



Fig. 1. Hangzhou: Qiantang River Delta (Photos: Valentino Matteis).

The Fumihiko Maki *Group-Forms* applied to a case study in contemporary Hangzhou Inner City

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Abstract: Cities change and grow unpredictably. Recently the transformations of the urban tissue are extensive and important especially in the cities of the emerging countries. Contemporary urban developments scarcely consider what could be learnt from existing urban fabric pursuing generic western-taste solutions ending up into ineffective urban schemes. Since we realize how difficult it is to foresee speed growth, it would be useful to consider a different, more flexible approach. Interpreting urban design as a collective form, a man-made landscape, with landmarks emerging and fabric extending, is what Fumihiko Maki suggests in his writing *Investigations in Collective Forms*. This was an interesting approach to be verified in 2013, during a one-week Field Studio in Hangzhou at Zhejiang University of Technology Campus. The problem to renovate an area selected from the historic urban tissue in the inner-city – No. 224 and No. 236 of West Lake Road – was investigated through a design approach that combines a traditional courtyard house typology with sequential and flexible schemes.

Keywords: Fumihiko Maki, Collective Forms, Open Forms, adaptable design.

Introduction

Today the image of the cities in emerging countries is modeled by their trend of growth and is generally different from the ‘static’ image of the ideal city of the past, whose expansion was prevalently following a linear concentric path.¹ The presence of different ethnic groups in urban contexts, the rise of new urban technologies, and the infrastructural innovation have determined the rise of evolving complex urban environments, difficult to be managed and controlled. As a consequence urban clusters or citadels, included heterogeneous functions and established new typologies of facilities around the globe. The recent sequence of economic crises and unwise planning actions left abandoned or incomplete urban areas built as the result of everlasting growth *euphoria*. On an opposite side there are countries like China, where new developments in the last decades were mainly defined by top-down policies and economic investments to be realized in few years so that the face of cities changed drastically.² In particular the issue of the latest internal migration in China, from the countryside to the major cities, or the national development plans supported the formation of endless settlements around the historical urban centers and in some cases around new settlements and trade economic zones. Some of these fast growing cities are not very well-known

1. DEL MONACO 2012.

2. BARBERA-DEL MONACO 2014, p. 245.

to the international public: Wuhan's growth reached 9 million inhabitants in few years and before it was an anonymous provincial city. Another example is the city of Chongqing that because of its autonomous province status arrived rapidly to 28 million inhabitants. So such an impressive and rapid impact of population determined the fast change of the image, infrastructures, urban textures, neighborhoods, landmarks of the fast growing Chinese cities and let us consider theme like the sum of mutually independent variables and forces under modification. To investigate the limits of the equilibrium between these variables and to define a methodology to control transformations by using them it can be helpful to apply to a case study like the City of Hangzhou (Zhejiang Province) the Fumihiko Maki and his *Theory of Collective Form*.

Collective Form Theory in short

In the 1964 essay entitled *Investigations in Collective Forms* the Japanese architect Fumihiko Maki, Pritzker Prize 1989, distinguishes three approaches to the urban texture design: "Compositional Form" – Brasilia planned by Niemeyer, the Japanese monument Horyu-ji; the Structural approach "Mega-Structure (Form)" – Kenzo Tange's design for 25.000 inhabitants at M.I.T (with Pillorge, Halady, Niederman, Solomons) or the Agricultural City by Noriaki Kurokawa and the *Group-Form* sequential approach – a Sudanese village and a greek village.

The first paradigm is referred to the praxis of the ideal historical cities (Renaissance and Enlightenment) where singular objects are part of a more general (urban) composition organized by shape, juxtaposition, location, nearness. It is a "static" approach that can be interpreted as a collective form since the composition tends to define a general balance that cannot be further transformed but for substitution of parts that are kept together by the initial scheme: "the elements which comprise a collective form are preconceived and predetermined separately".³

Instead the mega-form paradigm (or else the megastructure) emerged especially during '60 when the emerging idea was to include the complexity of an urban organism in one unique architectural object merging different functions, compacting and ordering components that usually, in the traditional city, are spread in the urban texture. This option brings back to the construction issues of one building the problems and the complexity of one entire city: "the megastructure is a large frame in which all the functions of a city or part of a city are housed".⁴ The main lack of the mega structures is the limited flexibility that is fundamental quality for the long term urban transformation.

The collective-form paradigm evolves by generative elements in space and arrives to an "open form" that, through variation actions can evolve to other forms clearly connected to the starting one. Each sub unity derive from the "open-form" system and behave as an organic cell, and it looks to other for some aspects specializing itself for other ones: "some basic idea of the group-form can be recognized in historical examples of town buildings. [...] The element and the growth pattern are reciprocal

3. MAKI 1964, p. 8.

4. *Ibidem*.



Fig. 2 Views at No. 224 and No. 236 of West Lake Road, Hangzhou (Photos: Valentino Matteis).

both in design and in operation. The element suggests a manner of growth, and that, in turn, demands further development of the elements, in a kind of feedback process.”⁵ The problem is, then, to detect the *invariants* and try to understand what differentiates them. It would be trivial to define the “open form” as a unity that can be multiplied sequentially, and consider it as a “collective form”, especially if the geometric layout does not result from an adaptation to local geography, but by a simple abstraction. The geometry is just one of the tools with which to investigate the collective-form and the “linkages” that create unity in a “cell-tissue”, the binder is the set of humanistic quality, relationship to society, the lifestyle, local and cultural traditions, specific habits and daily living of the inhabitants’ paths, sometimes even the construction techniques of buildings and roads. Much can be learned from history and regional traditions of existing tissues. Or, in the case of new settlements, from the fabrics that have had the most similar conditions; the spontaneous development of cities, in the long course of history, is almost a prototype of the collective-form. Interestingly, this kind of “forms” often derive from “popular” traditions or otherwise disseminated among collective population: it is rare that a fabric similar to the “collective forms” resulting from the structure of a royal palace (which is a form-composition), as often it happens, however, that the royal palace can be born from the nuclei of existing tissues, transformed and elevated to monumental hierarchically rank (just think of two examples: the Chinese imperial palace and the traditional courtyard house, the

5. *Ivi*, p. 19.

Roman palace, in many cases obtained by the aggregation of multiple buildings and land properties). Each of these building organisms includes the potential linkage with the court-road, the road-river, so that it is the natural formation of a hierarchically repeatable coherent system: each element possesses what allows the application of the method of growth and extension. It becomes, then, an “open form”: a generative one more easily adapted to the inhabitants’ habits rather than the generic composition (or structure) of the composition-form or mega-form. Starting from the analysis of the existing tissue and considering the new development as a dynamic pattern of collective form, once highlighted the elements that characterize the area, you define the points at which the collective-form units are best “specialized” and “adapted”. If you consider the historical route of the canal and the presence of an archaeological tour, the court-road ratio adapts to the new type of short-track historical relationship. And it gives rise to a variation of the original type, and to a new type of courtyard space derived from the first (which therefore retains the features of the original model, being still recognizable). Getting into collective form and its variants becomes a way of recovering the “regional” character of the city, its habits and physical qualities.

The design project in Hangzhou

The project presented has been developed together with Andrew Iacobucci during the one-week Spring Field Studio 2013 in Hangzhou, at the Zhejiang University of Technology organized by the UNESCO Chair in Sustainable Urban Quality and the Department of Architecture and Design of Sapienza University of Rome. The project area is located in the Inner City of Hangzhou – No. 224 and No. 236 of West Lake Road – close to West Lake. Today it is partially occupied by historic buildings, organized into a fabric of streets and service courts. The latest fabric is characterized by contemporary buildings. From the available maps (updated by some recent excavations), the original position of an ancient water canal is known. In addition, the positions of some roads and pavements dating back to the Song Dynasty is known on the base of some recently found relics. The main objective of the intervention was to obtain a low rise-high density population condition to be proposed as an alternative to the solution of the high-rise buildings or *in linea* blocks which are the most used typologies in use all over China from the recent suburbs to the areas close by the Forbidden City of Beijing. We began our work defining a first base unit, a collective-form unit to compose the whole. The living unit – the “open form” or “collective form” (to put it in terms of Maki) is the form of a traditional Chinese courtyard house, or an abstract layout derived from it, aggregated-stratified on three levels.⁶ The partially screened system of terraces allows the control of introspection in each court. Each of these cells can be aggregated to another through a small semi-private courtyard on which there are the entrance to the individual homes at the ground floor level. The minute tissue resulting retains the characteristics of the traditional alleys and courtyards that are present today on the portion of the lot where you have the

6. CONGEDO-DEL MONACO 2006, see housing projects section.

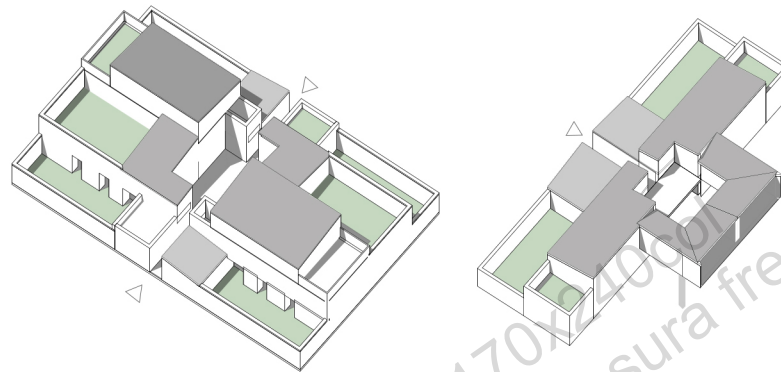


Fig. 3 Schemes of the residential base unit.

traditional dwellings controlled by the protective interventions of the municipality and that are part of the “historic” fabric of a Chinese city that used to be an imperial capital. The second basic form is derived by the overlapping – or subtraction – of the first strip of units along the course of the water canal – now buried – crossing the lot. It is thus obtained, starting from the basic units reworked on the theme of a traditional courtyard house, a new unit at two levels, held in part on stilts, facing the path of the water canal. So far, the court-road ratio is adapted to the main canal – and articulates the pedestrian path: the ground floor is organized through arcades, while the first floor through the volume covering the porch and the courtyard.

We had very limited data, but it was possible to assume that the canal path – crossing the lot from east to west – used to flow at a depth of 2.70 mt. The canal space and the level of the excavations unearthed became the key element and the main path attractor of the project, including an archaeological walk, for taking rest and for commercial areas. Walking through the lot you pass to the second defined path north-south, attracting flows of pedestrians – who would otherwise remain just outside the design intervention – into the residential fabric, enriching activities without invading the tranquility of the residential courtyards with their closest slower and secluded paths. All this defines a complex public space: a short path, an archaeological area close to the main promenade with commercial fronts. The main access to the project site, the crossing parallel to the canal and its perpendicular path, are arranged as green spaces and small squares. Their size is comparable to the one existing in the historic residential lots of Hangzhou. Some “pagodas” become a shady resting places. Yan An Road on the side (the west side) open lower inputs that connect directly the narrow pedestrian streets to the residences. Each of these entrances is marked by the sign “doors of the Moon”, cut with circular marks in the walls which are very common in the oldest urban fabric of Hangzhou and, more in general, in courtyard houses and traditional Chinese gardens. The population density forecasted is almost 400 inhabitants per hectare, comparable, if not superior, to that which can be achieved with existing *in linea* buildings. Overall, the project has 58 units or 58 families. Among these, 47

are family units for 4-6 people (most common household), 11 for smaller families of 3 or 4 people. The total number of inhabitants, then, oscillates between 220 and 330.

Conclusions

So the basic unit of the traditional Chinese courtyard house, or its abstract scheme (collective form), became the generative embryo of the project, which differs by the historical landmarks, the canal and the archaeological remains, with respect to their own functions. In this way an organic fabric is formed and made of thick and flexible spaces and paths preserving the idea of the traditional Chinese fabric of Hangzhou so that the inhabitants are able to recognize the permanent elements and the habits that belong to the people (the archaeological remains and the canals are now not directly visible). The recognition and the immediate continuity between the old and new tissue redials spaces and forms of traditional “family life” in renewed urban landscape, despite the recent interest of Chinese toward the western dwelling models. The flexibility of the “sequential design”, to quote Maki, allows to change modules during the construction plan and to predict fewer residences, reducing the number of storeys or even eliminating a certain number of units. Regionalism approach with the use of “open forms” can serve, therefore, as key requirements for the recent unpredictable modernity and to combine the local traditions into an adaptable design.

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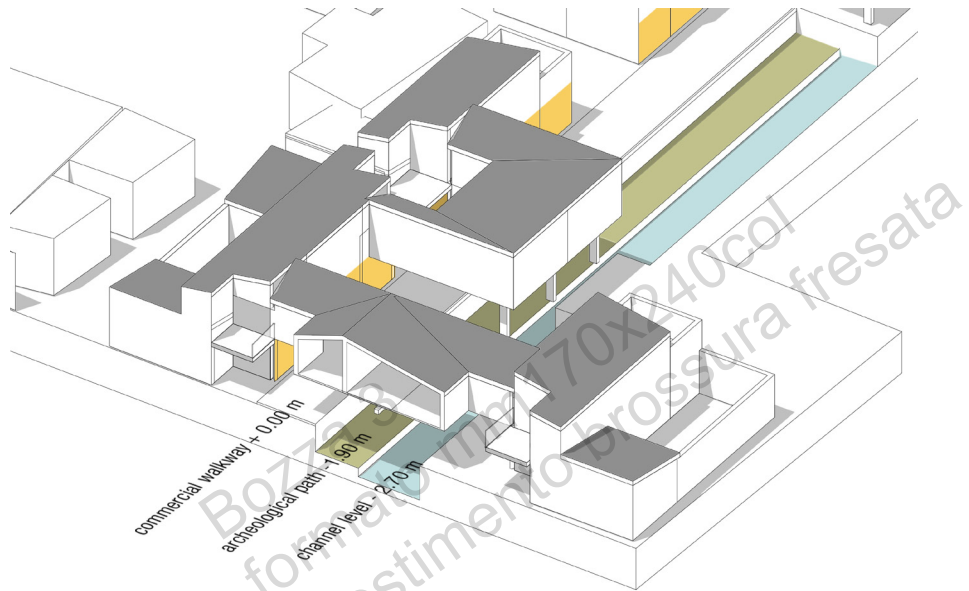


Fig. 5. Different levels toward the old-canal-path - No. 224 and No. 236 of West Lake Road - Design by Valentino Danilo Matteis, Andrew Iacobucci.

Fig. 6. Overall view - No. 224 and No. 236 of West Lake Road - Design by Valentino Danilo Matteis, Andrew Iacobucci.