

## On the search of human willfulness that had driven the making of a city in historia: Morella

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This contribution has to do with the powers that had driven the making of a city, in a socio-physical and space-time structural chronotopic manner, following ideas by M.Bakhtin (Bakhtin 1982), P.Ricoeur (Ricoeur 2003), and GIRAS Research Group (Muntañola 2016; Saura 1997). The main case study is the historic core of Morella, in Spain, and is focused upon the analysis of the relationships between: the configurative knowledge that is embedded in the urban form, the voices of their inhabitants considered as users, and the contemporary urban design practice of the architects and town planners Enric Miralles and Helio Piñón.

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The method to study the transformations of the city is based on two different perspectives, the first based on the Italian school of urban morphology and typology (Strappa 2003), the second on space syntax, developed particularly in University College London by Bill Hillier (Hillier 1996). Space syntax analysis will be used to analyse the urban fabric in relation to its connectivity and integration, while urban morphology studies will examine how the settlement has grown and been adapted to continue suiting the living. Then, direct observation and interviews with local residents provide insight into their daily lives and will also address how they have appropriated space to suit their needs.

This analysis of the historical footprints (physical and cognitive) will allow defining the territorial heritage and the basis of a historical-structural approach to architectural design, which takes into account the characteristics of the place, its invariants and its rules of reproduction.

## Introduction

What concerns me in this paper has to do with how and why cities took the shape they did. The intention is to explore history in a manner that analyses the historical record in service of the design of buildings rather than as a specialist subset of history. In simple terms, architectural history can and should serve the needs of architecture as a whole, responding to the role of designers in bringing historical precedent to bear on the present practice of architects as source material to be understood (Lucas, 2016). I am not engaged with form in the abstract, architectural meaning is ultimately always lodged in history, in cultural contexts.

In order to develop an evaluation of something so complex as the making of a city in history, we need a solid theoretical framework that help us to explain the different interactive relationships that are established in a specific context. A theoretical model that does not simplify the analysis dividing the physical factors from the social ones. There is a vast modern literature about urban form; how to make it and how to "read" it. Since Camillo Sitte's *The Art of Building Cities* of 1889 and all those other books since then by the likes of Spiro Kostof, Lewis Mumford, Saverio Muratori, Aldo Rossi, Alberto Magnaghi, etc., the professional eye of the designer has scrutinized urban configurations, and drawn prescriptive lessons from such scrutiny.

964 The main case study is the historic core of Morella, in Spain, and is focused on spatial configuration, taking into account the configurative knowledge that is embedded in the urban form, the voices of their inhabitants considered as users, and the contemporary urban design practice of the architects and town planners. It means to study urban form as a historical laboratory, as a continuous experimentation that set up cultural values, deep forms of communication. But to understand it, we have to look at it from the 21st century. The purpose is not demonstrating that the constructed environment forces a certain action to architects or users, is to show that we can study the cultural values that the constructed environment configures, to learn to design better.

## Methodology

In this paper, to explore the urban form of Morella, in Spain, we have searched on pictures, historical drawings, plans, ethnographic and archaeological reports, and on the current and ancient cartography. Studying cities from a scientific approach let us find out the knowledge that we cannot perceive by a direct visual intuition.

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The main methodological strategy to understand the historic urban form consists of a process of artistic and technical production based on the representation of the complexity of the territory and the transformations of the urban fabrics overlapping geographical, environmental and historical maps, and the current cadaster, in order to see what remains, what disappears and what is new. This allows us to understand the territorial structure from the present to the past, looking back to understand the meaning of the things. In this way we can identify the architectural characteristics of the territory and the specific qualities of the cultural and geographical environment of the city. As a result, we see that landscapes have genetic codes of identity.

## Forming process

Morfotypology is a synthesis through an iconographic representation of the morphological and typological dimensions interrelated. By the analysis of Urban Morphology, we can

represent the elements that highlight the formal characteristics of places in their individuality. Moreover, an analysis of the typology makes evident the formal characteristics of places that are repeated in more contexts and in time<sup>1</sup>.

The purpose in this case is not to establish a classificatory model. My contribution will show how to discover some important generative rules that explain the current spatial configuration of the city, whether geographic, cultural, sensorial, etc. How to demonstrate that form is a receptacle of meaning, that we "read" form correctly only to the extent that we are familiar with the precise cultural condition that generated it. Kostof pointed out that the more we know about cultures, about the structure of society in various periods of history in different parts of the world, the better we are able to read their built environment.

In *De re aedificatoria* León Battista Alberti observed that since Antiquity, two types of urban form had been used for shaping urban fabrics: the orthogonal-grid form and/or the semicircular form. These two main types of form used for building the geometry of walls, are still visible today in the skylines and the perimeters of most urban fabrics in Europe (Alberti, Rivera Blanco, & Fresnillo Núñez, 1991). Morella is a walled city located in the slope of better solar orientation of a hill and has got a castle on the top. The city has a semicircular form, an urban layout of concentric perimeters. There are lots of types of cities on the ground, such as settlements disposed in a topological way along the ridge, on the plateau in the land, on the slope of the hill, etc. Talking about the concept of "Type" Saverio Muratori says:

*Non si tratta di un concetto didattico nato dall'arbitrio di un classificatore, ma di una realtà umana innegabile, risultato di uno sforzo comune di creazione, dal cui ceppo germogliano le singole opere come fiori e frutti vivi di una propria originale individualità, senza rinnegare i valori vitali comuni. Il tipo così inteso non è più la serie standard del positivista né la varietà biologica fissata una volta per tutte da un determinismo meccanico...* (Strappa, leva, Dimatteo, 2003). 965

A Territorial Morphotype is characterized by the formal interpretation of the relationships between the urban fabric and its environment<sup>2</sup>. Morella has traditionally been considered a medieval city, because its settlement can be identified with the morpho-typological model of medieval fortified hilltop settlements, located on strategic high points of the territory with high visual control, with good defensive conditions before the probable attacks due to the frequent confrontation between peoples.

Thanks to the old fortification walls, the gates, the streets, etc., we know that there was a total architectural and urban interaction between the design inside and outside. There was a link of interdependence. Magda Saura (Saura, 1998) says that people were forbidden to build houses attached to the fortification walls and were only allowed to enter through the gates of the ancient city for a few hours during the day. Therefore, people were aware not only of the security the defense walls offered, but also of the kind of use they were able to make of these architectural structures. Use of space was regulated by law. The physical aspect of urban settings can only be meaningful in this context, when they are studied together with the legal codes that ruled people's behavior.

Alberti considered town planning to be a product of making, a human activity, a mental construct. He knew that since Antiquity, people had been aware of the role of building laws in defining the use of urban space. In Early Renaissance, people continued to be represented on city councils and were able to approve or reject an architectural design project if it did not comply with codes governing the use of urban space.

The separation between countryside and city in different units of analysis makes more difficult the understanding of the urban form. Spiro Kostof already pointed out that in the history of cities, the organic fallacy cannot account for spontaneous urban growth, unconscious or unplanned urban design (Kostof, 1977). As Aristotle recorded in his urban theories, Persian know-how was inherited in Ancient Greek town planning, and was carried through the rest

<sup>1</sup> Definitions of Alberto Magnaghi extracted from the conference at the COAC during the scientific conferences Architecture, Education and Society. Barcelona, May 31, 2013

<sup>2</sup> Idem.

of Europe through the ancient institution of the Roman cadaster, dividing private and public property. Originally the purpose was to collect taxes from agriculturally, zoned land, and this ancient planning tax policy still exists in many countries.

Saverio Muratori defended that all the territory of the Empire was planned from a grid of 720 x 720, the Roman cadaster. I have developed a hypothesis of centurion in the territory of Morella from the current cadaster and this grid. (Figure 1) On this hypothesis, we find a Roman logic because the grid is perpendicular to the Bergantes river, where there are the most fertile lands. Moreover, this grid is aligned with the castle's shape, and with the layout of some of the main streets of the city. The archaeological evidence shows that since the Neolithic period the rocks at the top of the hill where Morella is located has been inhabited. This place is a strategic point of control on the land, and I am sure that had been an important location for Romans. But, provably there was not a Roman city, there was a camp under the castle.

**Figure 1.** Hypothesis of centurion in the territory of Morella.



Morella is located at a crossroads, at the boundary of *Comunitat Valenciana*, very near from *Catalunya* and *Aragón*. For this reason, has been a wonderful location of visual control, strategically located from a military point of view. Figure 2 shows the overlapping of a military map from 1910 with the current road structure. In red we can see the roads that have disappeared, in gray the new ones and in black the ones that have remained. We see that the triangular structure of roads is modern, because in the past there was a fourth important road, which even corresponds to a historical gate in the fortification wall that was closed.

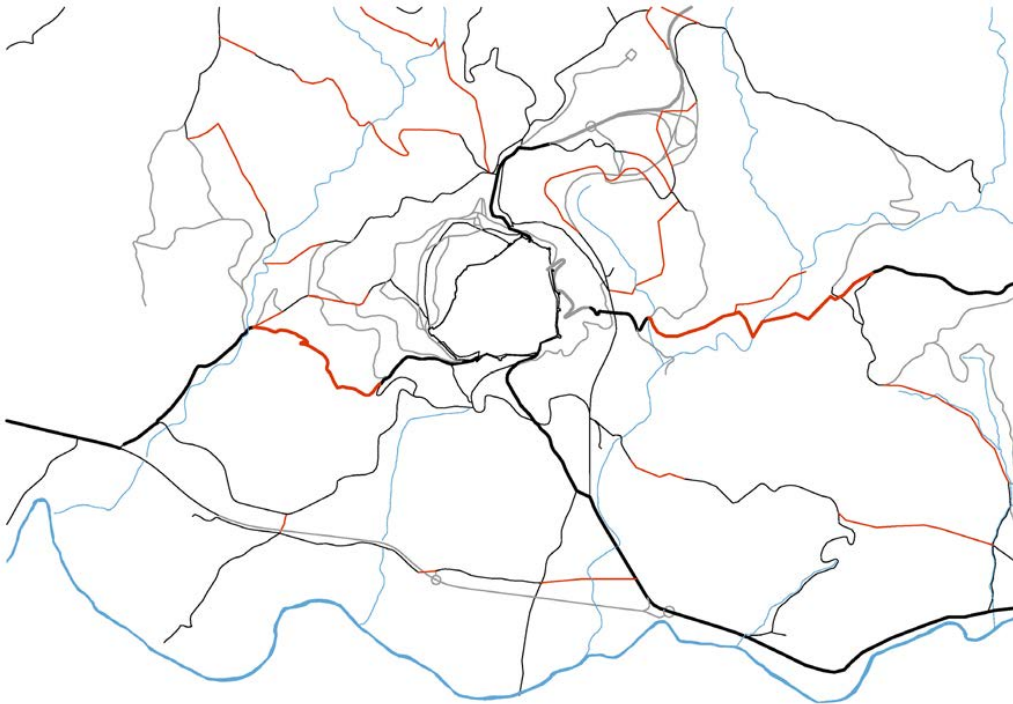
An urban morphotype is characterized by the formal interpretation of the urban layout of public and private space, streets, squares, etc., and by the relationships between them<sup>3</sup>. I will attempt to exemplify the contribution that urban morphology can make to the understanding of historic urban landscapes in the current era of concern for managing historic cities. This research direction on which we chose to focus corresponds to the historical reconstruction of the physical form of urban areas and it is supported by a diverse set of data sources, such as fieldwork in existing urban tissues, the analysis of old maps, the study of historical documents,

<sup>3</sup> Definition of Alberto Magnaghi extracted from the conference at the COAC during the scientific conferences Architecture, Education and Society. Barcelona, May 31, 2013



and archaeological work. Crossing different scales can be very useful when analyzing the structure in order to search for the oldest streets of the city (*Il percorso matrice*). There is a correspondence between main streets of the city and main access roads. Moreover, in Morella the old gates of the fortification walls are located at the meeting point between the main streets and roads.

**Figure 2.** Result of the overlapping of two maps: a military map from 1945 and the current cartography. In red we can see the roads that have disappeared, in gray the new ones and in black the ones that have remained.



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An aspect of plots was their dimensions. These can be subjected to metrological analysis, which affords an important means of reconstructing the histories of plot boundaries. For example, by analyzing measurements of plot widths, are able to detect regularities, speculate about the intentions of the medieval surveyor when the town was laid out, and infer the original plot widths and how they were subsequently subdivided or aggregated (Whitehand, 2010). In figure 3, in number 1 we can see how the street *Mare de Déu* in Morella was formed with regularity of plot widths, of approximately four meters, and the old palaces in the street are probably the result of the purchase of three consecutive plots. Another aspect of plots was their shapes (Strappa, Ieva, Dimatteo, 2003). Residential plots are likely to have been created as a series of rectangular shapes, which is the norm for plots in a housing area. So when we find irregular dividing lines, we assume a growth of the plot. Usually *dividing lines* are perpendicular to the first façade of the plot. In the number 2 of the figure 3 we see an overtaking of the plots on the street. It appears as a continuous porch on the street *Blasc d'Aragó*. On the other hand, in number 3 we see an alignment of plots in different blocks, and when more than three lines are aligned it seems to me that it cannot be casual. The main hypothesis is that there was a street that was closed in the past. These three hypotheses are only three examples to see the potential of information that the cadaster keeps as memory in the form.

Another important source to the historical reconstruction of the physical form of urban areas is the study of historical documents. In the Historical Archive of Morella we found some

documents of the late 18th century, about the construction of a neighborhood. The process of creating housing plots began in 1789, when a rural property within the old fortification walls was sold in order to build houses. The historic document specifies the dimensions of the plots in rectangles of 26x40 spans. This structure has remained until the present, as we see in Figure 3 (number 4) although was destroyed and rebuilt after suffering major damage in successive wars.

*"Sébase por esta escritura publica como yo Doña Francisca de Zaldua, viuda de Dn. Miguel Piquer, vecina de esta villa de Morella ... otorgo que doy en enfeudación y concedo en establecimiento y treudo perpetuo para siempre a Vicente Palos y Joaquín Palos, jornaleros y vecinos de esta propia villa ... un sito o solar para formar una casa cito y puesto dentro los muros de esta propia villa y Parroquia Mayor de ella, en el bancal dicho de Piquer, que tengo debaxo del Convento de San Francisco, que consiste dicho sitio en veinte y seis palmos de ancharia y de cuarenta y ocho palmos de largaria que linda por delante con calle que se deberá formar por medio de dicho bancal para subir del Llano del Estudio al dicho convento de S.Francisco, de un lado con sitio para forma una casa de Geronimo Monmeneu Alvanil, del otro lado con bancal mío propio y por la parte de arriba con el propio convento de San Francisco y bancal junta a el calle publica en medio que pasa del dicho convento al Sementerio Nuevo..." (A.H.N.M., 1128. page 2015 v. 4/11/1793)*

**Figure 3.** Historical reconstruction of the physical form of urban areas. 1- Metrological analysis of plots in Morella, 2- Overtaking of the plots on the street, 3- A street that was closed in the past 4- Configuration of residential plots, described in a historical document.

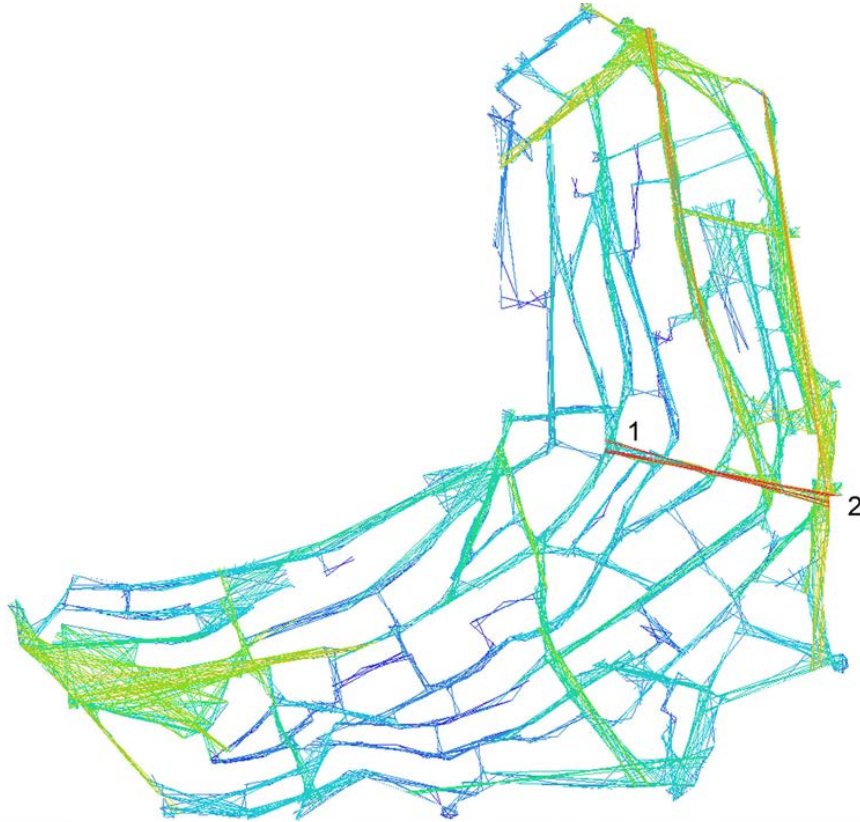
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Space syntax represents a more technical, logical and abstract version of public life studies. This map (Figure 4) was made with the help of information from a computer program about the probability that pedestrians and drivers would choose one way or another. The color scale illustrates the results, with blue the least likely and red the most likely. The red color in the map (Figure 4) indicates a good connectivity regarding the whole core of the city. The program analyzes the length of the vectors, which represent the visual capacity of people in a straight line and also the most direct routes. An important red line in this case goes from the Town Hall (1) to the old fortification wall (2). This red line indicates a good visual control from

far away to this place. But in this place, there is no public life. It is a priority car street.

**Figure 4.** Depthmap analysis of the public space inside the old fortification walls. The map shows connectivity.



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In historical documents, military maps and engravings, we can identify a gate of the fortification walls in this place, that has disappeared and a road outside. In addition to the historical images and plans, visual exploration is essential in locating the gate. If we look at the old fortification wall next to the tower, we can find some of the stones of the destroyed arch of the city gate, and outside there is a water source. This arch is five meters below street. In the municipal archive of Morella, we have found the memory of the urban Project of 1934 of the creation of a highway for cars that did not have the need to stop in the population. The creation of this road for cars supposed to break the old fortification wall and to raise the level of the street, hiding the old gate.

*"Para evitar el peligro que representa el tránsito de vehículos por las estrechas y empinadas calles de Morella, el Ayuntamiento de esta ciudad acordó construir una travesía exterior que uniese directamente la Puerta de San Mateo con la de San Miguel, a las cuales afluyen las principales carreteras que pone en comunicación esta ciudad con Castellón, Zaragoza y Teruel y los caminos vecinales que la unen a los pueblos próximos, evitando con la construcción de esta travesía el obligado paso por las calles, de los vehículos que no tuvieran necesidad de detenerse en la población".* A.M.M. (Archivo Municipal de Morella) Memoria proyecto Travesía exterior. Ing. Luis Calduch Pascual. Año 1934.

When applying Space Syntax analysis on a hypothesis of historical growing of the city, we see that each new street that appears modifies the complete structure of the city. The disappearance of a historic road that arrived from countryside affects the entire streets structure. The interesting thing about Space Syntax is that it is a specific tool that measures changes, not in an intuitive way, but in a more scientific way, from a systems theory. The

computer analysis with Depthmap is useful in this case to systematize what we had seen with the previous analysis, overlapping historical maps.

### **Conclusion**

In Conclusion, space syntax adds to traditional urban morphology methodology and proves to be extremely useful. A prerequisite shown in this paper claims the need for an accurate choice of historic maps and ethnographic reports, data previously gathered at a qualitative, interdisciplinary level. Future studies are needed to predict the impact of new infrastructure and design upon cultural heritage and upon social life.



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