The Architectural and urban design PhD course started in 1992, aiming at critically re-examining the theoretical, methodological and applicative tools of the architecture design, towards an unavoidable update in order to properly face the transformation and settlement dynamics of the contemporary city. In fact, today’s urban residential areas, are affected by deformation phenomena accelerated by road, transport and technology infrastructures proliferation, that, though creating articulated interconnection forms, generate effects of segregation, fragmentation and homologation of the architectural, urban and environmental structures. Considering the complexity of this scenario, architecture and city planning have to analyze in detail the design objectives and the suitability of its theoretical, interpretative and operational tools of the contexts.

During its 18-year activity, DrPAU carried out an investigation based on the connection between theoretical practice and operational practice of the architectural and urban design, namely by combining:

- the investigation on the paradigms of architectural and urban design, where the analysis of the specific disciplinary contents dialectically faces the necessary connections with parallel scenarios and skills which integration is more and more necessary to develop the critical points in question;
- the applied design investigation, considering the design as the engine and result of an investigation program, namely by turning into the elaboration of a critical subject, the result of a cognitive process aimed at interpreting the contextual reasons, the identification of a critical path, strongly referring to theoretical concepts and to referential, thematic and illustrative apparatuses.

Therefore, the common inheritance of the studies, research and designs developed in the PhD is based on a rich and articulated reflection on the design role and its theoretical and operational instrumentation in the conscious and oriented interpretation and transformation of contexts characterized by complex settlement dynamics. This way of investigation is every year stronger, as it is a common analysis ground that has to assess with critical attention the results of the weakening of the specific architecture practice and of the architect’s role, reflecting into a global uncertainty of the context, which is composite but rich, of the critical analysis, of the theoretical fragments and of the significant design examples; this weakening affects the definition of the contents, methods and the objectives of contemporary architectural research.

The educational and organizational approach, followed since DrPAU foundation, has been an investigation structure, where the theoretical and methodological contribution offered by the Faculty is combined with the applied design experimentation and the theoretical analysis of the paradigms on architectural and urban design developed by the PhD Students during the workshops and the international stages. The parallel with the research carried out at international level with Architecture schools is an essential element that is progressively developing in the PhD program: the architectural design stages organized by DrPAU in foreign universities, started during the IXth cycle at ETSAM in Madrid, and later at Lille and Paris Belleville Universities, ETSAB in Barcelona, Segovia, and recently at New York Institute of Technology, deal with the case study of the host city, and are combined with individual and collective classes and reviews. In July 2008 and 2009 the Dr PAU, in cooperation with the Bergamo Municipality has launched an international design Summer School program open to students of doctoral and third level courses in Italian and foreign Architectural Schools. In this framework the aim is to open a debate on the research problems, and on architectural and urban design techniques as well as on theoretical and application tools, stressing their central role in advanced university education with respect to the changing conditions and design practices in current urban and built-up contexts. This articulated formative experiences are the foundation to develop the individual research design resulting in the final dissertation.

The drawn-up PhD dissertations combine the theoretical analysis on a specific problem and the methods of architecture design with the illustrative design experimentations, applied to specific contexts, exemplifying the contemporary settlement dynamics and being strategically selected, particularly in Lombardy territory, but also at European and international level, namely referred to case studies analyzed in the design stages and workshops attended in the European and North American universities.

The dissertations exposed in 2010 dealt with three principal topics: the procedures and tools of architectural and urban design in metropolitan and sprawled settlements; the research on composition principles of urban spaces in the aim to conceive an open tool and a logical path for architectural design; the problem of the contemporary city scale: the new interrelation between the global and local aspects of the settlement structures particularly referred to the case-study of Bari and Biella. The dissertation on Bari as case study has been developed with the support of a grant generously given by Confindustria Bari.
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The presented thesis work has been made possible by the ANCE Scholarship (Bari Industrial Association). Its main task, the study of the city of Bari in general, has been the occasion to work on the transformation phenomena regarding the contemporary urban context according to a multi-scale approach, which considers the metropolis in a regional and landscape environment. It has been therefore an ideal testbed for the creation of new mapping methods and operational strategies for the contemporary city.

According to the interviewed Industrial Association, Administration Municipality and University staff, as the city grows more and more Bari’s references belong to a territorial context: due to its transformation, the city cannot be understood at the urban scale anymore, but it expands to the regional scale, or rather as a system of relationships with strong boundaries, but be considered as a perimeter of influence: this suggests the breadth of its new size. Besides the Piano Quaroni (1965-1976), in the interpretation of Ferrari, Rignanese and Ortiz Castaño, is structured by big regional directions, given by infrastructural and dispositional arrangements, which link the city both to the surroundings agricultural areas—the so called suburban green,—and to the regulation maps of the surrounding urban settlements. It is a sort of fractal gradient moving from the historical to the national scale through the urban and the regional scale. The complexity of the urban context, due to the multiple proximity of the space of connections (Choay, 2003), may be read through the theory of urban metabolism, on which the contemporary European research is focusing: when not intended as a mere ecological concern (balance between organic and inorganic energy), but rather considered through the lens of urban design, the concept indicates a sustainable consumption of urban space, originating from the study of urban settlement development in a temporal process of maintenance and transformation. The urban biography, then, influences and is influenced by urban metabolism: it considers the evolution of urban ages through steps of obsolescence of the technological network facilities. Such an approach is similar to the ecological interpretation of urban phenomena: the city, seen as an urban ecosystem in evolution (Lynch, 1981), is considered according to the multiple relations between living and non-living environment (Vercelloni, 1992). A study of the historical development of the ecological disciplines, from the German to the Anglo-Saxon areas, shows the strong link between landscape ecology and urban design. The majority of ecological studies focuses on environmental sustainability, aiming to reduce pollution and to return to a pure natural realm. By studying landscape transformation methodologies, disturbances, inputs, outputs and the internal cycling of urban and suburban landscape, human influence is often considered as negative for landscape energy balance, and human works as extraneous to the natural ecosystem.

In a new ecological approach the image of the territorial city is referred to the landscape, featuring in one whole ecosystem the complexity of the relation between the natural and the atropic elements (Naveh, Lieberman, 1990), from the very urban to the very rural, including all the spatial implications of contemporary lifestyle (d’Alfonso-Contin, 2008). The field of action (Corder, 2006) of urban relational and potential energies (or figure), is therefore the dense body of the space (or ground), the surface of the commons (Shane, 2009). The interpreted translation from English to Italian of text and terminology of the Landscape Urbanism discipline, considered as one of the more recent ecological and urban fields of study, has led to the building of a glossary that may be useful for the definition of the dynamic context of our cities. In Landscape Urbanism, a new way of looking and studying the multi-scale urban context, there is no more difference and competition between urban and non-urban, built and un-built, human and natural. A newly magnetized territory, whose structure is organized through collisive sites and territories among which the exchanging network system takes place, has an innovative morphological disposition: the layered architecture of the node includes the use of the ground as a stratified complexity which belongs to the visual (Rossi, 1964) and structural approach to landscape.

Such a continuous comparison between the English and the Italian schools of urban design leads to the definition of a design method, already partly in use in DOPAU department’s general research, which can be applied to Bari and similar case studies. The application of the whole terminological system in the projects produced during the Ph.D. shows the importance of the whole operation of translation: as tools for an appropriate definition of the landscaping materials, words and concepts build the image of the in-between urban context. Reading, interpretation and project are therefore the three steps by which the planning work is organized. The first includes a study of the visual and notational cartography (Leonardo da Vinci/ Lynch) as well as a comparison with similarly scaled urban cases and best practices, through satellite images and the use of metabolic indicators. The complexity of the local/global relation is also included in the interpretation phase, which then leads to the leveraging of the design concept through the production of synthetic and original maps. Design strategies and the building of future possible scenarios belong to the third phase, the project, which collects all the Ph.D. design workshops and studios at different scales, from the urban to the regional, and is mostly expressed by the section tool. Such a way of representation, in fact, is definitely the most appropriate to the description and the management of metabolic urban complexity in the experimentation of design original solutions.
CITY RELATIONSHIP, PROCEDURES, METHOD AND TOOLS OF DESIGN DISTRIBUTED SPACE STRUCTURE

Fabio Alessandro Fusco

1. Dispersion is a term that contains within it the concept of division and loss, and refers to this split in different parts and to this scatter the parts themselves so that’s what ‘original’ is lost every trace. The phenomenon of dispersion settlement contains within itself the dissolution (the loss) of the original form of the centred city, and the ‘sprawl’ (the scatter) of the parts following new configurations. Rewrites the relationship between morphological categories founding the space (built, open and relational space) and the geography of relations of the components, leaving ‘watermark’ traces of the initial state of the field. In the changed condition of contemporary spatial structures, is the ‘dispersion form’ that represents the problem that moves the research and the hypothesis of climb up again from its interpretation to the possible strategies for a transformative project.

2. What procedures, methods, criteria, must follow contemporary design to interpret the ‘form’ of diffused spatial assets? Which tools enable a process of uncovering and deciphering the relational structures of multiple forms of dispersed systems? These fundamental questions moves research to the modeling, the construction of a logical structure of investigation, in order to make an advancement in the theory of forms of settlement.

3. Moving from the tradition of studies on the form of the city and territory, the thesis experiments with a possible advancement of the theory of design of dispersed spatial structures. From the theoretical and methodological reflection and the descriptive/interpretative/operational approach formulated by Sergio Crotti, whose original research has been to trace the concept of morphology to the ‘becoming of form’, the thesis articulates its methodological grid in three acts:

I. Critical act. The first act is a critical reconstruction of the processes of formation/deformation of the spatial structures of urban sprawl, look at the innovative urban phenomena, the figures ordering space, the relationships between the components of settlements, the ‘consistency’ of materials, and records the modes of spatial organization of discontinuous systems expressed under three general criteria: separating, simplifying and bordering. Criteria that determine different ‘forms’ of the dispersion: the incremental form (the urbanized countryside) and the additive form (the city archipelago). The first ‘incremental’ manner is characterized by the iteration of individual elements, units that are repeated with small displacements and differences, following series and sequences of varying length and with more or less significant changes, according to minimal rationalities, on an infrastructural support homogeneously spread. The second ‘additive’ manner is characterized by plaques, portions of tissue, relatively homogeneous internally, characterized by varying degrees of permeability, but detached by its surrounding. Fragments of settlement to the drift, attributable to the original figure of the compact city. The description of the various forms of dispersion is an introduction for the definition of a transformative model of the selective modeling of the complexity of the mechanisms of processes in the diffused spatial arrangements. The ‘model’ of sampled exemplary settlement situations give back through a qualitative summary of the components involved, different relational systems, characterized by identifying and differential characters of space, ‘significant’ morphological characteristics configurations of anisotropic, isotropic, reticular, layered and mosaic type.

II. Circumstantial act. The second act puts his hands on the given datum, setting up a productive tension between interpreted structure (the form of dispersion) and interpretation (analysis). Not an ordered analytical cutting, a division in pieces which leaves each element in its place, but a crush that remixes and transforms, with the result of a new version of the data. A process of deconstruction/construction of relational structures of the forms of dispersion, critically oriented to the construction of a meaning in transformative choices. It is the need of transformation that leads the selective modeling of the architectural design. Establishes an abacus of ‘punctual’, ‘linear’ and ‘surface’ strategies, made operational by the tools of the project (figures and devices of space). Checks every single strategy, shape control of space spread, compared with the characteristic shape caught, and describes any time synthetic-projective thematic backgrounds supporting the project, to guide the components of complex settlement systems to arrange themselves according to appointed final previewed assets.

Transformative strategies explore possible new ‘forms of density’ (environmental, physical and infrastructural) of spread forms, trying to reconfigure relational structures of ‘complex’ settlement systems, fragmenting very large and common masses in smaller and smaller fragments.
THE METROPOLITAN FORM IN LITTLE URBAN ITALY. THE CASE STUDY OF BIELLA

Andrea Vercellotti

Italian territory, and more generally European, is increasingly characterized by a diffuse and disjointed form of urbanization that, going beyond the traditional boundaries, has invaded the territory and dispersed the urban values in an hybrid environment without identity. The new configuration, claimed by the major infrastructural networks, has imposed a new asset in which cities play a different role, competing in an higher order of relations, which compares each with its own specificity. The elements of recognition and organization of urban space, reinforced in centuries of civilization, no longer seem able to respond to new solicitations. The “liquid” society of Second Modernity, as some authors call it, has resulted in fragmented forms; thus the factory has been pulverized in a myriad of forms: thus the factory has resulted in fragmented the unfolding of these phenomena, in which experience a design strategy that can catch their opportunities and to halt the degenerations. Starting from the interpretative model of the network, the attempt was to provide a complete picture of the issue, working on the double level of theoretical reflection, firstable Italian and Anglo-Saxon, and design verification. Capture the Italian specificity of spread urbanism has constituted the first step, particularly in the methodology and analysis conducted by the architectural culture of the first part of the twentieth century, when diffusion and affirmation of the space of flows have begun to affect the territory. The same understanding of the processes of urban diffusion, which has proved a useful examination, carried out going over the same mode of settlement in a territory. In this gradual adaptation of the environment to human needs, there has been the work of civilization, carried out through a project of society which has been translated into a territorial project (the Cattaneo “artificial homeland”). Precisely the thought of Cattaneo introduced a modern approach to urban and territorial matter, which find the Italian peculiarities in the inseparable relationship between town and country. The evolution of the understanding of this originality crossed the theoretical work and urban design of significant personalities as Giovanni, Boito and Chiodi, which faced the new size scale of problems, the opening of the city beyond traditional boundaries and the management of public transport networks. The work continues investigating the anti-urban experiences of the Fascist era until the need to update the historical value of the urban tradition in the postwar period, with the debate on the categories of continuity, size and history, crucial for the school of Milan. The last section allows us to get inside the cultural context in reference to the design phase, with the understanding of the new dimension of urban growth and the affirmation of that widespread metropolitan form that the writings and plans submitted (primarily the extraordinary anticipation of the Valle d’Aosta plan of 1936-37) are trying to organize in a systematic way.

Any theoretical overview is followed by the application occurs on the case study of Biella, which is particularly interesting because it’s part of an historical period in which the city is faced with a challenging economic and social order, the textile industry, which has fueled its life for centuries. A crisis which is also a result of the impact of major infrastructural networks on the small scale of the towns: polarizing the territories on the nodes of the network, the global system effectively excludes regions eccentric than large routes of the mobility and transport, forcing them to think again their systems of connection to wide scale. The analysis of the case of Biella thus begins with the construction of an urban biography of the city and its region, conducted at different scales to better grasp the relationship between the development of urban form and the influence of relationships with regional framework. The urban bodies who are most clearly defined by the multiscale asset of contemporary space, in which multiple dimensional levels coexist, are represented by the terminals of large network systems, exchanger bodies that mediate between the anthropometric scale of the city and the territorial scale of networks, in a state of double proximity. Elements of the city that organize the frame of connection. That is within the big box of the station, a MegaForm transposing the new scalar order, valuable urban functions and opportunities to meet and exchange are condensed, making the node a hub of urban regeneration. The entire neighborhood of the station must be involved in a project of this kind, as demonstrated in an exemplary way the French experience of quartiers d’échange. These complex systems are designed following the procedure of the theme park, themed on the mobility and the different variations of time, waiting and duration. The new joints of articulation of the spread city have accepted the hybrid complexity of contemporary public spaces, in which even the concept of public space is replaced by that of public realm, the scene of the lifestyles of many urban populations, which any individual can now choose to belong. A strategy of densification has as its objective the establishment of a peak of urbanité, local situation able on unleashing his value on the surrounding area and the entire city. The local project is part of a cultural horizon then structuring of urban sprawl in order to maintain a balance between built and natural soil, essential in the interests of sustainability. How to build a space like this and with what tools? The research continues with the exploration of the relational space for commercial outlets, perhaps: the currently most pervasive form of theme park, to experiences of great concentration like Microrealities. From the perspective of the instrumentation necessary to handle situations of this complexity, looking at the procedures of parametric design and computational techniques as referents for an approach fell in contemporary reality. Concepts such as that of pattern and socio-spatial genotype, as well connected to large networks is associated with the attempt to address the issue of rootedness in the specificity of place. Here the reconfiguration of an entire urban sector is the result of an overall reflection on the evolution of the city. A new residential area closely linked to transport infrastructures, which rests on an area on the edge between urban and natural landscape, represents the result of a complex process of urban genetics. The analysis of phenomenal data drawn on urban and territorial morphology, can fully understand the close relationship between the community and the landscape it has created over the years, concrete evidence of its social, economic and cultural characteristics.
THE COMPOSITION PRINCIPLES OF URBAN SPACES AS GENERATORS OF URBAN FORM

Ju Sik Yang

The architectural design is measured always with the surrounding environment, where physically, historically, socially and culturally is situated the manufacture, in existing, in constructed, begins his long journey towards its own reason to be, that is the truth -in terms of valuation of itself and of the same context in which it settles. The urban facts that we face in this moment are currently lived and survived in the historical, dialectic development, and this means that they have the character of the permanence and immutability. They have self-reference in the interrelated relationship, they are the primary elements of composition of the surrounding environment; they finally comply with the environment, at the same time. Take a theory of architectural design approach is then to implement a reading and interpretation of a real complex, produced by history and not released it, in a dual movement: on the one part makes it possible, through the characterization of elements minutes, offer a synthetic analytical plan that can put in evidence the intimate structure of urban fact and give reason to a conscious design choice, on the other, it makes possible to deal with the project with determinants that are able to be compositional tools, capable of bringing the design to the scale of the building to the wider urban structure. The Thesis wishes to provide a new approach to architectural design theory, and seeks to present itself not as a closed, static tool, but as a model to determine a method of reality study and interpretation of its components, giving project conclusions which could offset, complement, and enrich the framework based on the analytical reading of preexistence. In this sense, it is called looking for an open tool and a logical path within the project that is to be able to study and replace its components of the context in which it operates. This operation will be possible if the paradigms of architectural space are considered as key elements of the discussion on the urban situation, in which the analysis of the present condition and the decomposition can be changed the device elements or else the prefigure and design elements. The paradigms of architectural space, through reading within the preexistence urban system and specific research on the urban tissue, will become real tools for the urban and architectural design and will contain instances of preexistence in its own general design. The thesis is divided into five chapters, which carry the reflection from a theoretical and analytical investigation to empirical investigation, providing an approach system to complete design. Then, the structure of each chapter will offer a reading of the problem, giving first a definition and an exemplification of term gradually addressed. While the first two chapters dwell on the description of urban facts in terms of the peculiar characteristics of structure, arrangement, and meaning, the third chapter seeks to specify how these elements are aggregated into the urban fabric, and which are, one of the ways, rules and aggregate models, on the other way what is the scene where the project is especially wide scale. Through this discussion come to the definition of devices paradigms of space and form of development and transformation of built context. The fourth chapter shows how the disorder of the current fragmented urban context can either try to boil down to an order of a debate on the concept of residual element, therefore in the rambling suburbs and major urban spaces, such as a vacuum can be a strong element of support instances of architectural design. Ultimately, chapter five crowns the analytical path and its derivations design through examples of projects that have used the paradigms as crucial device elements of design. Thus the paradigms become analytical or device elements and the elements of the composition of the architectural design. This research wants to structurally restore the reading and interpretation of universal archetypes in the design phase, so they are device figure of architectural design. This research has the aim of bringing it to limit the application of universal (or uniqueness interpretative) through presentation of projects that are distant from Western culture. That is, having the foresight to identify the archetypal forms in the Korean traditional architecture, laid the foundations for an architectural similarity which demonstrates the invariance of the inner structure of the form, on the other hand, that detects discrepancies between the architectural system, generated naturally from the different social and historical character of the context. The aim of this thesis was to gut and to systematize an approach when planning, concept design and architecture as a whole, an approach such that the reality is the sum and physical evidence of a complex process rooted in history and society. In this sense it is possible to verify adherence to the Western architectural model, an adherence to the culture that produced the same references in the analytic theory morph-typological. The analytical method, morphological, typological, and technology makes finding the transformative possibilities of urban facts and does reveal the representative architectural form, in which the design autonomy gets its reason for being in time. Intertwined self-reference forms come together in a crucial point, influencing each other and represent the architectural and metaphysical dialectical development process and every time it turns on the need of time. Today, the contemporary city in danger – whether its transformation processes become vicious – to forget, to become a place without memory, to take us to be a place of virtuality where there is a series of exchanges of goods and ideas, but without going to touch, to have contact with his physical and material aspect. But memory is the most sensitive of the city and the design that wants to build on the built. The real change with memory are those related to processes of construction and demolition, in some parts of the increasingly dynamic and static city or increasing city, resulting in the possibility of researching on the urban complex and its amendments effected or during the process, through new reading keys. Finally what emerges is an unconventional design approach, which takes its origin from a process quite agreed, based on theoretical orthodox references. A project that could then define visionary, imaginative, but tackled on a fabric is absolutely consistent relationship between meanings within the historical process.