a daily basis and even when there were no interconnecting doorways between the two, windows could make sure that one had control

over the other. Control is directly connected to power. Social and economic power over dependent units was needed to gain political power. Political power in turn could further increase social and economic power. Thus in the examples discussed above, the three forms of power are frequently identifiable and they are often inseparable. As a result, *insula* IX.3 can be divided into spheres of power, all of which are dominated by large units around which their dependents were clustered. Indeed, it is interesting that only a few units in the entire city block cannot be clearly identified as belonging to one of these power networks. These independent units were typically small *atrium*-houses, and the group might have included some shops too. Although we cannot exclude the possibility that they were owned by people who lived outside the confines of the city block and rented them out for profit, the units could have been owner-occupied and thus housed independent members of the middle-class population. The same pattern of dominance and ownership can be identified in other city blocks in Pompeii and beyond. What has been shown to differentiate this type of housing arrangement from purpose-built apartment blocks is not only their spatial configuration but also the embedded social relations.

Social relations were further investigated on the neighbourhood level. While neighbours separated by a common wall could matter on a very practical day-to-day level, people across the street could have formed the social group to identify with. They were rivals in terms of visibility, in business and perhaps in politics, and shared religious ceremonies.

The focus on neighbourhoods took us to examining the urban space at large. It has been observed, in the case of *insula* IX.3 and other city blocks in Pompeii and beyond, that the location in the urban matrix had a significant impact on internal development processes. Facades along busy streets were commercialized early on, others much later on or not at all. Domestic and commercial development took place often hand in hand. Change was found to be a recurrent theme, but the pace of it depended largely on the location in the urban matrix and wider trends in urban development. In Pompeii the tendency was to increase the gap between large and small units, build upper floors, and separate units owned in common into distinct architectonic entities. These were developments towards apartment blocks, the fully developed forms of which are not found in Pompeii, probably because, as we have seen, the physical and social dominance over units owned in common remained important in the town.

7.2 Challenges and further possibilities

This thesis has operated on a small scale. Evidence that has been shown to be highly revealing would probably have been left unnoticed had the scale been any larger. This undoubtedly is one of the most important benefits of micro-studies. Despite this, the limited scope has its shortcomings. According to Wallace-Hadrill, ‘without statistical study we have the greatest difficulty in rising above the level of the anecdotal.’⁹⁰⁹ Importantly, however, without these small-scale studies we cannot produce significant statistics for studies operating on a larger scale. Indeed, as it has become evident in the course of this thesis, traditional ‘facts and figures’ provided on the city block must be challenged. The identifications of unit functions as listed in e.g. Eschebach *et al.* have frequently shown problematic, Della Corte’s identifications of unit owners and occupants stand on a notably weak basis, and presumed connections between units cannot always be sustained. Statistical studies based on common assumptions lack the depth that new studies can provide. What follows is that patterns and tendencies observed in this thesis should be tested against other studies and evidence from different city blocks to show their prevalence. On the other hand, many of the patterns discussed above have already been previously observed. Hence, they were tested, and shown to be more or less valid, in this case study. Only when we begin to understand the reasons behind the variability between cities and city blocks, can we start to ask questions about the larger scale in a more meaningful way, and produce more meaningful statistics. As shown above, certain arrangements in *insula* IX.3 resulted from highly specific conditions just as elsewhere in the Roman world interesting developments took place e.g. when new areas were built at once or when the construction of a public building gave and an opportunity for property development and speculation.

Although we cannot extend the conclusions of this thesis too widely as each city block constituted a unique composition of units, their residents would nevertheless have come across similar questions of how to organise and share utilities, or deal with the legal and social responsibilities. Solutions may have varied, but the current thesis has addressed some of the concerns that affected the outcome. In a similar vein, while towns resorted to particular solutions to secure basic utilities for their residents, the overall questions they had

⁹⁰⁹ Wallace-Hadrill 1991b: 192.

to solve were the same. By identifying these questions, and possible solutions, we approach a better understanding of Roman urbanism.

The treatment of phenomena discussed in this thesis was characteristically descriptive. Numeric data were given when possible but dating in particular has remained loose. It was deemed interesting to discuss the availability of certain utilities on a broad time scale and discover tendencies and patterns. Emphasising relative change allows us to see these broad patterns whereas we cannot identify, or date, all separate changes. Moreover, because it is not always evident what constituted the initiator of change and what was the effect, it is better to discuss change as such rather than approach the question sequentially.

During the process of writing this thesis the significance of the work carried out by the *EPUH* team has been apparent. Not only has the chronology improved, but every new field season has added more structures to the corpus of data which stresses the overall importance of these types of re-documentation projects. It is very likely that the understanding will continue to evolve. This shows very explicitly how much more work there is still to do and how little we at the end know of this most famous ancient town.

Finally, we must revisit the most pressing problems in the evidence used. Let us begin with written sources. Using passages referring to the second-century BC laws, as documented by third-century AD jurists, in a text probably altered to some extent in the late Roman period, is highly questionable. Nevertheless, it needs to be stressed that the primary emphasis in this thesis has been on the archaeological evidence studied on its own right. While suggestions on the basis of written sources have been made, none of the conclusions are based on particular texts alone but on an aggregate understanding of various sources from various times and places. It is hoped that this process has evened out some of the biases in individual sources. In terms of archaeological data, it must be remembered that the evidence we have is an outcome of a number of choices made by Pompeians, nineteenth-century excavators, later scholars and conservators. Although much attention has been paid in the thesis to study the data as a whole, the evidence regarding upper floors, for instance, is largely missing. It has been argued elsewhere that both ground and upper floors housed domestic activities in AD 79, and if the ground floor was taken up by commercial

installations, the importance of upper floors as living space may have been pronounced.⁹¹⁰ The picture therefore remains unfortunately incomplete. Notwithstanding these challenges, the benefits of combining fragmentary and biased data sets through critical analysis of their information value have been made evident in this thesis, allowing us to improve our understanding of the conditions of daily life in the Roman world.

⁹¹⁰ Allison 2007: 276, Hobson 2009: 69.

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FIGURES

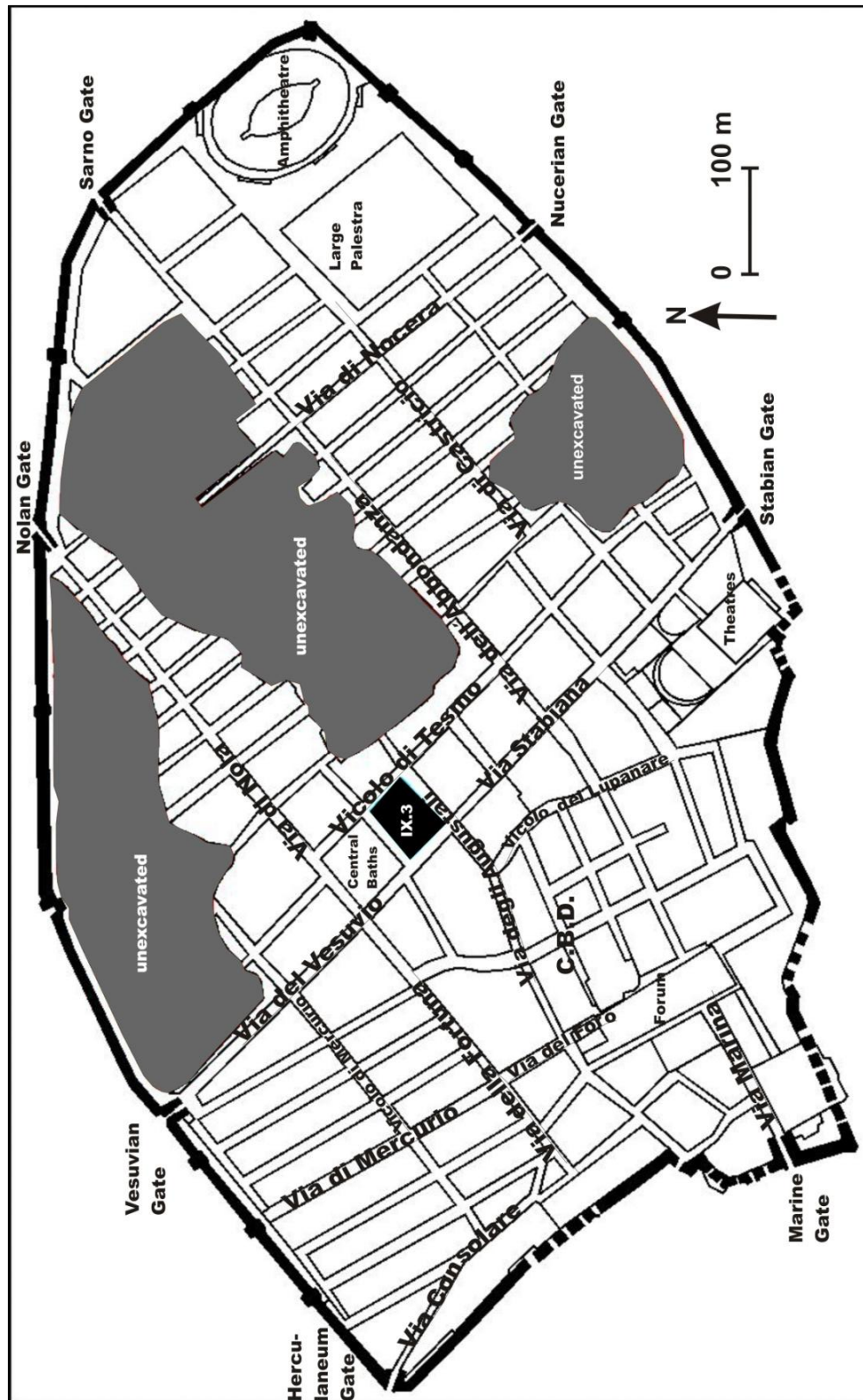


Figure 1. The location of *insula* IX.3 in Pompeii. Base map: SAP.

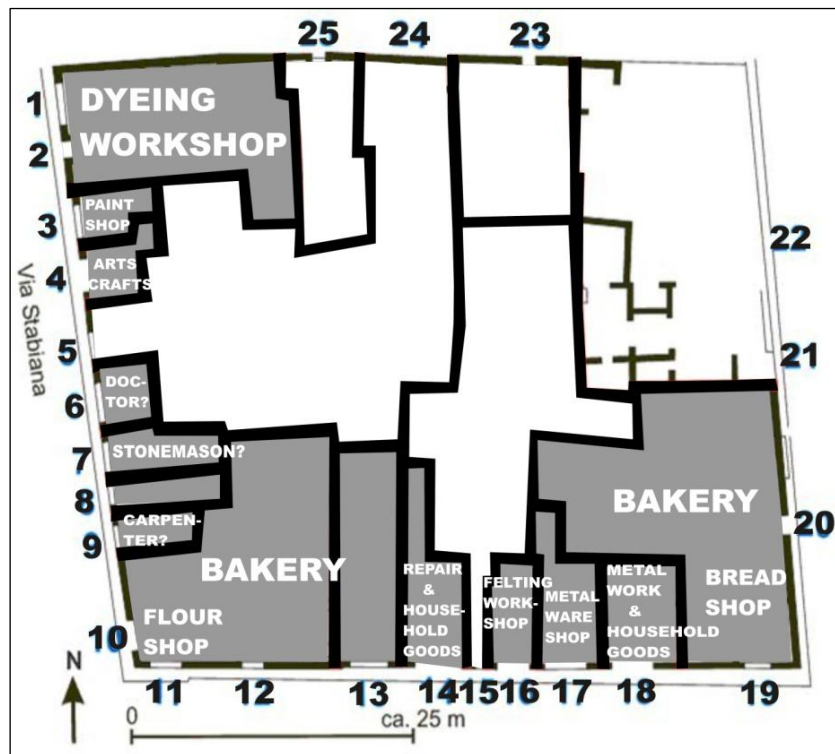


Figure 2A. The proposed functions of commercial spaces in *insula* IX.3 (after Eschebach *et al.* 1993).

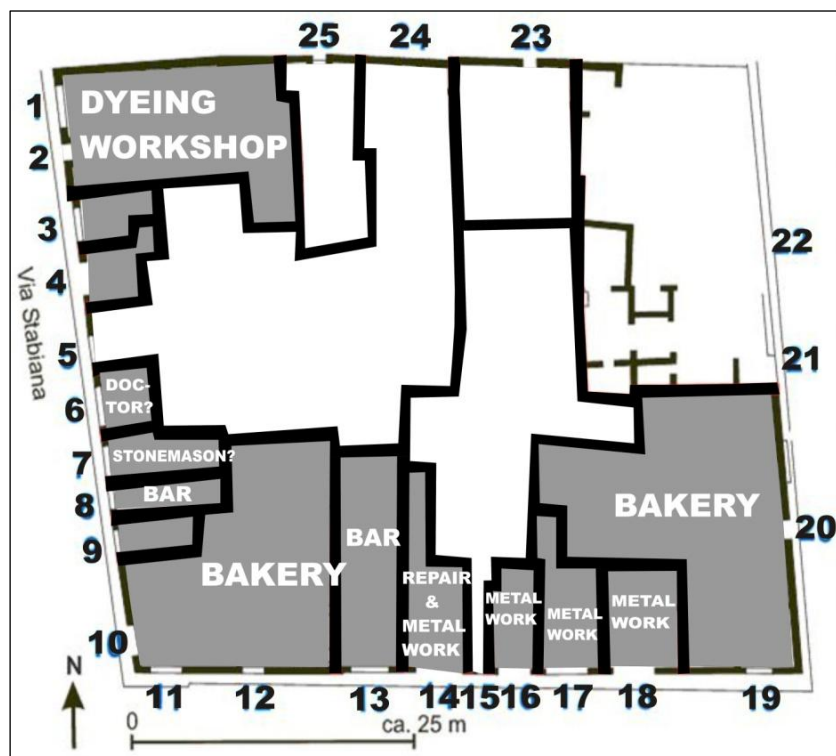


Figure 2B. Revised identifications.

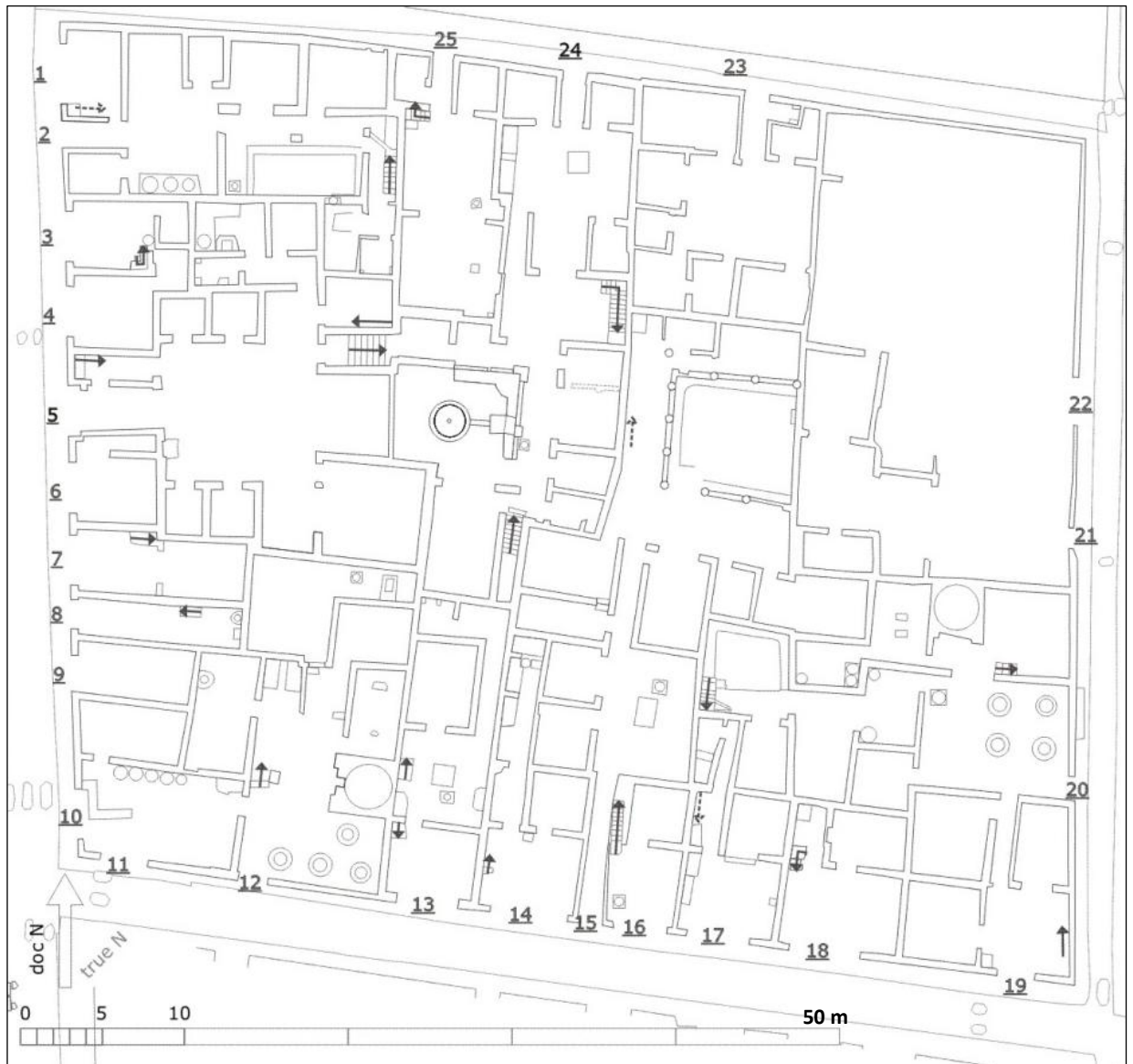


Figure 3. *Insula IX.3*, including the most prominent structures still standing, as documented by the *EPUH*. Front doorway numbers (which form unit numbers) are underlined and the arrows indicate the direction of stairs leading to the upper floors. Stairs of which there are no traces left today but the former existence of which is indicated by the *EPUH* studies or Fiorelli (1873, 1875) are marked in broken lines. Map: author, after *EPUH*.



Figure 4. The borders of individual units (the front doorway numbers of which are underlined) in *insula* IX.3 are marked in mid-grey.

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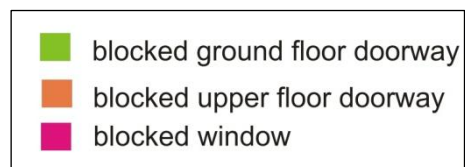
Figure 5. The plan of *Insula Arriana Polliana* (VI.6). The borders of individual units are marked in mid-grey.
After Pirson 1999: 24, fig. 6.



Figure 6. The hypothetical borders of properties in *insula* IX.3 (in black) on the basis of finding regularity in the plan and mapping the extent of upper floors (in light grey; after Andrews 2011). The presence of an upper floor in the front of Unit IX.3.1-2 and at the back of Unit IX.3.15 in AD 79 is uncertain which is indicated with a lighter tone. Note that the unit borders (in mid-grey) differ from those on the ground floor (compare fig. 4). Front doorway numbers (which form unit numbers) are underlined and the directions of stairs leading to upper floors are indicated with arrows.



Figure 7. Blocked windows and doorways in *insula* IX.3. Extant windows are also marked but left uncoloured. Unit borders are marked in mid-grey, hypothetical property borders are highlighted in black.



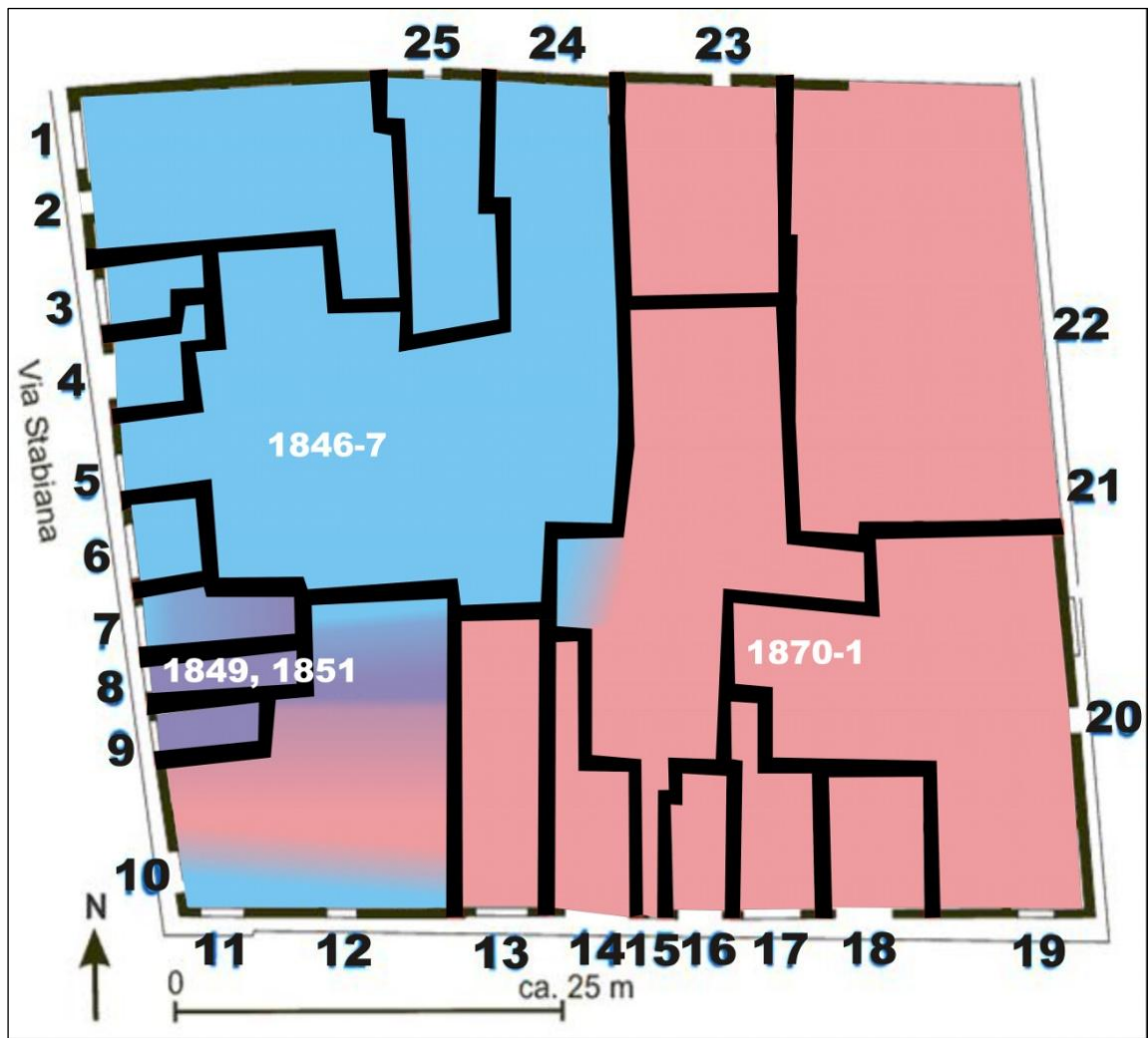


Figure 8. The progress of excavations in *insula* IX.3. Areas excavated in 1846-7 are marked in blue, those excavated in 1849 and 1851 are marked in violet and those in 1870-1 are in pink.

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Figure 9. *Insula IX.3* after Fiorelli 1873.



Figure 10. Room numbers of *insula* IX.3. The PPM scheme is presented in black. The parts which have been substituted in the EPUH scheme and are hence used in this thesis are marked in red. The numbers of individual units are underlined and the borders between units are marked in mid-grey.

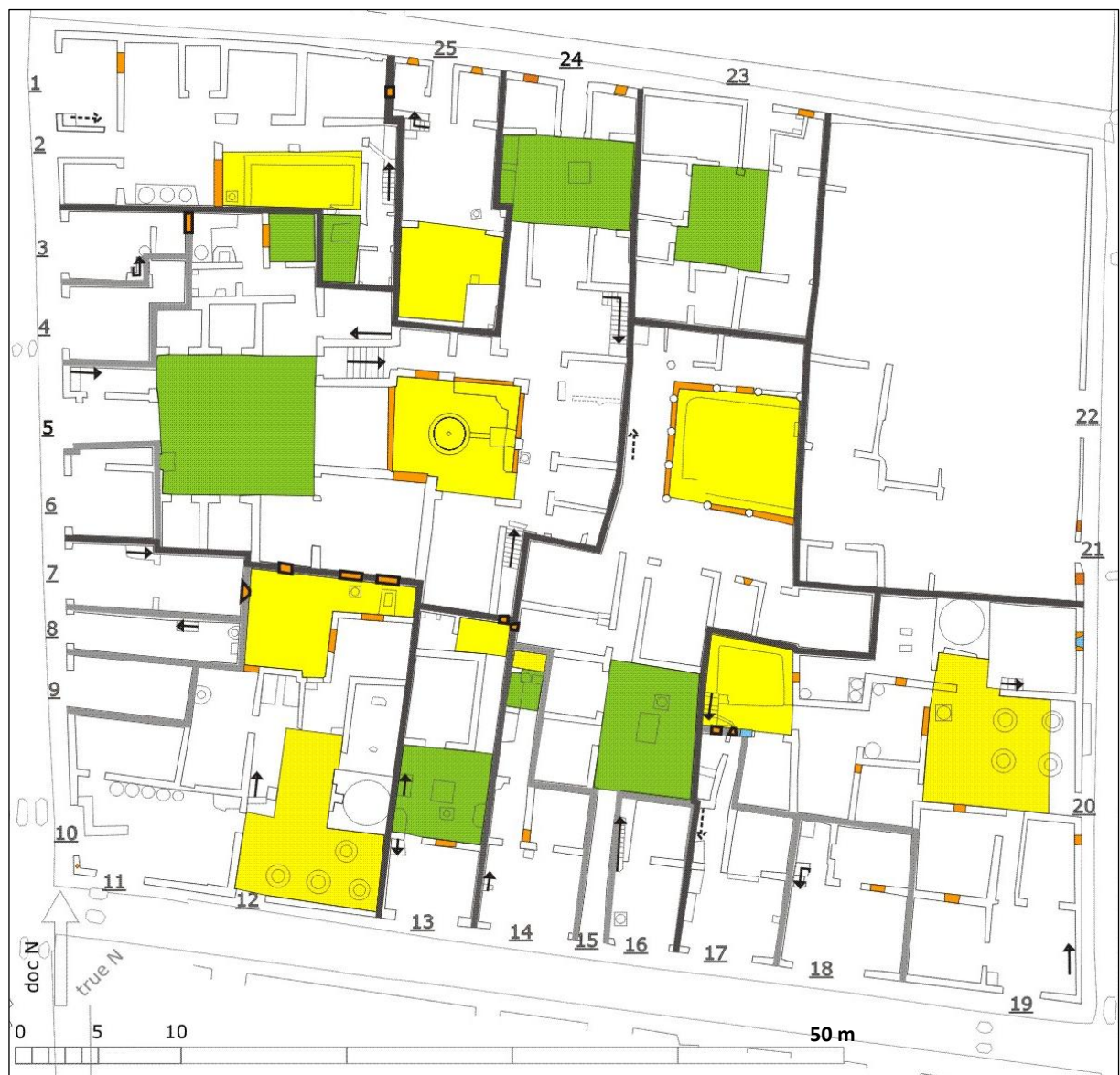


Figure 11. The sources of natural light in *insula* IX.3. Windows between neighbouring units are highlighted with thick black borders. Unit borders are marked in mid-grey, hypothetical property borders are highlighted in black.

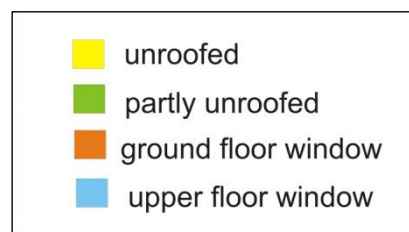
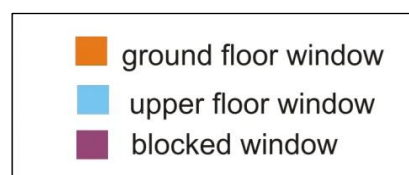




Figure 12. Extant and blocked windows in *insula* IX.3. Unit borders are marked in mid-grey, hypothetical property borders are highlighted in black.



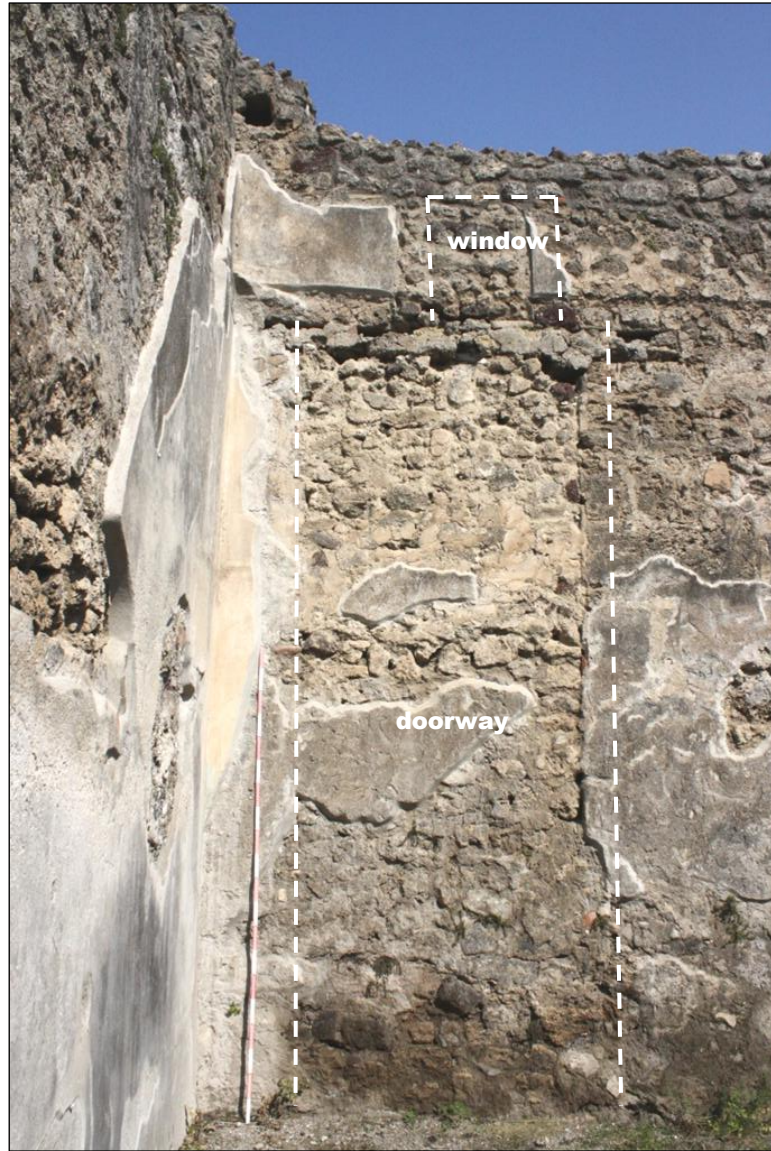


Figure 13. A blocked window and a doorway in the N wall of Room 52 (Unit IX.3.1-2). Photo: author, 2011.



Figure 14. The *impluvium*-cistern pair of Room 70 (Unit IX.3.13). An overflow channel leads S from the *impluvium* to the Via degli Augustali. Photo: T. Tuukkanen/EPUH, 2010.

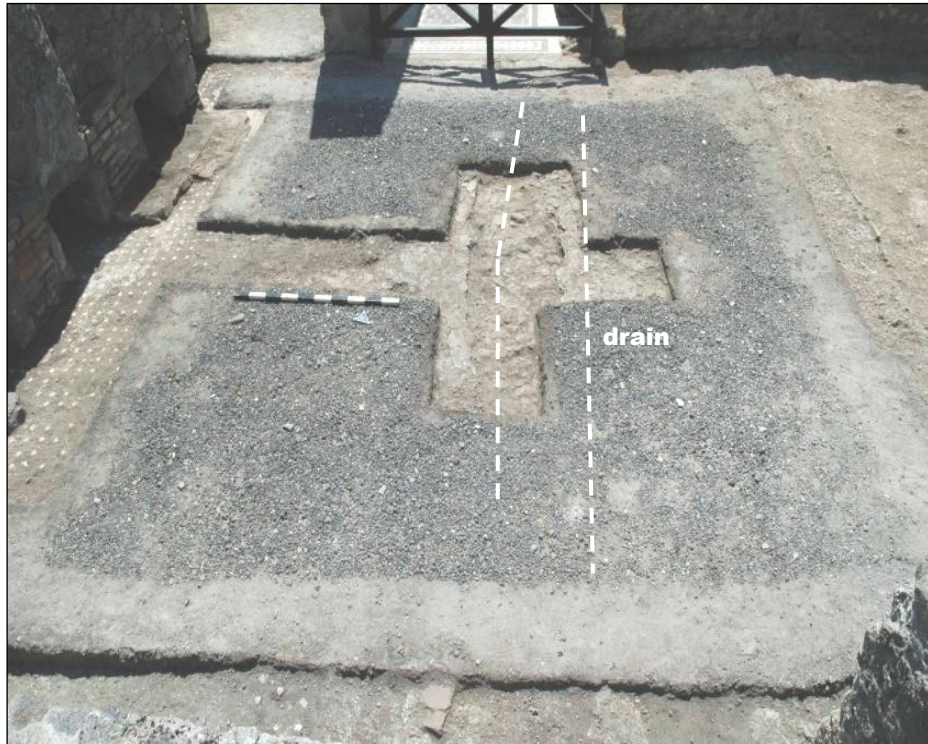


Figure 15A. The floor of Room 43 (Unit IX.3.1-2) contained no traces of an *impluvium* but a drain. Photo: T. Tuukkanen/EPUH, 2009.

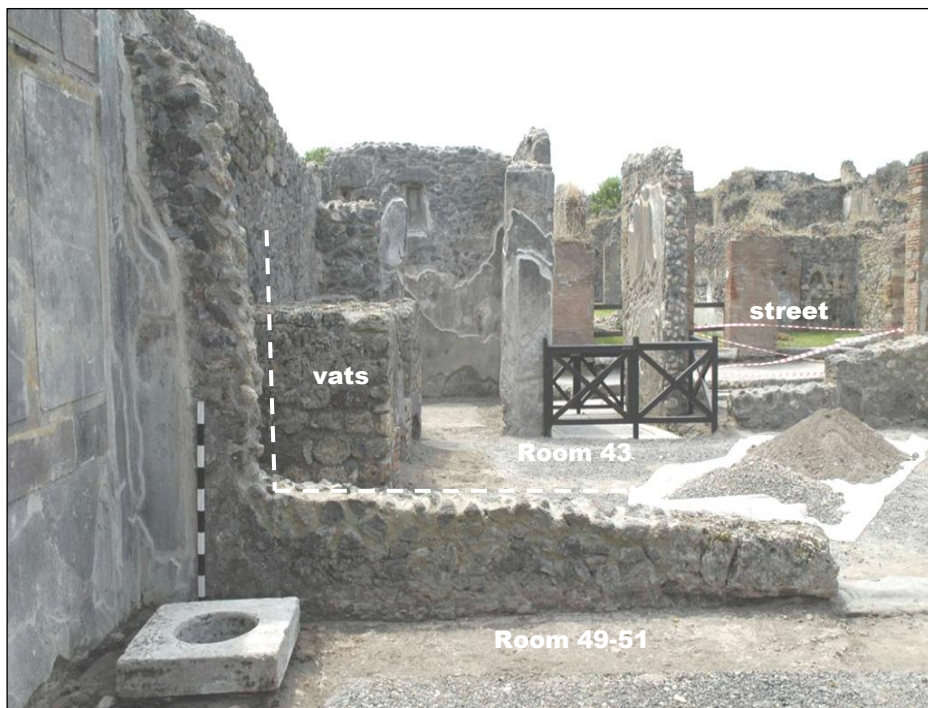


Figure 15B. The W wall of Room 49-51 (Unit IX.3.1-2) contains a large window to Room 43 where there is a masonry podium with three dyeing vats. Photo: T. Tuukkanen/EPUH, 2009.



Figure 16. Industrial fire installations in *insula* IX.3. Those with uncertain functions or the physical remains of which have disintegrated are marked with broken outlines. The window between Rooms 43 and 49-51 (Unit IX.3.1-2) is also shown. Unit borders are marked in mid-grey, hypothetical property borders are highlighted in black.



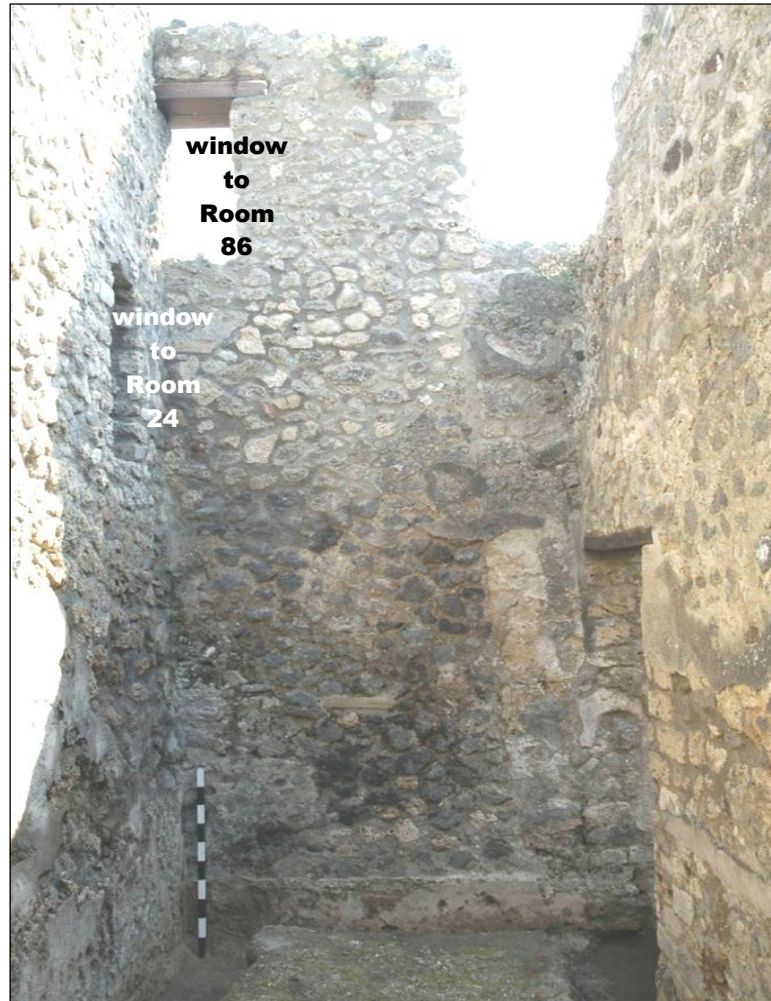


Figure 17. Room 73 (Unit IX.3.13), photographed from the W. The E wall contains a window to Room 86 in Unit IX.3.15 and the N wall contains a window to Room 24 in Unit IX.3.5/24. Photo: T. Tuukkanen/*EPUH*, 2010.



Figure 18A. The height of the window in the E wall of Room 52 (Unit IX.3.1-2) has been elevated thanks to the lowering of the floor level. Photo: M. Mustonen/*EPUH*, 2006.



Figure 18B. The height of the window in the W wall of Room 135 (Unit IX.3.25) has probably been lowered thanks to the raising of floor levels. Photo: T. Tuukkanen/*EPUH*, 2009.

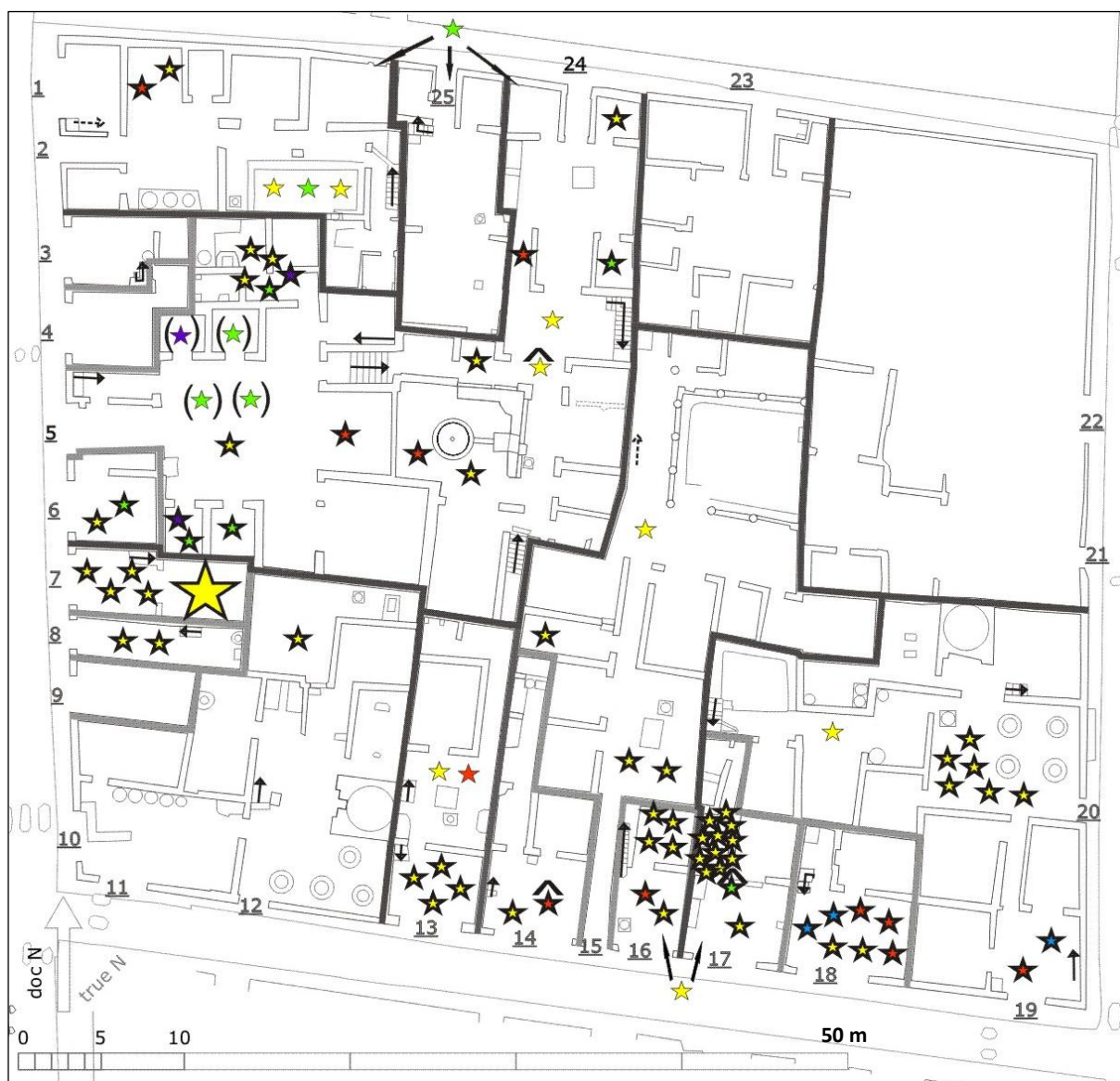


Figure 19. The distribution of finds related to lighting in *insula* IX.3. Finds without precise information regarding their find spot (or the available information is ambiguous) are marked without black outlines. Finds which have been found above 2 m and hence may derive from upper floor are marked with an accent mark. Brackets indicate alternative find locations, as given by Falkener, to those in *PAH*. 16 lamp fragments found in Unit IX.3.7 are collectively marked with a larger symbol. Artefacts which may have derived from several alternative units are marked outside these units. Unit borders are shown in mid-grey, hypothetical property borders are highlighted in black.

★	terracotta lamp	★	lantern
★	bronze lamp	★	candelaber
★	iron lamp		



Figure 20. An unroofed space between the oven mouth and the baking compartment of the oven (Room 62) in Unit IX.3.10-12 contains an opening to Room 61. Photo: author, 2011.



Figure 21A. Two masonry structures, podium and vat, flank the W wall of Room 99 (Unit IX.3.17).
Photo: author, 2011.



Figure 21B. At the N end of Room 78 (Unit IX.3.14), next to a cooking podium and along the low wall of a (former) water tank in Room 79, there is a cistern mouth and the remains of a structure, supposedly furnace.
Photo: author, 2011.



Figure 22. The location of cooking podia in *insula* IX.3 in relation to fully or partly unroofed spaces. The uncertainty of the function of the podium in Unit IX.3.15 is indicated by the lack of black outlines. Windows and possible kitchens discussed in the text are also marked. Windows between neighbouring units are highlighted with thick black borders. Unit borders are marked in mid-grey, hypothetical property borders are highlighted in black.

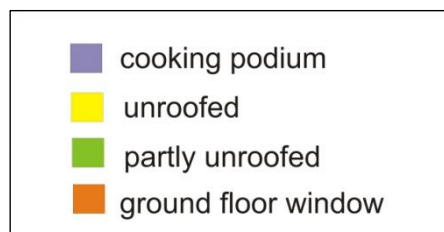




Figure 23A. A hearth and a staircase base flank the W wall of Room 70 (Unit IX.3.13). Photo: T. Tuukkanen/*EPUH*, 2010.



Figure 23B. A hearth at the NW corner of Room 136 (Unit IX.3.25), abutting a staircase base. Note the tiling and the curving superstructure. Photo: M. Mustonen/*EPUH*, 2006.

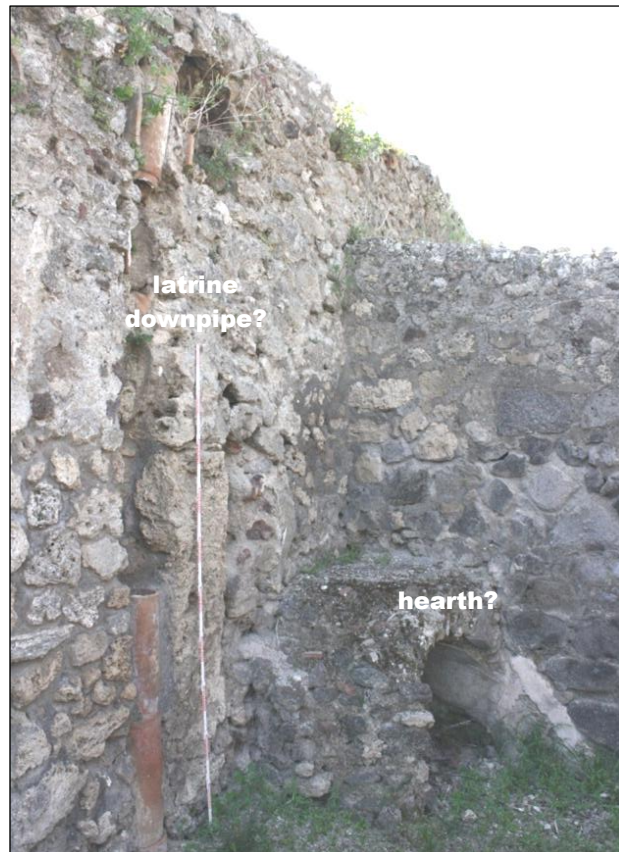


Figure 24A. A probable cooking podium in Room 93 (Unit IX.3.15), next to a possible latrine downpipe in the W wall. Photo: author, 2011.



Figure 24B. A tiled cooking podium in Room 14 (Unit IX.3.5/24) extends along the N and W walls, contains a separate oven on top and two vaulted spaces below. Photo: T. Tuukkanen/EPUH, 2004.



Figure 25A. A cistern mouth and a hearth along the E wall of Room 57 (Unit IX.3.8). Photo: T. Tuukkanen/*EPUH*, 2010.

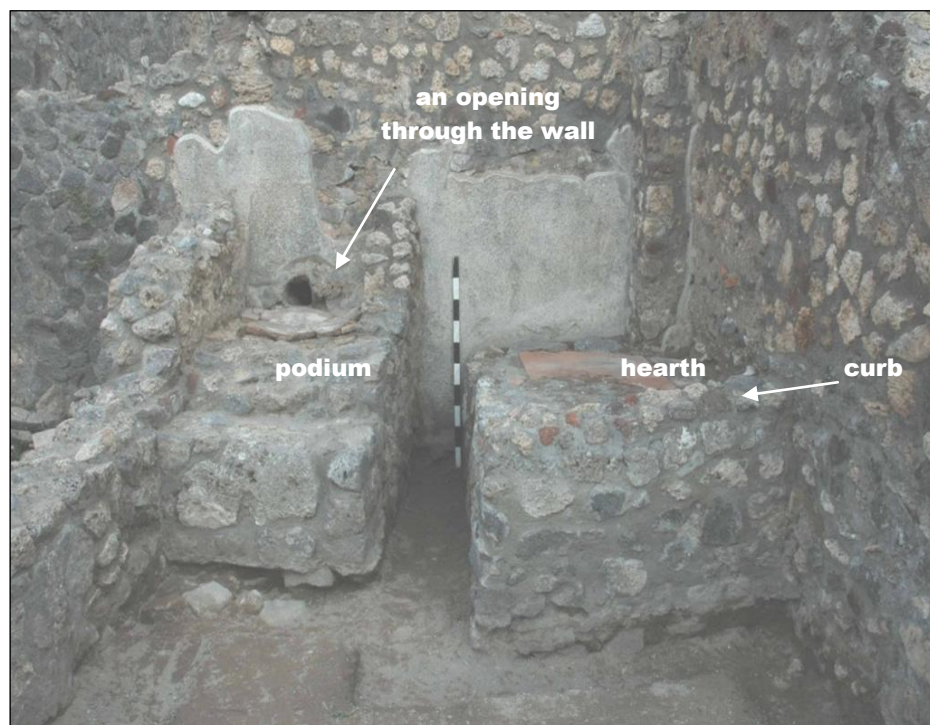


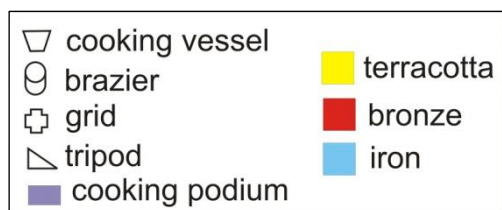
Figure 25B. Two podia along the N wall of Room 64 (Unit IX.3.10-12). The one on the left contains a hole through the wall above the tiled surface which is stained with lime deposits. The one on the right is also tile-clad and the S rim is curbed. Photo: T. Tuukkanen/*EPUH*, 2010.



Figure 26. A terracotta (A) and a metal (B) brazier stored in the so-called Forum Granary in Pompeii.
Photo: author, 2009.



Figure 27. The distribution of finds related to cooking in *insula* IX.3. Finds without precise information regarding their find spot (or the available information is ambiguous) are marked without black outlines. Finds which have been found above 2 m and hence may derive from upper floor are marked with an accent mark. Artefacts which may have derived from several alternative units are marked outside these units. Unit borders are shown in mid-grey, hypothetical property borders are highlighted in black.



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Figure 28A. Pan. Inv. no. 18686. H. 4 cm, diam. 30 cm (*Catalogue Riscoprire*: 239, no. 139).

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Figure 28B. Pan. Inv. no. 16616. H. 7 cm, diam. 25 cm (*Catalogue Riscoprire*: 239, no. 138).

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Figure 29A. Cooking pot. Inv. no. 4916. H. 19.4 cm, rim diam. 28.2 cm (Allison 2006: cat. no. 681, plate 48.3).

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Figure 29B. Cooking pot. Inv. no. 14069. H. 31 cm, diam. 32 cm (*Catalogue Riscoprire*: 240, no. 143).

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Figure 29C. Cooking pot (kettle). Inv. no. 4982. H. 14.5 cm, rim diam. 13.5 cm (Allison 2006: cat. no. 753, plate 55.2).



Figure 30. Structures related to water use in *insula* IX.3. Those marked in dark blue probably held water frequently, those in light blue held water from time to time, or their properties related to water consumption are less pronounced. The structure with altered function, from the first category to the second one, is marked with both colours. Structures marked in light green were seemingly not used for holding water as such although they had some water-resistance. Structures out of use in AD 79 are marked with a broken line. Unit borders are shown in mid-grey, hypothetical property borders are highlighted in black.

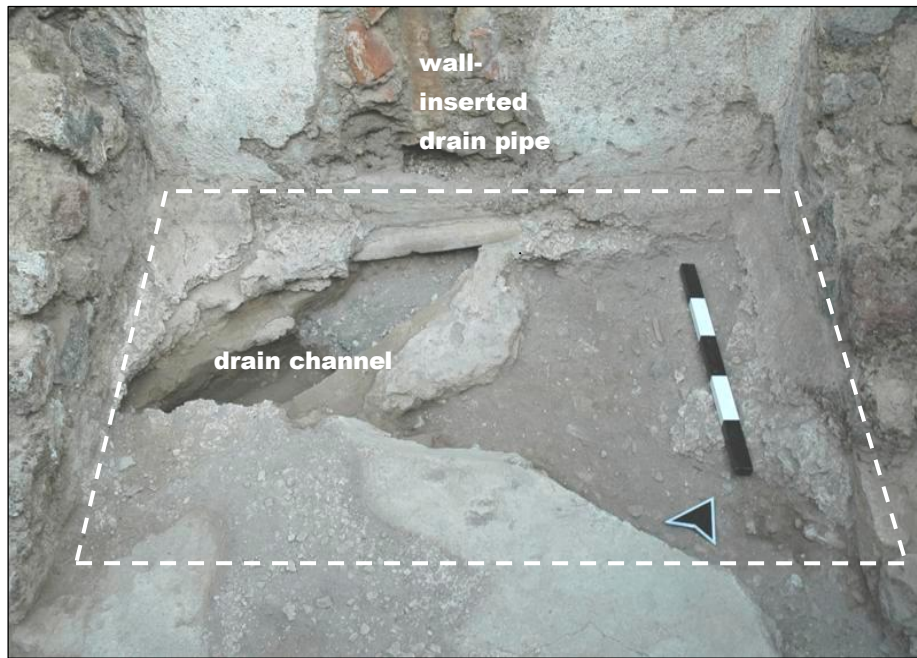


Figure 31A. A shallow sink(?), lined with hydraulic plaster, is found at the NE corner of Room 14 (Unit IX.3.5/24), adjacent to the cooking podium. Underneath it runs a drain, connected to a latrine downpipe.
Photo: T. Tuukkanen/*EPUH*, 2004.



Figure 31B. The floor of Room 14 contains several structures in and out of use in AD 79. On the right, the remains of the 'sink', and next to it an impression suggestive of a former basin; on the left, a cistern opening and a former cistern mouth. Photo: T. Tuukkanen/*EPUH*, 2004.

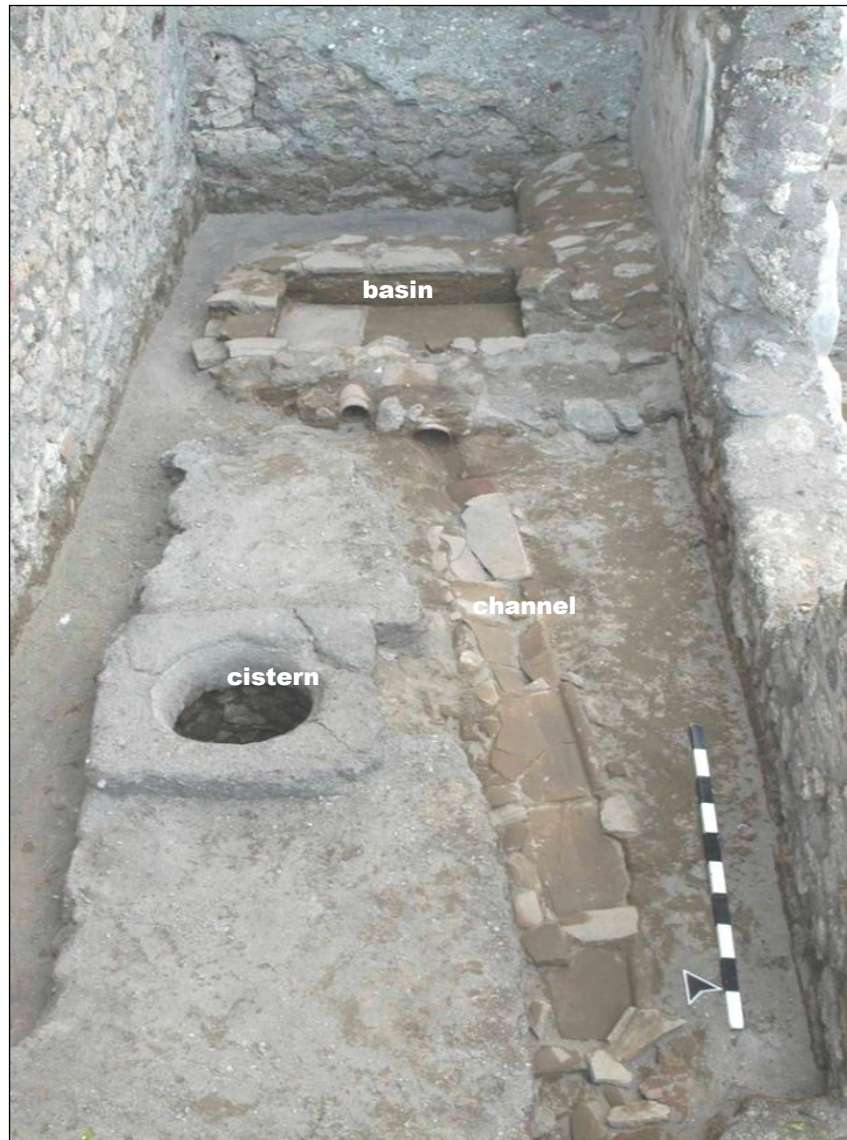


Figure 32. A shallow basin is located in the E end of the garden, Room 68, of Unit IX.3.10-12. The connection between the basin and a cistern in the room is not clear, but a channel leading W of the basin seems to bypass the cistern. Photo: T. Tuukkanen/*EPUH*, 2010.



Figure 33A. A lead pipe runs across Room 121 (Unit IX.3.19-20), climbs above the ground and cuts through the E wall to supply a large stone vessel in Room 118. Photo: author, 2008.



Figure 33B. There is a hole in the W wall of Room 118 for the pipe, and the vessel is pierced at its bottom and grooved at the rim. Photo: author, 2008.

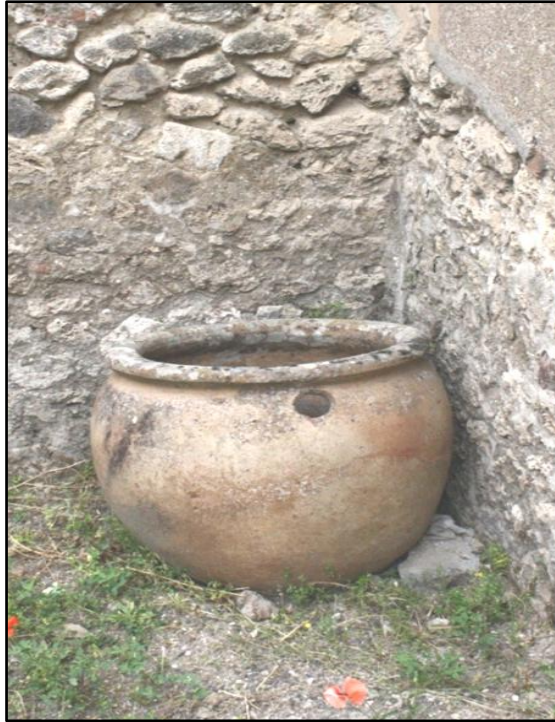


Figure 34A. The pipe in Room 118 seemingly supplied a *dolium* too. Note an overflow hole below the rim.
Photo: author, 2010.



Figure 34B. Two terracotta receptacles set into a masonry podium along the E wall in Room 120 of Unit IX.3.19-20. Photo: author, 2008.



Figure 35A. A battery of three cauldrons along the S wall, built on top of a *cocciopesto* floor decorated with *tesserae*, in Room 43 of Unit IX.3.1-2. Photo: T. Tuukkanen/EPUH, 2009.



Figure 35B. The floor of Room 54 in Unit IX.3.1-2 contains a rectangular *cocciopesto* structure with low, raised edges. Photo: T. Tuukkanen/EPUH, 2009.



Figure 36A. A vat along the W wall of Room 78 in Unit IX.3.14. Photo: author, 2011.



Figure 36B. A vat, currently filled in, along the W wall of Room 101 in Unit IX.3.17. Photo: author, 2011.



Figure 37A. The W wall of Room 29 in Unit IX.3.5/24 features two niches which, before they were filled in, contained two plaster-lined vats. Photo: T. Tuukkanen/EPUH, 2005.



Figure 37B. In the middle of Room 29, excavations revealed the remains of two floors out of use in AD 79 (in the upper part of the picture), a possible cistern out of use in AD 79 (in the middle), an *impluvium* of AD 79 (on the left), and a drain to which it was connected (running diagonally). Photo: T. Tuukkanen/EPUH, 2005.



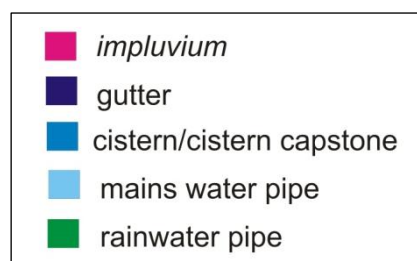
Figure 38A. A (former) water tank in Room 79, Unit IX.3.14. On the E wall (on the right), thick hydraulic plaster is replaced by non-hydraulic one. Photo: author, 2011.



Figure 38B. A groove in the W wall of Room 79 suggests that water was brought in, through it, from above. Photo: author, 2011.



Figure 39. Water supply structures in *insula* IX.3. The close-by water tower and public fountain are also marked, as are contour lines (m ASL). A probable *impluvium* under repair in Room 2 is outlined, structures out of use in AD 79 are marked with a broken line and those most probably in use are coloured in full. Unit borders are shown in mid-grey, hypothetical property borders are highlighted in black.



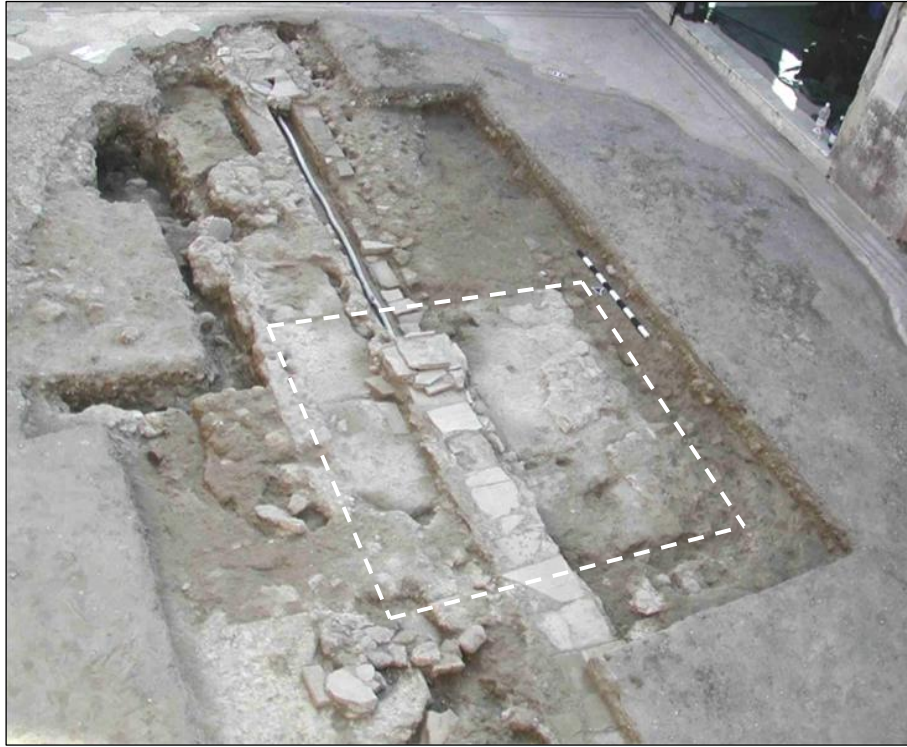


Figure 40A. The remains of a concrete base of a probable *impluvium* are seen in the middle of Room 2 (Unit IX.3.5/24). The base is cut by a drain which has been repaired in modern times and into which a modern lead pipe has been inserted. Photo: T. Tuukkanen/*EPUH*, 2003.



Figure 40B. The N and E walls of Room 18 in Unit IX.3.5/24 are flanked by a gutter. Photo: T. Tuukkanen/*EPUH*, 2002.

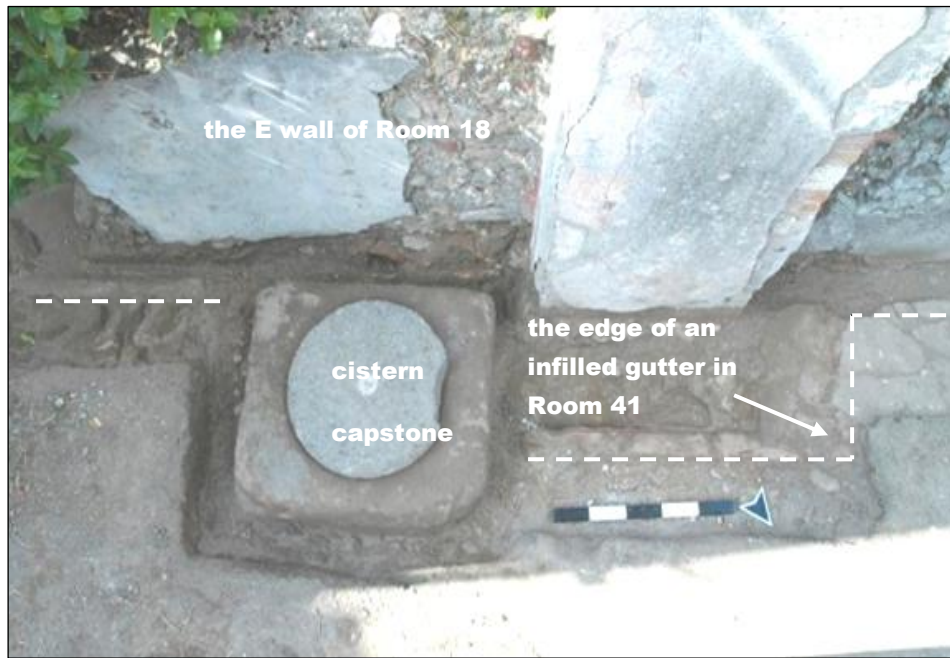


Figure 41A. The E wall of Room 18 stands partly on top of two former gutters in Room 41. The edge of the upper, infilled gutter can be best seen to the right of the cistern capstone. Photo: T. Tuukkanen/*EPUH*, 2004.

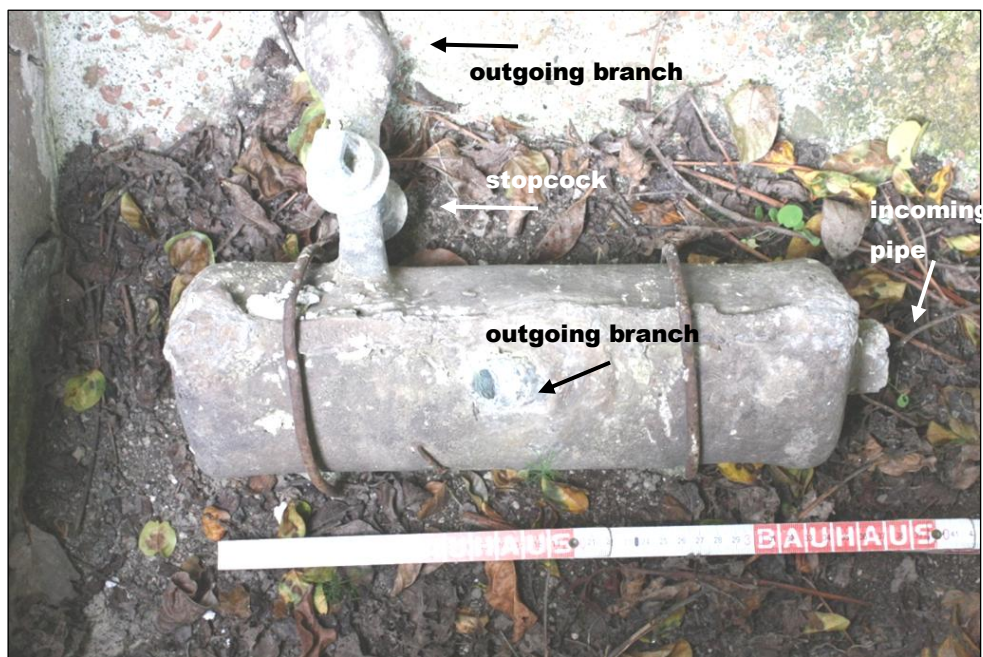


Figure 41B. The gutter in Room 18 accommodates a lead distribution box from which pipes led to the two fountain spouts in the room. Photo: author, 2011.



Figure 42A. A gutter along the E wall of Room 49-51 in Unit IX.3.1-2. Water in the gutter seems to have drained through a hole in the S wall to Room 54. Photo: author, 2009.



Figure 42B. A cistern mouth is found embedded in the N wall of Room 54 (Unit IX.3.1-2). Photo: T. Tuukkanen/EPUH, 2009.



Figure 43A. A lead pipe is embedded in the W wall of Room 80 in Unit IX.3.15. Photo: author, 2011.

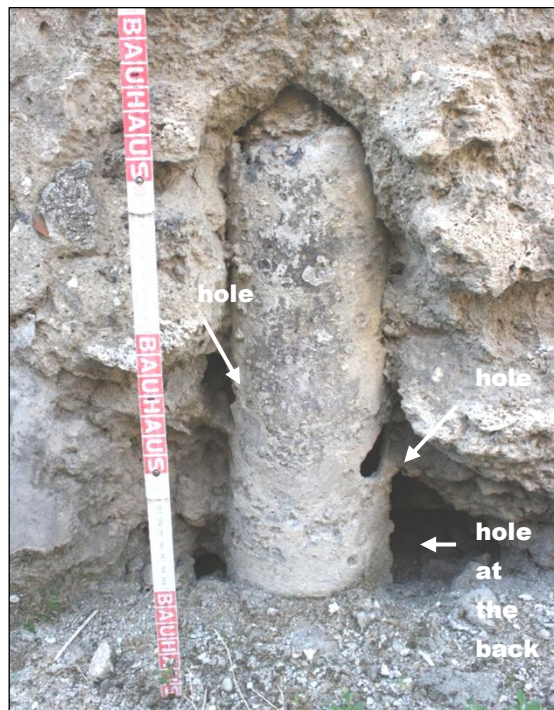


Figure 43B. A close-up of the lowermost *fistula* with socket holes of secondary pipes. Photo: author, 2011.

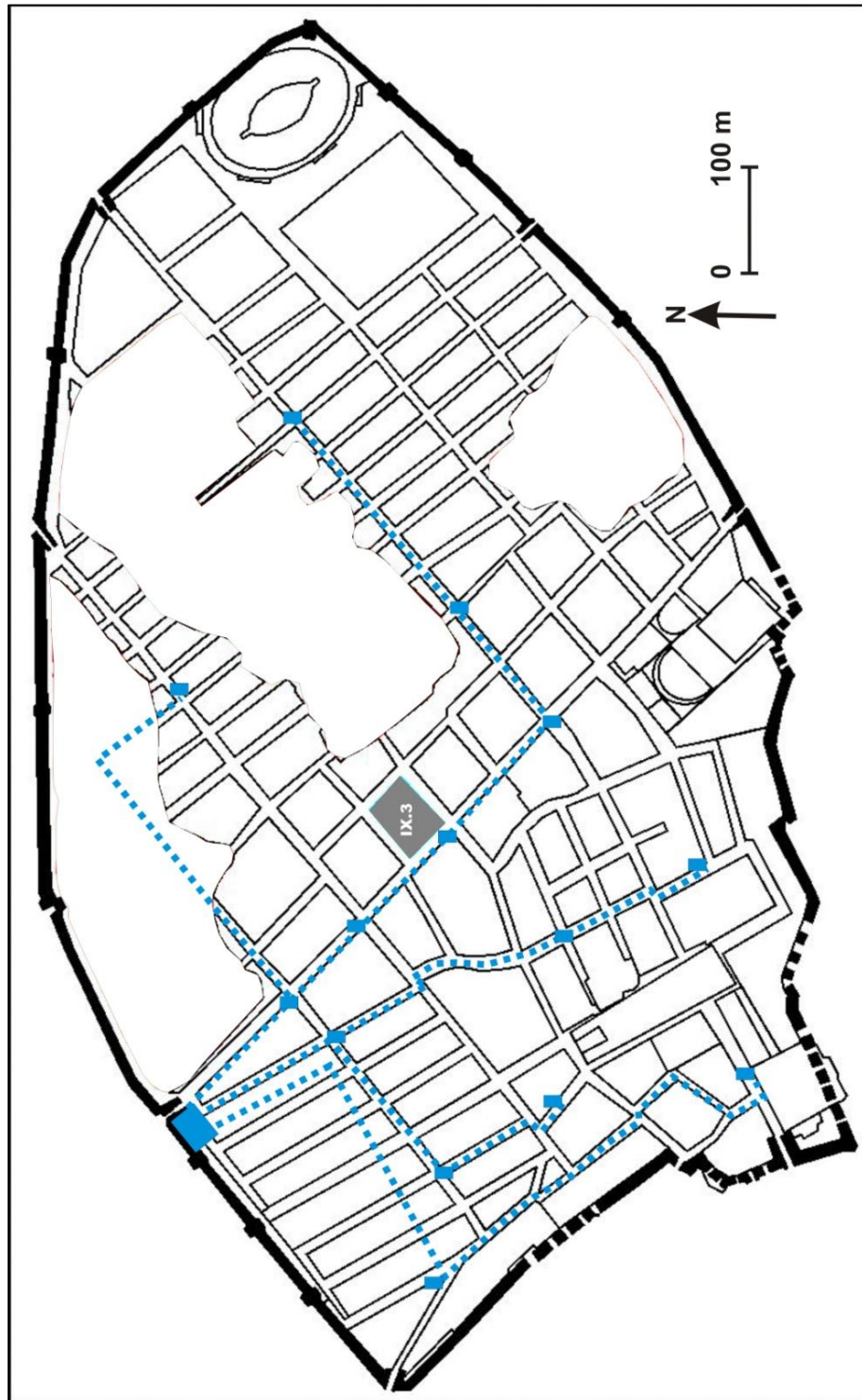


Figure 44. Mains water supply in Pompeii. From the *castellum aquae* (large rectangle) three mains lines (broken lines) departed, distributing water to the various parts of the town through 14 water towers (small rectangles). For the names of the streets, see fig.1. [After Wiggers 1996: 29, fig. 1. Only the known towers are marked, hypothetical (as presented by Wiggers) are omitted.]



Figure 45A. A lead pipe enters Room 17 in Unit IX.3.5/24 below the threshold and climbs up the stairs. Photo: T. Tuukkanen/*EPUH*, 2003.



Figure 45B. The pipe runs in a groove made to the S edge of Rooms 20 and 21, and then turns to the garden (Room 18). Photo: T. Tuukkanen/*EPUH*, 2004.



Figure 46A. There is a lead spout in the S wall of Room 122 (Unit IX.3.19-20), from which water sprang to a now-gone vessel set on top of a podium. Photo: author, 2008.



Figure 46B. From the vessel water flowed to a shallow gutter from which it was evacuated by a pipe running towards Unit IX.3.17. Photo: author, 2008.



Figure 47A. A water distribution box in Unit IX.3.18. Photo: J. Andrews, 2006.



Figure 47B. The pipe in Unit IX.3.18 comes in through the front doorway and runs towards the rear. Photo: J. Andrews, 2006.

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Figure 48. The distribution of public fountains in Pompeii. *Insula* IX.3 is marked in grey, a 50 m radius around the closest fountains in blue. Note that the E corner of *insula* IX.6 remains to be excavated. If it contained a fountain, it would be the closest source of public water to Unit IX.3.19-20. Nevertheless, the unit would still fall outside its 50 m radius. (Eschebach 1979: 38, fig. 8.)

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Figure 49a. *Casseruola*. Inv. no. 4928. H. 9.9 cm, l. 28.3 cm, rim diam. 14.7 cm (Allison 2006: cat. no. 658, plate 47.2).

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Figure 49b. *Forma di pasticceria*. Inv. no. 5607. L. 23.8 cm, w. 16.8 cm (Allison 2006: cat. no. 1830, plate 112.11).

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Figure 49c. *Patera*. Inv. no. 4262. H. 5 cm, l. 30.5 cm, rim diam. 17.2 cm (Allison 2006: cat. no. 128, plate 7.3).

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Figure 49d. *Conca*. MANN inv. no. 111121-2, length 7-8 cm, width 6 cm (*Catalogue Storie*: 277, IV.98-9).



Figure 50. The distribution of *casseruole*, *conce*, *forme di pasticceria* and *paterae* in insula IX.3. Finds without precise information regarding their find spot (or the available information is ambiguous) are marked without black outlines. Finds which have been found above 2 m and hence may derive from upper floor are marked with an accent mark. Brackets indicate alternative find locations, as given by Falkener, to those in PAH. Artefacts which may have derived from several alternative units are marked outside these units. Unit borders are shown in mid-grey, hypothetical property borders are highlighted in black.

◎ <i>conca</i>	■ bronze
◐ <i>casseruola</i>	
◑ <i>patera</i>	
▽ <i>forma di pasticceria</i>	

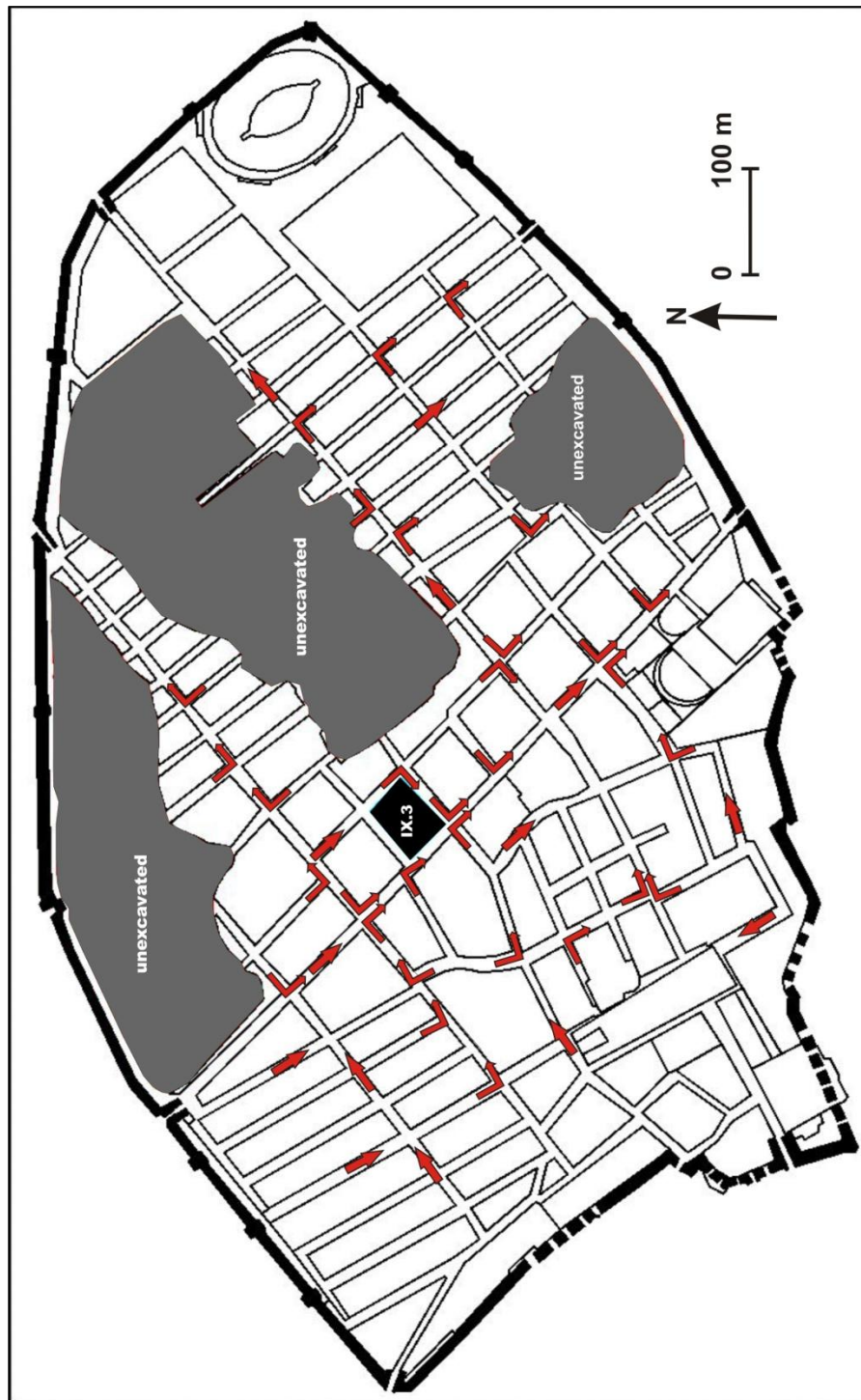


Figure 51. Pompeii's street drainage system (after Koga 1992: 61, fig. 4). For the names of the streets, see fig.1.



Figure 52. Drains and toilets in *insula* IX.3. Structures out of use in AD 79 are marked in broken lines. Unit borders are shown in mid-grey, hypothetical property borders are highlighted in black.

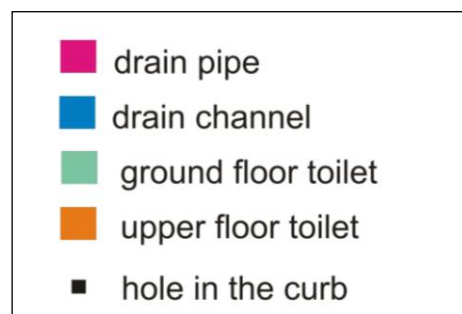




Figure 53A. A drain from Unit IX.3.10-12 runs across the E pavement of the Via Stabiana. Photo: T. Tuukkanen/*EPUH*, 2010.



Figure 53B. The curb at the entrance to Unit IX.3.13 is pierced by two holes. The hole on the right is connected to the channel deriving from Room 70 (see fig. 14). Photo: T. Tuukkanen/*EPUH*, 2010.



Figure 54A. The curb at the entrance to Unit IX.3.5/24 is pierced by two holes. Photo: author, 2008.



Figure 54B. The cover of a channel running N from Room 41 through Room 34 in Unit IX.3.5/24 had been exposed by AD 79. Photo: T. Tukkanen/*EPUH*, 2005.



Figure 55A. The toilet occupying the SE corner of Room 138 in Unit IX.3.25 had a tile floor and masonry supports for the seat. Photo: M. Mustonen/*EPUH*, 2006.

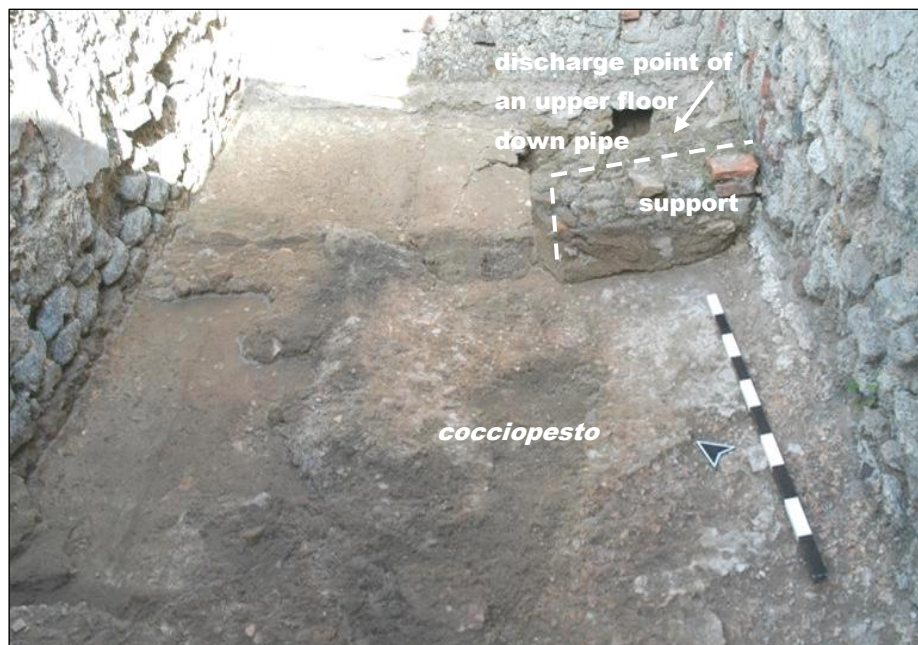


Figure 55B. The toilet in Room 23 of Unit IX.3.5/24 had a *cocciopesto* floor and a masonry support for the seat. Photo: T. Tuukkanen/*EPUH*, 2004.



Figure 56A. The toilet in Room 13 of Unit IX.3.5/24 contained a tile floor and three masonry podia, placed wide apart, suggesting that the seats they held fitted more than one person. Photo: T. Tuukkanen/*EPUH*, 2004.

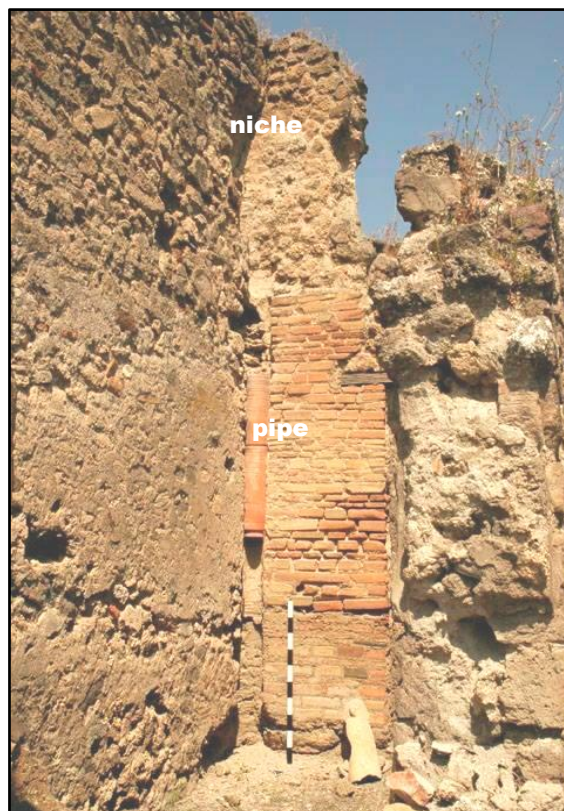


Figure 56B. An upper floor niche toilet at the NW corner of Room 101 (Unit IX.3.17). Photo: M. Mustonen/*EPUH*, 2006.

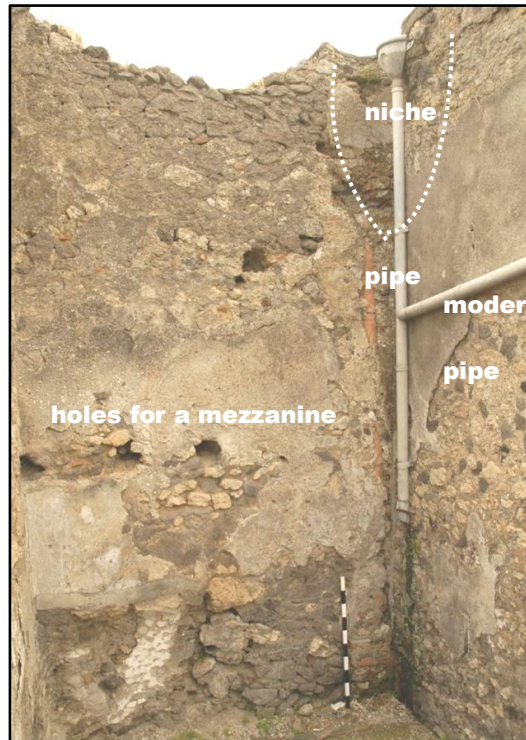


Figure 57A. An upper floor niche toilet at the SE corner of Room 38 (Units IX.3.3 and 4). Photo: M. Mustonen/*EPUH*, 2006.



Figure 57B. The downpipe in the W wall of Room 93 contains thick calcareous incrustation. Photo: author, 2010.



Figure 58. The W end of the northern alley is blocked with travertine ashlars. The ashlars on the right had a vaulted chamber underneath. Photo: M. Mustonen/*EPUH*, 2006.



Figure 59. The approximate distribution of different wall construction types in *insula IX.3*.

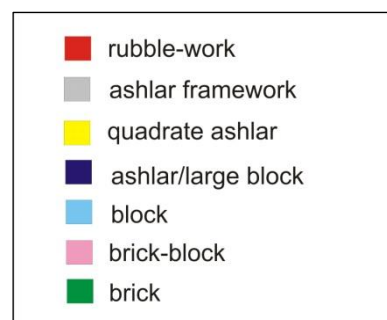




Figure 60. Pits discovered during the *EPUH* excavations. Those containing material dating mainly to the post 1st century BC era are in blue and those containing material dating largely to the pre-1st century BC era are in red.

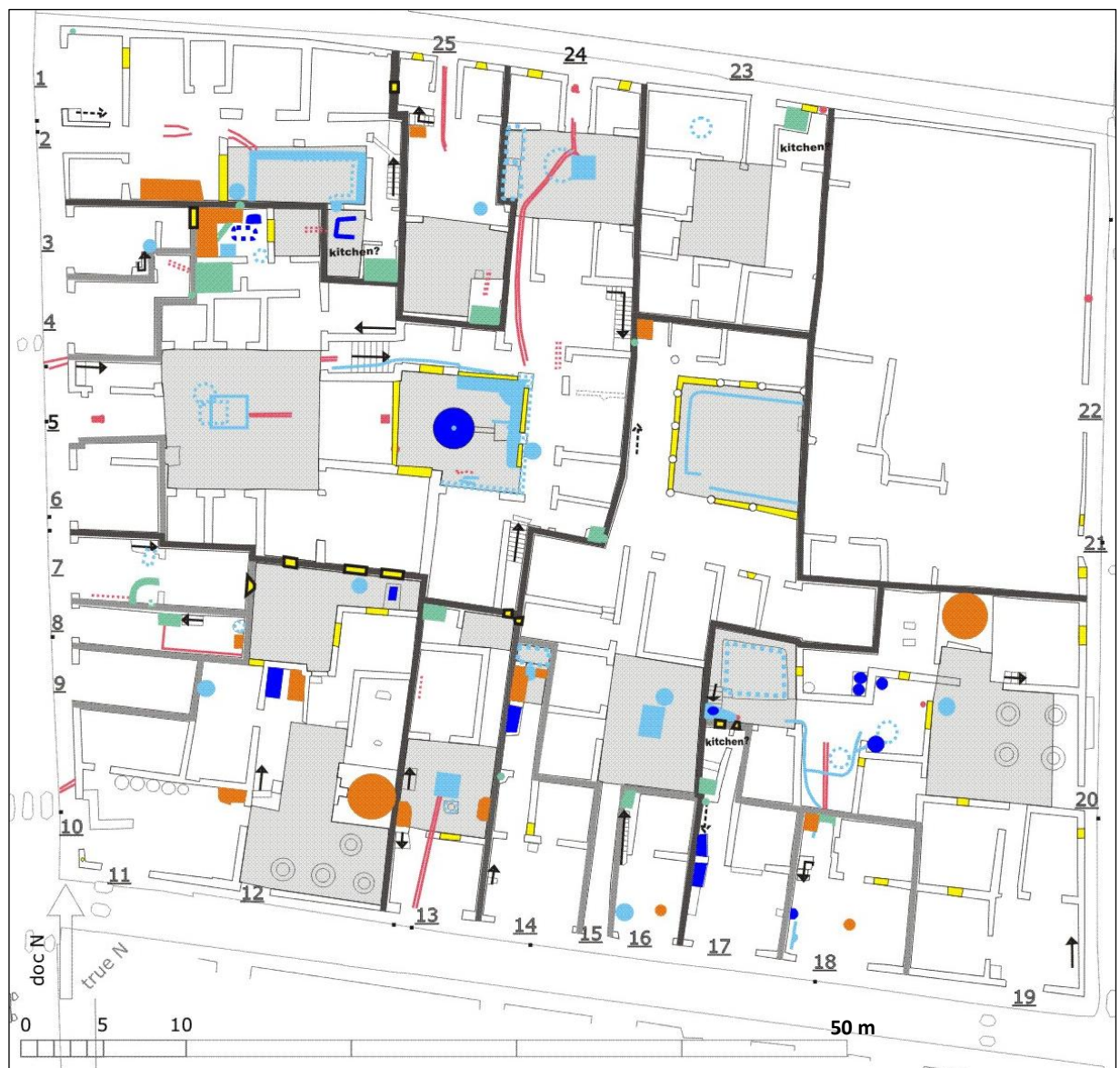


Figure 61. Water, fire and sewage structures, windows and spaces open to the sky in *insula IX.3*. Structures out of use in AD 79 are marked with a broken line. Windows between neighbouring units are highlighted with thick black borders. Possible kitchens are also indicated. Unit borders are marked in mid-grey, hypothetical property borders are highlighted in black.

■	fire structure
■	fully/partly unroofed
■	ground floor window
■	water consuming structure
■	water conducting/conserving/ collecting structure
■	drain
■	latrine



Figure 62. Shared structures and utilities between units in *insula* IX.3. All windows, blocked doorways, upper floors (in light grey), drainage channels, toilet facilities and water supply mechanisms that did or most likely did cross unit borders are mapped. Unit borders are marked in mid-grey and they reflect the situation on the first floor level. The hypothetical division of properties is indicated in black.

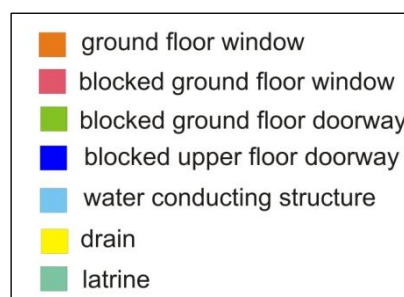
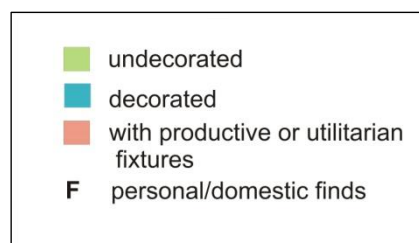




Figure 63. In AD 79 *insula* IX.3 consisted of nine to twelve properties. It remains uncertain whether Units IX.3.7 and 8 were independent or owned in common with Units IX.3.9 and 10-12, and whether Unit IX.3.14 belonged to the ownership of Unit IX.3.15. Property boundaries are marked in black, unit border in mid-grey and uncertain property boundaries are indicated with a broken line.



Figure 64. The distribution of undecorated (green) and decorated (blue) rooms in *insula IX.3*. The rooms that contain productive or utilitarian fixtures are toned towards red, and the rooms which contained personal and/or domestic finds are marked with the letter F. Finds which cannot be associated with a specific location within a unit are omitted. Note that rooms are coloured in full even if their decoration was restricted to a certain part only.



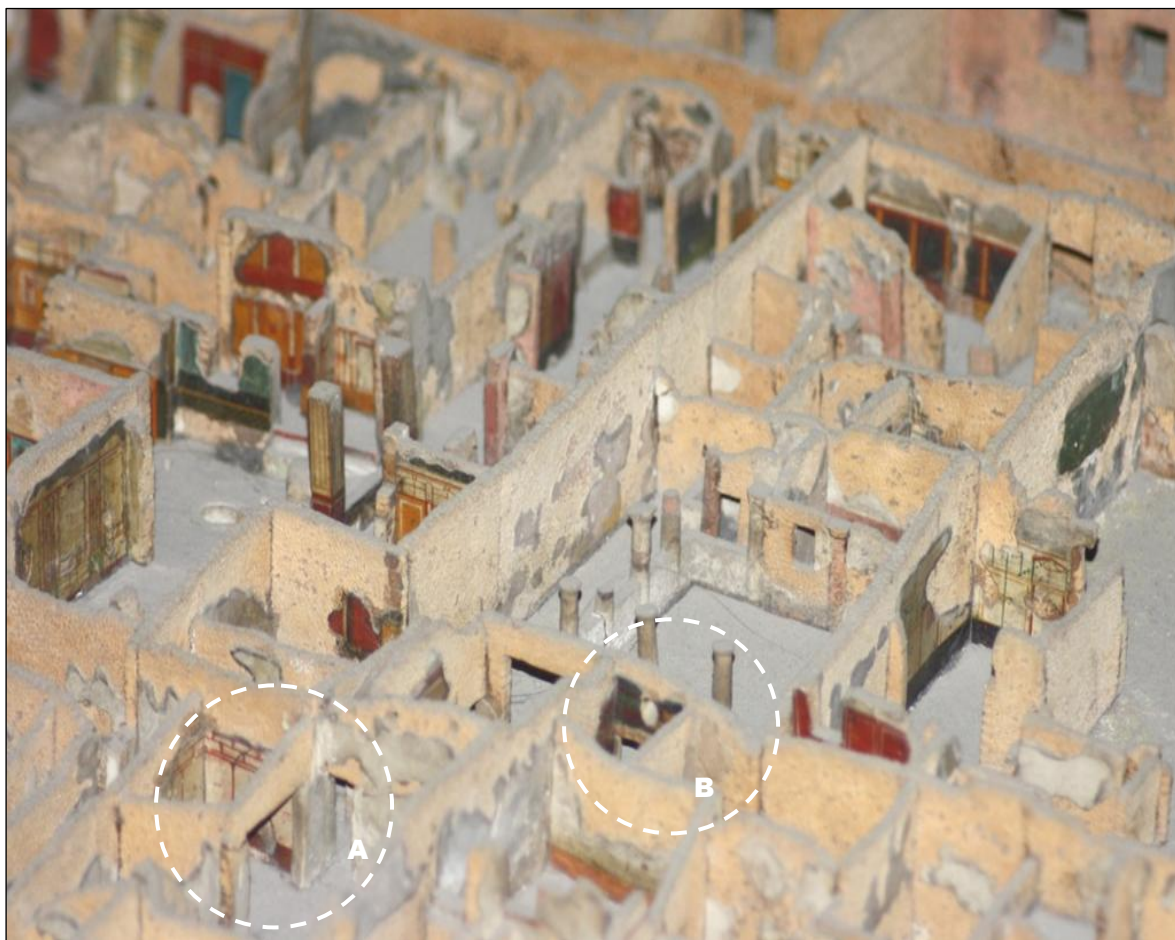


Figure 65. Unit IX.3.15 can be seen to contain both the first category (letter A, Room 84) and the second category (letter B, Room 94) decoration, as shown in the *MANN* model. Photo: author, 2008.

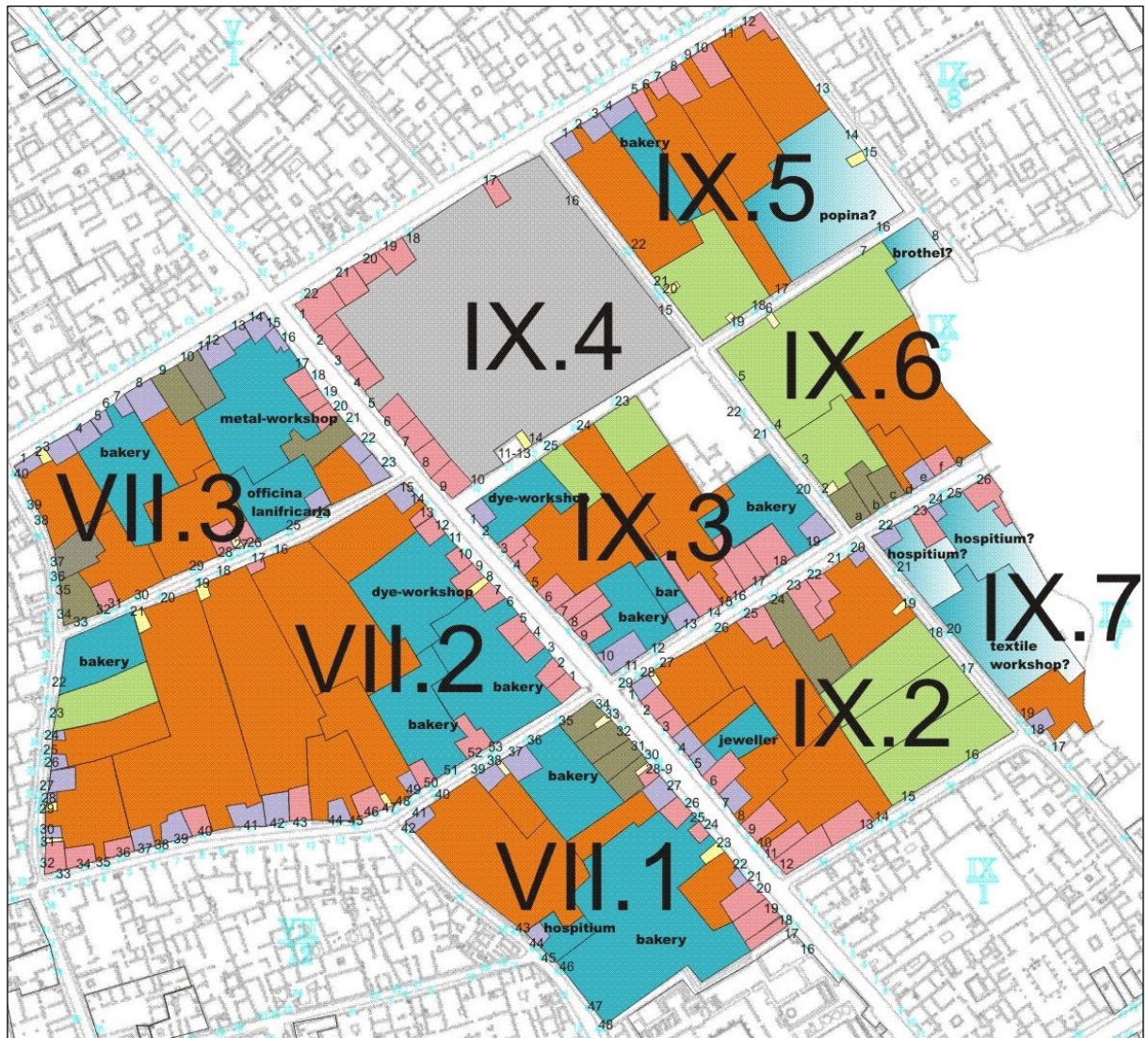


Figure 67. *Insula IX.3* in its neighbourhood (after Eschebach *et al.* 1993). (Work)shops attached to larger units through doorways at the back are in violet, those that are (currently) unconnected to larger units but ‘carved out’ of them are in pink, and those that are not clearly bound to other units and may therefore be independent are in brown. Domestic units connected to (work)shops either directly or indirectly are in orange, those that cannot be associated with commercial activities are in green and those that accommodated commercial functions in-house are in turquoise. The evidence for some of the identifications is vague and this is indicated by toning the unit colour towards white. The Central Baths is marked in grey and stairs to *cenacula* are in light yellow. Base map: Dobbins and Foss 2007, map 3/SAP.

■	(work)shop ‘carved out’
■	(work)shop connected
■	independent (work)shop
■	housing unit
■	housing unit associated with (work)shops
■	‘commercialized’ housing unit
■	Central Baths
■	cenacula

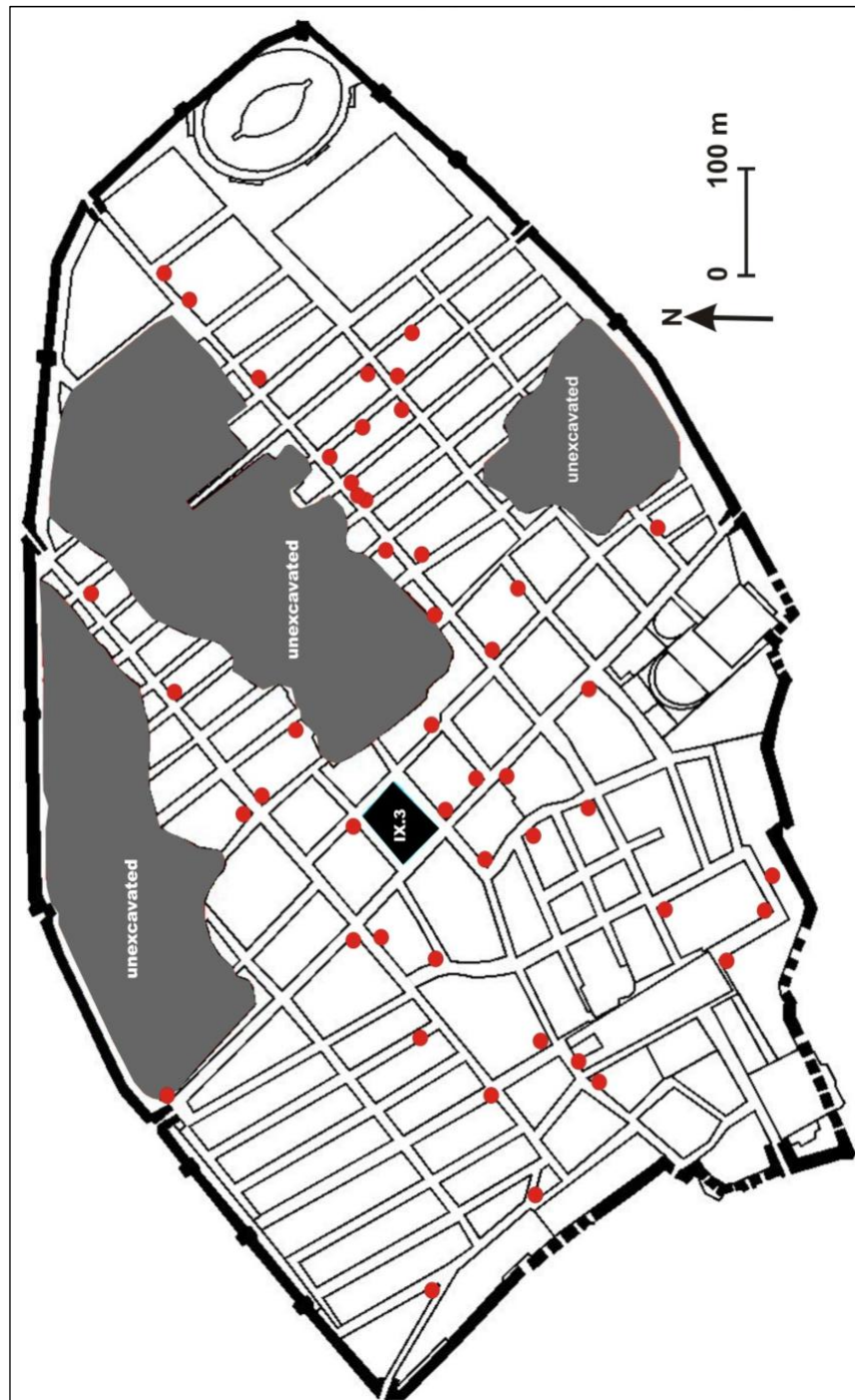


Figure 68. Street shrines (red dots) of Pompeii. After Van Andringa 2000: 49, fig. b; Anniboletti 2010.

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Figure 69. *Insula* VI.1 (after Jones and Robinson 2007: 390, fig. 25.1). Unit borders are highlighted.

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Figure 70. *Insula* I.10 (after Ling 1997: 346, fig. 24). Unit borders are highlighted.

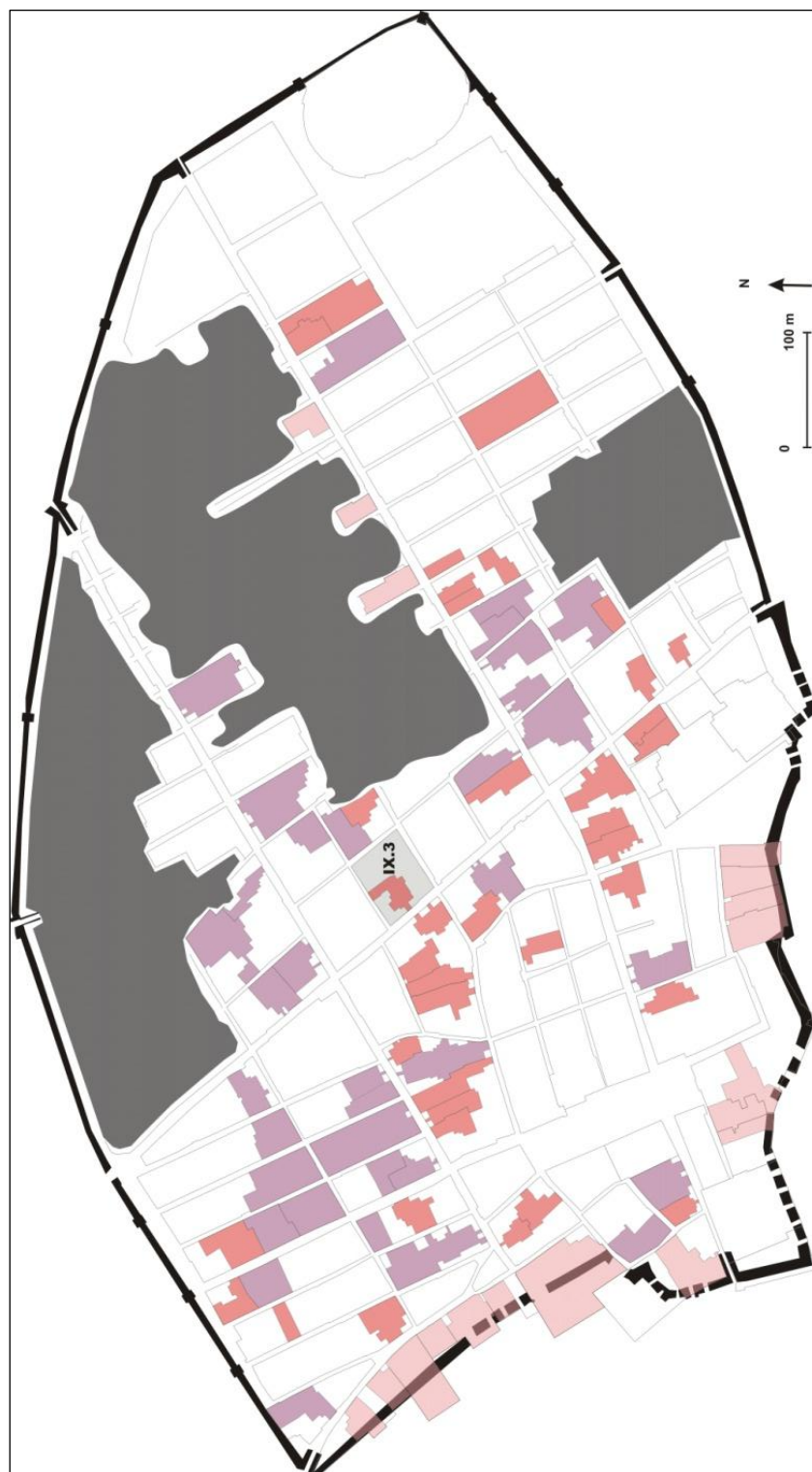


Figure 71. The distribution of units 500 m² in size (the size of the House of Marcus Lucretius) or larger in Pompeii. In terms of clarity, units within a single city block are differently coloured. Map: E.-M. Viitanen/*EPUH*, after Schoonhoven 2006: appendix 1.