

city as organism

new visions for urban life

22nd ISUF International Conference | 22-26 september 2015 Rome Italy

edited by
Giuseppe Strappa
Anna Rita Donatella Amato
Antonio Camporeale

STORIA URBANISTICA

DI ROMA

ALE TESSUTO URBANO

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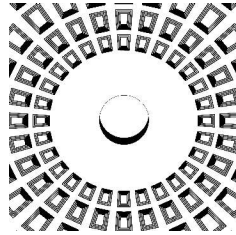
Urban Form Reading and Design
Urban Morphology Theories and Methods
New Researchers' Forum
Local Networks Forum

U+D edition

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2

U+D edition Rome
ISBN 97888941188-1-0
May 2016



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UNIVERSITÀ DI ROMA

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International Seminar
on Urban Form

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Italian Network of Urban Morphology (Isufitaly)

The italian approach to design. Learning from the building fabric. The case study of Trastevere

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Abstract

The notion of process is based on the belief that urban design and design of the building fabric are nothing more than the result of arranging developed and orderly human structures within a sequence which progresses from the incipient form to the contemporary layout. Progressive humanisation of the territory with constant, mutual adaptation of the parts with regard to the whole. Picking up on some key elements in western geographical thinking, Muratori and Caniggia laid the foundations of the notion of process and type, and started to single out the all-important working instruments for interpreting historic architecture and fabric. Rome's school of urban morphology, which has examined these observations more closely in recent decades, puts forward the question of design in historic fabric as one of the fundamental paradigms of the contemporary city. Design must interpret the process of transforming the fabric as one of the key factors for understanding the essence of architecture in its ongoing transformation and specialisation as regards urban organism and type. Making changes to the historic fabric, which is the result of congruent and proportionate continuity, entails design aimed at maintaining its vital and cooperative parts; it means proposing an additional adaptation of its parts with regard to the renovated whole and in relations with elements on the upper scale. But it also entails acknowledging in the process of type, the admissible limits and relations found in the dynamic essence of the parts and of the whole. This paper is aimed at reconsidering design in the historic fabric as a project to conserve the essence of architecture, a dynamic safeguard project which takes into consideration the opportunities of specialising and tying together the building type and the historic building fabric. To this end, it offers some interpretation parameters in order to understand the process of transforming the urban system, fabric and type. Parameters which make it possible to distinguish the random from the systematic, episodic transformation from planned transformation, looking on the building fabric and architecture in general as a text to be interpreted in its integrity and in the values that can be found in cartographical signs. Which brings what has actually been achieved three-dimensionally onto two dimensions. Tracing back of the form achieved shows us the essence and synthesis of a process clearly seen in the architecture. The question, currently being examined in greater depth during graduate school studies (coordinated by Prof. Strappa), has generated a consideration regarding the special complex building. A unique organism which plays a specific role in both the building fabric, the re-blending of which it proposes, and the urban organism where it presents itself as a special node.

1551

ISUFITALY was founded with the aim of studying and interpreting urban form and building types as they apply to urban planning and architectural designs in historic and historicised urban fabric. Founded in Rome in 2007, it evolved into its current, more official guise (again in Rome) in 2014, thanks to a group of researchers interested in analysing the planning aspect of urban morphology and who were convinced of the need to compete at an international, interdisciplinary level.

It is one of the Italian school of building typology's most recent contributions, which, with the foundation of ISUFITALY (a scientifically-oriented cultural association), intends to contribute to the international debate by publishing the results of a decade's worth of research, at the same time positioning itself once more within that wider historical and geographic scientific tradition that led to the establishment of modern urban morphology. Such research has evolved with its own particular characteristics in Italy but shares the fundamental assumptions held by geographers, declared with the reformation of the Mittel-European field of geography of the late 1700s. Such work has proved useful for architectural plans and urban designs and is now occupying a number of European and North American university departments of architecture. In 1994, the ISUF was founded in Lausanne thanks to the contribution of the Italian typological school (particularly those of Rome and Florence) and it is since then that, boosted by continuous debate, the practical role of morphological research in architectural plans and urban design has gradually been recognised, developed on the basis of the observations made by the Italian school. Today, morphological research is the subject of in-depth analysis in studies and experiments conducted in the schools of architecture of Rome and Bari.

Research background and prospects

1552

One of the first important contributions to defining urban morphology, particularly in the field of urban dynamics, was that of Carl O. Sauer in 'The Morphology of Landscape' and *Land and Life*, during the period when he was a lecturer at the University of California at Berkeley's geography department (1923-1956).

Sauer was one of the first to describe the concept of a city using the metaphor of an 'organism', a paradigmatic use of the term that clarifies – though not in a biological sense – how that definition, so dear to the heart of the Roman school (but also criticised for years), generally indicates a structure organised in systems and elements with the intrinsic ability to progressively re-compose itself over time.

Many years ago (1991), during a conference in Modena on Saverio Muratori, Manfredo Tafuri took the opportunity to highlight this aporia (Conference Proceedings, 1991). He stated that it was necessary to rediscover the common roots of Muratorian thought in the history of architecture (truth be told, he actually talked of the need to review Muratori's status as a lone figure), maintaining that by reincorporating Muratori's thought and presence in the historical and international scene he would have regained his importance and his place in architectural research.

A commonly held conviction claims that the morphological school's cultural foundations lie in European geographical precepts, in the fundamental premises that Alexander Von Humboldt perceived (that place cannot be separated from human use, and develops from being a natural space to becoming a human landscape) in the concept of cultural landscape as developed by Carl Ritter and then taken up by Otto Schlüter in 1908, and who Sauer was to borrow from in his concept of urban morphology: an organic or quasi-organic structure that is made up of elements and systems that can be grouped together in a series.

Sauer himself was later to associate himself with Vidal de la Blache (Sauer, 1923), responsible for the concept of 'cultural region', a particularly fertile concept in architectural research that was to contribute to providing the elements required to distinguish Gothic areas from Roman ones, areas characterised by masonry building techniques from those characterised by flexible wooden building techniques.

Much is also owed to scholars such as Albert Demangeon (Demangeon, 1920), one of the first to consider streets and houses as expressions of a cultural landscape. De-

mangeon paved the way for the study of rural architecture, of building type, which was still considered a model at that time, concepts that would later be resumed by Renato Biasutti (Biasutti, 1925) in Italy during the conference on rural dwellings and later by Giuseppe Pagano (Pagano, 1935) in his *Architettura Rurale Italiana*:

'...the inventory of rural architecture reveals an immense encyclopaedia of abstract forms and pcreative expressions with obvious connections to the land, climate, economy and technology.' (Biasutti R., 1926)

We also have Olinto Marinelli to thank for the concept of comparatively analysing geographic types, in geographic field work, an essential part of the study and understanding of the physical phenomena that influence the way man shapes his territory, anticipating human geography studies and studies of human behaviour in different geographic environments:

'Large-scale maps were not only used to explain terrestrial morphology; they also explained anthropogeographic features. After all, this field's main aim was to search for topographic traces, the marks left by man on the land that, 4those caused by natural phenomena, could be traced on paper' (Proto, 2012).

There's a concept that Marinelli's research and that of Biasutti and Pagano all share: the comparison of topographic traces that can – he says – reveal the marks left by man on the land with those typological studies on dwellings involuntarily oriented towards the architectural field and architectural planning.

The architect Saverio Muratori (1910-1973), who was completely steeped in this culture, made use of these concepts in his studies of cities. He understood territory as a substratum of the history of the ways man has organised the land's conditions and resources.

Gianfranco Caniggia pondered the writings of Lewis Mumford, as well as those of Lucio Gambi:

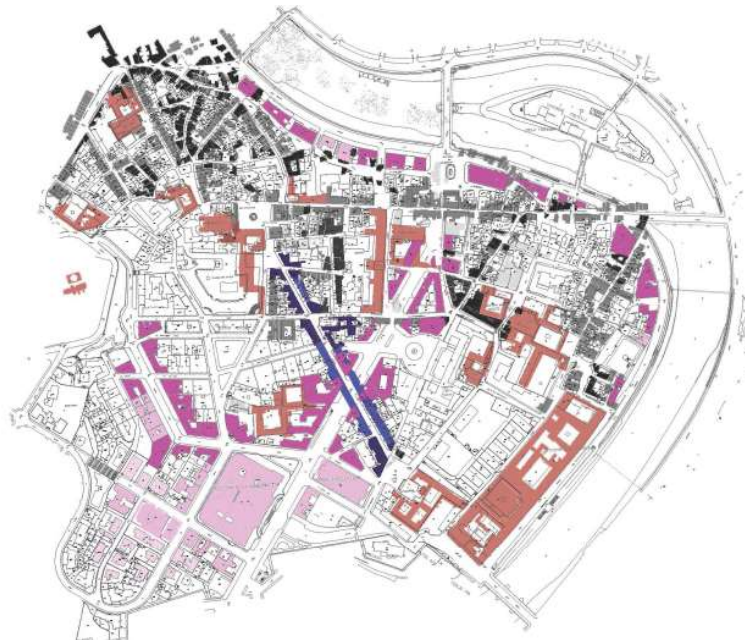
'...the history of the ways man has organised the land's conditions and resources... And this is the problem that the publications written in the 1960s and '70s address in a variety of ways, publications that I am now reprinting: publications that evolve from an interpretation of geography as the history of a cognitive conquest and a regional development of the Earth, as a result of how society came to be organised.' (Gambi, 1973) especially as regarded the introduction to the history of Italy that he advised his students to read. He would do this by referring to those environmental situations that he then reinterpreted as relatively independent and analysable systems, particularly as far as architectural expression (language) was concerned, not to mention the intrinsic tectonic characteristics of material, shaped by local culture. Caniggia went on to attempt to include the interpretation of topographic maps (those that Olinto Marinelli had referred to) and it is through such traces and drawings that they reveal the signs that man has chosen to impose on the territory, confirming or denying the existence of a phase in the anthropisation process that was evolving from a simple, random and relatively independent system towards a complex, diverse, organic and complementary system. Above all, Caniggia attempted to understand the architectural meaning of these environmental forms, forms that had evolved from being territory to being landscape, in order to glean guidance for architectural projects.

Architects – which is what Muratori and Caniggia were – are interested in such interpretations for practical reasons. Muratori referred to an 'operational history' (Muratori, 1960) of the interpretation of territory and urban landscape involved in architectural work, something that he was to explain in practical terms in the late 1950s with his *Storia Operante di Venezia* and later with the Roman version of this publication, reconstructing the image of a lost urban landscape from the traces still visible in the geography of the urban landscape, offering them to architects in order to make and transform cities and their architecture:

'...in studying the urban fabric of Venice and Rome, I have come to understand the laws that govern the typicality of urban forms...' (Muratori, 1960)

He was to do this by interpreting the signs of secret organicity in topographical maps that would prove essential for reconstructing the hypothetical and formal circumstances of the city's original layout; he was to do this using an architect's tools, redesigning the process that could be recognised in those traces and thus restoring continuity to a past rejected by modernity.

Figure 1. Reading of urban morphology on the present cadastral map



1554

Since the 1980s, the critical success of building types owes a great deal to the ISUF (the International Seminar of Urban Form), which has encouraged a new generation of researchers to tackle the issues associated with the interpretation of urban form. This time they have been freed from the parochialism that is so typical of the Italian architectural field (which judged the formal results of a design project as 'limited' when it did not correspond to the outcome of the typological study, while it highlighted its shortcomings when the design outcome was more directly connected to interpretation) in order to project it onto an architectural scenario where the rules of the past are the conditions determining a design and a contemporary language.

It was in just such a new scenario that the attention shifted in the 1980s to interpretation and to techniques for interpreting the forms that history has bequeathed us. Thanks to repeated comparative studies carried out on town plans, on urban fabric and building types, we have come to understand the documentary value of all the formal manifestations visually portrayed in town plans for the study and planning of cities.

Again, in the 1980s, this kind of formal research on city fabric made headway, something that some people call 'light archaeology', introduced by Caniggia, for studying historic city centre layouts (Bologna-Cervellati), with studies on Milan and Como (1966-67) (Caniggia, 1976); he had tried to involve the Roman school of archaeology in this research when he returned to Rome to teach, a school that was run by Paolo Sommella (1986) at the time, in order to jointly develop a research programme that would lead from cartographic interpretation to archaeological verification and design.

This investigation of forms is now the subject of renewed interest (Space Syntax) from fields investigating cartographic depictions, the orientation of urban roads and the form and the value of property (Conzen, 2001).

It is also thanks to the ISUF that we are now paying more attention to plots of land as the smallest unit of the urban landscape, to their relationship with streets and their gradual evolution within city blocks.

Topographic depictions

Some of the main documents used to study the urban landscape are topographic maps. The history of a city can be summarised in the history of its shape, its perimeters and

its buildings. In topographic maps, we can recognise the elements that diachronically contributed to representing the space and, at the same time, its details and unified essence. Its line, its borders, its constructed perimeter, their form expressed and reproduced on paper all point to a collective product created and moulded over time; such maps diamesically tell the story of acts and facts that have divided up or multiplied the space.

The shape of a plot is the state it has reached: constructed diaphasia, compared to what existed beforehand, that demonstrate the overlapping of forms over time; traces of a pattern that is sometimes larger than what is imposed by a design project and is recognisable because it initiates a new phase that imposes the orientation, rhythm and size determined by routes and hubs that did not exist beforehand.

It is then that a town plan is clearly a diamesic description of a city. Drawing a map is a way of describing facts in a form that has been frozen in time. A topographic map is a linguistic code, more akin to a hieroglyphic than to modern writing, a script that describes a city and that must be interpreted. Town plans allow us to read the complete process that generated the urban form and developed it up until the present day. At the international Franco-Italian meeting at Arc-et-Senans (28-29 October 1985), Albert Levy said:

'... la forme de l'expression ou forme urbaine peut être entendue comme le langage spatial à travers lequel la forme du contenu est manifestée' (Levy, 1988).

These forms, which are visible in maps, plot by plot and block by block, and are part of the urban fabric and organism, are the clauses, the phases in their syntactic and grammatical enunciation, they are the verb phrase with its linguistic rules.

Thus the form retains the memory of a road, a courtyard that was later built up, a constructed space that was either demolished or replaced; just as, on other occasions, a road is the final result of a process of transformation, where traces (the oldest and most authentic) are lost in the most secret, hidden part of the architectural plan and covered by more recent structures that have redefined the relationship of necessity (Strappa, 1985) that binds the parts of a constructed urban fabric.

1555

The smallest units of the urban landscape

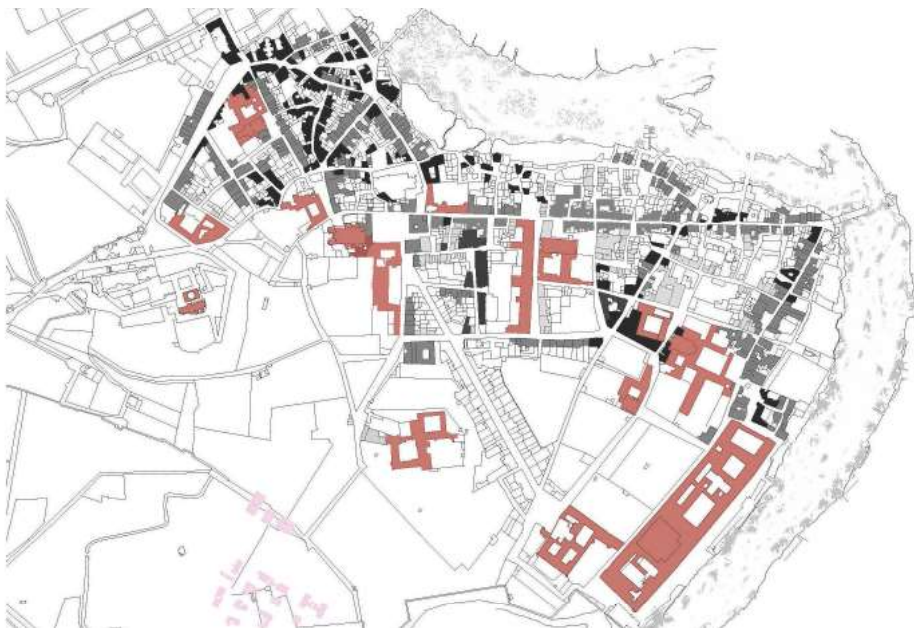
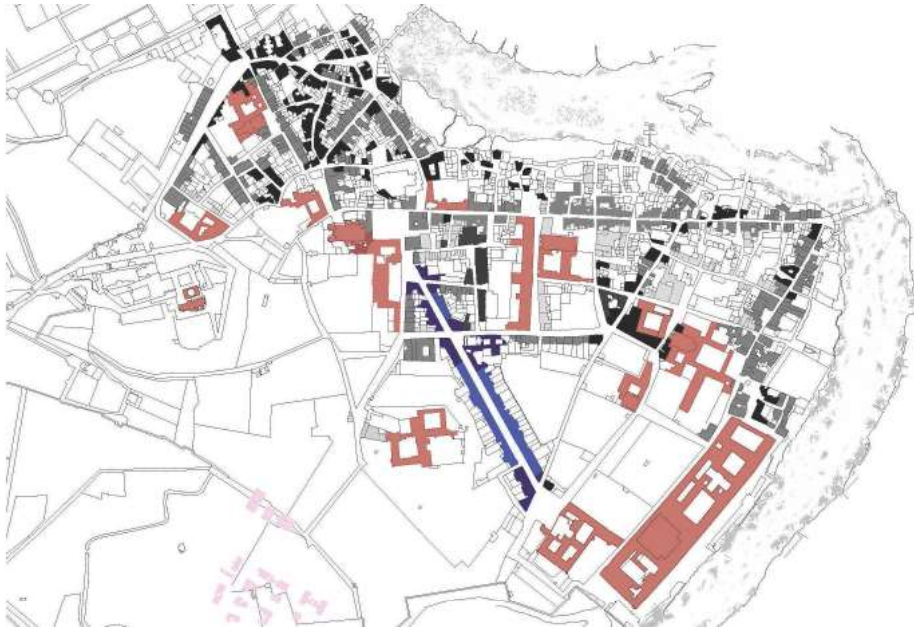
A plot is the smallest topographical unit, its shape is its meaning, as is the proportion of it that has been built on. It is the smallest part of the urban organism and of the process of change, conveyed using another expression and consigned to history.

The Conzenian school – says Whitehand (Whitehand, 2014) – had the chance to take advantage of the importance of the morphological period, paying particular attention to the shape of plots, which characterises different periods in history.

Caniggia also studied plots in *Il Progetto nell'Edilizia di Base*, published in 1984. A block and its component parts are described as variants but also as examples of composition, with rules and relationships of necessity that are frequently imposed by routes and streets. A parcel varies in blocks and beyond blocks, often at different orographic levels. In 1976, in *Strutture dello Spazio Antropico*, when discussing older buildings in the urban fabric, Caniggia highlighted how much diagonal and bending streets (Caniggia, 1976) were symptomatic of a constructed substratum that imposed limitations and the resulting architectural diaphasia.

A square, evenly-sized plot tells a different story from an irregular one. In Ancient Egypt, the hieroglyph for 'house' was indicated by a rectangular symbol with a gap. Even now, when we want to draw a diagram of a room, we draw a square with a gap that indicates the entrance. Thus if a map shows an irregular plot, whether it is very irregular or just slightly asymmetrical, this shape will express the history of this smallest parcel of urban landscape, the shape tells us the changes undergone by a plot and frozen in time by its depiction on paper. It tells us to what extent and in what way the plot is the result of a fusion of a number of plots or rather an addition of subsections of rooms, perhaps motivated by the need to extend the space or add annexes of a distributional nature or perhaps merged with older plots that had already been merged in the past and that sometimes occur at the expense of public spaces such as town squares and streets.

Figure 2. Path restructuring: Via di San Francesco
Figure 3. Fringe belt composed of serial special buildings



1556

Urban morphology and masonry structure

Though the layout of masonry structure and the shape of a group of parcels mainly have their *raison d'être* in the relief and orography that characterises a particular place, often – when the terrain features constant, flat characteristics – this reveals the purpose of those who intentionally organised the settlement. Nevertheless, we frequently observe, in the same topographic map, the synchronic formal results of planning decisions as much as physical-ographic limitations.

However, an expert eye will not fail to notice those apparently inexplicable traces of masonry that, though residual, are a coordinated part of the previously existing fabric

and hidden in the confusion of today's forms; those traces of minor buildings, consisting for the most part of simple constructions (of single or twin cells) that, thanks to their private and serial nature, have preserved their shape.

In order to interpret an urban fabric effectively, we need to start by highlighting its masonry's perpendicular structures, structures that belong to the same system of Cartesian axes, and move on to overlap it with the interpretation of land registry parcels. By repeating this procedure on different perpendicular systems and paying particular attention to the size of different plots, we can identify what bands each system of plots belongs to and thus identify the master routes or redeveloped routes that overlapped them.

The particular relationship of necessity that exists between routes and plots can also be the reason for the specialisation of building type and its internal layout, as Howard Davis demonstrated (Davis, 2009) in his interesting book on commercial and residential buildings, which discusses the different uses of terraced buildings in the cities of New York and Tokyo compared to those of Amsterdam. The function of terraced houses in New York, where they have preserved their traditional nature as terraced homes above shops, in plots distributed along the streets that run perpendicular to Broadway, is significant, while larger, non-residential plots are found in the part of a block that directly faces Broadway (central route); an unusual and contrasting characteristic compared to what he observes in the blocks of Amsterdam's historic fabric, which feature larger shop plots along roads that lead to bridges (Davis, 2009), while those that line the canals are more typical of a fabric of secondary importance.

Interpreting urban fabric: Trastevere

Rome's western hill, the Janiculum – the one the Etruscans dedicated to Janus, the god of new beginnings – is a hill that has always dominated the city's history and circumstances. From the top of its c.100 metres above sea level, the Janiculum was on the border of Etruscan territory, on the site of the ancient settlement of *Ianiculum*, which played a particularly important role in guarding the ford that crossed the Tiber River, beyond which the migrating hordes of ancient Latium congregated.

Legend has it that Romulus was the first king of Rome. History confirms that the Romilia tribe (M. Humbert, 1978) controlled the entire hillside area along the right bank of the Tiber from the Vatican field to today's Porta Portese.

In various different ways and in different eras, this area's natural morphology – much more rugged than what is found to the left of the river – was more challenging for those wishing to settle it than the area to the east of the river. Due to the lay of the land there (Carloti, 1995), these hillsides acted as a border, a margin, both as regards the Janiculum and the hills further to the west.

The Via Aurelia Vetus was one of the oldest hilltop roads in Etruscan territory; it crossed an area from the border of Umbria to the ford across the Tiber. Some believe this crossing was located near Tiber Island while others have pinpointed its site slightly downriver, where the Tiber widens and slows its course, making it easier to cross.

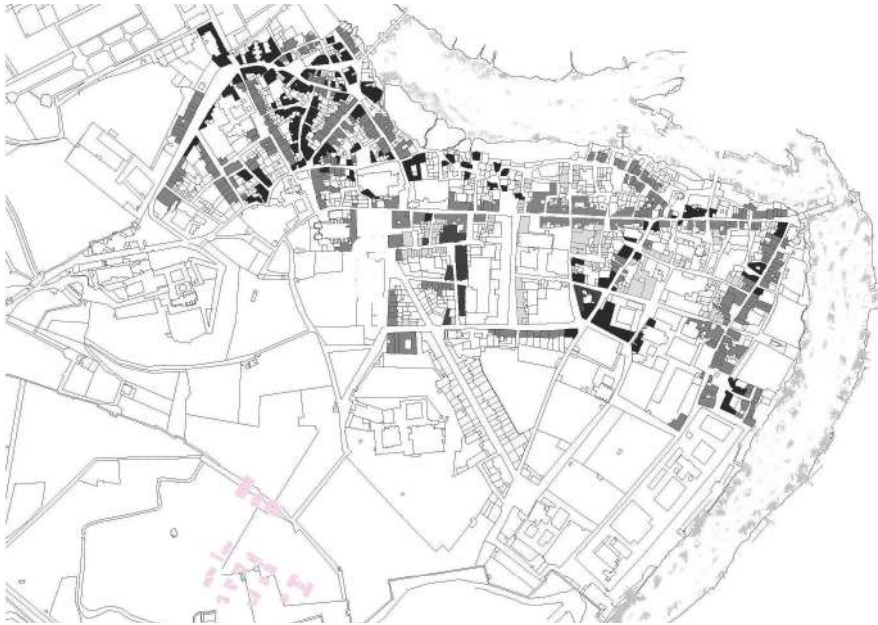
This was perhaps the first of the master routes that dominated the layout of this part of the city right from the beginning, and over time was to intersect with another master route (at the bottom of the valley) – the Via Portuensis – that in leading to the mouth of the river determined the orientation and organisation of the port area of the land and construction layout of Rome's Trans-Tiberina district, the area on the far side of the Tiber.

We can only examine these two main axes – the Via Aurelia (third century B.C.) and the Via Portuensis (first century A.D.), master routes of the settlement beyond the Tiber – in their original form after having eliminated topographic additions found along the strips of areas that have been subject to redevelopment, strips that time has placed on top of the older layout.

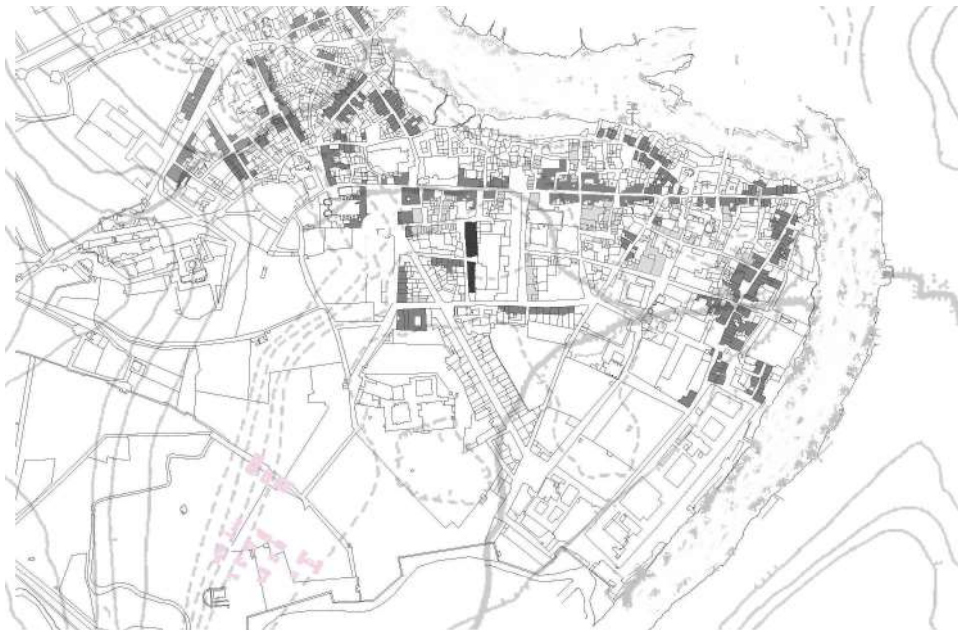
When we examine the shapes and sizes of plots, we immediately notice the irregular geometric patterns (plots obtained by redeveloping the urban fabric) that are found along Viale di Trastevere in the area between Piazza Sidney Sonnino and Viale Trastevere where it reaches Nuovo Regina Margherita hospital.

It is easy to see how this irregular fabric is the result of the way Viale Trastevere cut across

Figure 4. Infilling urban fabric
Figure 5. Matrix and plant paths



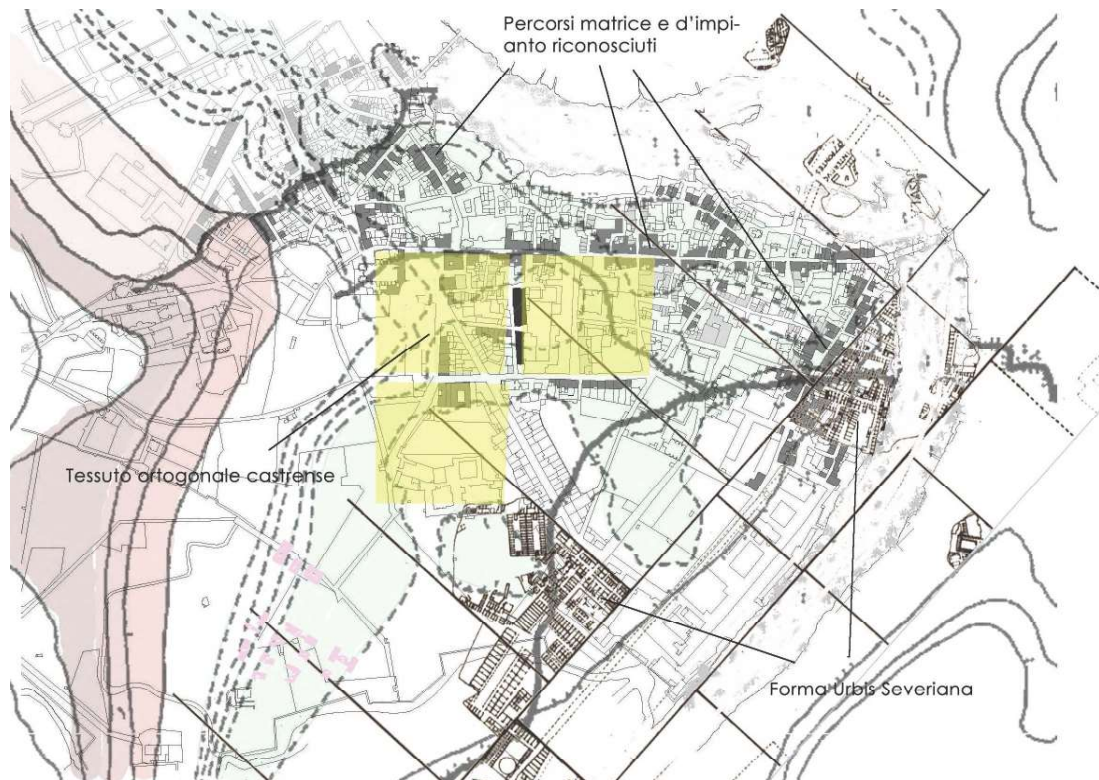
1558



the previously existing layout, a modification that proved necessary in order to connect Rome's old railway station to the city centre, with the resulting reconfiguration and re-fusing of plots along the area affected by the new road. The new layout created beyond the Nuovo Regina Margherita hospital is, in contrast, laid out according to rules imposed by a typological process, organised hierarchically, along the master route (Viale Trastevere) and the planned building routes (Viale Glorioso, Via Tavolacci, Via di Porta Portese etc.) that formed later, in the nineteenth century, along this new stretch of Viale Trastevere.

Now, if we place a survey of Trastevere's masonry fabric over the town plan, we can distinguish different building types that originally determined the shape of each plot and thus guess at their temporal sequence.

Figure 6. Overlap between Forma Urbis Severiana and the map of matrix and plant paths



1559

The largest plots are those associated with apartment blocks, while the smallest plots maintain their original terraced or pseudo-terraced nature. Next we can see, similarly, the layout of plots located along the edges of Via di San Francesco: unlike Viale Trastevere, this road was designed to connect two of this district's town squares, which are however separated by an undeveloped space. Piazza Santa Maria in Trastevere and Piazza di San Francesco a Ripa are the main hubs along the old master routes (Via Aurelia and Via Portuense) that were connected by the new Via di San Francesco road.

If we take another look at the shapes in the town plan along the edges of the San Francesco road, it's easy to see a similar situation to the one noticed in Viale Trastevere. There's an initial stretch within the older urban fabric that features irregular-shaped plots and a second, relatively more external and modern stretch that instead features the typical pattern of fabric organised along main axes and planned building routes. It is easy to see that, unlike the plots along Viale Trastevere, those along the edge of Via di San Francesco are generally smaller. In this case, as before, if we place the urban fabric over the town plan, we can recognise apartment block building types obtained by the merging of terraced housing and designed from scratch in the more regular, even section, as a well-developed apartment block type.

If we exclude the redevelopment caused by the Viale di Trastevere and San Francesco da Ripa roads from the private urban plan, we end up with the image of an urban fabric that is almost entirely made up of perpendicular roads that only occasionally have preserved short stretches of redevelopment.

These are random modifications of limited extent that are perhaps older (judging from the size of the plots) and made up of plots occupied by terraced buildings for the most part.

If we discard small redeveloped roads from the town plan, the layout of the older Trastevere area becomes even more obvious.

Morphological interpretation in historical map comparisons

A comparison of the many historical maps of the city of Rome (from Bufalini's map of 1551 to Falda's map of 1676, right up to the Nolli map of 1748) confirms the temporal sequence we can perceive when interpreting the city's urban fabric.

We can easily date the moment when the Viale del Re road (Viale di Trastevere) cut across the district and the Ministry of Education building (Cesare Bazzani, 1912) was constructed along Viale di Trastevere. We can recognise that date using morphological analysis because it is linked to relationships of necessity with Viale di Trastevere, in that it is a master route, just as Palazzo degli Esami – designed by Edmondo Del Bufalo, again in 1912 – and a more recent building – the former G.I.L. building by Moretti (1936) – are linked to relationships of necessity with the planned building route of Viale Induno.

A comparison of maps dating from before the Unification of Italy (the Gregorian Cadastre of 1818-20, Nolli and Bufalini's maps, as well as views of Rome such as those of Du Pérac in 1577, Cartaro in 1576, Maggi in 1625 and Falda in 1667) confirms the role of redevelopment played by Via San Francesco a Ripa, constructed and later built up from 1576 to 1667, a process that established new relationships of necessity within the urban fabric that in turn imposed new hierarchies on existing roads.

Similarly, old illustrations and archaeological documents regarding third-century Rome (the Severan Marble Plan) confirm how the pattern of the urban fabric was influenced by the master plan that established Trastevere's compositional rules and urban layout.

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