The emerging role of Urban Morphology in practicing and teaching architectural and urban design

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«E d’otto chase n’ò fatte una, chè tre rispondevano in Via della Vigna e cinque drieto»

«And out of eight houses I made one, as three were in Via della Vigna and five behind»

(Rucellai, 1457)

Abstract

The querelle between modern and traditional urban design has alimented in the past decades diverging phenomena such as the new urbanism, the so-called vernacular architecture and the landscape urbanism on one hand, and the extreme radical neo or ultra-modernist approaches on the other side, each establishing clearly a different and diverging position within the international debate. The urban morphology approach, as developed in time by the Italian school of Saverio Muratori and Gianfranco Caniggia and their followers, has developed a methodology for architectural and urban design, which is neither the radical reproposal of the ultra-modernist style, nor the nostalgic reference to vernacular forms. The Italian school of Urban Morphology proposes a methodology for urban and architectural design based on the reconstruction of the formation process of the built organism, the types, the aggregates, and the territorial cycles. Upon the full understanding of these multi scalar processes, it is then possible to develop the project as the last phase of an ongoing process. A last phase, conceived as contemporary on one hand, but not opposing itself to history on the other, deriving its vitality from the understanding of the formation process of building types and urban tissues so to be the continuation of the past into the future. The paper illustrates briefly the formation process of palaces and public squares through some well-known examples, and proposes a project that applied the same methodology in the design.

Keywords: urban-morphology; public space; urban tissues; urban design
1. The formation process of the urban block

According to the Italian school of Urban Morphology, every building type is the result of a diachronic process that starts with basic buildings; also every part of the city is the result of the transformation of urban tissues comprising basic buildings. So are churches, palaces, and also public squares. As an example of this process, the flat apartment building, or in-line house, the type mostly used today for housing, is the result of the merging of two row-houses. This transformation starts in the late XVIII century when the urban accumulation processes lead private landlords to own more than one adjacent row house, with the need to rent the space to different families. We can see many examples in the drawings filed in the title 54 of the Municipal Archive in Rome, where every architect had to file the survey of the existing building and the proposed transformation so to have the permission for the construction. In the example in Figure 1 the architect in 1870 designed for two row-houses in Vicolo dello Struzzo 12-14 in Rome, the replacement of the gable roof with one more storey and a flat roof, the demolition of the two existing staircases, the construction of a new staircase to distribute vertically the building, and a new facade.

The formation process of urban tissues according to the Italian school of Urban Morphology (Muratori, 1959), (Caniggia, Maffei, 2001) follows the repetition of a building type along a system of urban routes. These routes are hierarchized diachronically in matrix, planned construction and connection or restructuring routes. The repetition of the same type along the routes follows certain rules from which it is possible to recognize the different phases of the growth. In the first phase row houses are built along both sides of the matrix route; once the space therein is filled, planned construction routes stem on the sides of the matrix route and a new row of houses is built. This process happens in time, and not necessarily is planned. At the intersection of the matrix route and the planned construction route, the construction in the backyards of the corner houses determines a synchronic variant by position of the type. After the tissue along the planned route is completed, a connecting route can follow in two different ways: as a planned one, leaving the empty space for the urban tissue, or spontaneously, with buildings growing inside the backyards of the row-houses, determining the typical stepped pattern.

Figure 1. Project to merge two row-houses into one in-line house, Archivio Capitolino di Roma, titolo 54, fasc. 28/40, prot. a. 7670, 1870.

The new facade in a neo classical style used fake windows to obtain the rhythmical design à la mode, and inserted a fake doorway to achieve the symmetry of the composition.

Figure 2. Aggregation of row houses on matrix route (1), planned construction route (2), spontaneous connection route (3 above), planned connection route (3 below), (Strappa, 1995).
The formation of the urban block is the premise for its transformation, by demolition, into a public square.

2. The formation process of the square

The formation process of public spaces within the modern city has ancient roots: although referenced to the model of the great public spaces of Republican and Imperial Rome, the “common” urban space of Italian cities has a different juridical nature from that of the “public” space of the imperial Roman. The latter was fenced and equipped with gates, it was a personal property of the imperial family, its access was governed in time and it was dedicated to the worship of the imperial family and its tutelary deities. This space was therefore not “public” in the sense we understand today. The “common” space of the Italian cities came into being in the middle Ages hence the deliberate action of the free “Communes” who decided to build by subtraction such a space for the public assembly of citizens. In time it became a space for free civic aggregation, for the election of the council and the podestà.

Although there are earlier examples of squares built by subtraction next to the cathedrals, where meetings were necessary for the election of the archbishop, (Camiz, 2007), we can say, that the “common” space acquires its complete form and its civic role only since the thirteenth century with the more mature phase of the municipal experience. In these squares, bishopric, municipal (and later ducal and lordly), very often we can recognize the presence of a market place: the “common space” here takes on the double meaning of place for business and place for civic meetings. This manner of designing public spaces consolidated in the following centuries and can be seen in many examples even in mannerist age and beyond. The birth of the modern theatre stood initially in these spaces through wooden stalls mounted temporarily at the edges, before knotting in the form of a closed theatre (Strappa, 1995). The design of the common spaces within the city, therefore, used specific design skills, which involved the shaping of urban voids in a “theatrical” manner. One of the most meaningful examples is the urban project for Zagarolo as related to the comic scene of Serlio’s Treaty. In parallel with the rise of the bourgeois mansion and the recast and aggregation of basic building types, often adjacent to the same building, an empty space arises almost assuming the character of a “building without roof”. This happens in the site of the nodal simultaneous concentration of capital (building) and goods (market).
Piazza Maggiore in Bologna, even though located in the same position of the Forum of Bononia at the intersection of the Kardo Maximus of the Via Aemilia with the Decumanus Maximus, has no relation with the Roman Forum, which sits several meters below the ground level of the city. The area where the square is today was entirely built in the middle-ages, until the Commune of Bologna decided to demolish some blocks to determine a public space for meetings. In 1294 the commune of Bologna bought a large number of buildings, to create the space for the public market. A termination was designed, including many residential buildings contained in the blocks of the area surrounding the communal palace, and all the buildings therein were demolished (Guidoni & Zolla 2002) determining by subtraction the square as we can experience it today. Therefore that public square is not the continuation of the Roman Forum, but the result of a communal design, the planned transformation of a part of the residential tissue of Bologna so to determine the most important part of its political programme, the space for the assembly of citizens.

Figure 3 shows the termination perimeter and the demolished blocks. Piazza della Signoria in Florence is another eloquent example of the same process, the formation of public squares by the demolition of blocks of residential buildings for the deliberate action of the medieval Commune. In Florence the struggle for power of the two competing factions, Guelfs and Ghibellines, fighting for the full control of the Commune, ended with a strong prevalence of the Guelfs. The loosing Ghibelline faction, whose members lived prevalently in the area surrounding the Palazzo della Signoria, was exiled from the city, and the houses were demolished so to leave space for a new square in front of the communal palace. A space for the display of power, and for the triumph of the winning faction, the Guelfs. Piazza della Signoria is therefore the result of such a demolition, which happened in different phases, starting with the Platea Ubertorum that existed since 1299 next to the Palazzo della Signoria, and continued expanding that space in 1307, 1319 and 1343, by demolishing one block at the time (Guidoni 2002). Further demolitions were accomplished in 1362, 1374 when the Loggia dei Lanzi was built and others later in 1386 on the western side of the square. (Fig. 5 and 6). It is possible to recognize this process clearly in Piazza della Signoria as all the sides of the urban void follow the direction of a street, and the shape of the square is that of the missing residential blocks.

Figure 5. The different phases of the definition of Piazza della Signoria in Florence by demolishing urban blocks, (Guidoni, 2002).

Figure 6. Aerial view of Piazza della Signoria today (Google earth, 2012).
The Florentine palace, square and Loggia, determined a model for the design of public spaces that we will see employed one century later by Leon Battista Alberti for the project of Palazzo Rucellai, the loggia Rucellai and the square. Piazza Farnese in Rome is another example of the same type of urban transformation, the design of a public square by demolishing blocks of residential tissue. Here the construction of the palace begun in 1514 under the direction of Antonio da Sangallo the younger commissioned by Alessandro Farnese and continued until 1536. Following the election of Alessandro as Pope Paul the III in 1534, the palace assumed a different meaning and Michelangelo became the director of the project. It is in this phase that the necessity to demolish the two blocks in front of the building arose. The last storey of the palace introduced by Michelangelo, and the new papal rank of the owner required a space from where it was possible to see the facade of the palace. Starting from 1546 one block is demolished, and it is shown as missing in Leonardo Bufalini’s Pianta di Roma depicted in 1551, and in the following years the second block was removed leaving space for the square with the two symmetrical fountains. This square though is not a public space for the market and assembly of citizens, as it was not commissioned by the commune, rather it is a space for the display of power as commissioned by the pope, the lord or Rome. A space from which it is possible to gaze entirely at the facade of the huge palazzo, and recognise the importance of its owner, the pope Paul III. In this same public space we can notice the birth of the modern theatre, as the space was used for games and spectacles mounting wooden provisional stalls around it. The façade of the Renaissance palace became the *frons scenae* of the modern theatre, a place from where gaze at the spectacle, but also a space to seen from the spectacle. The modern theatre is not the transformation of the Greek theatre, but rather the transformation of an urban void, which in time was covered and became the modern theatre. It is possible to notice in many of the XVIII century examples the presence of windows and doors in the interior facades, as those of buildings facing an urban square. (Strappa, 1995).

3. The formation process of palaces

The transformation of the block into a palace, by recasting the different row houses into a unitary organism, is another example of how the special building types originate from the basic types. Starting from the Renaissance, the bourgeois capitalistic accumulation, lead some families to be rich enough to be able to buy an entire block of row houses.
Once the houses were bought it was necessary to transform them for the new needs of a larger and richer family including the necessity to display the social status of the owner. For this purpose a new role emerged, that of the architect. In the middle-ages very rarely the author of the project was known since the building was a collective work, but starting from the Renaissance the individual role of the designer exploited. The case of Palazzo Rucellai represents emblematically this new design process. The owner of the Palace, Giovanni di Paolo Rucellai, was a rich Florentine wool merchant that became rich with his business. As an educated man he kept a diary, the Zibaldone quadragesimale, a hand written book including personal notes as well as the translation of Greek and Latin classical texts. In this book he noted that the Palace was the transformation of eight houses into one building, showing clearly the specialisation of the palace as derived from the knotting of a part of urban tissue comprising row houses. We must now understand the process, showing the transformations and the role of the architects, Leon Battista Alberti and his executor Bernardo Rossellino. To redistribute horizontally and vertically the eight row houses, each one having originally one independent entrance and one staircase, it was necessary to reverse inside the built organism the two external routes:

![Figure 9. Matrix route (red), planned construction route (green), restructuring route (blue).](image1)

The matrix route on the front, and the planned construction route on the left side. The row houses were originally accessible directly from these streets, but following the transformation into a palace, they had to be distributed from the inside. The two routes outside the building were replicated into the two porticoes determining the asymmetric courtyard. At the node determined by the intersection of these two porticoes the new staircase was built, substituting the individual staircases of each row house. The new organism is based on the same structures of the older one, the walls, with very few changes. A new façade was designed covering with a stone cladding, composed with the classical orders, the former walls. This façade followed the principles of rhythm and symmetry, redefining the position and the measure of the window openings and the main door. The solution to this problem provided by Alberti, is similar to that one we considered in

![Figure 10. Alberti froze the transformation of row houses into a palace by leaving one of the houses uncovered by the new facade.](image2)
Figure 1, a double entrance door, with the axis of symmetry in the middle of the two doors, where the door on the left leded into the courtyard and the door on the right not being a real entrance to the palace, was a fake entrance door. This axis of symmetry determined the composition of the entire façade, with its rhythmical openings and superimposed classical orders. It must be noted that the last row house on the right, even though included in the transformation, as distributed by the portico on the second floor and not having its own staircase, is not covered by the new façade on the main street. Some may suggest that the unfinished composition of this building front derived from an interruption of the construction, but we believe firmly that is was intentional. Alberti froze the transformation of row houses into a palace by leaving one of the houses uncovered by the new façade, as a mark of the ongoing process. A mark that could be read only by a specialist, an architect, like he was.

As in the other examples shown, where the existence of the square is strictly connected with the palazzo facing it, even here, some years later, the owner decided he wanted a square in front of his palace. The palace was completed in 1451, and in 1546 Ugolino di Francesco Rucellai donated to Giovanni other houses within the block in front of the façade of the Palazzo. To establish a public square, in the form of triangle, delimited on the eastern side by a Loggia, once again Leon Battista Alberti was in charge of the project with the help of Antonio del Migliorino Guidotti. Demolishing the four houses, the project was completed, in the site of the last one a Loggia was built to delimit with a portico the public square. The overall model for the project is the same of that used for Piazza della Signoria, with the Palazzo and the Loggia, at a smaller scale, so to express the power of the family Rucellai, and to have a space from where it was possible to see clearly the new architecture of the building. Without this last operation the palace would have faced a narrow street and its composition could not have been perceived properly.
4. Application of the theory to design

The project here shown was presented for a public design contest organized in 2012 by the municipality of Carezzano Maggiore, a small town of 429 inhabitants in the Province of Alessandria, in the Piemonte region of Italy. The purpose of the competition was to select design ideas for the redesign of an area to be transformed into municipal facilities. A design team was established in Rome, under the direction of Prof. Giuseppe Strappa; the team comprised Paolo Carlotti, Giancarlo Galassi, Martina Longo, Marco Maretto, Pina Ciotoli and myself. We decided to join this competition to experiment our theoretical approach to architectural design and see if it was effective. As a matter of fact it proved to be quite effective as we won the first prize of the design competition. The group proposed a redevelopment of the area believing that the contemporary design should continue the ongoing historic process of urban transformation. The project involved the re-use and partial transformation of the buildings indicated by the competition announcement along the road axis of via Cinque Martiri. The buildings to be transformed overlooking Via Cinque Martiri had features that clearly indicated their origin as three rural courtyard houses, according to a building type diffused in many other areas of northern Italy (Strappa, 1995). Two of these original houses were merged in time into a larger organism, with the addition of a stable in the back.

The project therefore, as shown in Figure 14, built the processual sequence of this transformation and determined the new idea by continuing that process (Strappa, 2013). The different phases were hypothesized through the following succession. A first phase was characterized by the presence of a tissue of rural courtyard houses with the access from the main road. In the second stage part of these courtyards was infilled with the construction of smaller rural volumes such as stables, rustic buildings etc. In the third phase some of the courtyards, originally belonging to a single owner, were merged determining a larger organism. The fourth phase is the project, with the internal reversal of the matrix route, just like in palazzo Rucellai, and the knotting of the internal paths to form the new complex according to the palace building type. The fourth and final formation phase corresponds to the contemporary project, as a result of a process in progress. The new building is representative of a palace as derived from the evolution of the existing building fabric, highlighted by the interior courtyard, where the pavement design expresses the hierarchy of routes connecting the inside with the existing square in front of the church. The project was based on refurbishing, without demolishing, the existing buildings, determining a new horizontal distribution given by the portico and a new vertical connection given by the staircase.

Figure 13. G. Strappa, A. Camiz, P. Carlotti, G. Galassi, M. Longo, M. Maretto, P. Ciotoli, Riqualificazione di un’area del centro storico di Carezzano Maggiore, international design competition, 2012, first prize.

Figure 14. G. Strappa, A. Camiz, P. Carlotti, G. Galassi, M. Longo, M. Maretto, P. Ciotoli, Riqualificazione di un’area del centro storico di Carezzano Maggiore, international design competition, 2012, first prize.
Inside the new civic centre a portico unifies the spaces of the different building units by connecting them and is served by a main staircase placed to the left of the entrance. The portico is constituted by reinforced concrete pilasters cladded in bricks and is, together with the new staircase, the only addition to the pre-existing volumes. This addition also performs an energy saving task, through the presence of horizontal shingles that provide the passive protection of the façade facing the south. The entrance to the inner square is redefined so to allow pedestrian access as well as the occasional use for vehicles, both for functional and architectural reasons. The definition of the entrance in architectural terms becomes the visible indication of the transformation of a part of the urban fabric into a public building. The new public space inside the perimeter of the civic centre is designed as an inner square, paved in local stone slabs as a public space, and can be used for public events, along with the urban system of public spaces connecting to St. Eusebius’ church existing public square and to the square in front of the City Hall, by the use of the same and design and materials. The language, the technology and the materials with which this project was expressed are sincerely modern, with no mimicry of vernacular or classical forms, with no post-modernist accent.

The transformation process adopted in Carezzano though is the same of that of Palazzo Rucellai, by recasting existing residential units, courtyard houses in this case, row houses in Florence, into a new organism, the palace, by keeping and updating the existing bearing walls, and adding only a portico, a staircase and a façade. In this case it was not possible to define by demolition a square in front of the new organism, but the existing public spaces were connected using the design of new floor, conceived to unify the system of public spaces of the city of Carezzano Maggiore. This project demonstrates clearly how it is possible today to apply the methodology of urban morphology and building typology to an architectural design. Within the contemporary debate of architecture, characterised on one side by the star architecture, conceived to serve as a spectacular object for the media, rather than an organism useful for the city, and on the other side by the multiplication of radical organic forms, this approach constitutes a rigorous example of the application of a theory to a praxis. Based on the consolidated researches of the Italian school of urban morphology, this approach is continuously developing through the research of the urban tissues in different parts of the world conducted by various researchers. It is not therefore a static methodology based on given rules, but rather a field in continuous development.
7. References


Place and Locality vs. Modernism:

Examples of emerging new paradigms in Architectural Design

International Conference and Student Workshop

16-23 July 2017
School of Architecture
Athens, Greece

PROCEEDINGS

EDITORS: Elena Konstantinidou Dimitra Nikolaou
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International Conference in NTUA, Athens, Greece,
July 16 - 23, 2017

ISBN: 978-618-80734-8-7

Co-funded by the Erasmus+ Programme of the European Union
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ISBN: 978-618-80734-8-7
LOCATION

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The volume “Place and Locality versus Modernism” is the last deliverable of the project ARCHI.MEDES: Shaping the Architect’s Profile(s) for the Mediterranean and European South which took place within Erasmus+ Strategic Partnerships Action during the years 2014–2017. Scientific responsible of the project was professor Constantinos Spyridonidis. Participation organizations were Aristotelio University of Thessaloniki, University of Cyprus, Universidade Lusíada de Lisboa, Education in an Interdependent World, National Technical University of Athens, Universidade da Beira Interior, Covilha - Portugal, Universitat Politecnica de Catalunya, Cyprus Architects Association, Association of Greek Architects and Universita Degli Studi di Roma la Sapienza.

The main objective of the project was to investigate how the architects’ profile in MEDES countries can be built through educational structures and pedagogical strategies and processes. And also, how local particularities would be projected in the educational contents and methods so that the local and the international will collaborate constructively. More specifically the project wanted to bring together academics and professionals from the countries of the European South (Greece, Cyprus, Italy, Spain, Portugal) in order to critically analyze the identity of the professional architect in their regions and to collaborate on the development of proposals related to the forms and contents architectural education should assure in order to achieve a more employable and adaptable architect.

The volume includes the proceedings of an international conference held in Athens during the period 22-23 July 2017 and the results of an intensive workshop held in Lavrio from 16 to 20 July. The intensive workshop using as vehicle architectural design explored the basic question "how the characteristics of a Mediterranean place can inspire contemporary architectural creation in both architectural design level, and in design of public space." The results of the workshop have been presented during the conference, as many questions rose during the workshop exploring what is local / what is global. Are they autonomous and distinctive? Are the tools that we use for the analysis of the place coming upon the place itself and the locality? Is the inspiration of the project coming from the identity of the place? Can we make the same proposal for any other place?

The participants of the conference continued the above questioning. The presentations explored the Local and Global in Architectural and Urban Design and its approaches to teaching, presenting also some examples focusing on innovative and experimental approaches to local cultural heritage and social problems and inspecting how new technologies and environmental issues can serve creatively the above themes.
The whole project and especially the conference created an academic dialogue between the participants on the educational process which will be useful for the participating institutions.

Eleni Maistrou, Emeritus professor, NTUA

Constantinos Spyridonidis, Professor, Department of Architecture, AUTH
International Colloquium and Student Workshop
Workshop: 16-20 July 2017, Technological Cultural Park Of Lavrion, Greece
Conference: 22-23 July 2017, School of Architecture, Athens, Greece

Hosted by the School of Architecture, NTUA

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More details and material is available in the workshop's website:
https://archimedes2017lavrion.wordpress.com/
**THE CONFERENCE**

Modernity has imposed worldwide a global paradigm of architecture as an immediate consequence, but also as a facilitation tool of, an equally global economy. Through its many reframes and vestiges (Post-, Ultra-, New-) attempted to reluctantly address locality in terms of reference to local symbols, incorporation of historical styles, superficial imitation of facades, adoption of local typologies and use of local materials. Still in our days, modernity is paying lip service to such aspects of locality as sustainability, energy efficiency as well as climatic, environmental and ecological issues. Yet, no matter what those ad hoc considerations, modernity remains globally dictated and aimed and the dominant paradigm pervading the education and practice of architects.

During the last 30 years local adjustments of the global paradigm have reached a critical point of a radical shift. It seems that a viable alternative of a bottom up approach, from locality to architectural production is emerging and informs architectural design from start with the local conditions as integral ingredients, resources of ideas and architectural design.

Locality in all its kinds, modes and scales (climatic, spatial, social, economic and cultural) seems able to inform architecture from the stage of its original inception to its physical implementation. Instead of being imposed on, architectural works could be alternatively considered in a dialectical mode with locality as emerging from, conversing with and being justified and culturally significant on local grounds.

This conference will attempt to register, critically engage with and finally bring together emerging alternatives to Modernism in architectural education and professional practice.

**Organizing and Scientific Committee (NTUA):** Ganiatsas V, Konstantinidou E, Maistrou E, Nikolaou D.
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