ARCHITECTURAL COMPOSITION
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DOCTORAL PROGRAM
IN ARCHITECTURAL COMPOSITION

The doctoral program is understood as advanced learning, rooted in the history of the architect’s craft, of the profession and of the wealth of architectural techniques. The objective is to train architects who are capable professionals from a general point of view, with solid historical/humanistic training and a strong theoretical base, but who also have extensive knowledge of town planning and construction techniques and who are able to carry out architectural design. The training consists of the imparting of organised contents, the sharing of research, and participation in cultural debate. As is the case in the other arts, composition is understood as an ensemble of conceptual and technical fundamentals that precede the design project and to which it refers. The faculty is composed of professors in the field of architectural composition, history of architecture, restoration and construction.

The course is based on a meeting between members of the teaching staff and external professionals from among those at the forefront of international debate. This dialectic serves as a reference and as a source for research. The course is divided into integrated phases. The first phase consists of a redefinition of positions and responsibilities with respect to transformation of the territory and to evolution in the profession, in which the doctoral candidate is required to participate through research and contributions. It consists, in addition to participation in optional Polytechnic courses and in addition to a two-semester seminar in architectural design, of two specific courses given by several lecturers during two semesters («Architectural History and Design» and «Criticism and architectural theories»).

The second phase consists of a more specific, in-depth undertaking and deals with the problems of composition in relationship to architectural design, on one hand through two courses («Figures of architecture and forms of construction» and «Conservation and design»), and on the other hand by means of a second architectural design seminar. These courses will also involve several lecturers and are divided into two semesters. The third phase consists of increased involvement of the doctoral candidates in more specific research and themes, ranging from the theoretical debate in Europe and in Italy to the question of the old/new relationship, to the question of settlement- and founded-city structures, to research into the cultural and figurative identities of landscapes and architectural expression. The second and third phase involve training experience abroad, with participation in seminars and research with which the doctoral candidate is establishing relationships.

Maximum importance is given to the doctoral thesis. It constitutes the core and the conclusion of the doctoral candidate’s study and is attributed a very large number of credits. The theme and the formulation must be defined before the end of the first semester, in consultation with the supervisor. During the following five semesters, the thesis is developed as other studies are carried out, taking on a progressively more important role. The thesis is understood as research and must be characterised by cultural and scientific originality. It may or may not have a design aspect. The doctoral candidate is required to report regularly on the progress of the thesis and to attend open sessions, held in the presence of the teaching staff and the other doctoral candidates, at which the thesis is discussed.

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A MANUAL FOR THE TICINO VALLEY: THE RIVER’S ARCHITECTONIC CONSTRUCTION

Francesca Claudia Maria Belloni

This doctoral thesis tackles the general architectonic problem of the condition of the contemporary city: its lack of order, clarity and intelligibility of parts in terms of the whole, the absence of a steady line of continuity, and the failure to understand territory. All these make it imperative to review research into the city in history, with a view to trying out possible alternatives: to investigate this problem, with its contradictions and its difficulties, was investigated by studying the valley of the river Ticino and the settlements along its course. Though its choice as exemplar was arbitrary, the area has a high degree of artificiality and is connected with its institutional status as a Park (Parco del Ticino) and the attendant restrictions on land use. The Park makes it possible to set about conducting research in an “in vitro” condition, emblematic of an institutional and governmental paralysis of “not knowing what to do”. The Park, as a piece of territory, is a hopeful one: its present state seems favourably undisturbed, or at any rate subject to disturbances which are small and incipient compared with the usual chaotic development of edge-of-town sprawl. This makes it possible to analyse the reaction of a complex system to the all-important first signs of expansion beyond the historic centres of population, on a scale more readily monitored than that of the cities where we live. The Ticino region, from the Verbania to the Po, offers a sort of “recomposition of direction”, meaning that it shows what cities could be like in all their places, without superimposing artificial “models” of growth; for the river and its valley display their essence openly, and so far from masking their unresolved conflicts actually help to bring them out. For one side of the comparison, we take the present condition of the spread-out city: the settlement structure of the Ticino, which includes various ways of experimenting on the theme of the architectonic construction of the flood plain, shows a permanent identity of site and a persistent dependence of constructional characteristics on site morphology. Through the individuality of the solutions found, and the way they all belong to a limited number of settlement principles, we can experiment with possible alternatives to the modern city’s usual patterns of growth. With regard to this condition, the Ticino Valley offers a ready-made text written by knowledgeable hands over the centuries: the geology and geography of the territory, the traces and records of the river, the skeleton of settlements and the monumental nature of the various sites together form an extensive design, of which architecture can ask some exclusively “compositional” questions: in other words, a manual already written – as soon as we manage to see the river and its architecture in this way; and as soon as we manage, using the tools of architecture, to transcribe or rather translate it. Our research then sought to build a “manual of problems” that could illuminate the valley’s structure by means of examples – and even before that, indeed, through the choices which any classification necessarily implies. The design of the territory has its own tonality and aesthetic feel, which is the result of the relationship established between the static and lasting form of the river itself. We start with the realization that the territory is undergoing a continuous process of generation, a slow and unstoppable appropriation of places by humans who occupy and build on them. We reject Massimo Cacciari’s theory, borrowed from the geographers, which derives “territory” from teneo with its echoes of fear or terror as possibly connected with urban melt-down and the crisis of the modern city. On the contrary, we seek to understand the term in the light of its etymological origins as proposed by Marcus Terentius Varro in his De Lingua Latina: “lands” (terrae) progressively subjected to a dominium and a jurisdiction, and accordingly synonymous with “land” or “district”, having a dual meaning at once physical and administrative. It would in fact seem that Varro’s definition foreshadowed a whole series of fruitful questions for investigation. The manifold ways in which the territory refers to the city in its relations with the termini (boundaries) of the fields and with the ager compascus or common grazing, displays a connection of ideas with the Hegelian architectonic cultivation of the land. Now this cultivation is capable of shaping close social and legal bonds by means of the shared community of construction – meaning both the end result and at the same time the content of the work. But this definition, which already existed in the culture of classical times, is negative as well: it has its ambiguities. One could say that in Varro the only elements which formed part of the unbounded territorium were those which could not be precisely located in other spaces, i.e. that which is not the city, or does not belong to its fields, and may accordingly be trampled and encroached on, progressively made part of an appropriation as it is brought into and shaped in accordance with a new world of significations.

We then sought to describe some of the valley’s characteristics in relation to the course of the river: in the first place, the existence of an implicit order almost always hidden by more recent doings, yet still enduring and remaining over time; secondly, a predisposition of the valley towards defining its own identity in relation to subsequent experimentations and to the gradual drawing both of political and military borders and of geographical and cultural boundaries.

The Ticino Valley does not have a unified layout, nor did it originate with the carrying out of a plan drawn up at a particular moment in history. On the contrary, it exhibits a succession of urban ideas which have been superimposed, added and elided to define the territory’s specific traits, to shape the territory itself. The river is affected by the human drawing of boundaries which over the centuries have altered the valley’s nature, and the architecture is in turn affected by the river which has provided the measure for its character: it is in this dual relationship that this region’s intrinsic quality and essential identity are to be found.
This thesis forms part of a research project that has been engaged on for some years into the German architect and urban designer Ludwig Hilberseimer (1885–1967). It is clear to me that an in-depth familiarity with the characteristics of his work, and of the part he played in the architectural developments of the Modern movement until the quite recent past, could provide not only a significant and overdue clarification of the historical record, but also a decisive contribution to both theory and practice; for this German master tackled knotty issues which are connected with subjects and problems we are still facing today, and indeed relate to an intellectual era which is still ours.

The thesis aims, through meticulous architectural analysis and a through examination of source materials (a significant portion of them unpublished, but collected and translated by the candidate), to identify Hilberseimer’s contributions to the design and specification of the instruments, methods and procedures of composition needed to develop a “city idea” in a progressive way.

The thesis is arranged in three main parts. Part One is designed primarily to lay the foundations: it considers aspects of the theoretical bases of Hilberseimer’s thinking, and investigates their formation by examining his youthful projects and writings (mostly art criticism) from the same time; many of these have been translated by the candidate.

Part Two concerns research into urban form and the elements of the modern city. This involves the meticulous reconstruction of their genealogy, steadily expanding scope and growing complexity from a great range of quotations characteristic of Hilberseimer’s work; on this subject the thesis develops a particularly significant contribution which goes beyond the historical record.

Part Three of the thesis tackles the subject of what is known as “Mischbebauung” (city building in mixed types, in direct relationship with nature), on the basis of the principles explored in the thesis during the candidate’s first year of doctoral studies and exhibited in June 2003 at the exhibition “Periferie e nuove urbanità” [Peripheries and new urban design], organised by the Architectural Design Department of Politecnico di Milano at the Milan Triennale.

Two appendices complete the thesis: the first provides the main translations, in the form of source material for the study; the second concerns a design for the area of north Ticino/Malpensa, worked out on the basis of the principles explored in the thesis during the candidate’s first year of doctoral studies and exhibited in June 2003 at the exhibition “Periferie e nuove urbanità” [Peripheries and new urban design], organised by the Architectural Design Department of Politecnico di Milano at the Milan Triennale.

1. Ludwig Hilberseimer: Project for a satellite city (Trabantenstadt), urban mixed-type settlement. Perspective view, 1924

2. Ludwig Hilberseimer: Project for the University of Berlin, mixed-type settlement in the landscape. Perspective view, 1938
The subject of this PhD dissertation is “sacred space”: more specifically, Christian sacred space and the complex ways in which architectural space and religious liturgy relate to each other in Christianity. The thesis covers a whole century, from the 1900s to the latest projects commissioned by the Italian Episcopal Conference (CEI). The research is arranged like an exhibition built – naturally – around a selection of episodes chosen as particularly significant.

After an introductory discussion concerning the point of engaging with this subject today, the thesis considers the thorny question of the symbolism and identity of Christian sacred space, and immediately spotlights a number of issues – apparently contradictory – dating back to the first building of the early Christian basilicas.

Three architects – with very different backgrounds and perspectives on sacred space – were selected as leading representatives of the European scene: Rudolf Schwartz who, partly due to his encounter with Romano Guardini, made the design of sacred spaces the core of his architectural work; Dom Hans Van Der Laan, a monk as well as an architect and therefore in a special position to bring architectural and liturgical aspects together; and finally Le Corbusier, who in the course of his architectural career dealt with the three main kinds of Christian building, the sanctuary (Ronchamp), the convent church (La Tourette) and the parish church (Firminy).

The part of the thesis devoted to the Italian experience is divided into three separate periods. The first is the period before the Second Vatican Council (1963-65). Isolated but highly influential individual ventures are examined, as well as the more fully completed cases of Bologna and Milan.

The next phase is from the late 1960s to the mid-1990s; and lastly there is a new, contemporary phase beginning in the mid-1990s when, following the CEI’s increased awareness of these issues, a debate began which involved different disciplinary perspectives.

Themes developed include: the need, in religious liturgy and religious architecture alike, to refer back at times of crisis to their origins in order to re-establish and re-launch themselves, and tackle new demands with renewed spirit; the difficulty of finding a clear correspondence between form and meaning; the curiously and paradoxically emblematic way in which the Second Vatican Council represents a rupture that seems to have put an end to the philosophical, cultural and interdisciplinary impetus of figures such as Guardini or Couturier in the first half of the 20th century; the complex relationship between architecture and commissioning, and in particular the fact that when the liturgical framework is uncertain and fragile it is difficult for architecture to draw inspiration from it; and the fact that the intricate relationship between architecture and commissioning is actually a sign of how difficult it is, in the contemporary age, for the Church to project a consistent image and to maintain a coherent identity.

Lastly, a prominent feature of this research is its focus on a subject that has only recently regained the attention of architectural critics and historians. It puts this subject in the context of the relationship between the sacred space and the liturgical place. As a doctoral thesis in architectural composition, this work is not intended to be historical research but rather a dissertation on architecture.
Modern art expresses itself in a dual spirit, attempting to formalise its own field of investigation and at the same time willingly opening itself to upheavals and to the contamination of its own procedures of artistic practice. This dualism also affects the stylistic experimentation of Modern architecture: in this case it follows the crisis of the classical formal system, and expresses itself in an “element-based” character combined with a “trope-based” one. The former (the element-based character) provides the “logical” and “subdividing” aspect of the compositional process; it brings out the structuring role of the elemental components in defining a new formal balance. The latter (the trope-based character) is an expression of a search that explores the relationship between a work’s form and its significance: only with Modernity is a space opened up between form and significance, and it is precisely the shape of this space which Modern architecture investigates.

Through the dialectic between the element-based and trope-based characters, then, we find Modern architecture’s analytic attempt to shape architectural space in an osmotic relationship with nature. This thesis reviews the Modern search for a new formal synthesis, a search which became necessary following the rejection of a direct correspondence between the system of construction and the elements of architecture, of the imitative relationship between architecture and nature, and of the Vitruvian grammar of the Orders. In particular, the thesis investigates the compositional procedures which seek to solve the problem of moving between necessary object and eloquent form, between a work’s adequacy and its reality; it does this by analysing particular works of architecture as examples: Giuseppe Terragni’s Danteum and Casa del fascio, Le Corbusier’s Musée à croissance illimitée [Museum of Unlimited Growth] and Villa Savoye, and Mies van der Rohe’s Neue Nationalgalerie and the Lagerhaus [House with Three Courtyards].

Lastly, the thesis formally sets out its own investigative method and, at the same time, the compositional processes underlying the architectural works analysed, with the object of reflecting in its own structure – so as almost to make the object of the analysis coterminous with its instrument – the analytic character of Modernism, which held art to be inseparable from the philosophy of art. The “attempts at a style” of the Modern movement are analysed through compositional interpretations which investigate forms and procedures in the architectural works taken as examples, with an alternation between logical analyses and synthetic/comparative procedures.

The element-based and trope-based approaches, recognised as jointly-present characteristics of Modern architecture, are also used to describe the various styles and to try out possible stylistic advances. The former (element-based) studies these architectural works by recourse to a typological analysis and by pointing out and describing elements, in a way comparable (among other things) to that of structural linguistics; it aims in this way to define a repertoire of elements to be used in constructing form in the actual work. The latter (trope-based) concerns itself with tropes, a concept which originated in classical rhetoric, as a middle term between elements and form: through the tropes of Modern architecture, the parts of the work dissolve and regroup in the new formal orders.

The thesis contrasts these two modes in its compositional interpretations so as to trace, starting with the chosen examples from the architecture of the Modern movement, a new account that can be developed in various ways. This consists of a “comment” on a “text” found in the architectural works investigated, whose output is a field of changes moving from the description of the general and stable elements of the compositional process. One feature of this “rewriting” of the works is the idea of the architectural design as a medium for awareness of reality and imaginatio: a logical construct not derived from simple deduction but involving continuous invention.

Three recurring tropes are recognised in the architectural works examined: transparency, peripheral composition and the sequence. Transparency refers to a building’s ability to allow light and vision through itself, so as to construct a habitable space in a dialectical relationship with “nature” outside. This is done by an open composition of the building’s parts (Gropius’ Bauhaus School; Mies’ Barcelona Pavilion) and through the use of precise architectural elements loaded with figurative value. Peripheral composition refers to the opening of the “walled box” and refers, in these examples of Modern architecture, to the dialectic between a central void and a boundary: this boundary can be open, or broken by openings; it can be made denser through the centrifugal and extroverted motion of the building’s elements and parts (as in the weathervane above the classrooms and laboratories of Gropius’ Bauhaus School), or it can be made transparent and dematerialised, in a relationship of continuity with the space outside (as in the Neue Nationalgalerie of Mies). The sequence governs the composition of a fluid, progressive space which can be defined as a function of perception and is accordingly relative, changeable and complex. Modern architecture, as interpreted by means of this trope, offers a discontinuous space as masses and voids succeed each other, as storeys are staggered and elements are juxtaposed (the double-square geometry in Terragni’s architectural itineraries; open storeys for the slabs walls of the Barcelona Pavilion by Mies), and as the parts are given rhythmic composition and motion is visualised (the architectural walkthrough).

The three tropes define certain principles for Modern composition: the thesis in fact suggests that recurrences of it can also be instanced in the field of painting (transparency in the plastic figuration of Cézanne and Gaugin and in the affirmation of the autonomous value of pure colour in van Gogh; sequence and the fourth dimension in the works of Cubists and Futurists, in the decomposition of the image and the fragmentation of perspective painting), and also in the field of the music (peripheral composition in the twelve-tone or atonal music, where musical themes no longer refer to a harmonic centre). For architecture in particular, the three tropes are put together by the tension between two modes or configurations: the grid (discontinuous, point-based, paratactic) and the spiral or arabesque (continuous and fluid, syntactic).

Grid and spiral, constantly present and alternating in architectural composition, are seen as interrelated in the case of Modern architecture in particular: the tension between the two modes expresses the particular attempts at a style which the thesis examines through the architectural works and projects chosen as examples.
The thesis investigates the architecture of port facilities in riverside cities. The work’s guiding criterion is the relationship between the port as a settlement (in the genesis of the city) and the characteristics of its architecture.

The research was divided into two parts, and draws on the bringing together of various different disciplines complementary to architectural composition, since they are thought essential for an understanding of the underlying reasons for design in relation to context.

The first part investigates the relations between the port institutions and the city, with regard to the evolution of theoretical conceptions and also as illuminating the urban design implications of the architectures attendant on mercantile and river-based activities: the marketplaces, the various buildings, whether representational (hospitals, basilicas, town halls), functional (customs houses, slaughterhouses, markets), concerned with water management (bridges, dykes, wharves, mills, drains, power stations), or productive. The identification of structural differences between sea and river ports made it possible to bring out the close connections these urban facilities establish with their hinterlands for the protection of routes by land and by water, thus setting up different kinds of territorial ordering in the layout of the countryside. Our empirical investigation of the distinctive architectural characteristics of riverside cities mainly concerned three instances: Lyons, Strasbourg and Mantua. They are comparable in their nodal geographical position on isthmic routes, their isle-based urban layout, and their function as both commercial and strategic/military key points.

The second part concentrates on the case of Mantua. The territorial aspect of the architecture, the evolution of the city’s port facilities, the produce and manufactures of the countryside, the territorial arrangement of the river, are all objective factors which provide an understanding of Mantua’s unique architectural history only when brought into relationship with the characteristics that make up its proper identity. The rehabilitation and rediscovery of the port districts, ancient and modern, as places which offer an alternative to the undifferentiated sprawl of the present day, is investigated in order to empirically verify the propensity of design to take the form of architectural installations which offer a new version of the city’s functional and formal complexity.

In full awareness of the current importance of this subject, and the strategic value of port surroundings even today, we have tried to show how the development of riverside cities through history has always been based on a rethinking of their relationship with their port.