5th ISUFitaly International Conference
Rome, 19-22 February 2020

PROCEEDINGS

edited by
G. Strappa, P. Carlotti, M. Ieva
with the collaboration of
F. D. De Rosa, A. Pusceddu

URBAN SUBSTRATA & CITY REGENERATION

Morphological legacies and design tools

ISUFitaly
International Seminar on Urban Form
Italian Network

ISBN 978-88-941188-8-9

U+D edition Rome

FACOLTÀ DI ARCHITETTURA

SAPIENZA
UNIVERSITÀ DI ROMA

ISUFitaly
International Seminar on Urban Form
Italian Network

lpa
Laboratorio di **L**ettura e **P**rogetto dell'**A**rchitettura
via A. Gramsci, 53
https://web.uniroma1.it/lpa/

U+D urbanform and design
online journal
http://www.urbanform.it/

Centro Studi Americani
via Michelangelo Caetani, 32 – 00186 Roma
http://centrostudiamericani.org/

Graphic design and layout by Antonio Camporeale

ISUFitaly
International Seminar on Urban Form
Italian Network
http://www.isufitaly.com/

Contacts
Phone: +0668878832
Fax: +0668878832

PROCEEDINGS

edited by
Giuseppe Strappa, Paolo Carlotti, Matteo Ieva
with the collaboration of
Francesca Delia De Rosa, Alessandra Pusceddu

http://www.isufitaly.com/

5th ISUFitaly International Conference
Rome, 19-22 February 2020

URBAN SUBSTRATA & CITY REGENERATION

Morphological legacies and design tools

Contents

Presentation	6.
Organization	7.
Conference Themes	9.
Contents	11.

Presentation

URBAN SUBSTRATA & CITY REGENERATION
Morphological legacies and design tools

The fifth Isufitaly Conference will focus on the notion of the substratum in its various aspects.
First, the typological one, as a set of rules inherited from the built landscape that allow reading and conscious transformation. We cannot reduce, of course, the complexity and richness of our ancient heritage to universal interpretational patterns that classify types and processes in a kind of taxonomy of the Ancient (that is true for any built environment). Instead, the identification of a few common criteria that allow us to interpret these phenomena through an architect's eyes, tracing the many outcomes back to the general rationales that produce them, can prove useful to morphological studies.
Then, the physical shape of the historical layer, which in many ancient cities has determined the structure of the current settlements. Substratum is, from this point of view, the part beneath the current built landscape that has no longer a function but still contribute to the form of new fabric. It is the prolific layer that gives rise to multiple organisms. We could then consider a 'substratum' as the composition of elements that once belonged to a built fabric or architectural organism. 'Substratum' despite having lost both their relationship of necessity that bound them together (their purpose and original organicity), and the continuity between the different phases of change and development, still transfer specific characters to the buildings originated by them.
Finally, the intangible aspect, the heritage of projects, experiences, and researches that constitute the working legacy on which current study can be based.
The notion of substratum could be, therefore, more than a specific issue, a way of seeing the built reality useful to the contemporary project.
The term not only includes the ideas of rooting and transmission; it also refers to the means, the tools we can use to reach the essence of the form, of its universal being. This universality, a quality that the actual building did not possess, constitutes a fertile abstraction: a reading as well as a project, how we give a new unity to the multiple and scattered forms of the remains we have inherited.
Furthermore, another theme, which is complementary to the substrata one, is that of urban regeneration. It is a topic extensively investigated by urban research which, in this context, could be reconsidered differently and innovatively.
In continuity with the previous Isufitaly meetings, the theme of the conference proposes a debate on the topics of the urban form transformation at different scales, in the light of our cultural heritage understood as a design tool.
The conference will take place at Palazzo Mattei di Giove, built on the ancient remains of the Teatrum Balbi, in one of the Rome areas where the relationship between the present city and the ancient substratum is more evident, even in its contradictions (the Porticus Octaviae, the Teatrum Marcelli, the archaeological area of Largo Argentina).

Organization

Conference Chair
Giuseppe Strappa, *'Sapienza' University of Rome, Italy*
Paolo Carlotti, *'Sapienza' University of Rome, Italy*
Matteo Ieva, *Polytechnic University of Bari, Italy*

Scientific Committee
Michael Barke, *Northumbria University, United Kingdom*
Carlo Bianchini, *'Sapienza' University of Rome, Italy*
Alessandro Camiz, *Özyeğin University, Turkey*
Renato Capozzi, *'Federico II' University of Naples, Italy*
Alessandra Capuano, *'Sapienza' University of Rome, Italy*
Paolo Carlotti, *'Sapienza' University of Rome, Italy*
Orazio Carpenzano, *'Sapienza' University of Rome, Italy*
Giancarlo Cataldi, *University of Florence, Italy*
Vicente Colomer Sendra, *Polytechnic of Valencia, Spain*
Anna Irene Del Monaco, *'Sapienza' University of Rome, Italy*
Carlos Dias Coelho, *University of Lisbon, Portugal*
Wowo Ding, *University of Nanjing, China*
François Dufaux, *University of Laval, Canada*
Daniela Esposito, *'Sapienza' University of Rome, Italy*
Loredana Ficarelli, *Polytechnic University of Bari, Italy*
Luigi Franciosini, *Roma 3 University, Italy*
Pierre Gauthier, *Concordia University,Quebec*
Małgorzata Hanzl, *Lodz University of Technology, Poland*
Matteo Ieva, *Polytechnic University of Bari, Italy*
Hidenobu Jinnai, *Hosei University, Japan*
Anna Agata Kantarek, *Cracow University of Technology, Poland*
Nadia Karalambous, *University of Cyprus, Cyprus*
Kayvan Karimi, *The Bartlett School of Architecture, United Kingdom*
Aise Sema Kubat, *Istanbul Technical University, Turkey*
Irina Kukina, *Siberian Federal University, Russia*
Pierre Larochelle, *University of Laval, Canada*
Teresa Marat-Mendes, *University of Oporto, Portugal*
Marco Maretto, *University of Parma, Italy*
Nicola Marzot, *University of Ferrara, Italy, and TU-Delft, The Netherlands*
Carlo Moccia, *Polytechnic University of Bari, Italy*
Wendy McClure, *University of Idaho, United States*
Gianpiero Moretti, *University of Laval, Canada*
Giulia Annalinda Neglia, *Polytechnic University of Bari, Italy*
Hans Neis, *University of Oregon, United States*
Dina Nencini, *'Sapienza' University of Rome, Italy*
Vitor Manuel Araujo Oliveira, *University of Oporto, Portugal*
Attilio Petruccioli, *'Sapienza' University of Rome, Italy*
Carlo Quintelli, *University of Parma, Italy*
Ivor Samuels, *University of Birmingham, United Kingdom*
Giuseppe Strappa, *'Sapienza' University of Rome, Italy*
Fabrizio Toppetti, *'Sapienza' University of Rome, Italy*
Tolga Ünlü, *University of Birmingham, United Kingdom*

Anne Vernez Moudon, *University of Washington, United States*
Federica Visconti, *'Federico II' University of Naples, Italy*
Jeremy Whitehand, *University of Birmingham, United Kingdom*
Michele Zampilli, *Roma 3 University, Italy*

Organizing Committee
Anna Rita Donatella Amato, *'Sapienza' University of Rome, Italy*
Antonio Camporeale, *'Sapienza' University of Rome, Italy*
Nicola Scardigno, *Polytechnic University of Bari, Italy*

Conference Office
Anna Rita Donatella Amato, *'Sapienza' University of Rome, Italy*
Francesca Delia De Rosa, *'Sapienza' University of Rome, Italy*
Alessandra Pusceddu, *'Sapienza' University of Rome, Italy*

Conference Themes

Urban Form Theories

A.2 Urban Form Theory

Urban Form Reading

A.1 Urban Substrata and New Meanings
A.3 Urban Morphology and Planning Tools
A.4 Landscapes in Transformation
A.6 Ancient and New Public Spaces
PH.1 Urban Morphology in Historical Context
PH.2 Urban Regeneration and Social Issues
PH.5 Urban Morphology and Education/Methods and Spaces

Urban Form Design

A.5 Re-Emerging Substrata
PH.3 Reading/Design Strategies
PH.4 New Trends in Urban Form Interpretation
PH.6 Continuity and Resilience as Tools for Regeneration
B.1 Reading/Design Study Cases

A.1 Urban Substrata and New Meanings

25 Urban Fabric and contemporary dwelling in the Greek-Roman centre of Naples
Federica Visconti

33 Micro-urbanism – additional tool for urban heritage determination
Éva Lovra

39 Documenting the disappeared Rome: the San Marco district
Chiara Melchionna, Francesca Geremia

51 Underlying, extended and updated Rome in Valencia: the historic definition of Ciutat Vella as the core city
César D. Mifsut García

61 Why an Atlas? Reading of the cultural substrata of the Portuguese urban fabric
José Miguel Silva, Sérgio Padrão Fernandes, Carlos Dias Coelho

71 The concept of morpho-typology in the Alberobello urban organism
Matteo Ieva, Miriana Di Gioia, Francesco Maria Leone, Rossella Regina, Fausta Schiavone

79 Metamorphosis of Urban Form in A Historical Nutshell; A Critical Perspective
Selen Karadoğan, Ecem Kutlay

87 Transformation processes and the teaching of Urban Form Morphological legacies and Design tools
Nicola Marzot

A.2 Urban Form Theory

99 The Vacant City as the contemporary substratum. Why and How the crisis enables regeneration processes
Nicola Marzot

113 Giovannoni's "diradamento" as a congruent transformation of urban continuity. Applications and limits of a philological device for core city regeneration
Maria Vitiello

125 Shifting point-attractors: the central-symmetric flexi of via Flaminia and via Clodia near pons Milvius, Rome.
Alessandro Camiz

135 Urban aesthetics: the haussmannian urban form and the configuration of the city of Erechim/RS, Brazil
Camila Nardino, Piccinato Junior Dirceu

147 Coincidentia oppositorum.
The building of the urban form in O. M. Ungers
Vincenzo d'Abramo

155 An Examination of The Morphological Change of the Roman Main Axis-Case of Adana Turkey
Beliz Büşra Şahin, Fazilet Duygu Saban

A.3 Urban Morphology and Planning Tools

165 Industrial heritage as an overlooked potential in urban heritage.
Case study Miskolc-Diósgyőr.
Zoltán Bereczki, Éva Lovra

177 The Good, the Bad, and the Ugly
Mark David Major

191 Lasting transformation of Erenkoy
Burak Ozturk

201 The effects of planning decisions on the traditional urban fabric of a historical city: The case of Gaziantep in 1968-2008
Fatos Merve Hidiroglu, Ebru Firidin Özgür

213 Transitional Morphologies in the Global South: Sub-Saharan Africa
Ana Ricchiardi

225 Morphological features of small Morphological specifc features of postindustrial small towns industrial towns
Iuliia Viktorovna Bushmakova, Svetlana Valentinovna Maksimova

237 Gridded Urban Morphologies, sub-Saharan Africa and Senegal: Research Historiographies and Present-day Realities
Liora Bigon, Eric Ross

A.4 Landscapes in Transformation

247 Transitional form of industrial mixed-use
Martina Crapolicchio

257 Urbanscape as Landscape Emanation of East Adriatic Coast
Ana Sopina, Bojana Bojanić Obad Šćitaroci

271 The role of Pulp and Paper mills in the Quebec City's urban development: the first observations.
Maxime Nadon-Roger, François Dufaux

279 Dyads of an operating thought:
modification & continuity | project & morphology
Nicola Scardigno

287 The Spatial Logic of the Arabian Coastal City:
The Case of Doha, State of Qatar and Muscat, Sultanate of Oman
Heba O. Tannous, Mark David Major

305 Borgo Taccone. From the fragment to the weave
Giuseppe Francesco Rociola

A.5 Re-Emerging Substrata

317 The curvilinear substrate.
From the phenomenon of dequantification to deformation of the type
Cristian Sammarco

327 Ancient planned structures in Lake Bracciano area
Michele Magazzù

337 The City of Venice. The Form and the Space
Ermelinda Di Chiara

347 One new fragment: The Archaeological Museum by Egizio Nichelli (1954/1964)
Elisa Valentina Prusicki

359 The city of walls: how military architecture has shaped Baghdad and the citizens
Rossella Gugliotta

369 Layered Morphologies and Topographic Structures. Substrata and *Design Writing*
Laura Anna Pezzetti

383 Place Royale: An heritage to rediscover
Luiza Cardoso Santos

A.6 Ancient and New Public Spaces

393 Public Space in São Paulo: The fair as a form of urban land occupation
Denise Antonucci, Gabriela Lamanna Soares

403 Regeneration of Sanctuaries in Ancient Cities: Pergamon Example
Özlem Balcı

411 The Country Magnet – Garden Cities' aesthetic background
Antonio Blanco Pastor

423 Mapping Urbanities. From morphologies to flows a new reading of Public Space
Greta Pitanti

429 A green legacy: the transformation of eighteenth century parks into the new British universities of the 1960s
Marta García Carbonero

439 Volumes of the past, lines in the present. Ouzai square, on the traces of the invisible streetscape of Beirut
Marlène Chahine

PH.1 Urban Morphology in Historical Context

447 Emerging perspectives on urban morphology: collaborative learning activities fostering combined approaches
Nadia Charalambous

457 From past to present.
Shiraz historical texture and its morphological structure
Farzaneh Nahas Farmaniyeh, Ali Sokhanpardaz

483 Historical walls of segregation: a comparative approach on fringe belt as a tool of regeneration
Deborah C. Lefosse

495 Morphological development in historic context German of St Francis Convent development 2030
Gisela Loehlein

503 The concept of "trullo type" in the formation of Alberobello urban organism
Matteo Ieva, Greta Indrio, Davide Lasorella, Gianpiero Gorgoglione

509 Gravina in Puglia: City substratum as a Process of "Invention" and Transformation of the Territory
Francesca Delia De Rosa

519 Borgo of Chiaravalle Milanese: project tools and strategies for the recovery and protection of the historical center
Maria Chiara De Luca, Carla Galanto, Ileana Iacono, Antonetta Nunziata, Idamaria Sorrentino

PH.2 Urban Regeneration and Social Issues

531 Rethinking marginal areas: urban growth and inequality in informal settlements, the case study of Usme district, Bogotá
Nelcy Echeverría Castro

543 Morphological layers in Bucharest based on the spontaneous interior courtyards
Andreea Boldojar

555 A Gentrifying Pattern of a Global City. Case of Karakoy, Istanbul
Zeynep Tulumen

565 The urban redevelopment project of San Lorenzo district in Rome
Rosalba Belibani

577 Urban Morphological Forms of Informal Areas in Tirana;
Strategies of Intervention
Irina Branko, Andi Shameti, Juljan Veleshnja

587 Morphological legacies and informal city: understanding urban dynamics in the Vetor Leste do centro in São paulo
Ambra Migliorisi

PH.3 Reading/Design Strategies

595 Design strategy and urban configuration: morphological study of two new towns in mid-twentieth century Brazil
Maria Luiza Sorace Grande Tavares

601 Spatial Ambiguity in Singular Buildings. Timeless composition principles interpretation.
João Silva Leite, Sérgio Barreiros Proença

613 Shiraz and Kashan. Substrate and Urban form knots, road and band of pertinence for the Morphological Analysis
Paolo Carlotti

623 Lisbon porosity decoding.
Delayering the substrata of Almirante Reis avenue.
Sérgio Barreiros Proença, Ana Amado

PH.4 New Trends in Urban Form Interpretation

635 Urban recurrences as spaces generators
Santiago Gomes, Maddalena Barbieri

645 Landscape analysis for digital description of urban morphology of Upper Kama region towns
Anastasia Evgenievna Semina, Maksimova Valentinovna Svetlana

PH.5 Urban Morphology and Education/Methods and Spaces

655 Morphologie des écoles primaires québécoises : Débat entre le modèle, le type et le projet d'architecture des écoles d'après-guerre
Daniel Olivier-Cividino

665 Urban morphology education in Serbia: Origin, genesis and new tendencies
Vladan Djokić, Milica Milojević, Aleksandra Djordjević, Mladen Pešić

675 Morphological 'Reading' as a Catalyst for Conservation:
Results from an urban conservation course in Penang, Malaysia
Jeffrey William Cody

683 Schools of Municipality I of Rome: reading of the derivation process from the special type: the palace and the convent
Cinzia Paciolla

689 Schools as Elements to Regenerate the Communities in the Contemporary Cities. Case Study: Kashan, Iran
Elham Karbalaei Hassani

PH.6 Continuity and Resilience as Tools for Regeneration

701 From urban tissues to special buildings and public squares:
architectural design experimentation in Pera, Istanbul
Alessandro Camiz, Özge Özkuvancı, Cemre Uslu

709 Urban morphology and critical reconstructions:
the case of Friedrichstadt
Ilaria Maria Zedda

721 Munich DistURBANce and Urban Sponge
Pathways from a 'Residence City' to a 'Resilient City'
Markus Stenger

735 Read to create and create to design. Urban Morphology as a guide to the transformation process of the 21st century city
Francesco Scattino

B.1 Reading/Design Study Cases

741 On Methods.
Towards an operative reading of city morphological legacies ordinary-building and building-type
Sérgio Padrão Fernandes, João Silva Leite

751 Designing for Productive Urban Landscapes. Applying the CPUL City concept in Lisbon Metropolitan Area
Teresa Marat-Mendes, Sara Silva Lopes, João Cunha Borges

761 Reproduction of the Edge as a Vitrine in Odunpazarı Historic District, Eskişehir
Acalya Alpan, Hasan Unver

771 Trisungo: a typological-procedural research for the recovery of a village hit by the 2016/2017 earthquake.
Michele Zampilli, Giulia Brunori

785 Chelas Zone J revisited: urban morphology and change in a recovering neighbourhood
João Cunha Borges, Teresa Marat-Mendes, Sara Silva Lopes

797 The Campidanese House and its housing typology.
Studies and strategies for an integrated recovery of Sardinian historical centres.
Alessandra Pusceddu

809 Alphabetical index

Shiraz and Kashan. Substrate and Urban form knots, road and band of pertinence for the Morphological Analysis

Paolo Carlotti
Sapienza, University of Roma – Diap
Paolo.carlotti@uniroma1.it
Keywords: *Substrate, Shiraz, Kashan, Morphology Urban*

Abstract

Two doctoral theses, two Iranian cities, have been the subject of research work target to the renovation project of the building fabric. In one case it was a matter of understanding if it is how the school building can perform a specializing function in the building fabric (Strappa G. 2016) , in the other instead focused the attention on the theme of residential regeneration in the tectonic and compositional tradition.

This paper presents the synthesis of the regressive and stratigraphic reading of the historical fabric of the two cities. The work refines the concept of "restructuring road", focused by Caniggia, used to read the shape of the city. (Caniggia G., 1984; Carlotti P., 2018).

The applied method is to identify, on digitized aerial photography cartography of Cadastre, the role and meaning of the forms present in the map; identifying from time to time nodes and axes that belong the city to have an organic system of relationships (Sauer C. O., 1925). Then subtracted from the cadastral draw, it allows to identify prior substrates organized with systems and structures linked to other different logics and economies.

The overlapping of different urban layers has made it possible to highlight relationships and rules that presided over the different phases of the transformation process of the building fabric, which today can prove useful for the architectural and urban regeneration project.

Two doctoral **thesis**, two towns of the Iran, two historical inhabited centers, Kashan and Shiraz, located, the first in the mountain plateau on the northwestern border of the great salt desert (Dasht and Kavir), the other on the last peaks of the Zagros mountain range, which form a kind of wall on the border between the great Saudi desert and the steppe desert shared with Afghanistan. Geological shores of the Pangeic continent where the mountain range extended between Kashan and Shiraz was nothing more than the compression zone between the mega Eurasia from East Africa which arise it to a height of 4548 meters above sea level (Mount Zard Kuh). For centuries they have been the place of a vertical transhumance that from the Shiraz plateaus moved southwards towards the coast for a seminomadicity of between two hundred and six hundred km and that from the highest altitudes of Shiraz (1500 m) and Kashan (1600 m asl.) of the mountain area called "temperate area or Yaylag", where they spent the summer, descended in winter towards the lower and more temperate plateaus called "tropical valley or Kishlak".

Places of the estivation, of live under tents, of the Mongolian and Turkmen native people that from the steppes of continental Europe, in prehistoric times, found in the Persian highlands characteristics similar to those of the steppes. Peoples who have always followed the same path to reach the tropical area from the coldest areas of the Euro Asian steppes, which include the current provinces of Kurdistan, Kermanshah, Ilam, Isfahan, Chaharmahal and Bakhtiari, Lorestan, Kohgoliyeh, Fars and Khuzestan.

Kashan and Shiraz have been also the subject of doctoral research aimed at the morphological analysis of the strongly stratified and originally organized building fabric **made of** basic housing units, **with** courtyard type built (in the case of Kashan), built using the matter of the place transformed as building element and raised up on the same place.

This paper anticipates the result of the regressive and stratigraphic reading of the historical urban fabric of the two cities, carried out using and developing the concept of "breakthrough street"focused by Caniggia (Caniggia G., 1976; Carlotti P., , and most recently revisited in the) concept of hypergrid and hyperisolated, which symmetrically it inserts in the building fabric of historical and contemporary towns (Moudon A., 2019).

The method used was to identify the traces of the residual alignments in the more ancient residual lines drawn on the digitized aero-photographic cartography (dwg), which from time to time have changed the urban system organization (Sauer C. O.,1925).

The procedure adopted to read the urban fabric, aimed to recognition of the plot shapes, has been portrayed by a block scheme, theoretical basis of an algorithm which, through the recognition of shapes (pattern recognition) and of the bands of pertinence of the roads, that lead the diachronic recognition of the phases of urban transformations.

Road portion designed ex novo or sometimes superimposed on existing road segments, in turn matrices of building fabrics characterized by different geometries, logics and economies. Fundamental elements of the different phases of the building fabric transformation process which in formal transformation can prove useful for the architectural and urban regeneration project.

Hypergrid and hyperblock

The transformation of the city and its urban fabric can take place through substitutions or adjustments. Substitution transformations are usually implemented in the building fabric through breakthrough/ or new additions of hierarchically organized paths.

They are implemented by adjusting, by partial replacements that must adapt to pre-existing plots and block. These are easily recognizable because they usually have a building unit inside, built on the orthogonal bands of relevance made with plots with very irregular and with larger dimensions and often combined with differently oriented alignments. This is true both for historical and for contemporary urban fabrics. Samples of these operations are those that can similarly be observed in many European cities of the XIX s; such as that of Rue de Rivoli in Paris or the Gran via in Madrid or at Rome the Corso Vittorio Emanuele or Viale di Trastevere, but also in the urban fabrics of North American cities as Boston, for which the practice of replacement and updating of the urban fabric has often been due to the pragmatics and economic maximization logics (Petruccioli A., Carlotti P., 1998). Routes almost always created to connect urban knots, developed and designed in the building fabric in previous moments, new streets and urban developments that responded better to the dominant demands and logic of the moment. In the town with orthogonal urban fabric, these phenomena are relatively less evident, but they are

always perfectly recognizable because they tend to organize themselves with orthogonal arrangements, with wider axes hierarchically organized and characterized by bands of pertinence composed of larger lot surface and with taller buildings. I have already had the opportunity to highlight this particular behavior also in Roman fabrics, such as the one observable along the areas belonging to the breakthrough street of Viale Trastevere (Carlotti P., 2017).

In the current urban fabric, these replacement operations are known for the fact that they present irregular situations in the pre-existing fabric and, on the contrary, structures and hierarchies almost similar to those observable along the matrix paths for the newly expanded external sections. However, there is an infinite range of variants of these situations which must therefore be considered from time to time in their precise context.

The practice of "modernizing" the city by replacement and adaptation was a practice also used in the urban transformation operations carried out in the fifteenth and sixteenth centuries, where the opening of the new streets required the arrangement of the facades and the adjustment of whole blocks. An example can be that one can be observed on the Via Giulia in Rome, or in the axis of San Francesco a Ripa this last created to connect two important squares in the fabric of the Trastevere separated by an undeveloped depression that separated these parts of the district (Carlotti P., 2018). In the first section made by cutting the urban blocks and imposing the topological adaptation of new lots and new building types (replacement and recast in line of terraced types) it is possible to observe the effect of the renovation, while in the second section of the street, performed on a the partially void area, the drawing of the new rectangular lots, of a larger size, is organized orthogonally to the route.

Smaller transformations can be observed in several parts of the urban fabric created even before the centuries preceding the fifteenth century, mostly these are small adjustments in the building fabric or individual private transformation that continue over time even in the same space. **As aside case**, they constitute those episodic replacements, such as the square of the nova church, Piazza Farnese, Piazza della Cancelleria which with the construction of a special building (Oratorio dei Filippini and the Palazzo della Cancelleria, have established new urban centralities that has been then linked together with the construction of Corso Vittorio Emanuele in the 19th century.

Similarly, even the most ancient and apparently linked to chance traces respond to these logics of convenience and rationality observed in the fabrics described above. Also these are sometimes due to a sequence of isolated actions which, linked to more spontaneous involutions of the fabric, have led over time to the formation of concave or convex paths and to the infilling of the older building fabric. This is the case of the path in via Monserrato which in its central extension shows a concave trend, due to the advancement of the facades, probably to integrate the stairwell or the shops previously added on the street front and which had partially obstructed its wider seat. For example, in the case of Aleppo (Panerai) is known that, along the colonnaded street of the city, the progressive and irregular occupation of the space between the columns determined the concave and convex trend in the urban fabric, that was still possible to observe in the urban fabric before the war destruction.

Hyper blocks and breakthrough streets in the Kashan urban fabric

The study of the morphology of the central and historical area of the city of Kashan was carried out within the research activities of the LPA laboratory, and it was aimed at understanding the meaning and the role of the central places and their connection axes in the different phases of the transformation process of the town.

Looking at the cadastral cartography of both Kashan and Shiraz, the latest footprints on the city are immediately evident. The "modernization" was implemented with gutting operations, which in fact imposed a new grid and new layers in the historic town. However, the new pattern that overlaps violently on the fabric shows other stratifications, which, although dictated by the same logic, on the contrary, has been metabolized from each new addition and mutation.

The hypergrid has produced hyperblocks that can no longer be metabolized with that substrate that largely constitutes its content. However, this has not erased the form of the historical aggregate that can still be recognized within this new network that isolates and divides urban sectors one time organically connected to each other. If anything, the new axes of the hypergrid force the transformation of the building on the both side of the road margins and then, increasingly driven by maximization logics, to the inner urban

fabric of the hyperblock erasing any other residual traces of the past.

The hypergrid is an idea of a city, which is superimposed on an existing design and which triggers a transformation process that in the long run leads to completely reorganize the urban design.

The thesis assumed and presented in this short essay is based on the belief that each form of block and lot is the result of choices and / or adaptations to inherited and achieved structures. For this reason, it is always possible to deduce the previous phases from this, but only starting from the last one created, which if removed from the cadastral design, show the stratification previously made and overall less evident, with its own centrality and the different connections roads.

The reading of the Kashan building fabric was carried out on an aerial cadastral map capable of providing the exact shape of the land plot and of its built part. The first operation was then to recognize, through the almost total irregularity of the lots, the last imprint superimposed on the town. These are routes created in relatively recent times, traced at the expense of the historical base urban fabric, which by evidently cutting parts of the fabric have designed new and regular blocks composed by plots oriented differently from the larger dimensions and shape trapezoidal

The second operation was instead that, after eliminating the last building substrate, to analyze the bands of pertinence of the paths, as well as the shapes of the lots distinguishing them once again by size and regularity of shape.

It was easy to highlight the paths added in relatively recent stages to the edges of a denser fabric and characterized by particularly irregularly shaped lots.

Morphological analysis and historical documentation

By paying particular attention to the areas pertaining to the evident breakthrough street of the Kashan fabric and subtracting these from the contemporary cadastral map, it was possible to isolate and highlight the residual traces of the paths and building perimeters of an older substratum organized on different alignments and recognizable by the more or less regularity of the shape of the lot.

The contemporary hypergrid, the last ~~of the~~ layers added to the overall urban fabric of Kashan as well as Shiraz, is part of a system of breakthrough street, created in the recent Palhavi period through the disembowelment of the ancient urban fabric. This is in order to connect the main knots to improve the vehicular flow between them. New connecting axes, in between nodes in the urban organism made up of mosques and other special buildings of the Islamic city, that have reorganized the historical building fabric in hyperblocks. However, these have erased part of the historical fabric which had hitherto been nesting, but which is still partially possible to imagine if in the general drawing of the fabric if within the urban fabric we will have been able to isolate from the more modern one. Hyperblocks that still retain the signs of a planned or spontaneous fabric that belongs to other stages of development and that can be highlighted only by separating the alignments and the different plot shapes of the "matrix" urban design from that of the new breakthrough street of the hypergrid. By carefully examining this dense orthogonal mesh, inside the new hyperblock, and by combining this grid with the bands of pertinence of the several paths, it is possible to get back the evidence, albeit in a blurred way, what remains of the ancients urban layers that could have been at the origin of the current form.

Even in the morphological study of Shiraz the traces of the paths that connect the inner centralities with the urban doors of the inner walls town are evident. As in Kashan, it was possible to isolate those paths characterized by greater length and that only occasionally have adhered to the different alignments of the urban fabric. Which cross and connect urban areas, which in turn show the permanence of alignments, with bands of pertinence consisting, for the most part, of rather irregular shaped plots. In a couple of cases and in coincidence with a general orthogonal warping, concave sections have been observed. (Caniggia G., 1976, p. 86).

On the other hand, the behavior observed in the areas belonging to some older streets that specialized in the commercial function is different. In Kashan one of the most evident is that of the bazaar, close to the original settlement nucleus. The section characterized by irregular polygons is placed diagonally to the fabric, instead composed mainly of orthogonal paths and lots along the bands of pertinence (Fig.6). Particle shapes adapted and superimposed on an evident structure on a building fabric that still retains coordinated alignments both to the north and south of the breakthrough street.

In the southern stretch of the fabric of the city of Kashan, a restructuring path is recognizable that connects more external knots and stretched on traces of fabrics still aligned on different manner. While the path that matches the commercial fabric of the Grand Bazaar coincides, roughly with the alignments of the substratum and recognizable in the north-eastern sector of the historic center. Both paths recognized through morphological analysis coincide with the reconstructions made by Kashan historians.

If we do not take into account these different overlaps made in the building fabric, a whole series of paths and bands of pertinence emerge, portions of the path and blocks that extend it within the northern area of the historic town, aligned according to the same orthogonal geometries and which belong to an expansion phase of the town just outside the original nucleus. (Fig. 8).

Conclusions

The paths of restructuring and the topological variants observable in the cadastral urban fabric, if investigated through the regressive method, allow us to reconstruct what Paolo Carafa defines as "the flow of landscapes in transformation" (Carafa P., 2020). Topological variations of the cadastral units of the Kashan and Shiraz have infilled the courtyard house (short) areas that existed in the historical fabric of the city and other time the space of the public way, confirming what the historians of the Iranian city have hypothesized about the different case studies examined.

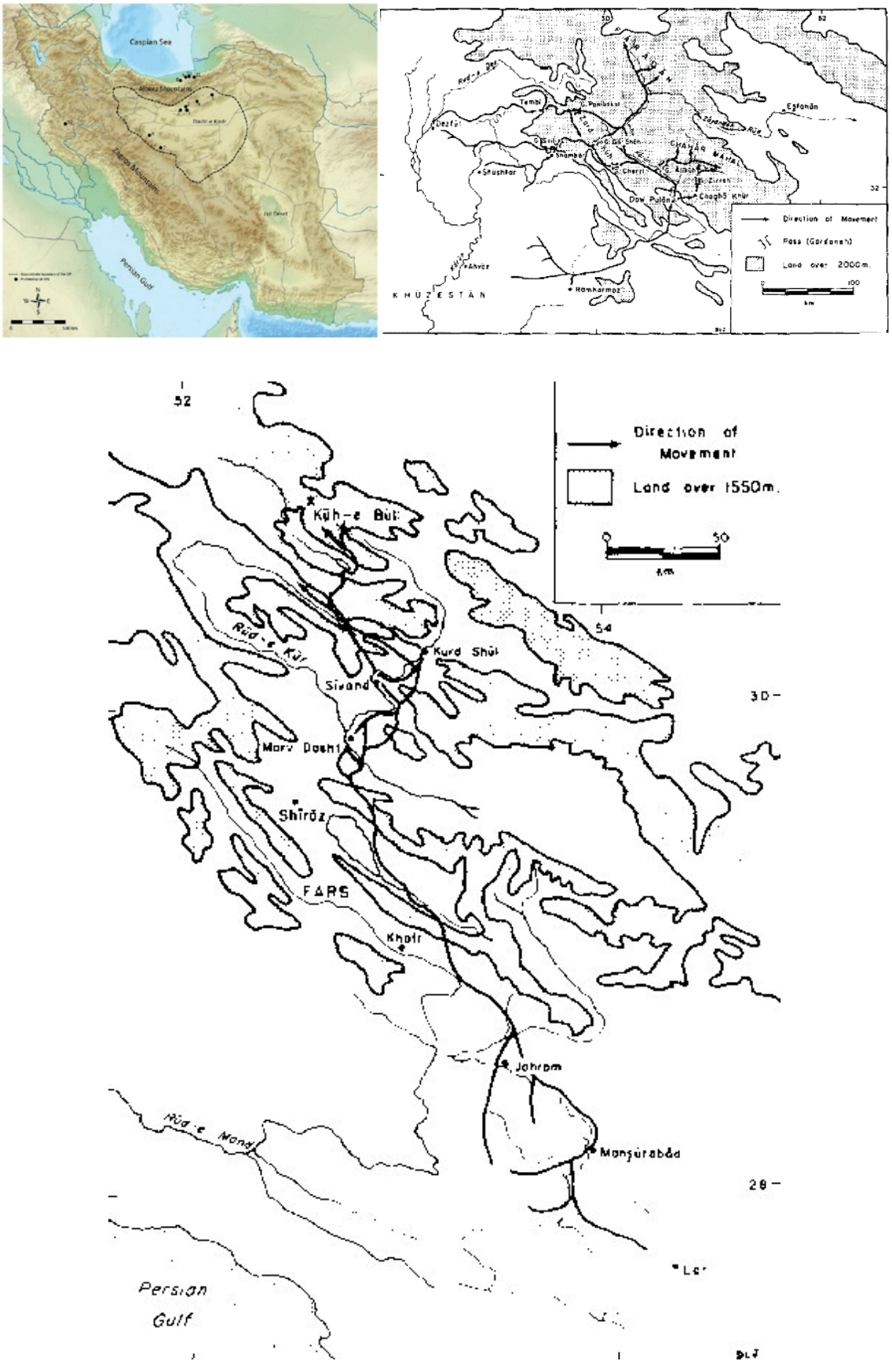

Figure 1-2-3. Iran: Physical morphology and path of trhansumence.

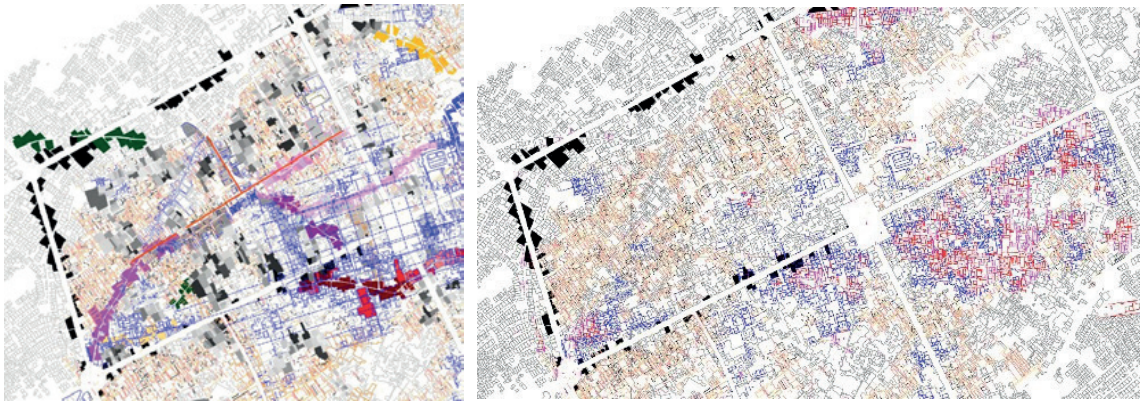

Figure 4. (right) Kashan: Analysis of urban fabric. Band of pertinence of breakthrough street built in different time.
Note the irregular form of the plots;
Figure 5. (left) Kashan: Hypergrid and hyperblock superimposed and alignments of the ancient phases of development.

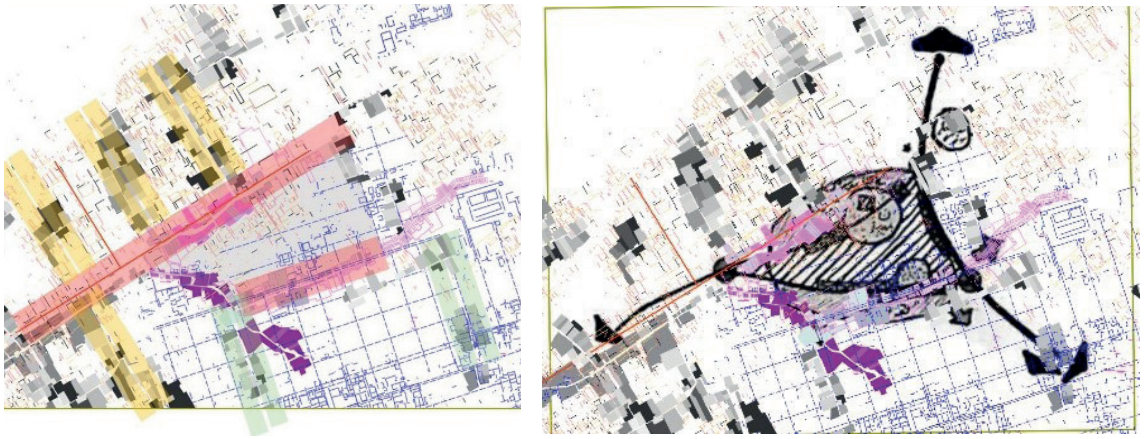

Figure 6. Kashan: Morphological analysis of the urban Fabric. The drawing superimposed is the historical Hypothesis of the first settlements. The behavior of the plots and the alignment confirm the historical hypothesis

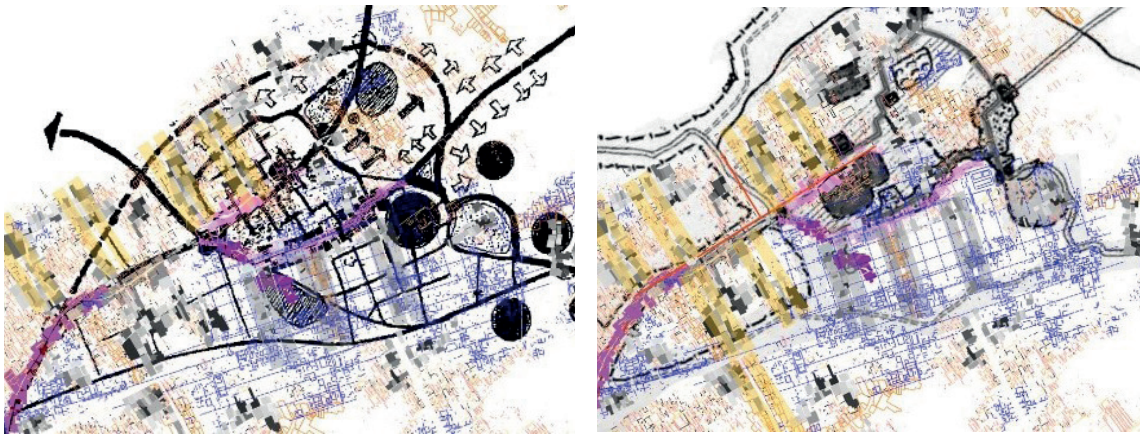

Figure 7-8. Kashan: Morphological analysis of the urban Fabric. The drawing superimposed is the historical Hypothesis of the different phases of the settlement from IXs to XIs. The behavior of the plots and the alignment confirm the historical hypothesis organised with two different alignments at north (light orange) and south (light blue alignment) after the first phase and the further extension of the XIs phase. (Light orange alignment)

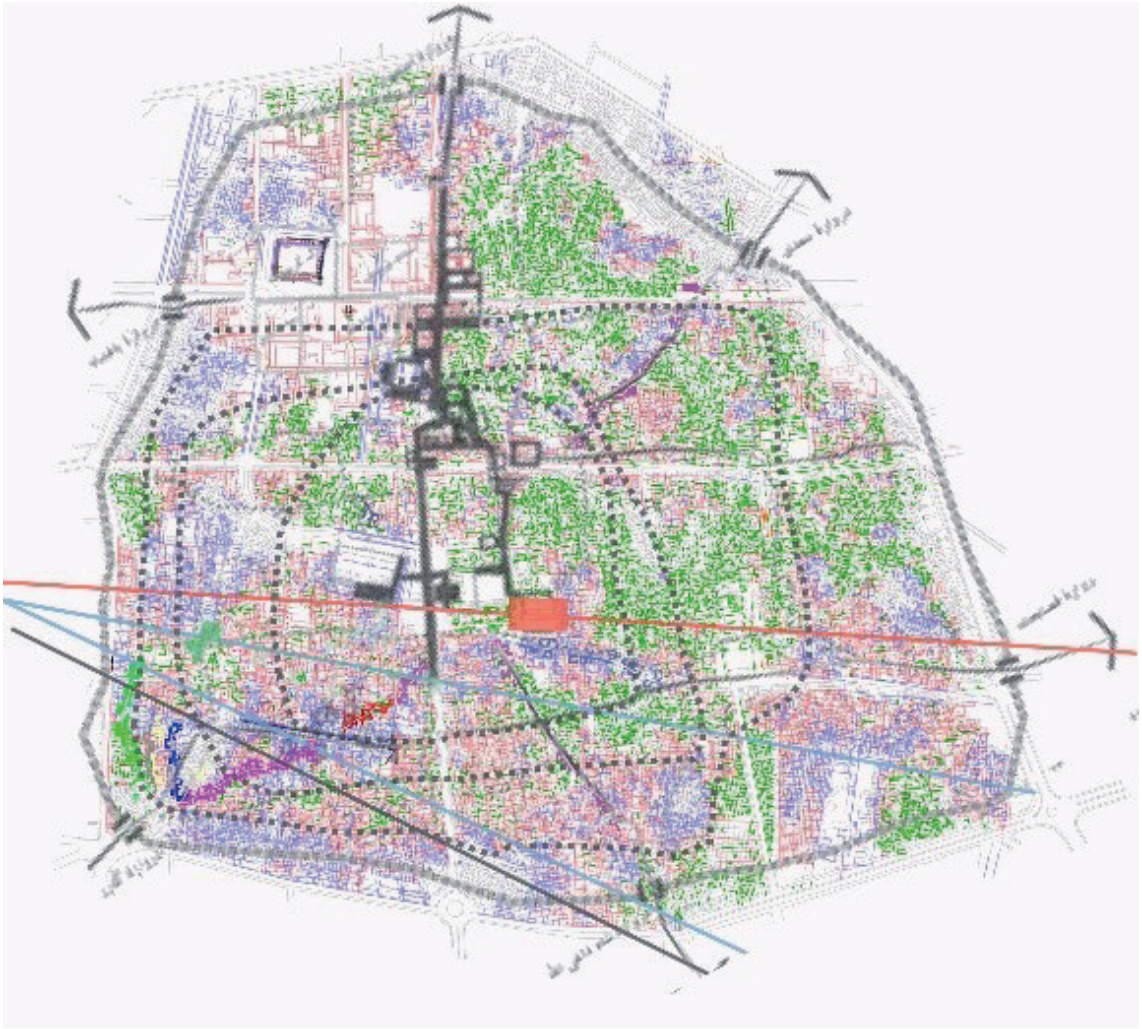

Figure 9. Shiraz: Morphological analysis and breakthrough street in between different town wall.

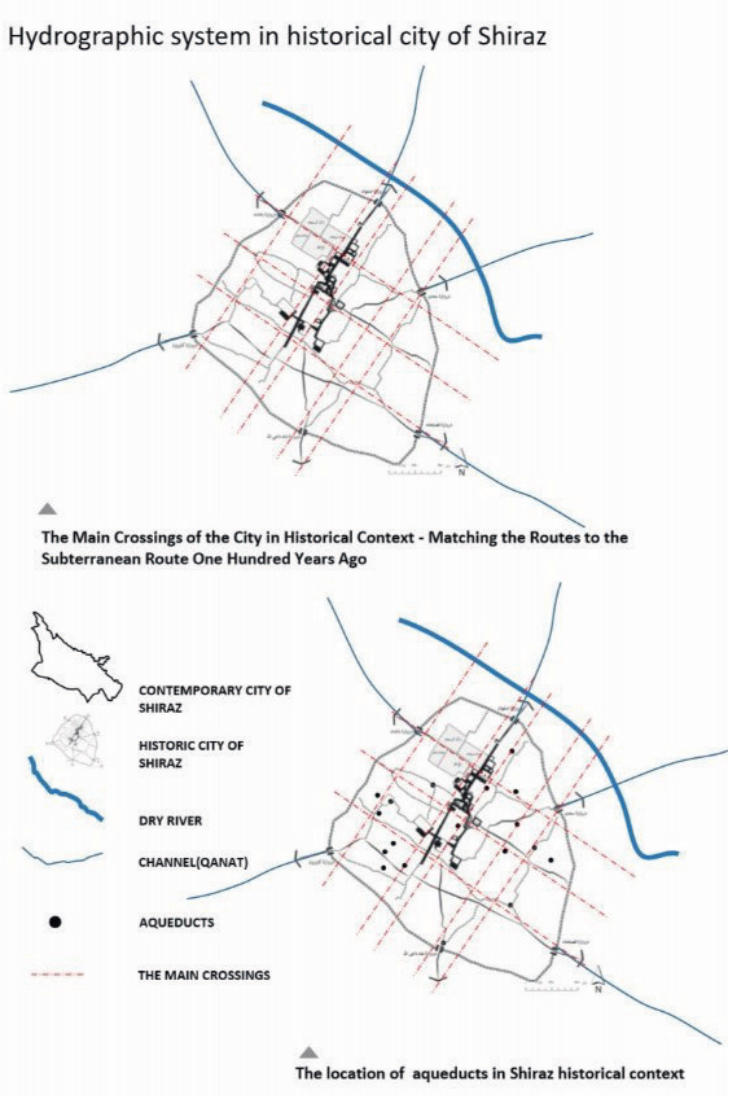

Figure 10. Shiraz: Hydrographic system and Chronology of some historical monuments.

References

Caniggia G., Maffei G.L. (1979), *Composizione architettonica e tipologia edilizia. Lettura dell'edilizia di base*, Marsilio, Venezia

Carafa P.,(2012) *Atlante di Roma Antica*, Mondadori, Milano

Carlotti P., (2017) *Elementi per un'esegesi della morfologia urbana*, U+D, Roma

Moudon A., (2019) "*Introdicing Supergrids, Superblock, Areas, Networks, and Levels to Urban Morphological Analyses*", in ICONARP, vol 7, Special Issuue, pp. 01-14

Sauer C.O., (1925) *The morphology of landscape,* Univ. of California press

Petruccioli A., Carlotti P., (1998) Boston……

Strappa G., Carlotti P., Camiz A., (2016) *Morfologia urbana e piccoli centri storici*, Gangemi, Roma

Alphabetical index

A

Acalya **Alpan** 18, 761
Ana **Amado** 16, 611, 623, 632,
Denise **Antonucci** 14, 393

B

Özlem **Balcı** 15, 403
Maddalena **Barbieri** 16, 635
Rosalba **Belibani** 16, 565, 575
Zoltán **Bereczki** 13, 165, 175
Liora **Bigon** 13, 237
Andreea **Boldojar** 16, 543
João **Borges** 18, 751, 754, 760, 785, 786, 787, 788
Irina **Branko 16, 577,**
Giulia **Brunori** 18, 771, 772, 773, 782, 783
Iuliia Viktorovna **Bushmakova** 13, 225, 228,236

C

Alessandro **Camiz** 6, 12, 17, 125, 126, 134, 391, 622, 687, 701, 704, 708
Marta Garcia Carbonero 15, 429
Paolo **Carlotti** 6, 16, 21, 24, 125, 134, 282, 391, 458, 613, 614, 615, 622, 687, 690, 699, 701, 704
Nelcy Echeverría **Castro** 16, 531
Giancarlo **Cataldi** 6, 24, 62, 126, 134, 327, 328, 336, 682,
Marlene **Chahine** 15, 439, 440, 441, 445
Nadia **Charalambous** 15, 447, 445,
Jeffrey William **Cody** 17, 675, 682
Carlos Dias **Coelho** 6, 12, 24, 61, 62, 67, 69, 602, 603, 611, 612, 633, 749,
Martina **Crapolicchio** 13, 247

D

Vincenzo **d'Abramo** 13, 147
Maria Chiara **De Luca** 15, 519
Francesca Delia **De Rosa** 7, 15, 282, 509
Ermelinda **Di Chiara** 14, 337
Miriana **Di Gioia** 12, 71, 72
Vladan **Djokić** 17, 665, 668, 669, 674
Aleksandra **Djordjević** 17, 665

F

Farzaneh Nahas **Farmaniyeh** 15, 457
Sérgio Padrão **Fernandes** 18, 61, 611, 612, 741

G

Carla **Galanto** 15, 519
Francesca **Geremia** 12, 39, 49
Santiago **Gomes** 16, 635
Gianpiero **Gorgoglione** 15, 449, 500
Rossella **Gugliotta** 14, 359

H

Małgorzata **Hanzl** 6
Elham Karbakaei **Hassani** 17, 689
Fatos Merve **Hidiroglu** 13, 201

I

Ileana **Iacono** 15, 519
Matteo **Ieva** 6, 12, 15, 23, 71, 72, 77, 134, 280, 282, 283, 286, 499, 500, 504, 518,
Greta **Indrio** 15, 499, 500

K

Selen **Karadoğan** 12, 79
Ecem **Kutlay** 12, 79

L

Davide **Lasorella** 15, 499, 500
Deborah C. Lefosse 15, 483
João Silva **Leite** 16, 18, 396, 601, 611, 612, 741
Francesco Maria **Leone** 12, 71
Gisela **Loehlein** 15, 495
Sara **Lopes** 18, 751, 785, 787
Éva **Lovra** 12, 13, 33, 165

M

Michele **Magazzù** 14, 327, 328, 336, 782
Mark David **Major** 13, 14, 177, 183
Svetlana Valentinovna **Maksimova** 17, 225, 645
Teresa **Marat-Mendes** 6,18, 751, 785
Nicola **Marzot** 6, 12, 38, 87, 88, 89, 93, 94, 98, 99, 100, 101, 109, 111, 134, 737, 739
Chiara **Melchionna** 12, 39
Cesar Damian **Mifsut Garcia** 12, 51
Ambra **Migliorisi** 16, 587
Milica **Milojević** 17, 665

N

Maxime **Nadon-Roger** 14, 271, 278
Camila **Nardino** 13, 135

O

Heba **O. Tannous** 14, 186, 189, 287, 288, 302, 303
Vitor **Oliveira** 24, 669
Daniel **Olivier-Cividino** 17, 655
Özge **Özkuvancı** 17, 701
Burak **Ozturk** 13, 191

P

Cinzia **Paciolla** 17, 683
Antonio Blanco **Pastor** 15, 411
Mladen **Pešić** 17, 665
Laura **Pezzetti** 14, 369, 370, 371, 378, 380, 381
Junior Dirceu **Piccinato** 13, 135
Greta **Pitanti** 15, 423
Sérgio Barreiros **Proença** 16, 601, 611, 623
Elisa Valentina **Prusicki** 14, 347, 357
Alessandra **Pusceddu** 7, 18, 797

R

Rossella **Regina** 12, 71
Ana **Ricchiardi** 13, 231
Giuseppe Francesco **Rociola** 14, 305, 314, 315, 316
Ombretta **Romice** 682
Eric **Ross** 13, 237, 238

S

Fazilet Duygu **Saban 1**3, 155, 156, 157, 161
Beliz Büşra **Şahin** 13, 155, 156, 157
Cristian **Sammarco** 14, 317
Luiza Cardoso **Santos** 14, 383
Nicola **Scardigno** 7, 14, 279, 282
Francesco **Scattino** 17, 735
Fausta **Schiavone** 12, 71
Anastasia Evgenievna **Semina** 17, 645
Andi **Shameti** 16, 577
Bojana Bojanić Obad **Šćitaroci** 13, 257, 258, 268
José Miguel **Silva** 12, 61
Gabriela Lamanna **Soares** 14, 393
Ali **Sokhanpardaz** 15, 457
Ana **Sopina** 13, 257, 258, 268
Idamaria **Sorrentino** 15, 519
Markus **Stenger** 17, 721
Giuseppe **Strappa** 6, 19, 23, 69, 77, 98, 108, 111, 125, 134, 282, 283, 284, 286, 317, 318, 325, 345, 370, 382, 391, 504, 518, 545, 554, 613, 622, 687, 692, 699, 701, 703, 704, 708, 749

T

Maria Luiza Sorace Grande **Tavares** 16, 595
Zeynep **Tulumen** 16, 555

U

Hasan **Unver** 18, 761
Cemre **Uslu** 17, 701

V

Juljan **Veleshnja** 16, 577
Federica **Visconti** 7, 12, 24, 25, 338, 339, 345
Maria **Vitiello** 12, 113, 118, 123

Z

Michele **Zampilli** 7, 18, 771, 772, 773, 777, 782, 783
Ilaria Maria **Zedda** 17, 709

ISUFitaly
International Seminar on Urban Form
Italian Network
ISBN 978-88-941188-8-9