Rethinking Ostia : a spatial enquiry into the urban society of Rome's imperial port-town

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6 – The Spatial Organisation of Insula IV ii

Since Ostia's insulae came to light in the large-scale excavations of the late 1930s/early 1940s, they have attracted widespread research interest, reaching from architectural studies to attempts claiming ideological continuity between Roman imperial and Italian fascist architecture.[1] Current approaches examine the infra-structural capacity of *insulae* and value their ability to adapt to dynamic urban processes;[2] again other studies view particular insulae as short-lived material manifestations of architectural dreams, which were quickly modified in response to demographic and economic change.[3] Earlier work concentrated on typological and cultural-historical explanations,[4] whereas more recent approaches follow advances made in Pompeian studies, partially integrating concepts of today's urban planning and urban geography into archaeological research.[5] With reference to Ostia, these studies incorporate aspects of the insulae's spatial organisation into research deploying a wider social focus relating to status and ownership.[6]

Space Syntax's methods of spatial analysis add a new perspective to the current *insula* discussion. Space Syntax techniques not only provide evidence for the intricate organisation of space within the Insula, but also investigate the active role of spatial characteristics, considering the ways in which built and non-built spaces themselves function to pattern the social interaction taking place within them.[7] According to Space Syntax theory the spatial structure of built space embodies knowledge of social relations,[8] from this follows that a better understanding of the Insula's spatial organisation will allow us to gain insights into the Insula as a lived space. Insula IV ii serves as a case study,[9] while various other Ostian *insulae* equally warrant a detailed spatial analysis. Still, Insula IV ii is of particular interest since a number of spatial features, consisting of interlinked courtyards, render Insula IV ii a very appealing dataset for spatial analysis.

The basic principles of Space Syntax have been introduced in chapter three above, while general trends and problems in the archaeological application of Space Syntax methodology have been thoroughly discussed elsewhere.[10] Perhaps it is still useful to emphasise once more that Space Syntax has helped to redress a conceptual imbalance in archaeological research wherein highly dynamic space of past urban landscapes, settlements, and individual houses has remained predominantly studied from fractured, isolated and static positions.[11] Space Syntax offers techniques of analysis which form the bases for interpretations that are configurational, dynamic and experiential; it allows us to pursue methods for the reconstruction of past movement patterns, and through this enables us to 'retrodict' past interaction spaces. Nevertheless, this study still shares with more conventional archaeology the difficulty of having to draw on essentially inanimate resources, in our case the built and non-built spaces of Ostia's Insula IV ii, and to breathe life into them by systematic analysis and interpretation.[12]

1. See for examples Bauers (1999: 26) structural assessment of Ostia's Insula dell'Ercole Bambino and Insula del Soffitto Dipinto, II vi 3-6; see Kockel (2001: 66-72) on Calza's influence on architectural interpretation.
2. Scaliarini-Corlàita (1995); Steuernagel (2001).
3. Gering (2002).
4. Packer (1971); Pasini (1978).
5. Laurence (2007).
6. DeLaine (1999; 2004) and Gering (2001).
7. Cf. Anderson (2005).
8. Hillier and Hanson (1984:184-185).
9. The first results of a Space Syntax study of Insula IV ii have been published previously; see (Stöger 2007).
10. Thaler (2005: 324-326); Cutting (2003).
11. See Stöger (2010: 57).
12. Cf. Hanson (1998: 49).

The spatial analysis builds on the archaeological study presented in the previous chapter. From the assessment of the standing remains this study established that all existing buildings within the Insula were in use during the early 3rd century AD, forming a simultaneously existing spatial association, which is a crucial pre-requisite for spatial analysis. Selecting the early 3rd century as a time-slice for analysis places the spatial discussion within two major urban developments: on the one hand Ostia's 2nd century AD urban expansion which is widely understood as a 'boom-town' phenomenon,[13] and on the other hand Ostia's changing role during the early 3rd century which saw a transformation from a commercial hub with an outward focus to a 'consumer' city responding to the needs of an increasingly local clientele.[14]

In the following chapter the Insula's spatial structure will be analysed. The first part examines the Insula's spatial characteristics which are readily apparent; this is followed by a discussion of the physical form and the size of the built and non-built spaces and how they relate to land-use categories. Next, the Insula's topological and visual patterns are analysed and their spatial relations calculated, using Space Syntax methods; this forms the main part of the analytical approach to the Insula's spatial structure. Finally, a summary of the Insula's spatial organisation will be presented together with an evaluation of how it relates to the Human Use of Space and how the Insula functioned as an urban neighbourhood.

6.1 THE INSULA'S SPATIAL PROPERTIES

The Insula covers a total area of 7321 m^2 comprising 14 buildings, characterised by diverse land-uses. It represents a built environment that potentially accommodated commercial (shops and storage), industrial (workshops and small scale production), recreational (baths and inns), sacred (*mithraeum*), and communal (open courtyards, entrance passages and portico) as well as habitation space (ground floor and upstairs dwellings) within its confines.[15] These spaces were not only linked functionally, but also through a spatial relationship provided by shared common spaces. A number of the Insula's spatial characteristics are readily apparent. Commercial space was predominantly located along the street fronts, maximising the potential for interaction at the Insula's interface with public space. Industrial space in contrast seems to have reached deeper into the Insula, with the narrow end of the plot along the street front. The southernmost corner of the Insula, the area least accessible, was dedicated to the Mitreo degli Animali. Several buildings provided dwelling units at ground floor level, while the majority of habitation spaces were located on the upper floors. Five staircases are linked directly to the public domain of the street space;[16] they offer access to the upstairs areas independent of the inner space of the Insula. Seven additional staircases are present in buildings inside the Insula, linking those upstairs areas closer to the Insula's internal communication (Fig. 6.1).[17]

The Insula's interaction with Ostia's public space, the street network, appears in part similar to today's gated communities; the latter are defined as a residential social system that closes itself off from other areas through a form of social or physical mechanism.[18]

13. See chapter two above, especially the section on Heinzelmann's 'boomtown' model (2002, 2005).
14. Gering (2004: 303) considers the Severan period as the starting point for fundamental structural changes in Ostia's urban landscape; see Pavolini (2002) for an examination of Ostia's urban economy during the Severan period; see also Boersma (1985) for a diachronic approach to Ostia's Insula V ii, which provided the case study for Pavolini's socio-economic assessment.
15. See section 6.2 below for information on the land-use categories identified within the Insula.
16. The staircase leading to the upper floors of the Caupona del Pavone, IV ii 06 can only be reached from within the building, and was thus not accessible from the public street space.
17. The indicated upper floors are only hypothetical; some buildings could have had three to four upper storeys, which is very likely for the Caseggiato dell'Ercole. The stairs in the baths' service area presumably gave access to service related space, but not to dwelling units on the upper floors.
18. See Bert Lott (2004) on Augustan neighbourhoods; see also his section on neighbourhoods in modern contexts, including gated communities (2004: 18-23).

Fig. 6.1 – Stairs to upper floors accessible from the outside and from within the Insula

Although a comparison to today's gated communities might not be fully adequate, still, today's communities offer us some insights into everyday life within confined spaces,[19] and therefore might allow us to look at the Insula with more critical eyes. In their modern form, gated communities are a type of residential community containing strictly-controlled entrances for pedestrians and vehicles, and are often characterized by a closed perimeter of walls and fences. A closed perimeter would only apply to the Insula's eastern and southern boundaries, which are indeed confined by walls: a 162 m long closed boundary is found along the eastern and southern confines, closing-off the Insula against the Campo della Magna Mater and the unexcavated space to the south. In contrast, 212 m of open boundaries mark the Insula's western and northern sides fronting onto the Via della Caupona and the *cardo maximus* (Fig. 6.2). The sides which open to the streets were as open as possible, with every room located along the street front having individual door openings directly connected to public space. At the same time, every single entrance to the street could be closed off; travertine thresholds are still present *in situ*. In addition, the portico along the *cardo maximus* could be screened off, adding a further boundary, if discreet, between the Insula and the public domain. It seems that the Insula could close itself off from the street network, and could still keep internal movement in flow. Today's gated communities often consist of small residential streets and include various shared amenities. For smaller communities this may be only a park or other common areas. For larger communities, it may be possible for residents to stay within the complex for most of their daily activities. As far as the Insula is concerned, the diversity of land-use which seems present might have allowed the residents to remain within the boundary for most day-to-day activities, while the internal courtyards might have functioned as common areas.

19. See Low (2001: 45-58) for a critical view on today's gated communities in the context of urban fear and how gated communities are producing new forms of exclusion and residential segregation.

6.2 PHYSICAL FORM AND SIZE OF SPACE

As a starting point, the most straightforward approach to space is the physical size and the form of spaces. This seems already quite informative: the Insula's total area measures 7321 m^2, of which open space covers 1544 m^2. Comparing the Insula's covered (built-up) spaces to its open spaces leads to a ratio of 5:1, which means that about 21 % of the total area remained open (see Fig. 6.2).[20] This accounts for only 6 % less than the area dedicated to commercial space (*tabernae* and storage), which covers about 27.7 % (Fig. 6.3).[21] It is equally interesting to note

20. Included are passage corridors which are strictly speaking not open space, but they are movement space providing access to the open spaces.

21. The land-use categories listed here are suggestions based on the observed spatial properties of the buildings (Fig. 6.3); in addition, functional categories, such as industrial and religious land-use have been suggested only as far as the archaeological evidence permits. The following tentative land-use categories have been made: commercial (shops and

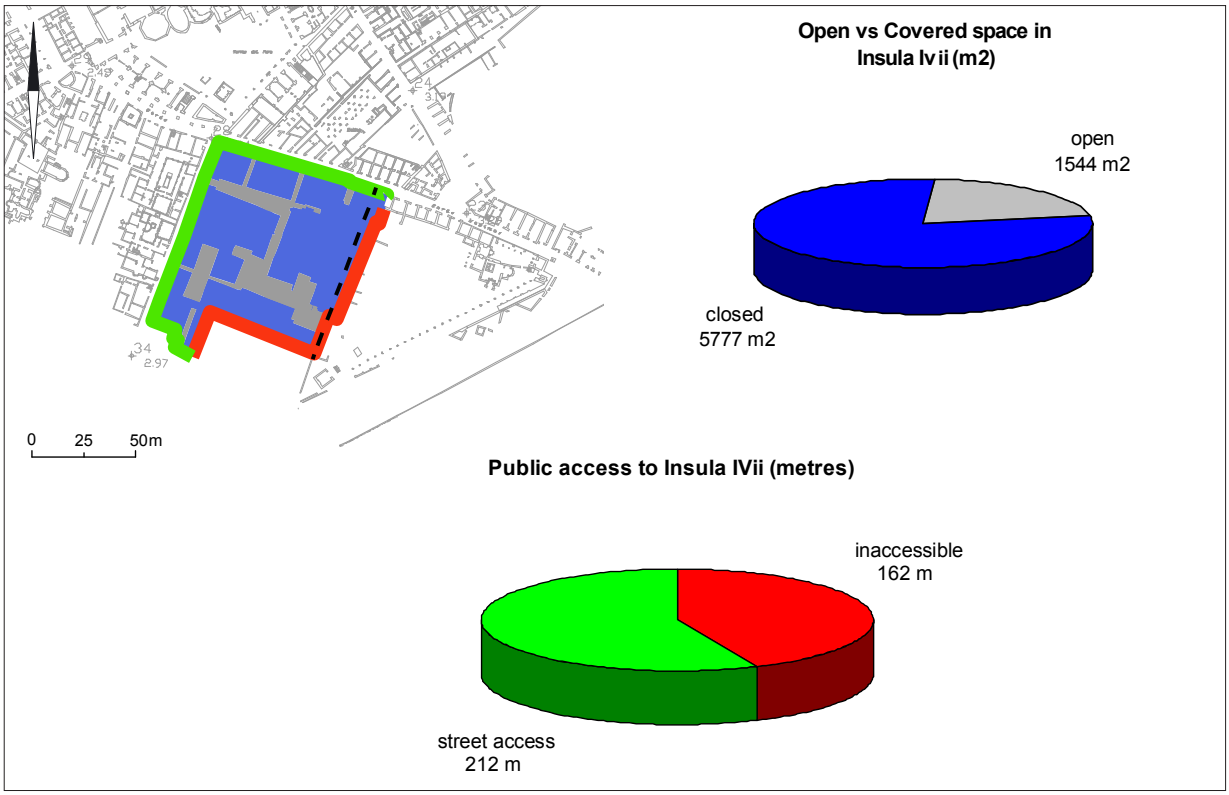

Fig. 6.2 – Insula IV ii, public access to the Insula along the *cardo maximus* and the Via della Caupona

that the Insula dedicated about 26 % to recreational land-use (baths and bars/inns). This means that space earmarked for 'pleasure' seems to have ranked as highly as the Insula's commercial spaces. Habitation space is difficult to assess since it was mostly located on upper floors no longer extant (see Fig. 6.1 above), therefore this calcuation takes only ground floor spaces into account. Nevertheless from the generous distribution of open spaces and the diversity of land-use some assumptions relating to the 'quality of life' within the Insula can be made. Today's urban theory postulates that next to a lively mix of land-use and building types, also particular qualities of the physical city are needed to provide for a good neighbourhood.[22]

These physical qualities include doors directly entering the streets, small 'walkable' blocks and the opportunity for pedestrians to turn corners frequently; all of these features are present within Insula IV ii. Above all, the spaciousness of the open areas points not only to a generous attitude towards space, but it also indicates that numerous activities could have taken place simultaneously within the courtyards. One of these activities was fetching water. Fountain houses are found in two courtyards (see Fig. 5.36 above);[23] located in very central spots the fountains also had a social role to play, and apart from their obvious function they presumably served as meeting points for those who lived in the Insula.

storage), recreational (baths and inns), industrial (factories and industrial spaces) religious (*mithraeum*), habitation (domestic dwellings at ground floor and upstairs) as well as interaction (open spaces and passages between buildings).

22. See Jacobs (1961).

23. Fig. 5.36 above shows the fountain house in the courtyard of the Caseggiato dell'Ercole.

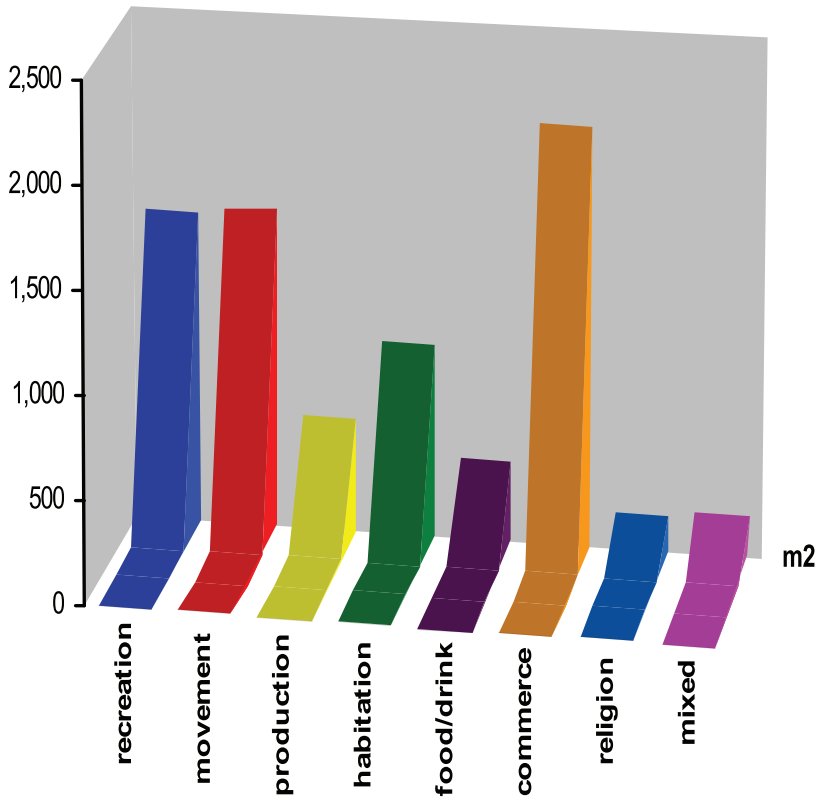

Fig. 6.3 – Insula IV ii, ground floor space dedicated to different categories of land-use (in m²)

6.3 SPATIAL ASSESSMENT AND SPACE SYNTAX

Descriptive qualitative methods seem often beneficial, and even more so when spatial characteristics give the impression of being self-evident. However, description sometimes substitutes for a real understanding of the spatial laws of interaction and movement, and often fails to comprehend the significance of generative spaces for social activities.[24] By exploring different ways of quantitative spatial assessment, a better understanding of the Insula's spatial organisation and its significance for social activities can be achieved. Hillier and Hanson, the pioneers of Space Syntax, stress the importance of the term 'exploring'. They argue that it is impossible to establish in advance which spatial dimensions are likely to be the most relevant,[25] and thus it becomes the researcher's task to discover which representation and which measure captures the logic of a particular system.[26] This study fully embraces the idea of exploring space through various analytical approaches, however at the same time it aims to ensure an approach as comprehensive as possible. Therefore, the three-way-approach suggested by Hanson is followed throughout this study.[27] According to Hanson space should be examined through its three principal aspects: its convex or two-dimensional organisation (convex spaces like rooms and buildings), its axial or one-dimensional structure (lines of movement) and its visual fields. Accordingly, the appropriate Space Syntax tools have been applied: convex or Access

24. Cf. Clark (2007: 85).

25. Hillier and Hanson (1984: 122-123).
26. Cf. Thaler (2005: 326).
27. See Hanson (1998: 38).

Analysis , axial analysis and visibility graph analysis or Isovists. Hanson's approach assures that each type of analysis relates to an aspect of how inhabitants and visitors experienced and used space. In the following sections Insula IV ii will be investigated through its convex spaces (buildings), its axial structure (movement related spaces including passages and courtyards) and its visual fields (inter-visibility between spaces). These different ways of looking at the Insula can be seen as layers of spatial structuring which co-exist within the Insula's plan, each layer with its own contribution to the Insula's accessibility and spatial lucidity.[28]

6.4 THE INSULA'S CONVEX OR TWO-DIMENSIONAL ORGANISATION (ACCESS ANALYSIS)

Access Analysis is a promising starting point when applying Space Syntax to past built environments. Access Analysis applied to the individual buildings provides insights into their spatial organisation, while the examination of the complete Insula allows a better understanding of the relationship between buildings and Insula, drawing on the 'local-global' interplay which is at the heart of Space Syntax analysis. Two interrogative tools have been used for the analysis of the Insula's built space: access diagrams and spatial values. The diagrams are a translation of a two-dimensional site plan into a graph. The graphs visualise the topological connections between the rooms (convex spaces) and enable us to calculate spatial values. A quantitative assessment requires a calculation of numerical indicators for all spaces, while a qualitative description of the access diagram, the so-called J-graph,[29] would allow already a deeper understanding of the Insula's spatial organisation. The spatial values applied here comprise two independent Space Syntax measures: control values and real relative asymmetry (RRA). These respond to the 'local' and 'global' spatial properties of the Insula and its buildings, and therefore indicate how central or peripheral a given space is within the total movement flow within the Insula. Access data offer indications about those spaces potentially destined for interaction, and those which were more likely to have provided privacy, both 'Insula-wide' and at the level of the individual buildings. All buildings have been analysed twice, individually and collectively as part of the Insula's total configuration.[30]

The analytical strategy chosen is to examine the spatial configuration of the individual ground plans to identify the potential 'hotspots' for interaction within every building.[31] The analysis is based on the structural assessment presented above, and takes into account reconstructions and alterations made until and during the early third century AD.[32] Tables 6.3 to 6.14 list the most significant spatial values for each individual building, while the complete access data can be found in Appendix 1. The selected values either indicate spaces characterised by very high or very low levels of global or local interaction potential; furthermore, those spaces where we find most consistency or discrepancy between local and global interaction potential have also been identified. They

28. See Hillier (2007: 116).
29. J-graph stands for justified graph; in this case justified with respect to the outside space, alternatively any other selected space within the configuration can be placed at the root of the graph and the graph can be justified accordingly.
30. Access Analysis has been performed using Jass analysis software, designed and developed by the KTH Stockholm. Concerning the graph figures presented in this study, as far as possible there is consistency in the system of numbering: the room numbers found on the individual house plans in chapter 5 are followed, but at times nodes are added. Regarding the Insula's total configuration the sequence of numbering cannot follow the individual house, and instead reflects only the sequence of numbers placed in the course of the analysis. There is therefore no consistency between the node numbers of the individual buildings/space and the node numbers attributed to the spaces within the total configuration.
31. There is no doubt that a larger sample size consisting of a greater number of individual houses or even a number of different *insulae* would strengthen the analysis. Nevertheless the fourteen buildings which compose the Insula constitute a coherent sample since they form a distinct spatial unit. Due to the strong variation between the types of buildings, a comparison across the buildings through specific rooms or distinct spaces is difficult to achieve. See Hanson (1998: 38) for studies which apply Space Syntax to large data sets of similar buildings, searching for invariants in the spatial pattern and investigating the relation of labels (function or use) to spaces.
32. The structural analysis presented in Chapter Five forms the basis for the interpretation by which the early 3rd century Insula is defined.

are of particular interest, since they indicate specific rooms by which buildings are often functionally defined.[33] All values have been calculated in relation to the exterior space (the public street space), or the Insula's internal courtyards for those buildings which have no direct access to the public carrier space, but can be reached by passing through the internal spaces. To facilitate comparison between buildings, all integration values for the buildings' 'exterior' (street space or internal courtyards) are shown in a separate table (Table 6.1); these values offer information on how the individual buildings potentially related to visitors from the 'outside'.

As Table 6.1 shows, only five of the Insula's buildings have direct access to public street space. Surprisingly, those buildings prominently located along the *cardo maximus*, the Terme del Faro as well as the Caseggiato dell'Ercole, attribute only moderate levels of interaction potential (presence availability) to the outside carrier space. Quite the opposite can be observed for the buildings located along the Via della Caupona: the Caupona del Pavone as well as Buildings 7 and 8 (IV ii 7-8) dedicate high levels of interaction potential to the outside street space.

Exterior Outside 0.0 Inside 0.0	No	Depth	RRA	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Terme del Faro IV ii 1	26 Ext.	0.0	1.308	Moderate	Moderate	1.667	Moderate
dell'Ercole IV ii 2-4	36 Ext.	0.0	0.429	Moderate	Moderate	2.979	Moderate
Industrial bld. IV ii 4	9 Int.	0.0	0.909	High	High	1.833	High
Building 5 IV ii 5	15 Int.	0.0	1.869	Low	Moderate	1.500	Low/mod
Caup./Pavone IV ii 6	21 Ext.	0.0	0.672	High	High	2.000	High
Building 7 IV ii 7	24 Ext.	0.0	0.561	High	High	5.833	High
Building 8 IV ii 8	14 Ext.	0.0	0.288	High	High	5.167	High
Buildings 9&13 IV ii 9 and 13	17 Int.	0.0	1.415	Moderate	Moderate	1.583	Moderate
Building 10 IV ii 10	7 Int.	0.0	0.725	High	High	1.833	High
Mitreo degli animali, IV ii 11	5 Int.	0.0	2.841	Low	Low	0.500	Low
Building 12 IV ii 12	7 Int.	0.0	0.725	High	High	2.583	High
Building 14 IV ii 14	5 Int.	0.0	0.287	High	High	3.333	High

Table 6.1 – Integration values and control values for the buildings' exterior spaces

33. Cf. DeLaine (2004: 158).

By making their street fronts highly permeable, these configurations seem vastly affected by the way the buildings relate to the exterior. Conversely, the spatial configuration of the baths seems principally organised so as to structure interior relations, giving only moderate interaction potential to its link with the outside street space. Then again, the Caseggiato dell'Ercole displays a different spatial organisation altogether, its portico and entrance passages providing various choices to form different circulation paths; these allow for a differentiated spatial experience for visitors and residents.

Along the *cardo maximus* the Caseggiato's portico acts like a filter between the building and public space, while along the Via della Caupona, the Caseggiato's spaces are directly linked to the street space. In total however, the Caseggiato's configuration attributes only moderate levels of interaction potential to exterior space, while its portico 35 and its interior courtyard 34 have not only high integration values but also high control values and hence hold key positions within the Caseggiato's spatial organisation.

The buildings located inside the Insula have their points of access linked to the Insula's inner courtyards or passages connecting them. Buildings IV ii 4, 10, 12 and 14 dedicate high integration values to the courtyards from where they can be reached. Quite the opposite can be observed for the Mitreo degli Animali: it attributes low integration values to its outside space. The *mithraeum*'s spatial organisation seems structured so as to focus on its interior spatial relations, while outside space remains marginal. This demonstrates that the *mithraeum* not only occupies a segregated location within the Insula, but also its spatial structure communicates a closed attitude vis-à-vis its primary access space. Neither the *mithraeum*'s location nor its spatial organisation seems to encourage chance encounter. This suggests that the *mithraeum* depended on knowledgeable or invited visitors. Then again Buildings IV ii 5 and 9/13 show only moderate to low integration values for their access spaces. Both buildings seem to be more of a residential or partially residential nature and hence moderate or even low interaction potential for their 'outside' spaces seem in line with their possible function. A further step of analysis would take the public outside carrier into account and calculate the topological distance (in depth-steps) from the buildings located inside the Insula to the outside street space. However, since the courtyards and passages have been included in the Access Analysis of the complete Insula, this part of the analysis will not be repeated for the individual buildings. The significance of the internal courtyards and passages for movement flows within the Insula is easily recognisable. When viewing the courtyards from the perspective of the individual buildings the former seem to act as 'commons' or in-between areas created by collective use of space; nevertheless it remains difficult to establish whether they were shared property or they belonged to certain buildings and passage was negotiated between the residents.

Mean integration values (MRRA)

Mean integration values (MRRA) allow a first hand impression of the buildings' spatial structure and facilitate comparison between the buildings (see Table 6.2). MRRA values express how shallow or deep on average the spaces in the buildings are from one another.[34] This helps to formulate ideas about the use of space and the potential function of buildings. Within the group of buildings the Caseggiato dell'Ercole has the lowest mean integration value (0.562), which means that the building is well integrated.[35] This is not at all surprising since its shallow ringy structure affords greater integration between all its spaces. In contrast, the Mitreo degli animali shows the highest MRRA (1.893), its unilinear sequence of rooms being the most segregated configuration within the Insula. The MRRA values for the other buildings range between 0.7 and 1.5; Buildings 7 and 8 are also fairly shallow and hence configurationally more integrated than other buildings with deeper tree-like structures like the Terme del Faro (MRRA 1.195) or Building 5 (MRRA 1.218). The mean integration values allow only a rough understanding of the buildings, whereas specific spatial characteristics will be discussed in the

34. Hanson (1998: 26).
35. Integration values (RRA, real relative asymmetry) range from 0 to infinite, they average around 1.0; low values (moving towards 0) indicate higher integration, while high values (above 1) refer to low integration.

following section when the buildings are examined individually, based on their access graphs and the spatial values calculated for every building.

Insula IV ii	MRRA	Depth-steps
Terme del Faro, IV ii 1	1.195	8.0
Caseggiato dell'Ercole, IV ii 2-3	0.562	4.0
Building 4 (Indus. building), IV ii 4	1.218	3.0
Building 5, IV ii 5	1.218	6.0
Caupona del Pavone, IV ii 6	1.110	4.0
Building 7, IV ii 7	0.725	4.0
Building 8, IV ii 8	0.837	2.0
Buildings 9 and 13, IV ii 9 and 13	1.333	7.0
Building 10, IV ii 10	1.523	3.0
Mitreo degli Animali, IV ii 11	1.893	4.0
Building 12, IV ii 12	1.015	3.0
Building 14, IV ii 14	0.907	2.0

Table 6.2 – Mean integration values for all buildings within Insula IV ii

6.4.1 Syntactical assessment of buildings IV ii 1 to 14

The Terme del Faro, IV ii 1

The baths have a deep tree-like structure (Fig. 6.4), centred on two nodal spaces: the large *frigidarium* 9 and the service corridor 17. These spaces have typically high integration potential since all movement passes through them; at the same time they are controlling spaces protecting the links to all rooms surrounding them (Table 6.3). The baths seem to be divided into functional zones along these nodal points: the *frigidarium* 9 forms the hub for the section which was open to visitors, while the service corridor 17 links up with all spaces that are needed to operate the baths. In addition, the service corridor 17 connects with the Insula's interior southern courtyard, where we find a secondary entrance to the baths. This suggests that access to the baths was structured, allowing personnel to enter the baths from the rear entrance, while visitors would use the front entrance on the *cardo*. The actual bathing block with the heated rooms can only be reached by passing through a series of rooms. Interestingly enough, the heated rooms are the only spaces within the baths which allowed for movement to circulate: Rooms 1, 3 and 5 are linked in a loop, whereby the flow of movement seems to almost reflect the thermal flows. The heated pool areas, 22 and 23, in the baths' caldarium 3 emerge as the most segregated spaces within the configuration, located eight depth-steps away from the outside space; they provided cut-off areas affording high levels of privacy. All in all, the baths' spatial organisation seems very lucid and functional, and it can be assumed that it was instrumental in sustaining the baths' long period of use.

Terme del Faro, IV ii 1	No.	Depth	RRA (M R R A 1.195)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Frigidarium	9	3.0	0.569	High	High	3.083	High
Passage	17	4.0	0.803	High	High	4.133	High
Heated pool	22	8.0	1.864	Low	Low	0.250	Low
Heated pool	23	8.0	1.864	Low	Low	0.250	Low
Outside space	26	0.0	1.308	Moderate	Moderate	1.667	Moderate

Table 6.3 - Spatial values: Terme del Faro, IV ii 1

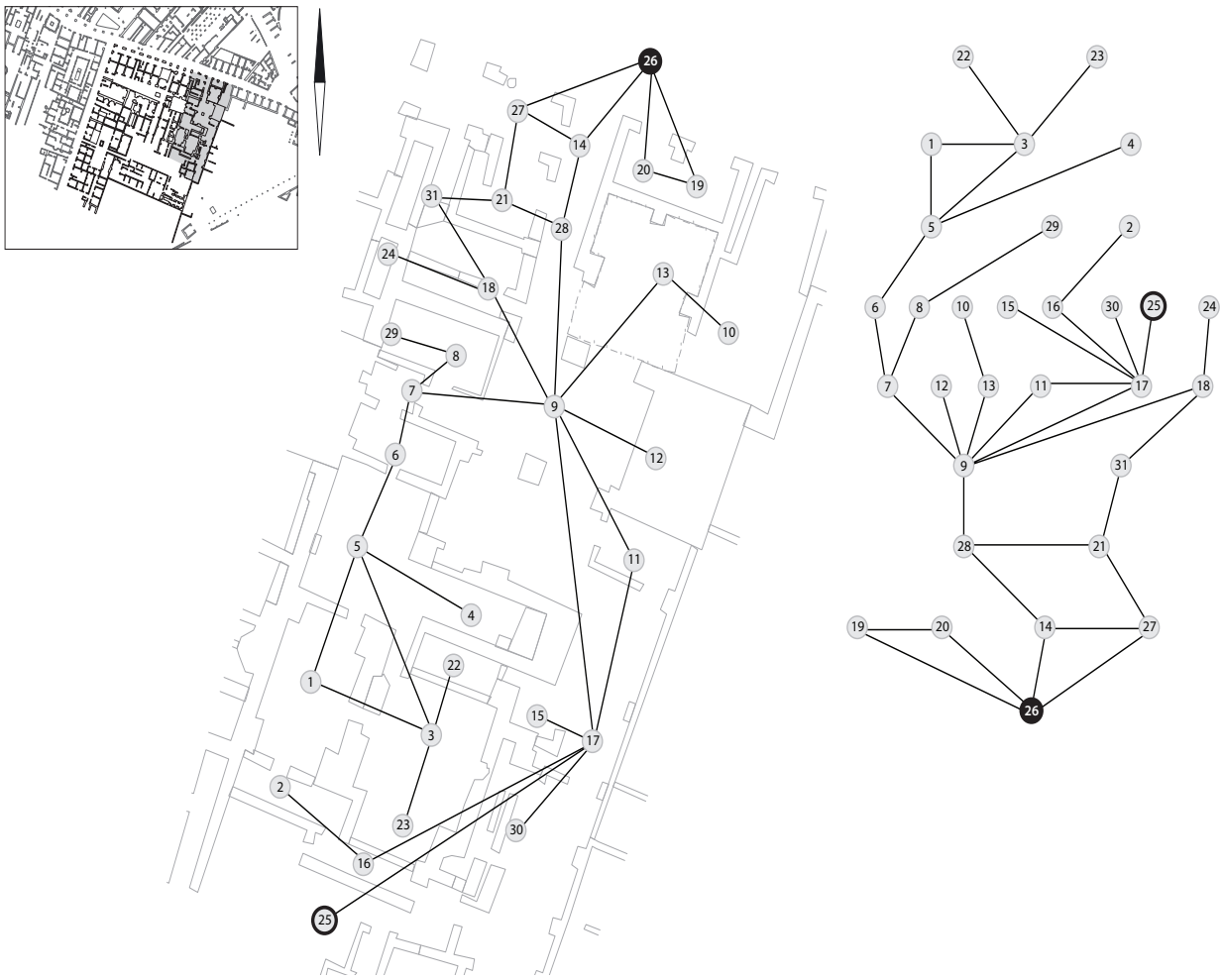

Fig. 6.4 – Terme del Faro, IV ii 1, topological graph (26 = outside carrier); J-graph Terme del Faro, IV ii 1 (root 26 = outside carrier)

Caseggiato and Portico dell'Ercole, IV ii 2-3

The access graph of the dell'Ercole building complex displays a shallow bush-like structure (Fig. 6.5), with two major spatial pivots on which the Caseggiato's movement and interaction hinges: the portico 35 and the interior courtyard 34. Both areas have high levels of integration and control (see Table 6.4). The most striking features of the building complex are the circulation choices provided by its spatial configuration. Apart from the passage corridors which directly link the portico to the courtyard, there are five *tabernae* with back-rooms (5 and 6, 8 and 9, 10 and 11, 12 and 13 as well as 14 and 15), connecting the portico with the courtyard through the *tabernae*. The Caseggiato's easternmost passage 7 connects with its eastern neighbour, the Terme del Faro, and offers a circulation loop passing through the baths to the exterior. Two further passage corridors, 1 and 20, tie the portico to the courtyard and at the same time offer a variety of circulation options. These passages allow access to the inner part of the Insula independent of the *tabernae*, while a combination of routes passing through *tabernae* and passages offer a great variety of paths in and out of the Caseggiato, including the outside street space on the Via della Caupona, as well as routes passing through the industrial western wing of the Caseggiato, consisting of rooms 30, 32, 39 and 40. Passage 1 is of particular interest since it leads not only to the Caseggiato's courtyard but continues deeper into the Insula leading to the southern courtyard. In its late state the Caseggiato had turned into a structure that was partially directed outwards towards the *cardo*, and partially inwards towards the courtyard and the inner Insula, while the connection between the outside and the inside had been largely disrupted. Since the route choices had been reduced, the intensity of movement and interaction within the Insula must have been negatively affected. The Caseggiato's westernmost section does not offer connections through the *tabernae*; unsurprisingly within this section we find the most segregated *taberna* 25, typically with very low control and integration values; *taberna* 25 is closely followed by *taberna* 23 on the portico side. Both *tabernae* are only connected to one neighbour, while all other *tabernae* within the Caseggiato have two or more connections to neighbouring spaces. Having just one single entrance could have positive and negative effects on the *tabernae*'s accessibility to customers. If the *tabernae* are too open they will lose their capacity to 'capture' customers and instead might be reduced to serving as through passage for visitors to reach locations within the Insula. On the other hand if they are too closed they will not promote accidental encounters since their spatial structure will not draw in passing visitors. In this context it is worthwhile to recall some interesting results from the structural assessment discussed in section 5.2.2 above. We could see a transformation in the development of the Caseggiato from a pronounced open to a fairly closed structure: the westernmost part, which is configurationally less integrated than the eastern part was built later than the eastern part, while the eastern part was gradually transformed into a more segregated structure by walling-up door openings between *tabernae* and between *tabernae* and passage corridors.

Caseggiato dell'Ercole, IV ii 2-3	No.	Depth	RRA (M R R A 0.562)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Portico	35	1.0	0.267	High	High	8.093	High
Courtyard	34	2.0	0.286	High	High	7.199	High
Stairs	2	2.0	0.609	Moderate	Low	0.063	Mod/low
Taberna Comm.	25	3.0	0.629	Moderate	Low	0.067	Mod/low
Mixed (baths)	04	3.0	0.838	Low	mod	1.000	Low/mod
"porter house'	30	1.0	0.619	Low	Low	0.726	Low
Outside Space	36	0.0	0.429	Moderate	Moderate	2.979	Moderate

Table 6.4 - Spatial values: Caseggiato and Portico dell'Ercole, IV ii 2-3

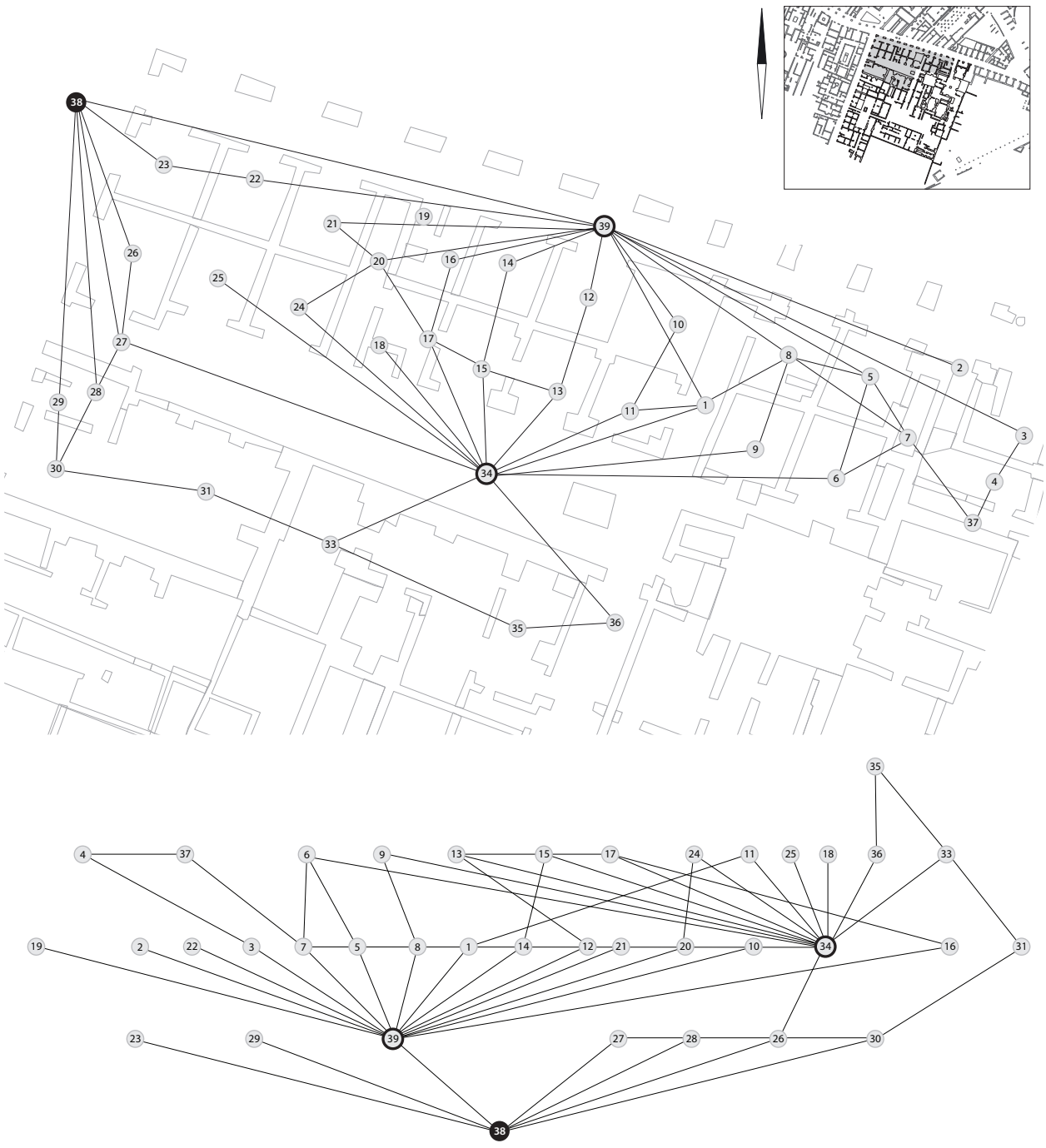

Fig. 6.5 - Caseggiato and Portico dell'Ercole, IV ii 2-3, topological graph (38 = outside carrier), J-graph (root 38 = outside carrier space)

Building IV ii 4

The configuration of Building 4 is characterised by a sequence of spaces joining each other without clear architectural definition of their boundaries (Fig. 6.6). Room 3 stands out since its walls are clearly defined. Entrance space 6 and passage 9 emerge as the most integrated spaces, and as the spaces with the highest levels of control (see Table 6.5). Quite differently, although predictable, the stairs which can only be accessed from outside the building (passage 9), and the under stairs 7, only reachable from the entrance area 6, are the most segregated spaces. They are not at all integrated into the movement flow which joins all other rooms within the premises. All other spaces are linked up into a sequential order which suggests a circular movement loop by entering the building from the passage 9 and leaving it from room 1, or the other way round; optionally the movement flow could be extended to include the western wing of the Caseggiato dell'Ercole and then leaving or entering the buildings through the access points on the Via della Caupona. The interlinked spaces of Building IV ii 4 lend themselves very well to different working zones required when a production or a work process consists of a sequence of defined steps, each occupying a certain area according to the spatial and temporal order of the work process. Based on the assessment of its spatial structure, industrial use seems strongly suggested for Building IV ii 4, which is also supported by archaeological evidence such as the basalt pavements, and the water basins placed in room 2, however at a late period of use.

Fig. 6.6 - Building IV ii 4 (industrial building)
topological graph and J-graph (root 10 = courtyard)

Building, IV ii 4 (Industrial building)	No.	Depth	RRA (M R R A 1.218)	Global interaction potential	Local int. Potential	Control Values	Potential presence availability
Entrance space	6	2.0	0.909	High	High	1.833	High
Under stairs	7	2.0	1.636	Low	Low	0.333	Low
Stairs	8	1.0	1.636	Low	Low	0.333	Low
Passage (internal Insula)	9	1.0	0.909	High	High	1.833	High

Table 6.5 – Spatial values: Building IV ii 4 (industrial building)

Caseggiato IV ii 5

The building's spatial structure comes out as a rather deep tree-like graph of 6 step-depths (Figs. 6.7 and 6.8)[36]; the graph reveals that the building is divided into syntactically distinct parts: a unilinear sequence of spaces, 10, 9 and 3, leading from the entrance 10 to the nodal areas formed by corridor 5 and courtyard 4, which constitute the second and deeper part of the building. Corridor 5 and courtyard 4 emerge as the spaces with the highest consistency between integration and control values (Table 6.6); hence they represent the areas around which the building's movement and integration patterns are structured. It is only in the deeper part of the building that route choices are offered and circulation rings allow movement to flow between the rooms. Although Building 5 is difficult to assess since its original entrance arrangement was altered when the baths' water cistern was placed there, still some observations can be offered. It is noteworthy that regardless of the rearrangement of the entrance the building's core structure, centred on corridor 5 and courtyard 4, remained fully intact and only became a few steps more remote from the outside when the building's main access point was transferred to room 10 next to staircase 14. The unilinear path which leads into the building suggests that there were no specific arrangements made where visitors and residents could interface. Only when room 3 was reached, were some movement options offered, allowing the residents to withdraw into the building by using different paths than the visitors. The apparent absence of a formal reception area for visitors, together with the sequential ordering of rooms 1, 2 and 3, point to a so-called *medianum* apartment which is typically found in Ostia.[37] In general these types of apartment did not place much emphasis on reception areas since their residents seemed to expect few casual visitors. This could also explain why there was little importance placed on the building's main entrance, and why it was possible to transfer it so nonchalantly to the side. Another interesting aspect of the building is found in rooms 6 and 7. Their spatial values reveal moderate to low integration and control potential, suggesting higher levels of privacy for these rooms. In earlier literature these rooms have been referred to as bedrooms (*cubicula*).[38] This was suggested since they have no source of light and air other than through corridor 5 and courtyard 4 to which room 6 was connected through a window. The spatial values seem to support the proposed function. These rooms are found in a part of the building relatively cut off from the main interaction spaces; however, their segregated location is a result of the blocking of the former main entrance. It therefore seems that these rooms became only suitable as *cubicula* after the Severan reconstruction, when the water cistern was constructed; whereas before the reconstruction this portion of the building had been located right next to the main entrance. Once the entrance was blocked these rooms received higher levels of privacy. However, we cannot relate the wall decorations which remained preserved in rooms 6 and 7 to a change in function since they seem to pre-date the Severan reconstruction and therefore were already present before the rooms became more segregated.[39]

Caseggiato IV ii 5	No.	Depth	RRA (M R R A 1.218)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Courtyard	4	5.0	0.807	High	High	3.667	High
Corridor	5	4.0	0.595	High	High	3.867	High
Cubiculum	6	5.0	1.147	Moderate	Low	0.167	Mod/low
Cubiculum	7	5.0	1.147	Moderate	Low	0.167	Mod/low
Stairs	14	1.0	2.422	Low	Low	0.500	Low
Passage Insula	15	0.0	1.869	Low	Moderate	1.500	Low/mod

Table 6.6 – Spatial values: Caseggiato IV ii 5

36. Fig. 6.8 shows the building after rooms 12 and 13 have been added and a possible connection to Building IV ii 12 was made.

37. See DeLaine (2004) for a syntactical assessment of a group of Ostia's *medianum* apartments; Caseggiato IV ii 5 is not included in the data set.

38. See Liedke (1995) and Falzone (2003).

39. See Liedke on dating the wall paintings in rooms 6 and 7 (1995:15).

Fig. 6.7 – Caseggiato IV ii 5, topological graph (root 15 = courtyard) and J-graph, (root 15 = courtyard) ; spatial structure before rooms 11 and 12 were inserted into the courtyard (4) and without a conncetion to Building IV ii 12

Fig. 6.8 – Caseggiato IV ii 5, J-graph, (root 15 = courtyard) and topological graph (15 = courtyard, 13 = neighbour Building IV ii 12)

Caupona del Pavone, IV ii 6

The Caupona (hostel) has a bush-like graph-structure, with four spaces, 1, 11, 12 and 17, linked to the outside street space (Fig. 6.9). Corridor 1, which is directly connected to the public carrier, emerges as the most integrated area within the building, revealing both high levels of control and interaction potential (see Table 6.7). Two further nodal points are provided by the corridors 13 and 6; most rooms fan off from the corridors 1, 6 and 13. Interestingly, the Caupona's spatial organisation does not promote any circulation of movement. Except for the corridors, most rooms are dead-end spaces with a single point of access and exit. This type of spatial structure has the advantage that it allows different activities to occur simultaneously, using different rooms or sections of the building without interfering with each other. However, the disadvantage is that such a configuration tends to promote fragmentation, and consequently rooms and whole parts can easily become disconnected from the rest of the building. Through its 'dead-end' or terminal structure the Caupona seems to have deprived its residents and visitors of different route choices: those who used the building would have to enter it in a certain way and leave it in the same way. The route would be determined at the point of entrance into the building; whereas the presence of interconnected spaces would have allowed the same configuration to be modulated into a different spatial experience for residents and visitors.

Moreover, route choice would have enabled those who used the building to transfer from one section to another without leaving the building. As the configuration stands, the choice as to which part of the building one wanted to reach had to be made already outside the building.[40] This is quite significant, since through this mechanism the outside space became one of the Caupona's main interaction areas. In fact, the building attributes high levels of interaction and control potential to the outside carrier, the public street space. In contrast, the most segregated areas of the building are rooms 9 and 18. It is quite revealing that room 9 was a later addition to the building; it was attached to room 8 to add a further degree of privacy. The room is rather unique through its high quality of wall paintings. Room 18 instead suggests a more mundane function as it served as the back-room of *taberna* 17 and was only accessible through 17. The Caupona's overtly outward focus has already been highlighted in section 5.2.6 above; the syntactical analysis confirms the observations made, and above all adds new insights about the building's conspicuous 'terminal structure' which seems primarily concerned with drawing people into the building. The exterior interaction space and the building's corridor-based structure seem to have co-operated congenially in supporting the building's function as a *caupona*.

Caupona del Pavone, IV ii 6	No.	Depth	RRA (M R R A 1.110)	Global interaction potential	Local interaction potential	Control Values	Potential Presence availability
Corridor	1	1.0	0.479	High	High	2.833	High
Corridor	13	2.0	0.959	Moderate	High	3.333	Mod/high
Storage room	3	2.0	0.959	Moderate	Low	0.167	Mod/low
Passage to latrine	4	2.0	0.887	Moderate	Low	0.167	Mod/low
Small room	9	4.0	1.558	Low	Low	0.500	Low
Back-room	18	4.0	1.534	Low	Low	0.500	Low
Outside space	21	0.0	0.672	High	High	2.000	High

Table 6.7 - Spatial values: Caupona del Pavone, IV ii 6

40. The only connection between corridor 1 and the northern section is provided by a small door opening right next to the main entrance (see Fig. 5.61 above).

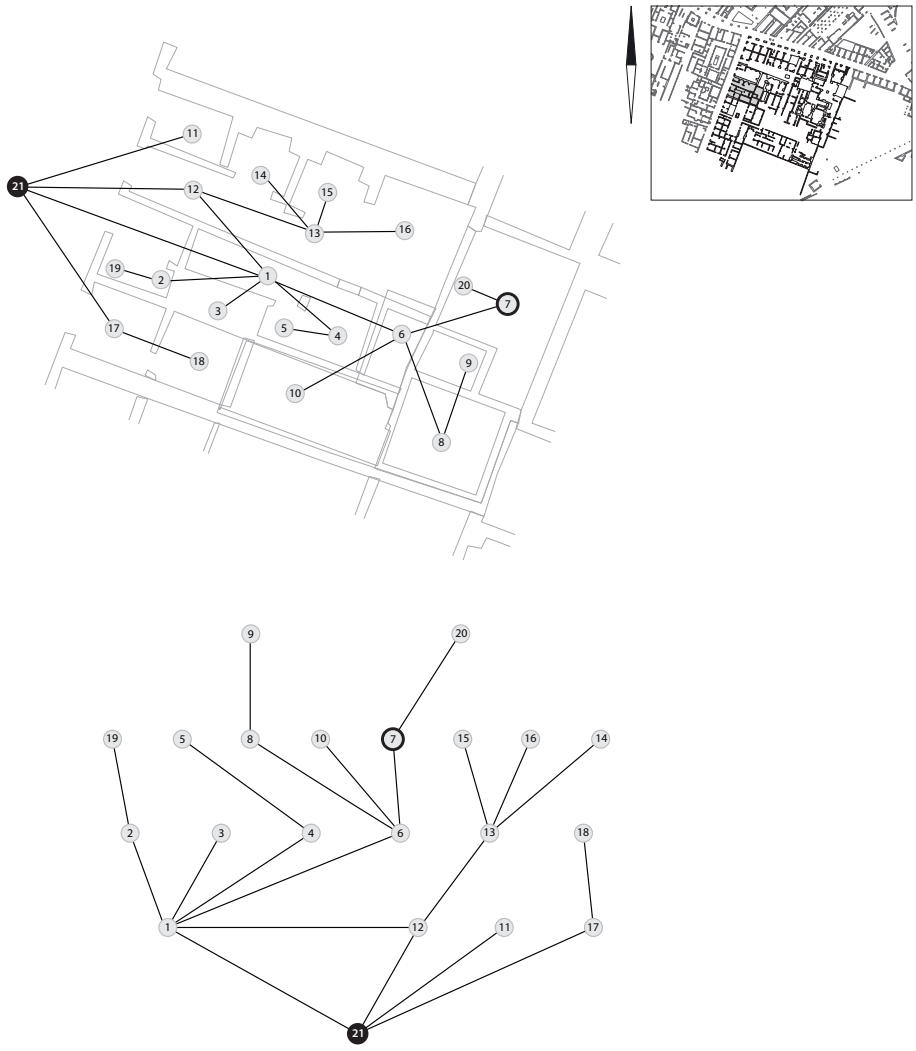

Fig. 6.9 – Caupona del Pavone, IV ii 6, topological graph (21 = outside carrier); J-graph Caupona del Pavone, IV ii 6 (21 = outside carrier)

Caseggiato IV ii 7	No.	Depth	RRA (M R R A 0.725)	Global interaction potential	Local interaction potential	Control Values	Potential Presence availability
Courtyard	1	2.0	0.272	High	High	9.667	High
Corridor	5	3.0	0.646	Moderate	Moderate	1.567	Moderate
Stairs	14	1.0	0.970	Moderate	Low	0.125	Mod/low
Taberna comm.	9	1.0	0.969	Moderate	Low	0.125	Mod/low
Neighbour IVii8	25	4.0	1.055	Moderate	Low	0.333	Mod/low
Neighbour IVii9	26	4.0	1.038	Moderate	Low	0.333	Mod/low
Outside space	24	0.0	0.561	High	High	5.833	High

Table 6.8 – Spatial values: Caseggiato IV ii 7

Caseggiato IV ii 7

Buildings 7 and 8 form an architectural unit; however, the spatial connection between the buildings appears contradictory. To keep the error margins as low as possible, Buildings 7 and 8 have been examined as separate syntactical units, however including one neighbouring space within each configuration (i.e. room 23 of building 7 is space 13 of building 8). Building 7 has a rather shallow, well integrated spatial structure (Fig. 6.10).

The configuration centres on its internal courtyard 1; the latter is the building's most integrated space, and has the highest levels of control potential. Along the Via della Caupona all rooms open directly onto the street, hence the building attributes high levels of integration potential to the public carrier 24 (Table 6.8). Since the configuration is fairly well integrated, there are no spaces which stand out as being either distinctly segregated or more integrated than all other spaces.

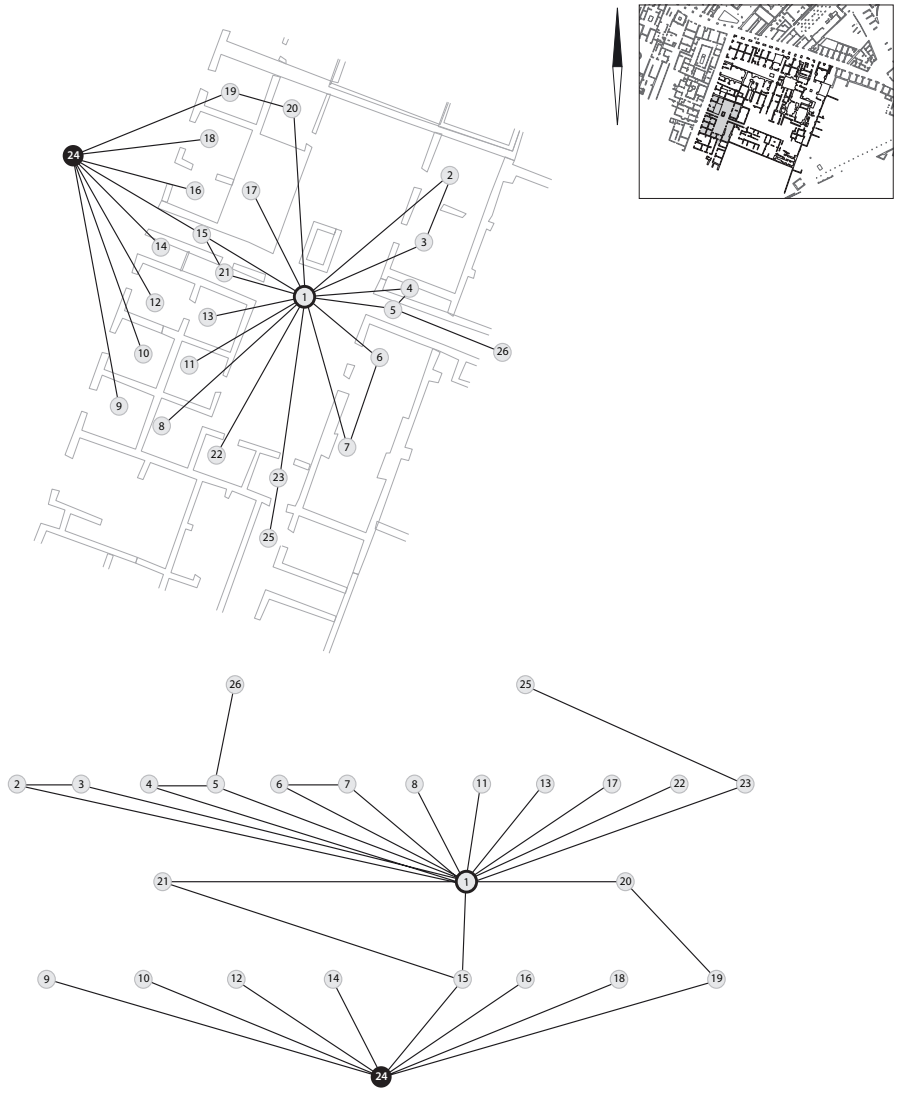

Fig. 6.10 – Caseggiato IV ii 7, topological graph (24 = outside carrier); J-graph (root 24 = outside carrier)

Tabernae 9, 10, 16 and 18 are only open to the street space; predictably, their integration values are relatively low (RRA 0.951 – 0.969), since they are not connected with any other spaces within the structure. Their outward focus makes them most accessible to customers from the street space. Rooms 2 and 3 on the other hand open to the inner courtyard. They are interconnected and hence enable movement to pass between the rooms, and through the courtyard; this allows for a slight differentiation in their use, since the rooms could be closed off from the courtyard and still be interconnected internally. Room 23 plays a specific role within the overall configuration since it connects buildings 7 and 8. Being linked to both buildings, room 23 assumes the role of a controlling space (Control Value 1.067). However, the relationship between Buildings 7 and 8 is not very clear. While a structural connection exists through shared walls, the spatial association between the buildings does not really convince. The buildings are internally connected through a passage which allows informal access between the buildings without passing through exterior space. Interestingly, Building 7 does not seem to promote its link to Building 8, but rather plays it down by hiding the connection behind room 23; from the courtyard side room 23 appears just like any other room lined up along the inner courtyard. The situation is markedly different on the side of Building 8, where corridor 12 leads into room 23, whilst the original door aperture was constricted at a later point (see Fig. 5.76 above).

Building IV ii 8

Building 8 is difficult to assess since it is structurally connected to Building 7, and more importantly, it is not clear whether Building 8 has been completely excavated. It is therefore impossible to determine whether spaces 5, 6, 12 and 11 opened to the street space, or whether they were connected to a courtyard. The spatial values presented here can only be tentative since they are based on the current state of the excavations (Table 6.9). As far as the building can be assessed, the configuration appears shallow and fairly well integrated (Fig. 6.11). Passage 12 and the outside carrier 14 emerge as the most integrated spaces. Rooms 8, 9 and 10 reveal only moderate integration and low levels of control; this could suggest that the rooms were more suitable for habitation than for commercial use. The range of rooms is topologically and metrically as close to Building 7 as it is to the commercial premises of Building 8. The rooms could be reached from Building 7 without passing through outside space, which makes them a suitable apartment for someone who had business premises in Building 7; while they could be also fit the needs of a tenant from Building 8.

Building IV ii 8	No.	Depth	RRA (M R R A 0.837)	Global interaction potential	Local interaction potential	Control Values	Potential Presence availability
Passage	12	1.0	0.384	High	High	4.643	High
Room	8	2.0	0.961	Moderate	Low	0.167	Mod/low
Room	9	2.0	0.961	Moderate	Low	0.167	Mod/low
Room	10	2.0	0.961	Moderate	Low	0.167	Mod/low
Back-room	3	2.0	1.345	Low	Low	0.500	Low
Outside space	14	0.0	0.288	High	High	5.167	High

Table 6.9 – Spatial values: Building IV ii 8

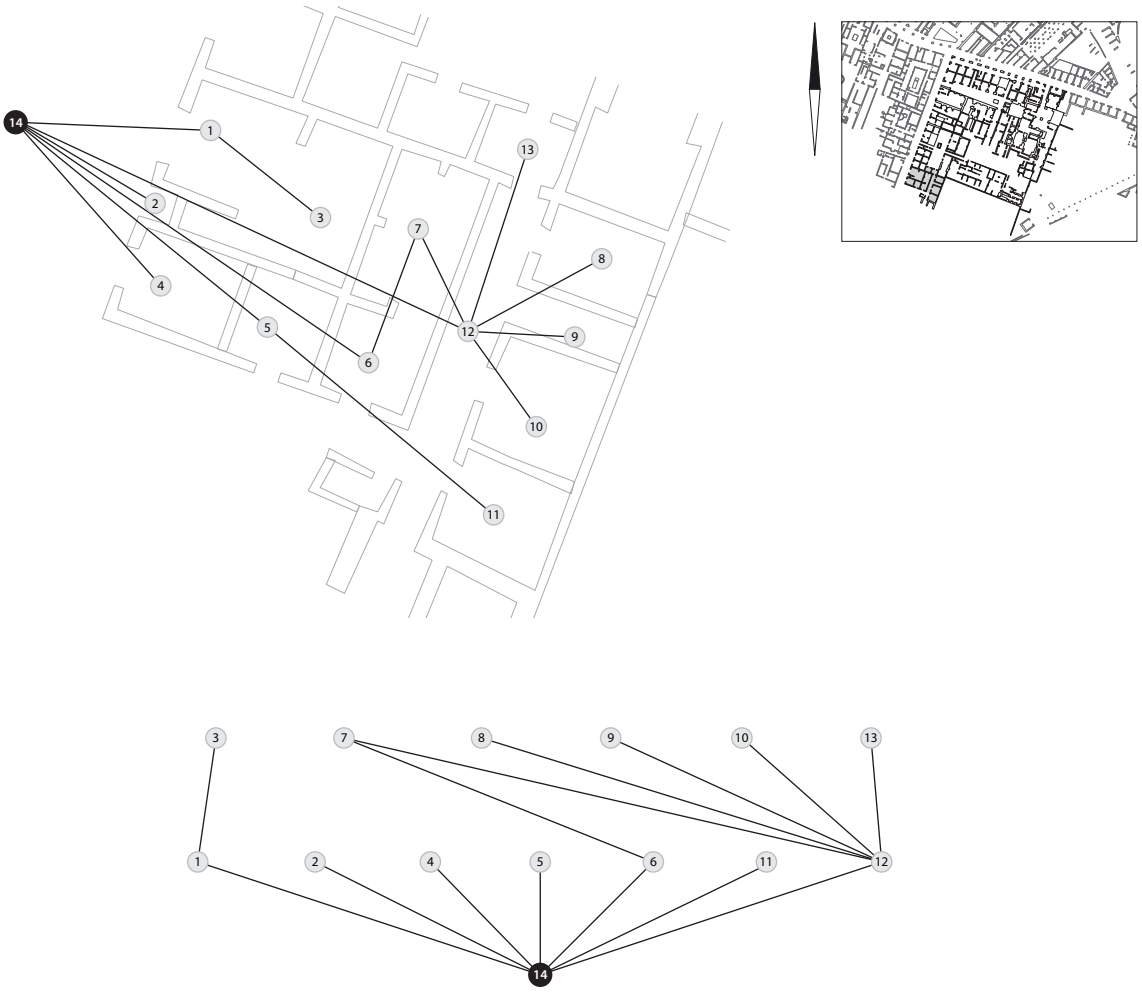

Fig. 6.11 – Building IV ii 8 (sub-section of Caseggiato IV ii 7) topological graph (14 = outside carrier); J-graph (14 = root, outside carrier)

Buildings IV ii 9 and 13

Building 13 and the western part of Building 9 form an architectural unit, whereas the eastern part of Building 9 belongs to an earlier building phase. Despite being composed of three distinct parts, the sections form a unity through their common spatial structure.[41]

Nonetheless, the three distinct parts are individually connected to the Insula's southern courtyard 17. Passage 2 holds a key position. Placed in-between Buildings 13, 9 and 7, the passage has low integration values since it was not embedded within the structure, but reveals high control values since it controls access to all other spaces (see Table 6.10). The access graph for Buildings 9 and 13 shows a deep spatial structure composed of two separate paths leading into the buildings (Fig. 6.12); the paths converge only in the deeper part of the building, where corridor 7 provides the connection between the eastern and western sections of Building 9. Room 4, located in the western portion of the building,

41. The buildings are also architecturally linked through a common wall shared between the eastern and western portions of Building 9.

emerges as the most integrated room of the entire configuration, while Room 14 ranks also high in terms of potential integration and control. Room 14 seems to function as the central space of a range of rooms, possibly forming a *medianum* apartment, a type of dwelling typically found in Ostia.[42]

Buildings IV ii 9 and IV ii 13	No.	Depth	RRA (M R R A 1.333)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Room IVii9	4	5.0	0.792	High	High	2.333	High
Room IVii9	14	2.0	0.962	High	High	1.833	High
Room IVii9	10	6.0	1.811	Low	Low	0.333	Low
Room IVii9	15	3.0	1.443	Moderate	Low	0.333	Mod/low
Room IVii9	16	7.0	1.358	Moderate	Low	0.333	Mod/low
Neighbour IVii7	18	2.0	2.292	Low	Low	0.500	Low
Room IVii9	10	6.0	1.811	Low	Low	0.583	Low
Passage 2	2	1.0	1.811	Low	High	1.917	Low/high
Southern courtyard Insula	17	0.0	1.415	Moderate	Moderate	1.583	Moderate

Table 6.10 – Spatial values: Building IV ii 9 and IV ii 13

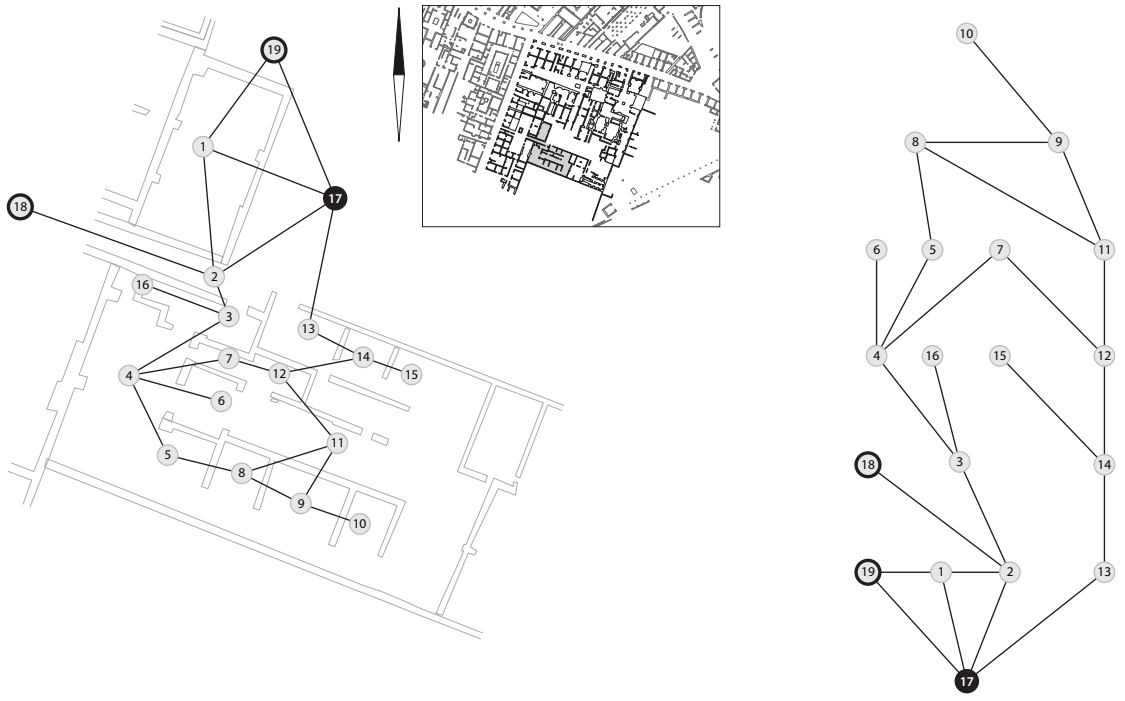

Fig. 6.12 – Buildings IV ii 9/13, J-graph and topological graph (root 17 = southern courtyard)

42. Apart from Building IV ii 9 where we find a northern and a southern range of rooms which presumably formed medianum apartments, an additional one can be found in Building IV ii 5.

Building IV ii 10

The Space Syntax data obtained for Building 10 can only be regarded as preliminary since the archaeological investigation could not produce a reliable ground plan. Nevertheless, a tentative spatial assessment has been made for completeness sake, accepting the limitations of the ground plan. The access graph displays a simple graph structure, with three spaces directly linked to the outside courtyard 1. Room 3 emerges as the most integrated space with the highest levels of control (Table 6.11 and Fig. 6.13).

Fig. 6.13 – Buildings IV ii 10, topological graph and J-graph (root 7 = southern courtyard)

Building, IV ii 10	No.	Depth	RRA (M R R A 1.523)	Global int. Potential	Local int. Potential	Control Values	Potential presence availability
Room	3	1.0	1.015	High	High	2.333	High
Room	5	2.0	1.885	Low	Low	0.333	Low
Room	6	2.0	1.885	Low	Low	0.333	Low
Stairs	8	1.0	1.595	Moderate	Low	0.333	Mod/low
Room	1	3.0	2.465	Low	Low	0.500	Low
Southern courtyard (common)	7	0.0	0.725	High	High	1.833	High

Table 6.11 – Spatial values: Building IV ii 10

Mitreo degli Animali, IV ii 11

The *mithraeum* is characterised by a sequenced single-entry plan, where one room leads into the next without providing alternative route options. The unilinear graph is an unswerving representation of the *mithraeum*'s spatial structure (Fig. 6.14); hence the spatial values are not at all surprising (Table 6.12). Corridor 2 emerges as the most integrated room, with high interaction potential and moderate control function, while cult room 4, located at the end of the sequence of spaces, reveals typically low integration and control values, making the space very suitable for activities which require more privacy than other rooms.

When we consider the *mithraeum*'s cultic function it is interesting to observe how cult practice seems to have been translated into spatial structure. We would not really expect centralising rooms within any *mithraeum,* but still it is striking to see how radically the cults' emphasis on consecutive processes is reflected in this unilinear sequence of rooms. One can think of the cult's religious initiation steps, as well as social promotion along a linear path following the hierarchic order of the cult society. On the same note, it does not surprise us to see that the building marginalised the role of its outside space: it creates low integration and control values in the southern courtyard 5 from where it can be reached. The spatial values strongly suggest that the *mithraeum* did not at all promote interaction with casual, uninvited visitors.

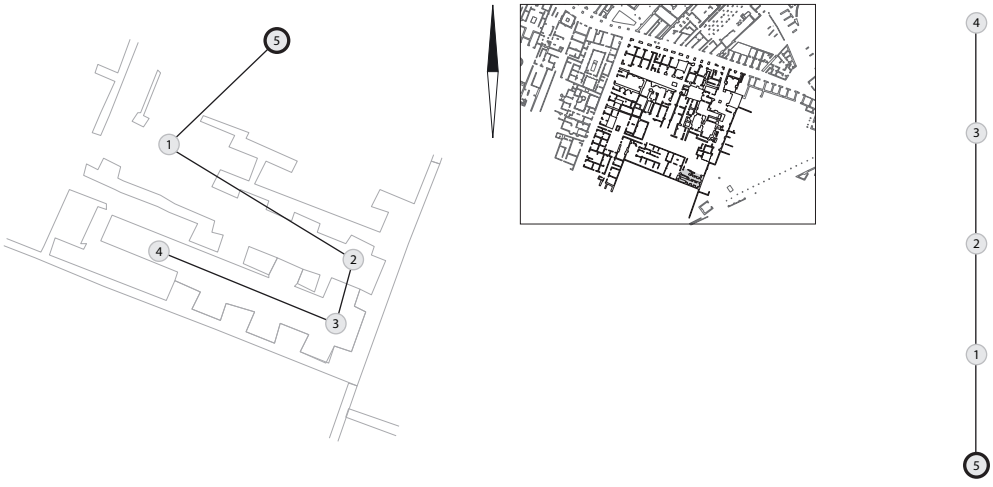

Fig. 6.14 – Mitreo degli Animali, IV ii 11, J-graph and topological graph (root 5 = courtyard)

Mitreo degli Animali, IV ii 11	No.	Depth	RRA (M R R A 1.893)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Corridor	2	2.0	0.947	High	Moderate	1.000	High/Mod
Entrance	1	1.0	1.420	Moderate	High	1.500	High/Mod
Approach	3	3.0	1.420	Moderate	High	1.500	High/Mod
Cult room	4	4.0	2.841	Low	Low	0.500	Low
Southern courtyard common	5	0.0	2.841	Low	Low	0.500	Low

Table 6.12 – Spatial values: Mitreo degli Animali, IV ii 11

Building IV ii 12

Building 12 is characterised by a multiple-entry graph: rooms 1 and 2, as well as the stairs 4 are directly accessible from the Insula's southern courtyard 7 (Fig. 6.15). However, the building not only communicates with the courtyard to the south of it, but also with passage 8 on the western side, as well as the eastern courtyard 5 which is associated with the Terme del Faro, IV ii 1. Strictly speaking Space Syntax only accepts one single exterior space; however, in this specific case passage 8 and the eastern courtyard 5 have been included as distinctively defined exterior spaces, which link the building to different spatial 'territories' (thus the eastern courtyard 5 was associated with the Terme del Faro, while passage 9 formed part of the spatial area of Buildings 14 and 5). In addition, space 8 has been included, marking the building's connection to its northern neighbour Caseggiato IV ii 5.[43] The access data reveal that room 2 has the highest integration and control potential, closely followed by the external space, the Insula's southern courtyard (Table 6.13). The multiple-entry structure makes the building very accessible to the exterior, which seems to suggest that the rooms were well suited for commercial use.

Fig. 6.15 – Building IV ii 12, J-graph and topological graph (root 7 = southern courtyard)

Building, IV ii 12	No.	Depth	RRA (MRRA 1.015)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Room	2	1.0	0.435	High	High	2.033	High
Stairs	4	2.0	1.595	Low	Low	0.600	Low
Neighbour	6	2.0	1.305	Low	Low	0.250	Low
Southern courtyard common	7	0.0	0.725	High	High	2.583	High

Table 6.13 – Spatial values: Building IV ii 12

43. Based on the structural assessment of Building IV ii 5 (see section 5.2.5 above) there is good reason to suggest that Buildings IV ii 5 and 12 were interconnected.

Building IV ii 14

The spatial structure of Building 14 shows similarities to Building 12, and can also be characterised as a multiple-entry building (Fig. 6.16). *Tabernae* 1, 2 and 3 are individually connected to the exterior, while *taberna* 3 is also linked to passage 6, as well as to the enclosed space 4 located in front of *taberna* 3. Unsurprisingly, the courtyard to which all spaces are connected emerges as the most integrated space with the highest integration and control levels (Table 6.14). The building's strong outward focus suggests commercial use.

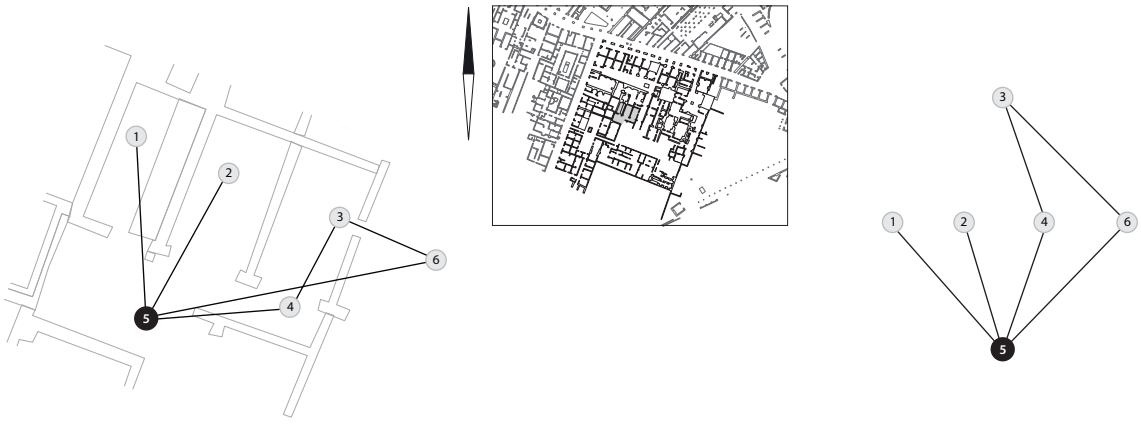

Fig. 6.16 – Building IV ii 14 (*tabernae*), topological graph (root 5 + courtyard)

Building, IV ii 14	No.	Depth	RRA (MRRA 0.907)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
Taberna	3	2.0	0.573	High	High	1.000	High
Southern courtyard (common)	5	0.0	0.287	High	High	3.333	High

Table 6.14 – Spatial Values: Building IV ii 14

The syntactical assessment of the individual buildings using Access Analysis provided a number of important indications about the buildings' potential for interaction between residents and visitors, and in terms of the functional use of the buildings and their rooms. Ideally this type of spatial assessment should be expanded by a more detailed analysis focused on specific spaces to which a functional label can be attached. These function-specific rooms could then be compared across all buildings to establish whether these rooms were differently embedded within the configuration of the individual buildings. However, the diversity of buildings within the Insula renders such an analysis difficult since hardly any two buildings conform to the same type, not to mention the occurrence of distinct function-specific rooms in all buildings. Nevertheless, one of the few functional spaces which were indeed present in most buildings is staircases. They seem an area worth exploring since they allow insights into the accessibility of the upstairs areas in relation to the ground floor spaces. Staircases have been included in the Access Analysis of the individual buildings and the total Insula, and will be briefly discussed in the following sections (see Table 5.17 below).[44]

44. A more detailed analysis of the staircases would require adapting the graph structure by placing the root of the access graphs on the staircase. For the analysis presented so far, the graphs have been justified to the outside space.

6.4.2 The 'collective' Insula

The Insula's configuration has been examined as a single spatial unit to establish to what extent the individual buildings were affected by the larger spatial entity, and to better understand the functioning of the Insula's collective spatial structure. The total configuration comprises 183 individual spaces, including the outside carrier space of Ostia's street network, which counts as one space. Of particular interest are the 'commons', the internal courtyards and passages, which were held in shared use by all buildings within the Insula. These spaces performed as major integrators and distributors stirring movement into and within the Insula, and were essential for providing access to those buildings which were not connected to the exterior public carrier space.

Access Analysis applied to the Insula's total ground plan has produced a graph structure, calculated from the perspective of the outside space (Fig. 6.17), as well as spatial values for a comparative quantitative assessment.[45] The graph structure can be described as a broad multiple-entry graph with 28 spaces connected to the public carrier space; the mean integration value (MRRA) for the total unit is 0.937, pointing to a moderately-well integrated spatial structure.[46] Following the same approach as used for the individual buildings, the Insula's spatial 'hotspots' were identified on the basis of their spatial values (RRA and Control Values). These have been ranked and compared to each other to develop an understanding of the configuration's spatial logic. The graph structure alone already discloses some insights: the Insula reveals a structure of 10 depth-steps, measured from the outside carrier to the topologically most remote spaces. A comparison

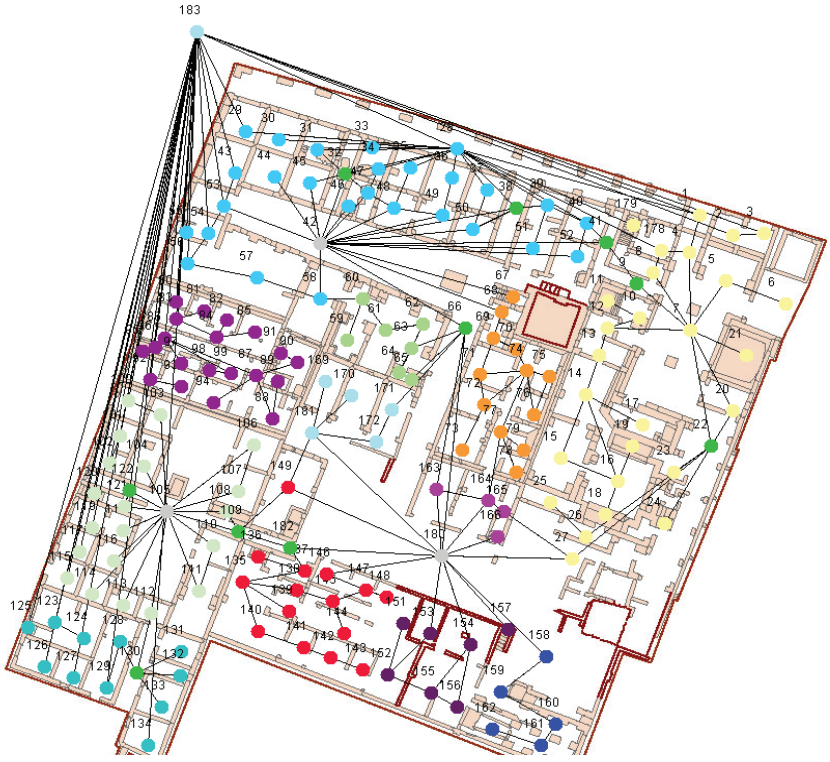

Fig. 6.17 – Insula IV ii, topological graph of the total configuration (183 = outside carrier; 42, 105 and 180 = courtyards, 28 = portico)

45. See Appendix 2 for a complete list of the Insula's spatial values.

46. A comparison with the mean integration values for the Insula's most integrated building, the Caseggiato dell'Ercole (MRRA 0.562) and the least integrated building, the Mitreo degli animali (MRRA 1.893) might help to put the Insula's total structure into perspective.

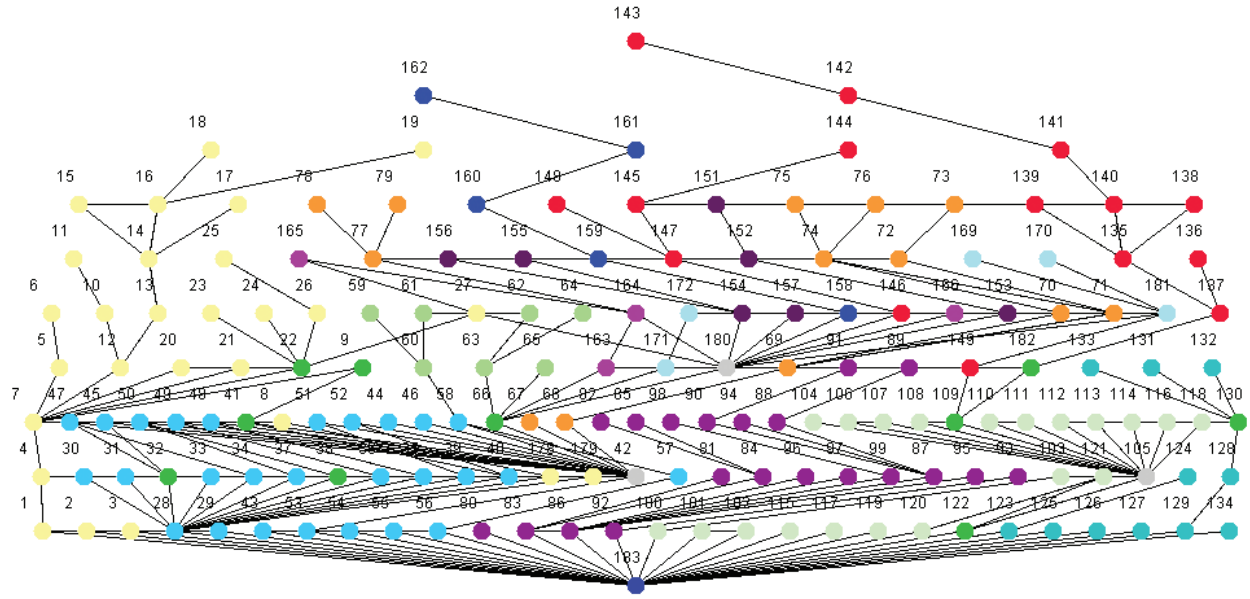

Fig. 6.18 – J-graph Insula IV ii (root 183 = outside carrier)

between the graph structure of the individual buildings and the Insula's structure is informative: while most individual buildings have an internal depth of 4 to 6 depth-steps, the Terme del Faro is the deepest building, boasting 8 depths-steps, nearly reaching the Insula's full extent of 10 depth-steps which is reached by the Mitreo degli animali, the most remote location within the Insula.

From the total configuration (Fig. 6.22) a number of spaces emerge as the areas with the highest levels of integration and control, and with highest consistency between local and global integration values (Table 6.16). Comprising the portico 28 and the courtyard 42 of the Caseggiato dell'Ercole, as well as the outside carrier space 183, these spaces are dedicated to movement and interaction and form the Insula's interface with visitors. Together with the inner courtyards, 105 and 180, they provide the principal circulation system. It is worth noting that all spaces which serve a common use are located in the shallower, well integrated parts of the Insula, relatively close to the outside space, mostly 1 to 2 step-depths, but not more than 4 step-depths away from the outside carrier space. In contrast, all spaces which are residential or more private in nature are located in the deeper, less integrated portion of the Insula, at 5 to 10 depth-steps away from the public outside space. This suggests that through its collective structure the Insula was able to generate one feature common to most types of domestic architecture: it incorporates the elementary relation between the inhabitant/resident and the visitor, in the sense that the inhabitant is in the deeper, often less integrated parts of the Insula, and interfaces with the visitor through the shallower, often well-integrated parts of the Insula.[47] If we take this observation a step further we might be able to say that at a collective level the Insula still upheld an inherently domestic structure, while at an individual level some of the buildings had lost their elementary inhabitant/visitor dynamic. This observation seems to receive even more significance when considered within the wider context of the Insula's evolving configuration, which at an earlier point in time experienced the loss of the *domus,* which had served as the urban 'base-unit' until the earlier Trajanic period.

Next to the Insula's most integrated spaces (Table 6.15), the most segregated spaces are equally instructive about the functioning of the configuration (Table 6.16). Those rooms which have been identified as the most isolated spaces within the collective

47. See Hillier and Hanson (1984: 183).

configuration confirm largely the spaces which have previously been earmarked with the same property for some individual buildings. As already mentioned in the discussion of the baths' spatial structure, the areas of the heated plunge pools, 18 and 19, emerge as the most segregated rooms of the baths. This is unquestionably related to the function of these pools as discussed in sections 5.2.1 and 6.4.1 above. The two other rooms, 143 and 162, which come into view from the assessment of the collective structure, have also been identified at the level of the individual buildings: unsurprisingly, the *mithraeum*'s cult room 162 emerges as one of the most segregated rooms within the entire Insula, superseded only by room 143, which ranks as the most segregated space of the total configuration. The range of rooms including 141, 142 and 143 is noteworthy; the rooms seem to form a *medianum* apartment located at the Insula's southernmost edge. Facing south, unobstructed by direct neighbours, these rooms might have provided an excellent apartment appealing to the upper end of the rental market. Its segregated location might have even enhanced the value of the apartment; due to its 'remoteness' it provided higher levels of privacy than any other ground floor dwelling available within the Insula.

Building	Room/ function	No.	Depth	RRA (MRRA 0.937)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
IV ii 2	Portico	28	1.0	0.622	High	High	7.652	High
IV ii 3	Courtyard	42	2.0	0.558	High	High	7.699	High
IV ii 6	Corridor	86	1.0	0.733	Moderate	Moderate	4.035	Moderate
IV ii 7	Courtyard	105	2.0	0.703	Moderate	High	9.416	Mod/High
common	Southern courtyard	180	4.0	0.617	High	High	5.783	High
common	Outside carrier	183	0.0	0.562	High	High	165.386	High

Table 6.15 - The Insula's 'hotspots', the circulation spaces with highest levels of local and global integration potential (RRA 500-650 = high, 650-950 = moderate, 950 += low)

Building	Room/ function	No.	Depth	RRA (MRRA 0.937)	Global interaction potential	Local interaction potential	Control Values	Potential Presence availability
IV ii 1	Heated pool	18	8.0	1.693	Low	Low	0.250	Low
IV ii 1	Heated pool	19	8.0	1.693	Low	Low	0.250	Low
IV ii 9	Room	143	10.0	1.851	Low	Low	0.500	Low
IV ii 11	Cult room	162	9.0	1.605	Low	Low	0.500	Low

Table 6.16 – The Insula's most segregated spaces with lowest global and local integration potential

A number of interesting observations can be added from an examination of those spaces which have contradictory values, in the sense that they have high integration values and low control values or the other way round. A good example comes from room 139 located in Buildings 9/13. It has moderate integration values (RRA 1.259) but low control values (CV 0.250); hence moderate to low levels of presence availability. This allows for the possibility of segregation, which predestines this room for specific use, possibly reserving access to specific people. This notion seems to be strengthened by the archaeological assessment which found room 129 to be distinct from the surrounding rooms by its floor mosaics.[48]

Staircases have been mentioned previously as one of the few function-specific categories of space which can be examined across the entire Insula (Table 6.17). Within the Insula's collective configuration the staircases are moderately integrated since most of them are reachable from the outside space or the interior courtyards or passages; in most cases they are accessible independent of the ground floor space of the buildings they form a part of. An exception to the rule is staircase 136 within Building 9/13, which is indeed only reachable from inside Building 9, and hence a closer connection between activities on the ground floor and those on the upper floors can be assumed.[49]

Building	Room/ function	No.	Depth	RRA (MRRA 0.937)	Global interaction potential	Local interaction potential	Control Values	Potential Presence availability
IV ii 1	Stairs	24	5.0	0.987	Moderate	Low	0.167	Mod/low
IV ii 1	Stairs	179	2.0	0.824	Moderate	Low	0.063	Mod/low
IV ii 3	Stairs	33	2.0	0.824	Moderate	Low	0.063	Mod/low
IV ii 3	Stairs	46	3.0	0.759	Moderate	Low	0.059	Mod/low
IV ii 4	Stairs	65	4.0	0.819	Moderate	Low	0.167	Mod/low
IV ii 5	Stairs	67	3.0	0.759	Moderate	Low	0.059	Mod/low
IV ii 6	Stairs to well	91	4.0	1.326	Low	Moderate	0.500	Mod/low
IV ii 6	Stairs	95	2.0	0.935	Moderate	Low	0.143	Mod/low
IV ii 9	Stairs	136	6.0	1.080	Low	Low	0.333	Low
IV ii 10	Stairs	157	5.0	0.819	Moderate	Low	0.077	Mod/low
IV ii 12	Stairs	166	5.0	0.819	Moderate	Low	0.077	Mod/low

Table 6.17 – Staircases accessible from within the Insula

48. Scatters of *tesserae* of floor mosaics are still present in room 130; See section 5.2.9 above with a description of Building IV ii 9 and its spaces.

49. As far as the technical side of the analysis is concerned, the Access Analysis presented here does not include upper floors as spatial units. This seems to have a somewhat negative impact on the control values presented in Table 6.17; their low control values seem to be partially the result of the exclusion of upper floors. DeLaine's analysis included upper floors as a single spatial unit. She argues that this would at least allow the general impact of upper floors to be assessed (see DeLaine 2004: 160, note 39). Upper floors are a difficult issue, however to deal with them as a single spatial unit seems a sensible way, and will be considered for further Space Syntax endeavours into Ostia's past built environment.

The Insula's circulation spaces including portico, entrance corridors, internal passages and internal courtyards (see Table 6.18) compose another group of spaces to which a function label can be attributed. The group includes the Insula's 'hotspots', identified as the most integrated spaces. The courtyard system, consisting of courtyards 42, 180 and 105, plays a significant role since all movement inside the Insula is channelled through them. The southern courtyard 180 is the only one directly connected to all other courts by means of passage corridors. The presence of three courtyards could potentially engender a sense of fragmentation within the Insula, yet this seems balanced by the fact that the southern courtyard acted as a centre for the entire layout. On the other hand, the different route options offered by the various passages and courtyards might have helped in counteracting a sense of disintegration since they unite the Insula through movement. The wide range of movement choices enabled those who used the Insula, both residents and visitors, to explore the spaces in different ways, generating routes according to specific functional requirements, or to simply stroll through the Insula wherever their fancy took them.

Building	Room/ function	No.	Depth	RRA (MRRA 0.937)	Global interaction potential	Local interaction potential	Control Values	Potential presence availability
IV ii 1	Entrance	1	1.0	0.682	Moderate	Low	0.432	Mod/low
IV ii 1	Corridor	4	2.0	0.745	Moderate	Low	0.793	Mod/low
IV ii 1	Frigidarium	7	3.0	0.735	Moderate	Low	0.500	Mod/low
IV ii 1	Passage	9	4.0	0.838	Moderate	Low	0.458	Mod/low
IV ii 1	Passage	22	4.0	0.784	Moderate	High	3.458	High/mod
Common	Courtyard	27	5.0	0.757	Moderate	Low	0.759	Mod/low
IV ii 2	Portico	28	1.0	0.622	High	High	7.652	High
IV ii 3	Corridor	32	2.0	0.658	Moderate	Moderate	1.371	Moderate
IV ii 3	Passage	38	2.0	0.659	Moderate	Low	0.705	Mod/low
IV ii 3	Passage	41	3.0	0.694	Moderate	Low	0.809	Mod/low
IV ii 3	Courtyard	42	2.0	0.558	High	High	7.699	High
IV ii 3	Passage	47	3.0	0.742	Moderate	Moderate	1.009	Moderate
IV ii 3	Entrance	53	1.0	0.602	High	Low	0.928	High/low
Common	Passage	66	3.0	0.617	High	Moderate	2.302	High/mod
IV ii 6	Corridor	86	1.0	0.733	Moderate	High	4.035	High/mod
IV ii 7	Courtyard	105	2.0	0.703	Moderate	High	9.416	High/mod
IV ii 7	Passage	109	3.0	0.724	Moderate	Moderate	1.233	Moderate
IV ii 7	Passage	122	1.0	0.663	Moderate	Low	0.602	Mod/low
IV ii 8	Passage	130	3.0	0.973	Moderate	High	4.000	High/mod
Common	South. courty.	180	4.0	0.617	High	High	5.783	High
Common	Fronting 14	181	5.0	0.783	Moderate	High	2.910	High/mod
IV ii 13	Passage	182	4.0	0.699	Moderate	Low	0.660	Mod/low
Common	Outs. carrier	183	0.0	0.562	High	High	165.386	High

Table 6.18 – The Insula's movement spaces: spaces directly connected to the outside space are marked in light grey (1, 28, 53, 86, 122, and 130), while all internal courtyards (42, 105, and 180) and the outside carrier (183) are marked in darker grey (RRA 500-650 = high, 650-950 = moderate, 950 + = low)

6.5 THE INSULA'S LINE STRUCTURE (AXIAL ANALYSIS)

To explore the *dynamics* of the Insula's internal space structure we need to move away from Access Analysis and select Space Syntax techniques specifically suited to capture movement. This requires also a methodological shift from built spaces to open spaces, thus moving away from the Insula's buildings to its open courtyards and passages. Hanson's three-way-method, as discussed above, advocates that space should be studied through all its aspects. Conforming to Hanson's approach the Insula's axial structure and its visual fields have been examined using Space Syntax's axial analysis and visibility graph analysis (VGA).[50] Both are analysis tools specifically geared to capture movement by linking spatial and visual properties.[51] A good look at the Insula's internal space structure already shows that it is distinctly broken up into convex spaces (the courtyards), and into lines (entrance corridors and passages) which interlink the convex spaces (Fig. 6.23). The spatial dynamics which might have been active are best captured by axial graphs and visibility graphs (see Figs. 6.20 and 6.23). The graphs are based on the longest visual lines and their integration, identifying those spaces which are visually most integrated or segregated within the Insula's entire movement spaces. The fewest and longest lines that cover the open spaces form the Insula's potential route matrix. The lines are hierarchically ranked following a colour-coded scale from red for the most integrated lines to blue for the least integrated lines.

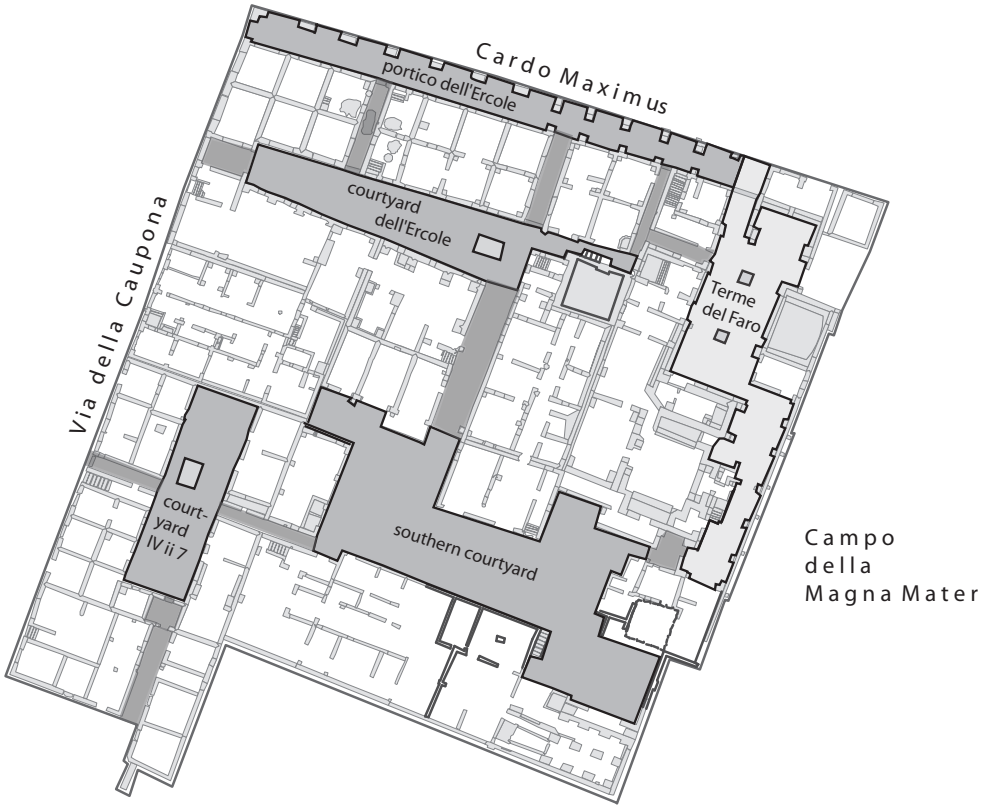

Fig. 6.19 – The Insula's internal space structure: all movement-oriented,interconnected spaces including the Terme del Faro, IV ii 1.

50. The graphs and analyses have been produced with Depthmap 7.12.00d; developed at the VR centre for Built Environment, Bartlett, UCL.

51. See chapter four of this volume on Space Syntax theories and methods; see Hillier and Vaughan (2007) on the positive correlation between movement and visibility.

Before homing in on the Insula's space structure, a look at Hillier's findings about the City of London's space structure may be helpful for developing a deeper understanding of the Insula spatial organisation.[52] Hillier identified two constant spatial properties within the small-scale complexes of the City of London which seem to explain how the supposedly labyrinthine back areas of the City prove to be highly intelligible for those who navigated its spaces. The first property relates to the prevailing movement patterns in which he identified a persistent 'two-line-logic.'[53] In a similar but less intricate way, there is also a 'two-line logic' to movement within the Insula: if one enters the Insula through one of the passage corridors which can be seen from the *cardo maximus*, the next line will take a visitor either out of the back area by leaving the courtyard through the exit on the Via della Caupona, or further into the Insula to some significant spatial event like the next large courtyard, i.e. the southern courtyard. From there, another line would take visitors again out of the Insula by passing through building IV ii 7, reaching the Via della Caupona. This means that wherever one goes within the Insula, there is usually a point from which one can see the point of departure, i.e. the entry into the Insula, and where the next point of aim might be. Hillier contends that this spatial technique has the effect that the back areas become normally and naturally used for movement as part of the urban space pattern, and there is no inhibition or sense of territorial intrusion in these areas.[54] Whether this holds true for the Insula is difficult to prove, but the ideas are compelling and should be examined in the light of the archaeological evidence, and above all they should be put to the test by correlating the Insula's axial line structure and the spatial integration values (RRA) for the courtyards under discussion.

The second spatial property identified by Hillier's 'City of London' study concerns how the buildings relate to the open spaces. Hillier observed for London that almost all buildings open directly onto convex spaces (courtyards and squares), and through this practice a close relationship between the residents within the buildings and those outside is created. According to Hillier this kind of direct interfacing engenders a sense of unforced co-presence between people carrying out different activities.[55] Hillier's observation locates the spatial properties which are instrumental in generating the potential for social interaction. Above all it becomes clear that interaction potential is dependent upon a two-way relationship between the linear space structure (movement spaces) and the buildings relating to it.

Regarding the Insula we can notice that only the southern courtyard was surrounded by individual buildings, while the other courtyards were integral parts of buildings (Caseggiato dell'Ercole and Caseggiato IV ii 7). The irregular shape of the southern courtyard suggests that it was rather a product of individual negotiations than planned design. In line with Hillier's observations it is worth noting that Buildings IV ii 12, 13 and 14 fully open onto the courtyard,[56] and hence provide for the interface described by Hillier as being necessary to engender interaction potential. These observations are confirmed by the high levels of local and global interaction potential which have been attributed to the southern courtyard (see Table 6.18 above), as well as by the high integration levels which the buildings themselves created for the courtyard.[57] The next step is to examine whether the courtyard's high integration values can be matched by the line structure which represents the Insula's movement potential.

52. See Hillier's article on 'cities as movement economies' for different ways of looking into urban space (2007:111-137).
53. On the 'two-line logic' see Hillier (2007: 116-119).
54. Hillier (2007: 116-118).
55. Hiller (2007: 118).
56. Building IV ii 10 presumably opened onto the courtyard, however, the archaeological assessment was not able to produce a reliable site plan, see section 5.2.10 above.
57. Buildings IV ii 12, 13 and 14 cause high integration values for the southern courtyard; see Fig. 6.1 above.

Fig. 6.20 – Insula IV ii: internal courtyards, including the movement spaces of the Terme del Faro; Axial Analysis (all lines) identifies the central passage leading from the portico to the southern courtyard as the visually most integrated space (graph produced with Depthmap UCL)

Fig. 6.21 – The Insula's potential route matrix based on the longest and fewest lines, including the movement spaces of the Terme del Faro

Movement including Terme del Faro	Integration HH	Ranking	Colour Coding	Line Selection	Integration HH
Average	2.06651	1	red	Southern courtyard to baths	3.52814
Minimum	1.23485	2	orange	Portico to southern courtyard	3.08713
Maximum	3.52814	69	blue	Passage Building 8	1.23485
Std Dev.	0.531128				
Line Count 69					

Table 6.19 – Integration values for the most integrated and least integrated visual lines; the area analysed includes the spaces of the Terme del Faro

6.6 THE INSULA'S AXIAL AND VISUAL STRUCTURE

Depthmap's axial analysis applied to the Insula's internal space structure identified the most integrated visual lines, calculated for axial integration on the basis of the longest visual lines. This is a two step process: first, all lines to all lines are calculated (Fig. 6.24); in a second round the fewest longest lines are extracted from the total set and reduced to a representative minimum of lines. The fewest lines embody the Insula's potential route matrix (Figs. 6.25 and Tables 6.19 and 6.20), colour-coded according to their level of integration. From the Insula's route matrix, the red line extending diagonally from the southern courtyard to the baths emerges as the most integrated line within the system. The second most integrated line connects the portico to the southern courtyard. Moderate integration levels are represented by the lines in yellows and greens. The blue lines signify the most segregated lines, of which the most isolated one is found in the passage corridor of Building IV ii 8. Clearly, the southern courtyard comes out as the converging zone for visual lines from all directions, making the courtyard the prime space for movement and social encounter. This however raises the question about the importance of the baths for the Insula's overall movement dynamics, or more precisely whether the baths were an important force in pulling movement into the southern part of the Insula, in particular the southern courtyard.[58]

Movement without Terme del Faro	Integration HH	Ranking	Colour Coding	Selection	Integration HH
Average	1.92754	1	red	Via della Caupona to border with Campo della Magna Mater	4.2116
Minimum	0.827921	2	yellow	Portico to southern courtyard	2.93536
Maximum	4.2116	36	blue	Corridor to baths from Caseggiato	0.827921
Std. Dev.	0.644301			dell'Ercole	
Line Count 36					

Table 6.20 – Integration values for the most integrated and least integrated visual lines; area analysed excludes the spaces of the Terme del Faro

58. Including the baths' movement spaces compromises to some extent the definition of the sample set – which was defined as the open spaces dedicated to movement. The bath's movement spaces have been included since they represent semi-public spaces and form a spatial hybrid between open and closed structure.

By adding the baths to the Insula's movement system, their influence can be demonstrated (Fig. 6.20). However, when excluding the baths from the movement spaces, the southern courtyard still emerges as the most visually integrated area within the Insula as the graph demonstrates (see Fig. 6.21). Interestingly, a new dynamic becomes visible when the baths are disconnected from the movement flow: the new longest, most integrated visual line connects the Via della Caupona through Building IV ii 7 and through the southern courtyard, leading towards the eastern boundary where the Insula meets the Campo della Magna Mater.

Both analyses, including and excluding the baths, confirmed the long line connecting the portico to the southern courtyard as the second most integrated line. This line represents the axial connection between outside public space (*cardo maximus*) and the very centre of the Insula. The line proves to be consistent and seems to point to the 'two-line-logic' which seems to emerge as a constant element in the Insula's space structure. The 'second' line's counterpart is found in the longest axial line which connects from the Via della Caupona through Building IV ii 7 all across the southern courtyard. Together these two lines form the Insula's visual base structure and seem to constitute the starting point for the 'two-line-logic'. Both lines remained preserved and respected throughout the Insula's development. This is evident from the alignment of the buildings which safeguard the visual line, even at all costs as the passage through Buildings IV ii 7, 9 and 13 demonstrates. Interestingly, the lines are also respected by more mundane structures such as the fountains located within the courtyards. Above all, the visual lines seem to contradict Liedke's suggestion of a continuous structure involving Buildings IV ii 14 and IV ii 5,[59] which would break the visual line from the porticus to the southern courtyard.

Fig. 6.22 - The Insula's potential route matrix based on the longest and fewest lines, excluding the movement spaces of the Terme del Faro

59. See Chapter Five.

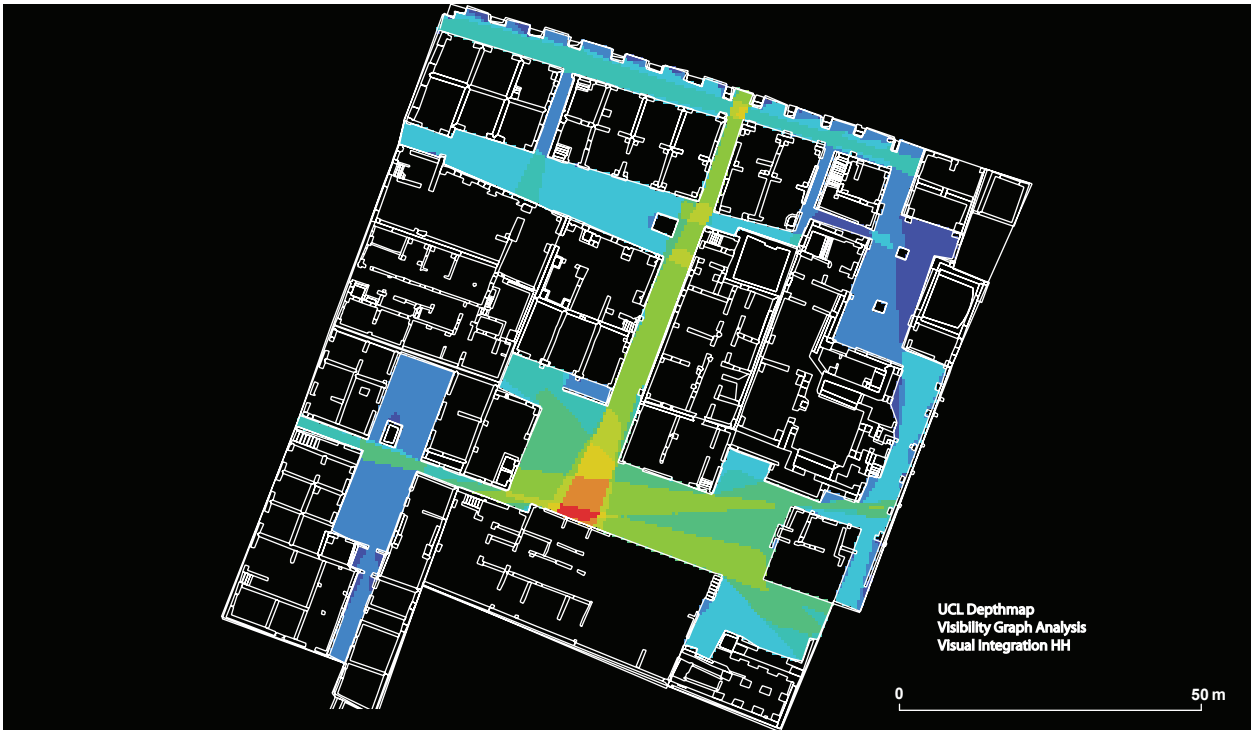

Fig. 6.23 - VGA identifies the southern courtyard as the visually most integrated space

The fountains of the Caseggiato dell'Ercole and Caseggiato IV ii 7 were placed in a way so as not to obstruct the longest visual lines. Their placing not only respects the Insula's 'two-line-logic', but also appears to respond to another spatial law which seems to be known to human intuition. This law has to do with the 'interference effect' of objects within space.[60] Both fountains are not located in the geometric centre of the courtyards, but were moved to the sides.[61] Their somewhat off-side position decreases their interference effect and makes them better accessible from all places within the courtyard, calculated for the mean distance from all surrounding spaces.[62]

A further level of analysis pertaining to the Insula's visual fields has been applied, the so-called Visibility Graph Analysis (VGA). It is based on visual integration and on a positive correlation between visibility and movement potential. The visibility graph produced reveals the Insula's visually most integrated spaces (Fig. 6.27), displayed in a ranked order from the most to the least visually integrated spaces, colour coded along a scale from red for the most integrated to dark blue for the most segregated spaces. The southern courtyard emerges as the visually most integrated space, marking the area where the longest visual lines converge as the most integrated zone. Hence VGA confirms what has been identified by the axial line analysis. Both analyses earmark the southern courtyard as the area where movement, coming from various directions within the Insula converged; greater density of movement raises co-presence within the southern courtyard which is an indication for increased potential for social interaction. Finally, agent based analysis provided by Depthmap (Fig. 6.28) produced a graph showing the movement traces of 50 virtual agents walking randomly through the Insula driven by visual parameters only and allowed to turn

60. Hillier (2008a: 225).
61. Apart from the spatial laws mentioned, the location of the fountains is also influenced by other parameters such as water pipes and property divisions.
62. The 'interference effect' can also be put to intended use when an object is expected to interfere with movement, e.g. placing a statue or monument in the centre of a square.

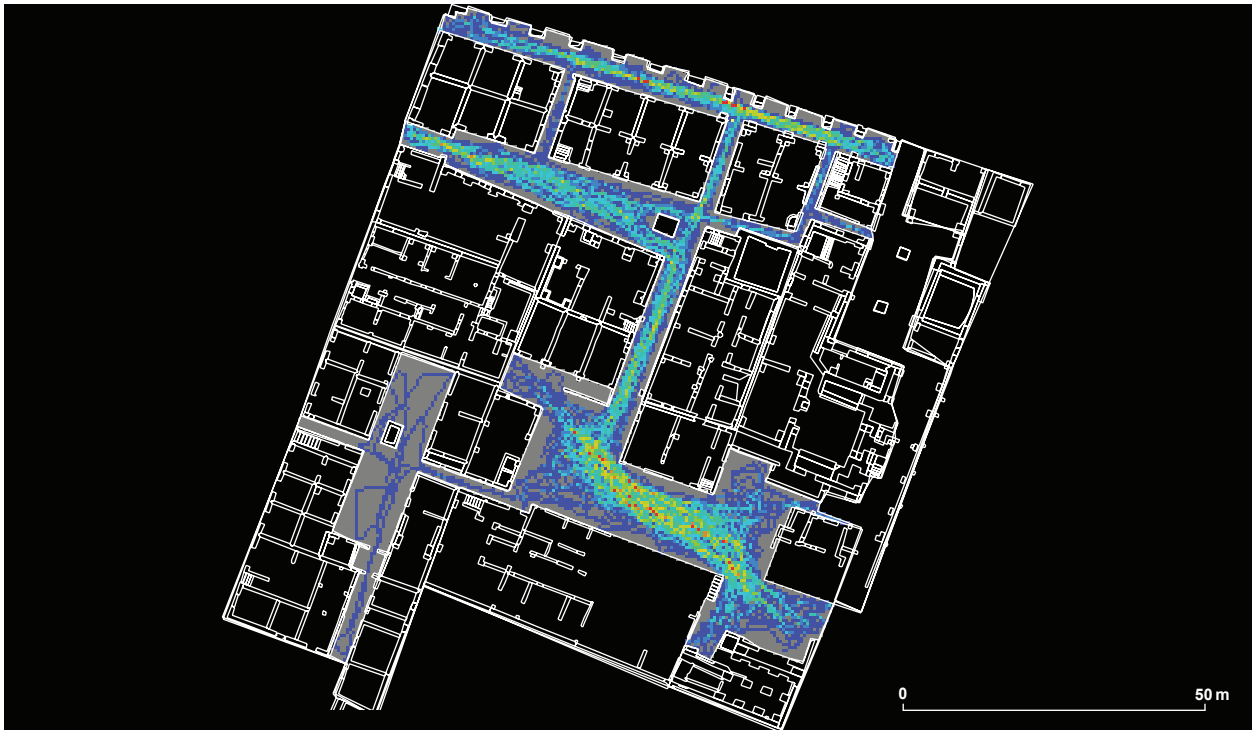

Fig. 6.24 – Agent analysis (preliminary state) movement traces of 50 autonomous agents

directions,[63] their random walks take the larger part of them to the southern courtyard. Hence, once again the southern courtyard emerges as the Insula's best place for social interaction.

6.7 Conclusion

Through systematic analysis and interpretation of the various spatial aspects of the Insula this study was able to extract different layers of spatial structuring which co-exist within the same Insula plan, each with its own contribution to the Insula's spatial functioning, and to the way the spaces were perceived by those who used and navigated them. Access Analysis provided insights into the individual buildings as well as the Insula's collective configuration, demonstrating how the individual layouts structured the relationship between residents, and between residents and visitors. Axial line analysis and VGA helped in identifying the southern courtyard as the Insula's most integrated area.

In terms of the Human Use of Space this clearly points to the fact that the Insula was able to draw people in from the street space. Most importantly however, by promoting accessibility to the back part, i.e. the southern courtyard, the Insula's space structure helped in sustaining activities in the back areas. This is even more interesting since the Insula had clearly defined its commercial front towards the outside through the Caseggiato dell'Ercole, with its portico taking up almost the entire length of the Insula along the *cardo maximus*. As we have seen earlier on, a lively environment of unforced co-presence is not only dependent on the line structure and the open spaces which constitute the movement spaces, but also requires that the buildings relate to the open spaces by providing openness themselves. The analysis has shown that the buildings surrounding the southern courtyard interfaced in a manner to encourage co-presence.

The Insula seemed also successful in the way it provided various route choices. This enabled the same configuration to form different kinds of spatial experience for both residents and visitors; the route

63. See Chapter Four, section 4.5.2.

choices could also articulate formal and informal relations within the Insula. This seems demonstrated by the structured entrances to the baths which allowed a distinction between visitors and those who operated the baths. Various circulation paths through the Insula could be followed, allowing function-specific routes, or even a simple pub-crawl moving from one inn to the next. One circulation path is of particular interest since it completely encircled the baths and its associated buildings without passing through outside space, and could therefore run independently of visitor relations. The loop interconnects the baths with the southern courtyard, leading back again into the baths through the central passage and the eastern part of the Caseggiato dell'Ercole, thereby creating a 'spatial Insula' within the Insula (see Fig. 6.27, VGA makes the circulation path visible which encircles the baths).

The case study of Ostia's Insula IV ii has demonstrated that syntactical and visual tools of spatial analysis can add a valuable dimension to the archaeological assessment of a past built environment. Spatial aspects have been detected which would otherwise not be noted by observation only. The real advantage of Space Syntax lies in the fact that the method forces the researcher to understand a building or a group of buildings as a configuration of space; Space Syntax becomes a tool to think with. It inspires the researcher to explore further and to experiment at both levels: the technical side of the analyses and the possible interpretations of the results provided by the analyses. The syntactical enquiry into the Insula could and should be expanded including various other spatial parameters, such as examining the Insula's total configuration from the perspective of each individual building, or exploring the Insula's visual fields from location to location. Another promising addition to the current analysis would be to include the streets of the Insula's immediate surroundings into the area defined for analysis. Firstly this would give the Insula a buffer zone to counteract possible edge effects which the immediate boundary of the Insula might exert on the analysis. Secondly, by including a certain amount of street space the effect of the streets on the Insula could be calculated and evaluated. Surely this would lead to yet another set of questions related to the position of the Insula within the spatial configuration of the entire city, of which the Insula is a member, as much as it is a unique and distinguishable entity.

With regard to the Insula and its quality as lived space, spatial tools provided a valuable contribution to show that within the Insula space was designed to promote encounter, and to privilege integration over segregation, which ultimately makes for a better and safer neighbourhood, not only in early 3rd century Ostia. The Insula's integrating capacity seems the key to its long period of occupation. Although composed of individual buildings, still the Insula's space structure, its courtyards and passages, were essentially collective and shared by the buildings which composed the group. Its collective space structure seems to have prevented fragmentation into highly individualised luxury architecture, which was the fate of the neighbouring *insulae*, as can be seen in the development of the late Roman *domus* which affected other Ostian *insulae* at a later point.