

# TYOLOGICAL PROCESS AND DESIGN THEORY

EDITED BY ATTILIO PETRUCCIOLI



AKPIA



*On the cover:* Plan of Venice with the original settlements up to the XIth century.  
(From Saverio Muratori, *Per una operante storia urbana di Venezia*, Roma, 1959)Plan

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**ATTILIO PETRUCCIOLI**

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# Contents

<b>Exoteric - Polytheistic - Fundamentalist Typology. Gleanings in the Form of an Introduction</b> by <i>Attilio Petruccioli</i> ..... pag.	9
<b>Urban Tissue and the idea of Urban Morphogenesis</b> by <i>Sylvain Malfroy</i> ..... »	19
<b>Designing in Stages; Theory and Design in the Typological Concept of the Italian School of Saverio Muratori</b> by <i>Giancarlo Cataldi</i> ..... »	35
<b>Alice's Dilemma</b> by <i>Attilio Petruccioli</i> ..... »	57
<b>Typological Process Towards Urban Rehabilitation; The Manuale del Recupero of Rome</b> by <i>Francesco Giovanetti</i> ..... »	73
<b>The notion of Enclosure in the formation of a special building type</b> by <i>Giuseppe Strappa</i> ..... »	91
<b>The Central space in North African Architecture</b> by <i>Serge Santelli</i> ..... »	115
<b>Typological Zoning</b> by <i>Karl S. Kropf</i> ..... »	127
<b>The Changing Morphology of Suburban Neighborhoods</b> by <i>Anne Vernez Moudon</i> ..... »	141
<b>Urban Morphology and Typology in the United Kingdom</b> by <i>Peter J. Larkham</i> ..... »	159
<b>Type, Urban Context, and Language in Conflict; Some methodological implications</b> by <i>Maurice Cerasi</i> ..... »	179

*Giuseppe Strappa*

## The notion of enclosure in the formation of Special Building Type

Several notions on the genesis and evolution of special building types can be applied to the reading of the built environment and to design. The expression "special building", according to a research field well-established in Italy, addresses the non-residential portion of the built environment which derives from residential base building. Special building also includes those types in which the residential function is subordinate to its special purpose (i.e., the palazzo, the convent, etc.).

I will attempt to demonstrate that:

1. The most general of these notions are based on a few fundamental acts of appropriation of space (especially the act of establishing a perimeter), fostering a set of building principles that constitute the structural essence of special organisms.
2. These principles can be applied to different cultural areas to distinguish a common set of characters in buildings of different geographical areas and historical periods, thus demonstrating the structural "necessity" of type.
3. Such principles can constitute the base for operational criteria in design. I believe that, in order to actively contribute to practice, such research ought to use the very tools of the designer, analyzing and classifying buildings in a way that is intrinsically different from the one of technical and historical manuals of architecture. A simple example will demonstrate why: if one compares two buildings commonly addressed as "churches", such as a basilica and a central-plan church, it may be found that they have fewer features in common than an early Christian basilica has with Berlage's Stock Exchange in Amsterdam, or that S. Maria delle Carceri shares with Palladio's Villa Capra.

Definitions such as "church", "stock exchange", "villa", widely used in architectural studies, are in reality referring to the specific function of a building, and are therefore insufficient for the designer to distinguish the fundamental character in common among different buildings. Hence it is necessary to retrace their formative roots in order to understand the essence of an "organism", and discover useful data to design.

In the 20th century, architecture studies based on the notion of organism boast a long teaching tradition in the School of Architecture of Rome: Giovan Battista Milani, followed by Saverio Muratori and Gianfranco Caniggia's analyses of base types, laid the fundamental theoretical and methodological base of the research field. Many of Caniggia's notions about

base building can be extended to special types, and will constitute a constant reference to the arguments to follow.

The basic terminology of this presentation is related to:

- . the notion of organism and type;
- . the notion of serial and organic structure.

The one specific to the subject at hand are related to the idea of enclosure:

- . route;
- . axis and axiality;
- . dividing line;
- . margin;
- . node and nodality;
- . pole and polarity.

The notions which I will try to explain by examples, try to establish the methodological principles to read the built landscape at various scales, namely at the one of the building and aggregate organisms. Since the definitions used here are always closely linked to the method, it is important to specify their meaning: if for the historian memory is the recording and ordering of the built environment in all of its different forms over the course of time, for the architect memory expresses itself in the attempt to reduce the built environment to general unifying principles (the structural essence) of which buildings are but particular manifestations.

### **Organism and building type**

An organism can be defined as a group of elements linked together by necessity and jointly contributing towards the same purpose.

Type can be defined as a heritage of common, transmittable characters preexistent to the formation of the organism, governing the generation of the single elements and the structure of their relationships. Type is not definable by a simple statistical recurrence of certain requisites; it is not an abstract model, but rather a synthesis of the original characters of a building: it is the materialization of a persistent set of notions, principles, and characters inherited on a collective basis and accepted by a civilization throughout its history. These features are the ones shared by families of buildings over time and space in an infinite number of variations.

Extending this notion, the built organism is based on general principles determining its transformation over time. Once constructed, the building crystallize these principles in time and space, thus individualizing the type: specific rules particularize principles, making them "individual". Its analogy to the biological or botanical organism has often been emphasized,



but the affinity cannot be extended to the mechanisms involved in the permanence and transformation of buildings. The features common to groups of buildings are not “naturally” transmitted in time, but are artificially altered through the innovative, original contribution with which each civilization reinterprets and adapts to its own needs the traditional types that it had inherited. Buildings embody a historical type; once they have been built, they give their own contribution to the evolution of type through a continuous sequence of transformations constituting the typological process.

Thus, a typological order of the built environment cannot be formulated on a purely taxonomical basis like in botany but, in order to be usable, it must be based on the essential reasons underlying the continuous transformation and conveyance of certain building features over time.

### **Level of typicality**

It can be defined level of typicality as the quantity of attributes a building has in common with others (thus distinguishing it from similar building groups). Therefore, the maximum level of typicality is that which identifies itself with a single building “in all of the attributes which can be conferred to it” (Caniggia-Maffei, 1979).

### **Serial and organic structure**

An element is the smallest component of a structure. The definition is inclusive, and practically applies to any scale of architecture, from the building to urban form (Maretto, 1993).

Structure is the rule linking elements together in a recognizable form generally behaving according to a geometric order. This rule determines the relationship among elements, informing the character of their aggregations.

Serial structure is an ensemble in which one element can be replaced without causing substantial changes to it; in an organic structure, on the contrary, the arrangement and the distributive, static, and expressive role of each element is such that it cannot be replaced without altering the structure itself. It should be underlined how the character of a structure is strictly related to the character of its elements. Namely:

- serial structures formed by serial use of a serial element (totally serial structure).
- serial structures formed by organic elements;
- organic structures formed by serial elements;
- organic structures formed by organic use of organic elements (totally organic structure).

### **Limit, Perimeter, and enclosure**

Since special buildings, by definition, are generated as specialization of base residential construction, their technical terminology can be derived from the one of residential organisms and fabrics.

### **Course or route**

Both the English word "course" and the Italian "percorso" derive from the participle of the Latin verb *currere* (to run, to pass), and indicate the action performed to cross the entire extent of a place, implying a point of departure and one of arrival (two poles with different values). Therefore, the term is inseparably linked to motion, an ever-changing relationship between time and space. This is fundamental to understand the hierarchization of space along a route according to the proximity to a pole, a node, or an antinode.

### **Node and nodality**

Formative building processes are based on the concepts of centrality and "peripherality", of nodality and anti-nodality, which constitute the fundamental key to read an organism's character. A node can be defined as a specific point within a continuum that is at the intersection of two continua, or as the branching of one continuum into the other one, or as a discontinuity within a continuum<sup>1</sup>. This is a critical notion to recognize, in general terms and at various scales, the character of an aggregate of elements, of a single building, or of an aggregate of buildings. The notion of nodality, linked to the previous one, expresses the connection between the components of a building or of an urban organism which is not necessarily identified by a point, but by axes and their intersections (axial nodality). Nodes originate from the everyday use of an enclosed space, thus usually from those routes that had been individuated by the formation processes of building types and fabrics, and geometrized to structure the whole architectural space. Opposite yet complementary to the latter is the notion of "anti-node", which is defined as the singular point in the opposite direction (i.e., peripheral) with respect to the central position of the node.

In building organisms, the formation of the node is the fundamental problem, even during construction, in which the constructor's technical and expressive skills are concentrated.

## **Axis and axiality**

The axis (from the Latin axis — pivot, wheel axle), is formed through the progressive “geometrization” of the routes within the elementary architectural organism, and is often generated by the consolidation of ritual actions.

The axis requires two poles, one at each end. With the exception of structural shifts caused by major design intervention, the main direction is always one, due to the specialization of the two poles and their different degree of polarity (polarizing pole, polarized pole).

The nodal axis, along which the main fluxes of movement occur (often, but not necessarily, corresponding to the main entrance), individuates the center of the overall geometry that unifies structure and function into one constructive action. Along its predominant direction, the axis establishes a sequence of elementary structures, simultaneously orienting and reinforcing the direction of movement from the initial structures (portal, pronaos, vestibule, etc.) to the final one (apse, loggia of the palazzo, opisthodom, etc.). This observation implies that the hierarchization of the sequence of elements of the enclosure is not a mere geometrical composition, but comes from the ways in which man uses and knows space, and to the time in which cognitive reading and functional process occurs. Axes have a centering and unifying effect on the built environment, and are inevitably associated to the dividing lines organizing the overall structural system<sup>2</sup>.

## **Margin**

It indicates the ultimate component defining the enclosure. It is constituted by a dividing line individuated by structural systems (load-bearing walls, pillars, etc.), or simple structures (boundary walls, fences, etc.) that can also be associated to an anti-nodal axis identifying anti-nodal routes.

## **Pole and polarity**

From the Latin *polus* (pivot; *polos* in Greek). In Caniggia’s definition, “the pole indicates a sublimation of the term node, in general determined by the presence of various continua, not so much intersecting but rather terminating or starting from one point. (. . .) However, the distinction between node and pole is intrinsically linked to the reading scale”<sup>3</sup>.

In general, it is possible to define as “polarity” the character associated to the pole, namely the character of an organism with properties of attraction and orientation, and as “polarization” the act of attracting or orienting towards a direction.



In special building organisms, at the intersection of two or more equivalent axes, the pole generates a vertical axial nodality commonly named "polar axis" (as for instance in central-plan organisms)<sup>4</sup>.

The notion of enclosure may be derived from that of typicality level. On the basis of the aforementioned definition, a minimum level of typicality can be defined as that which comprises all buildings, coinciding with the founding actions discernible in every form of human settlement: the appropriation of space leading to the enclosure (in a way analogous to the complementary need/action of protection generating the roof). While the maximum level of typicality coincides with all characters of one and only one building (hence matching building type with building), the minimum level of typicality corresponds to the identification of the most general characters of a set of building types; in other words, the primary forms of a building action. These original forms are the typical elementary structures generated during the very first phase of settlement, and that have no clear precedent in the history of that territory. Usually an enclosure is the legible component of an organism's system. Not even the most elementary megaron, in fact, can be considered as correspondence between a single structure and the building organism (the house). These primary shapes coincide, instead, with the original symbolic forms<sup>5</sup>, capable to synthesize some fundamental aspects of knowledge by giving a conventional expression of them; they can be considered as elementary organisms divested of any attribute in order to reveal their typical, objective essence, in a way that is not very different from other symbolic forms used in other sciences such as mathematics (think, for example, about the notion of "set"). In this sense, their identification is facilitated by the consolidated relationship between elementary tectonic form and conventional expression, in a way similar to ideograms, in which a concept is expressed through direct graphic synthesis.

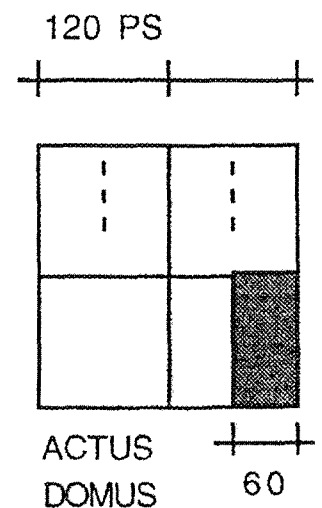
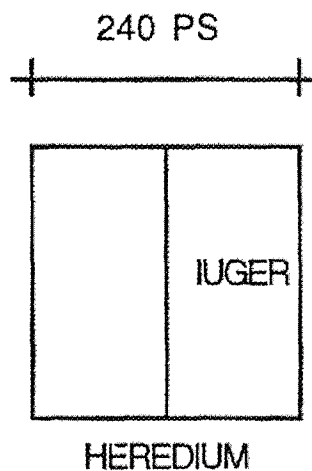
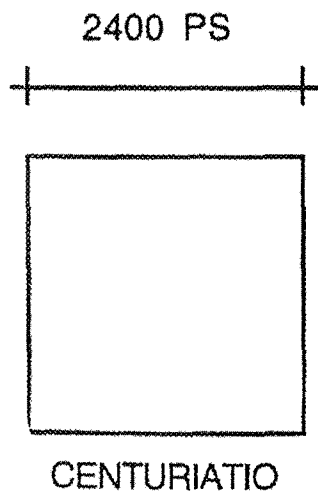
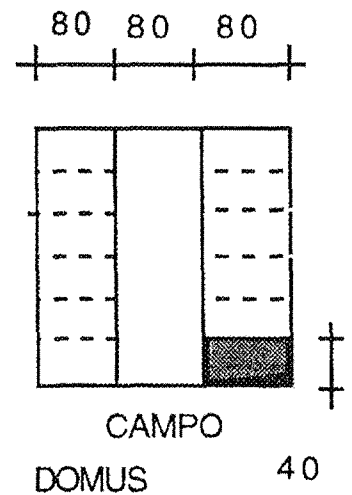
It is not a coincidence that Egyptian ideograms and Chinese pictograms express the concept of enclosure in a similar manner, turning it into the root of more complex words associated to the notion of perimeter and protection, such as house, city, and nation.

The origin of the enclosure and of the complementary covering can be drawn from the same generating principle: the idea of linkage which is at the root of both the action of enclosing and the one of covering expressed by the node. In its more explicit forms, the act of covering is indicated by a symbolic landmark (the acroterion of the pediment in classical temples, the lantern of cupolae in churches, the pinnacle of bell towers and minarets).

It is possible to argue on the formative process of architectural space through the dialectics between the act of enclosing and the act of covering, beginning with the house as synthesis of both actions. Gottfried Semper refers these two actions to the two original forms of civilization: nomadic cultures and those which originated in hot climate through an active

relationship towards nature. The domus and the hallenhaus exemplify these two different approaches to building.

Even those buildings which derive from the specialization of the house largely maintain their original character. The symbolic shape of the enclosure is directly associated to the majority of buildings consisting of a series of modular spaces (special serial buildings), as result of a general organizing principle often based on the idea of an open space within a perimeter (such as the convent, the palazzo, etc.)<sup>6</sup>. On the other hand, in the symbolic shape of the covering, dialectically related to that of the enclosure, it is possible to recognize the building action structured around one dominating room (special nodal building). In this case, the covering is a fundamental element organizing space, and it identifies the spatial node linked to the symbolic action of synthesizing the complex componentry into one single architecture. This synthesis can be deemed typical by presence of one space dominating the hierarchy in terms of organization, space, and structure. Center and periphery, node and anti-node, are therefore inseparable concepts to understand the inextricably symbolic and functional origin at the base of the hierarchy of special types. The two actions interact and complement. Imagine a basilica organism, originated from the action of defining a central space by a peristyle, later protected with a covering. The dialectic and complementary relationship between the two actions is often legible in the logic of transitional phases: when the open space has a markedly nodal function, it prefigures the "necessity" of the covering. The peristyle of Diocletian's palace in Split, where were found traces of an "uncovered basilica", is an example of the potential vocation of the central space to become the covered node unifying the whole organism. Therefore, the organization of special building into serial and nodal ones affects not only the functional and construction



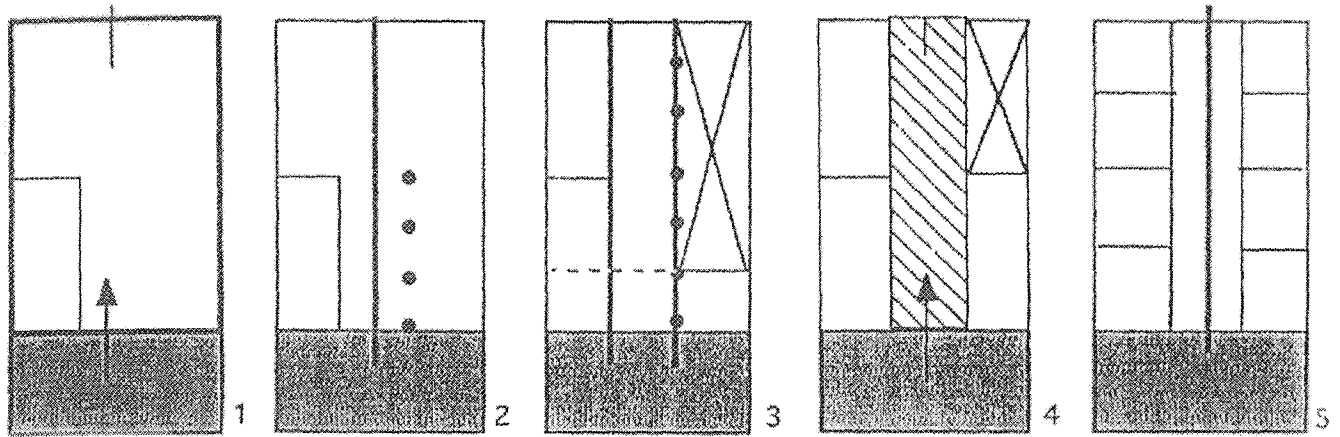
data, but also the symbolic character inseparably linked to them. The permanence of the notion of enclosure in the relationship between basic and special buildings is sometimes much more direct than one would deduct from simple morphological analysis. An enlightening example of this is the persistence of the domus layout in special types, the typical dimensions of which link the building enclosure to the general Roman parcelling system, demonstrating the continuity of territorial transformation processes from Late Classical to the Medieval period.

The base dimension of the heredium (240 x 240 Roman feet), derived from the subdivision of the centuriatio, originates the actus (120 x 120 feet), half of the side of which (60 feet = 17.70 meters) constitutes the base front measurement of the domus lot. Note that the etymology of both the Latin heredium and the Italian lotto (lot, parcel of land; from the Frank lot) indicates the notion of inheritance, of a continuously transmittable asset. Within the land parceling, the evolution of the elementary domus is always based on the principles of nodality and axiality, margin and dividing line, associated to the notion of enclosure.

The domus, in fact, gives rise to special typological trends as well as to multi-family assets decomposing itself into single-cell row units (pseudorows), yet maintaining its own generating principles linked to the use of the enclosed space.

A representative example is the Venetian house, the typological matrixes of which are deeply rooted in the Roman Po Valley. As found both above sea-level and on land-fill constructions, the recurring dimensions (to be regarded as typical and variable within reasonable limits) of the Venetian single-family domus derive from the traditional half-actus module or, in the case of the 40 pedes front, from the direct subdivision of the heredium into three parts along one direction (two strigae and one open space in-between), and into six according to the other, thus producing the common aggregation with squared fronts onto the public space of the campo (the Venetian square). By schematizing a very complex process, the larger lots are preferably laid out with the long side facing north in order to have the water (often a small canal or rio) parallel to the terra firma passage on the side by the first construction typically oriented south. The internal route is progressively covered over time, generating a portego (portico) which geometrizes the route and originates an axis polarized at both ends by entrances. The following building takes place on the southern side, starting from the external route with more nodality according to the typical process of "tabernization" (Caniggia-Maffei, 1976) through the formation of the internal dividing lines complementary to the centering axis. This internal space assumes two fundamental roles related to economic and social processes - the changes of which were already quite advanced in the 12th century — which led on one hand to the differentiation of the domus type into upper-class residence and palazzo, and on the other to its subdivision into low-income family houses. The first case brings to the





formation of the nodal space of the special building — the deposit, the merchant fondaco and, on the upper floor, the sala Veneta legible from the outside through the polifora (an originally open, transparent space). The second case generates an internal route (calle) as the axis of a row-house type of aggregation.

*1- Elementary domus and formation of the enclosure margins; 2 - Forming of the "portego" and centering axis; 3- Starting in "tabernization" and forming of dividing lines of warehouse and "sala veneta"; 4- Formation of the "casa fondaco" type around the nodal space of the warehouse and "sala"; 5- Alternative conclusion of typological process: formation of pseudo-row on the "calle" (venetian narrow road) nodal axis.*

Facades originated by such process — both in the Byzantine fondaco and in the Gothic house, as well as in the following Renaissance types — immediately reveal margins, centering axis, nodal space, and dividing lines. In particular, the space b (see figure) individuated by the central polifora (transparent, a discontinuous load-bearing structure) is originated through a process starting from an open space, while the side walls a and c (opaque, load-bearing and continuous) come from the first phases of construction. Notice how the walls a and c are not symmetric in the case of buildings that directly derive from the domus, while they become symmetrical when the inherited type is embodied in buildings intentionally designed during the Renaissance period. The vertical tectonic nodes A and B (often paraste) or horizontal D (marcapiani) are often clearly legible and are typical features inherited by the carpentry tradition of the Veneto region. The entire polifora is considered as boundary of a virtually open space; it therefore shouldn't surprise how sometimes the centering axis C (also common to the gothic area) can meet a continuous vertical element<sup>8</sup>.

On the basis of what has been said, the enclosure may be analyzed not only as the result of the act of enveloping space with a continuous structure (as evident in the landfill Venetian house, being itself a fence, or in typological trends such as the castrum, the praetorium, and the forum, representing the notion of enclosure as physically concluded space), but also as a symbolic form resulting from the act of defining a conventional space within which

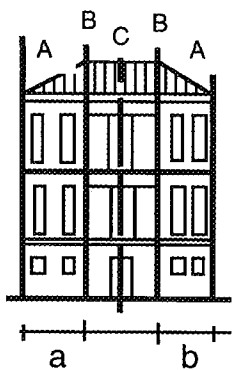
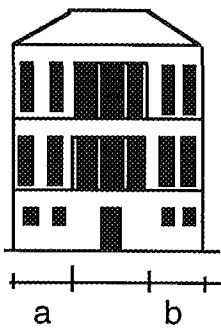
elements, structures, and systems produce the mechanisms of centrality, periphericity, nodality, anti-nodality in a relatively autonomous thus legible way. Such space can constitute the parameter with which to define the reading scale in function of the hierarchization of the organism's components. In other words, the notion of limit and enclosure is not simply derived from the presence of physical margins, but is also linked to the complementary notion of route and those of nodality and centrality related to it. We can therefore state that there are features in common between the notion of enclosure at the building scale (exemplified by the domus), and the notion of enclosure at the aggregate scale (exemplified by the route and its pertinent area in row-house aggregations).

This can be exemplified by the reading of the formation of the block, the analysis of which cannot be referred to the interior space physically defined by the streets (except in planned developments, where the block is often identified with one building), but rather to the routes. For example, the analysis of the formation process of the *contrada* (a neighborhood developed around one route; from the Latin *contra*, in front of), in the case of row or pseudo-row house fabrics such as the ones in Venice mentioned above, replaces that of the block by using different reading criteria. The notion of enclosure may be applied to the aggregation along the two sides of a route, and to their pertinent areas defined by the secondary routes:

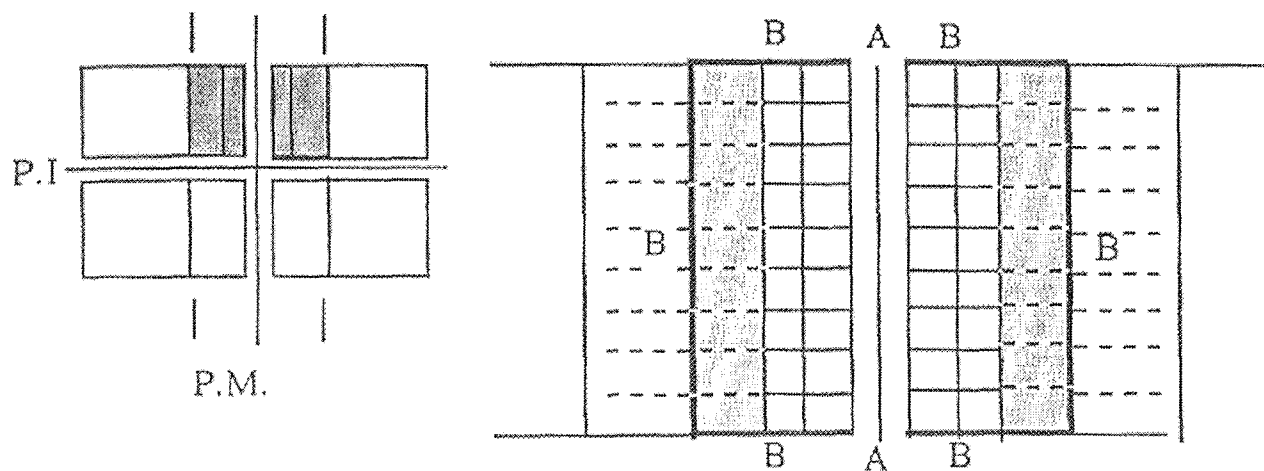
- main central route: a linear nodality consisting of a public open space between aggregations, which becomes the main central axis as geometric expression of motion; it is particularly evident in the case of planned fabrics;
- margins of the aggregate: linear anti-nodalities consisting of the external dividing lines, not necessarily straight, of the two pertinent strips (Caniggia, 1979, p. 171); the dividing lines are constituted by the boundaries between pertinent areas or by walls separating two rows of buildings pertaining to two different routes.

This scheme is generally valid for completely serial elementary fabrics in which buildings have not yet developed along the planned routes. In reality, the variants generated at the intersections between routes — starting encroachment processes, complicate the reading of the margins. However, it is useful to understand the analogy between base and special building, which adopts from the urban fabric the hierarchy of routes, the forms of aggregation of the rooms, and the base dimensions of the elementary cell. Special serial types are characterized by modular repetition of one room according to a transposition inside the building of a system of routes analogous to that one of the fabric<sup>9</sup>. During the transformation of the aggregate into the building, also the margins of the new enclosure are consequently transposed.

Let's take for instance the Roman or Florentine Renaissance palazzo. In these cases, not all rooms are actually identical: some are larger and devoted to reception and representation, while others are service rooms covering a less important position in the overall geometry. Process-wise, this type plays a



A. Margins. B. Dividing lines. C. Centralizing axis. a, b. Different dimensions of serial band.



particular role in special serial building: for example, if compared to the convent type, which only derives directly from serial cells forming the fabric, the palazzo simultaneously comes from the specialization of base types and features transposed from the fabric. This explains, in brief, the difference in the layout of the two building types.

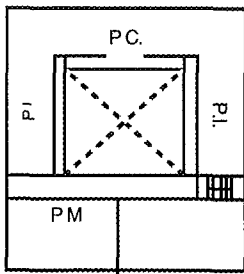
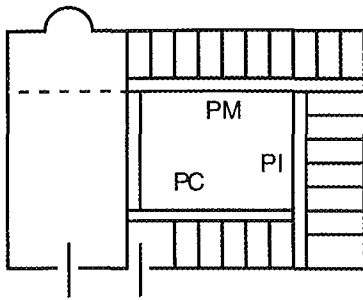
The palazzo is not only deriving from the fabric — from which it reverses the fundamental character and hierarchy of the routes within its interior distribution (where the main axis, starting at the entrance, acts as a matrix route, the orthogonal ones as planned routes, and the parallel ones as connecting routes) — but also from the base types consisting of both the domus<sup>10</sup> and the late medieval corte mercantile (merchant courtyard house), from which it derives by direct specialization or by the merging of different units<sup>11</sup>. In this regard, the palazzo's distribution can be considered as derived from the building aggregate, the structuring routes of which were made interior and private. Such process is exemplified by some types of Roman insula<sup>12</sup>, the interior stairways of which were directly accessed from the street (as in the houses in via del Tempio, Casa di Diana, and Casa dei Dipinti in Ostia), and the ground-floor and mezzanine were largely composed by autonomous special serial rooms organized along a route leading to an interior vertical distribution.

Even in its latest and more complex forms, the palazzo retains its original character of a serial repetition of rooms derived from the elementary cell. It develops into its mature, larger form when land-ownership policies change - which started in the middle of the 16th century in the main Italian cities — and allowing to join formerly separate row-house properties through their transformation into an enclosure layout.

The reversal of routes from the public to the private realm in the Florentine and Roman palazzo is perfectly legible in the larger examples, such as Palazzo Medici and Palazzo Farnese: the main route is polarized by the

*P.M.* - Matrix course; *P.I.* - Planned building course; *AA* - Centralizing nodal course; *B* - Dividing lines.





stairway, the secondary routes are comparable to the planned ones, and the final connecting route consists, in the Florentine palazzo, of the lounge and the ground-floor loggia (Caniggia, 1987).

However, the relationship with the fabric is often less evident because of the intrinsic continuity with the urban organism. Palazzo Lancellotti is a significant example of the complex relationship between new enclosure and base fabric laid out according to the ancient insulae. The site was occupied, presumably until the 4th century, by insulae along the via Lata axis (today's via dei Coronari). The palazzo was located on a nodal point at the intersection between via Lata and a street leading to a posterula of the walls along the Tiber river (today's via Arco di Parma). The average dimension of the insulae corresponded to the actus. The medieval row-house fabric formed along the centering routes of via Lata and the parallel route corresponding to today's via della Maschera d'Oro, as well as along the new internal route now corresponding to via dei Tre Archi and via Vecchierelli.

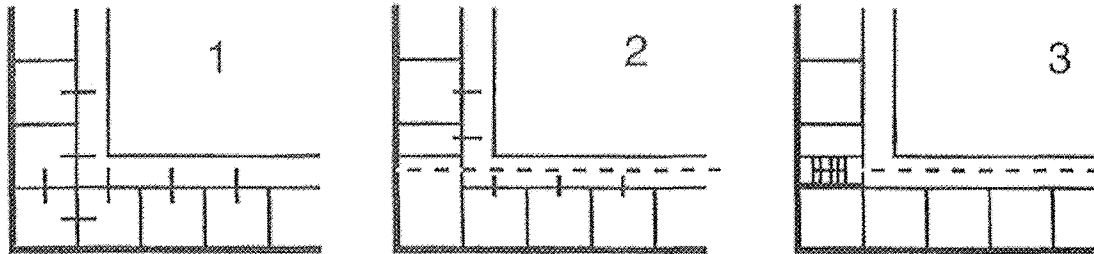
Construction began with the purchase and remodeling of houses on via dei Coronari by Mons. Scipione Lancellotti, and continued until the palazzo's court was completed. Only later the organism became asymmetrical for a further addition.

Surprisingly the orientation of the palazzo does not occur, as is usual, along the matrix route. However, considering the preexistent medieval enclosure-type structures and their medieval transformation, the interior routes may be read as the absorption within the organism of the dividing route (which through vicolo dei Tre Archi led to piazza Tor Sanguigna), which therefore maintains, both in base and special building, its complementary role with respect to the parallel routes. In Palazzo Lancellotti, this explains the formation of the single porticoed main route polarized by the large stairway, while the through-route continues towards Vicolo dei Matriciani. Falda's plan however shows the tendency towards the hierarchical formation of the typical routes at the piano nobile, despite the following variations. The facades show traces of the two typical phases of the transformation of the palazzi:

- a "fabric-like" behavior, still legible on the side facade (the ground floor of which is still occupied by shops) and, on the left-hand half of the front facade by presence of the typical inter-axis deriving from the opening of two windows in each room;
- a "design-like" behavior, with typical regular inter-axis also continuing in the extension.

One aspect of the close link between fabric and building is that during the serial repetition of rooms (or of cells), exceptional solutions always occur at the nodes; it is there that the series of rooms is interrupted or rotated in correspondence to the building's sides, just like a node generates a variant in the urban fabric. In the case of Palazzo Lancellotti, the nodal room and the corner variant coincide, being one directly derived from the other.

In general, the corner variant is one of the recurrent issues linked to the

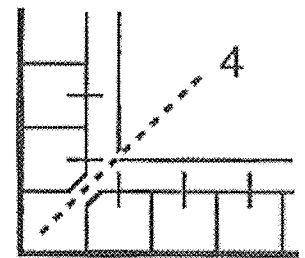


notion of enclosure Their different solutions are indications of the building's levels of seriality and organicity, and of the builder's intentions and final choices, thus documenting his different degrees of critical conscience during the act of building: thus they are the legible traces of the organism's genesis. In traditional construction, but often also in buildings designed by the architect's critical conscience (think, for example, of special nodal rooms in buildings such as Palladio's Palazzo Thiene), the serial spaces are organized in a way that is very similar to the ones generated by the routes in the urban fabric: at the corner, exceptional position within the fabric, a "base type" variant is produced according to the degree of anti-nodal importance of the intersection between routes.

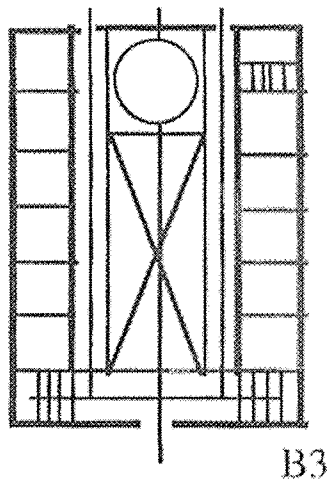
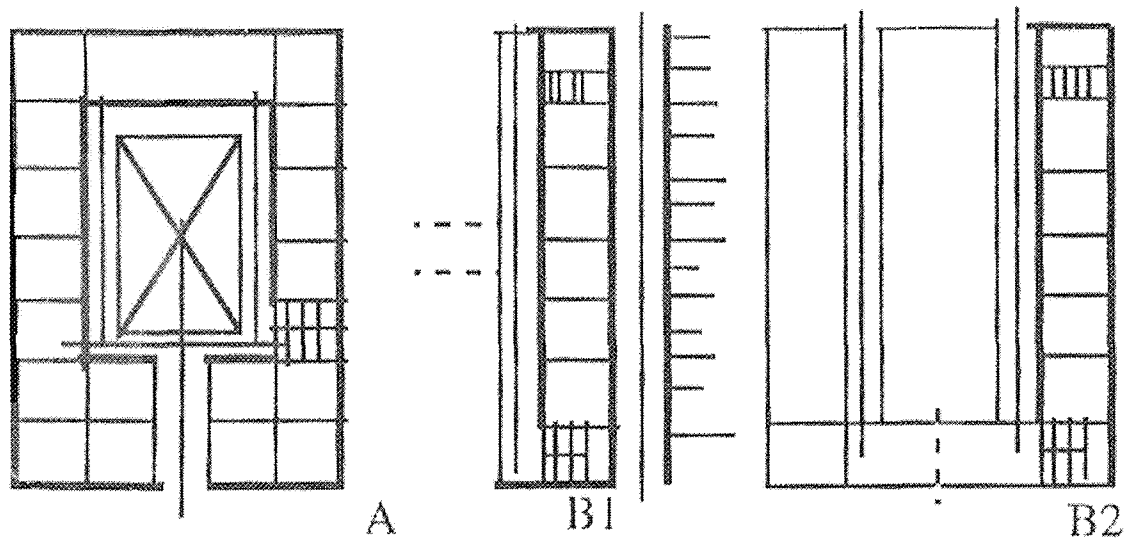
The convent is another significant example of the relationship between special serial building and the notions of fabric and enclosure. The monastery was originated in Europe as a true spontaneous fabric in the 4th-5th century, coinciding with the formation of the first monastic communities: like row units, it was generated as an aggregation of formerly autonomous cells.

The series of rooms composing the organism are organized starting from the first emplacement, which formed along the route beginning at the entrance to the church's presbyter. As in urban fabrics, this route acts as matrix for a subsequent planned route along which a new series of modular cells will then be organized. The following route concludes the enclosure, forming the cloister and finally establishing the access to the organism tangent to the dividing line separating the nodal organism from the church. Within a broader typological process, we can consider the convent serial type as another matrix of a series of modern special building types. Schools, especially universities, are very clear examples of such a process, furthermore demonstrating how the notion of utilitas derived from the concept of type reaches far beyond the mere correspondence between function and type.

In Rome, the indirect reuse of both convent and palazzo types for higher education is self-explanatory. The ancient university - the Collegio della Sapienza on today's Corso Rinascimento - consists of an enclosure-type



*Graphic examples of the need for the variant in nodal rooms in serial specialized building. 1 - Specialization due to lack of opening onto the course; 2 - Specialization by increase in size; 3 - Specialization polarized by the stairs; 4 - Specialization by direct access of the corner room from the course.*



A - Reversing of the courses in the Roman type of palazzo; B - Example of reversing process of the courses (Collegio della Sapienza in Rome): B1 formation of the internal course polarized by the two staircases; B2 formation of the enclosure, doubling of the course and formation of the orthogonal course; B3 conclusion and formation of the nodal chapel of S.Ivo.

structure strongly developed along the main axis, as well as organized along porticoed routes facing the yard, with the S. Ivo church located in axial position. The direct origin of such organism from base building seems to be confirmed by Pope Eugene IV's wish that "the schools all be reunited, and (...) that they be gathered in the S. Eustachio quarter"<sup>13</sup>. This was achieved by acquiring houses near the S. Fortunato church in an anti-nodal position with respect to the fabric (Campo Marzio was still almost uninhabited at the time), thus allowing to develop a large structure. It seems that the first educational facilities directly reused those very houses; the first special building, built at the end of the 15th century, is composed by a number of rooms as multiples of the elementary cell along via de' Sediari, and aggregated according to the serial logic of the base fabric<sup>14</sup>. The fundamental typological difference distinguishing the new structure from the residential fabric is the position of the distribution route: parallel to via de' Sediari, yet inside the organism, it is polarized by two stairways continuing the route on the upper floor, and is contiguous to open spaces that will later merge to form the enclosure of the following building. Therefore, it is the fabric and its aggregation principles that generate special structures through a process typical of all special serial buildings: the fabric's routes are reversed within the special serial organism, determining its formation and evolution process.

When it was decided to expand and unify the organism, the new interventions were designed on the basis of the precedents of the convent and the Roman palazzo<sup>15</sup>, which had been recursively developed and transformed over time: the two original yards were joined by the demolition of a wing orthogonal to via de' Sediari; a new building was constructed symmetrical to the existing one, thus creating, due to the polarizing position

of the stairway, a route parallel to the main external route that introduced hierarchy in the system; the new centering axis was established in order to unify the entire organism, transforming the "fabric-like" aggregation into one single building, accompanied by the erection of the St. Ivo church and the remodeling of the external routes. The new enclosure, by establishing a perimetral dividing line, rectified the direction of the adjacent via de' Staderari into the new diagonal trajectory later maintained by the following building of Palazzo Carpegna and Palazzo Madama. Due to their large size (four elementary cells), each room specialized itself by establishing its own centering axis, as indicated by the triplication of the portico's spans corresponding to the cell, which allowed a widening along the axis. The organism may now be considered as a special fabric.

The building's character is legible from the outside through the indication of the portal-church axis on the front, and the two axes of the longitudinal routes of Piazza S. Eustachio; the side facades keep their original aspect indicating the serial layout of rooms through the windows' binary module, which survived the several transformations although progressively unified starting from the first series on via de' Sediari. Notice in this regard how the architects' drawings also show a process of design shifts parallel to construction, by passing from strongly serial types (in Giacomo della Porta's project, the rooms of the two series along the two porticoed routes are absolutely equal), to their greater specialization and hierarchization. This process should have ended by reinforcing both ends of the parallel longitudinal routes through the opening of two lateral portals that were never built (Mastroianni, 1989). Notice also the first formation of a very simple special building along a single route, and how its repetition generated the serial organism through the joining of the two parallel routes to the one linking the two stairways to form a new axis: such evolution stands as further proof of the procedural continuity among special serial types (i.e., the formative role of the stoa in Greek cities). The final phases of construction are accompanied by a remodeling of the surrounding urban fabric, consequently shifting the urban role of the building from anti-nodal to nodal.

The mutual relationship and exchange between base building and special building is rather complex and often not behaving according to a linear process. The constant exchanges between residential and sacred architecture exemplify the problem at hand: in Christian architecture, the first worship gatherings originated and established themselves in private houses at least until Constantine's edict of 313.

Hence the special building for Christian liturgy originated from a simple reuse of the dwelling. Developing its own specific building types according to Roman construction techniques, Christian liturgy reinterpreted and varied the original types according to necessity (compare, for instance, the structure of the domus with that of the early Christian church, where aisles and transept obviously coincide), nevertheless the axiality and nodality based

on the notion of enclosure, deriving both from the basilica and the domus, were still reconstructed.

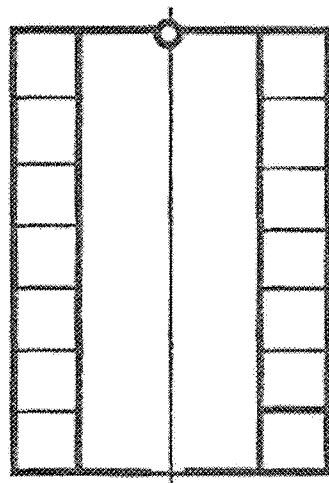
Although special nodal buildings are serially organized, their contiguous rooms are linked together by a relationship based on necessity which cannot be disjointed from the type's organic behavior. As an example of the greater degree of organicity of special nodal buildings, let's consider a church in which the serial spaces are contiguous to the central nave. The latter in turn is:

- from the structural viewpoint, the part of the building to be supported, the load of which is partially born by the subordinate serial rooms;
- from the distributive viewpoint, the "served" room, while the serial spaces function as servers;
- from the spatial viewpoint, the "nodal" room, the space where the builder's expressive and symbolic intention is fully expressed, and the character of which is enhanced by the serial spaces to its sides.

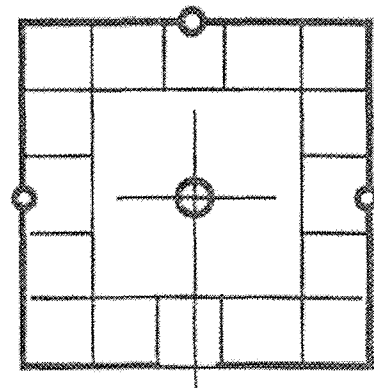
Special polar buildings feature an even greater organic character, due to the fact that eventual series of peripheral rooms are organized according to the pole in two or more equivalent directions.

We have already mentioned the formation of the nodal space in Roman special building as an organic evolution starting from serial organisms. Such phenomenon - cyclic rather than linear - is common to even quite different cultural areas: in Islamic typological processes (especially the ones pertaining to the madrasa and the mosque), the open space within the enclosure is progressively transformed into an organic vaulted space of the mature (but not necessarily subsequent) types, thus changing the axially and nodality of the matrix types.

A critical factor resides in the observation of the continuous exchange between the two terms of the dyad during the typological process: between serial organisms organized around an open space (cloister, patio, court, yard),



A

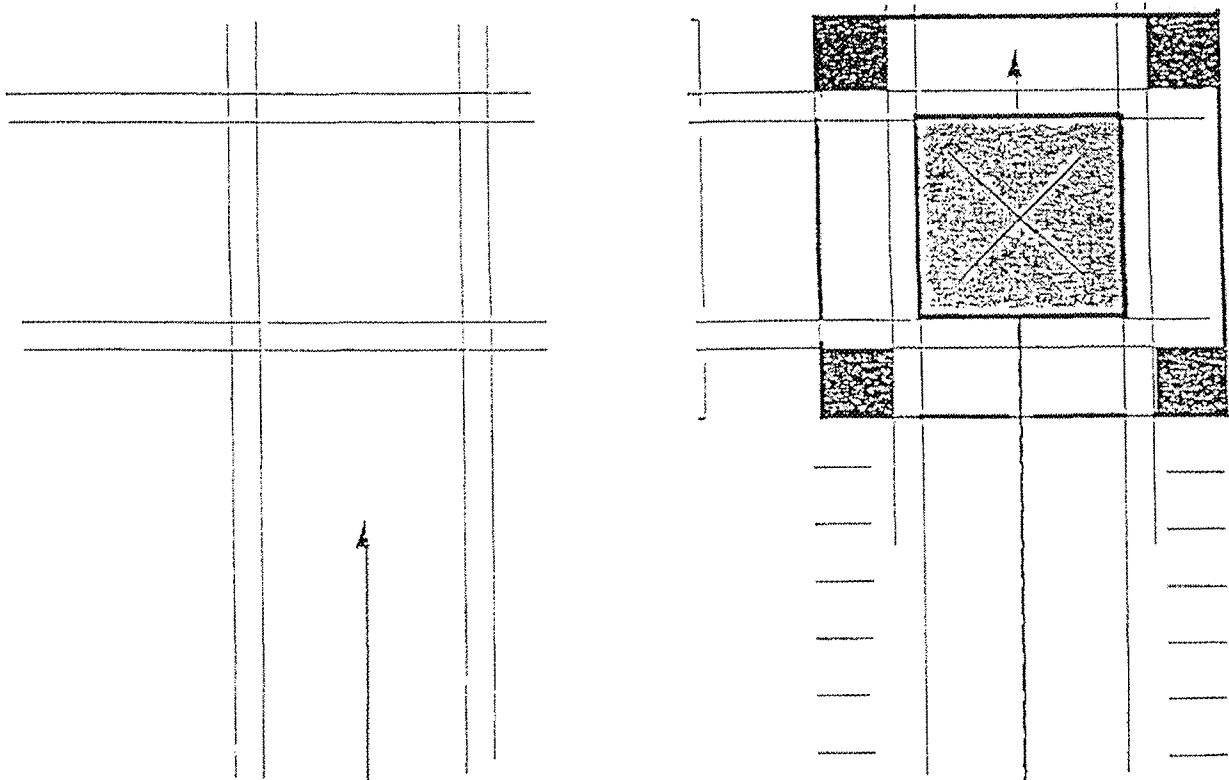


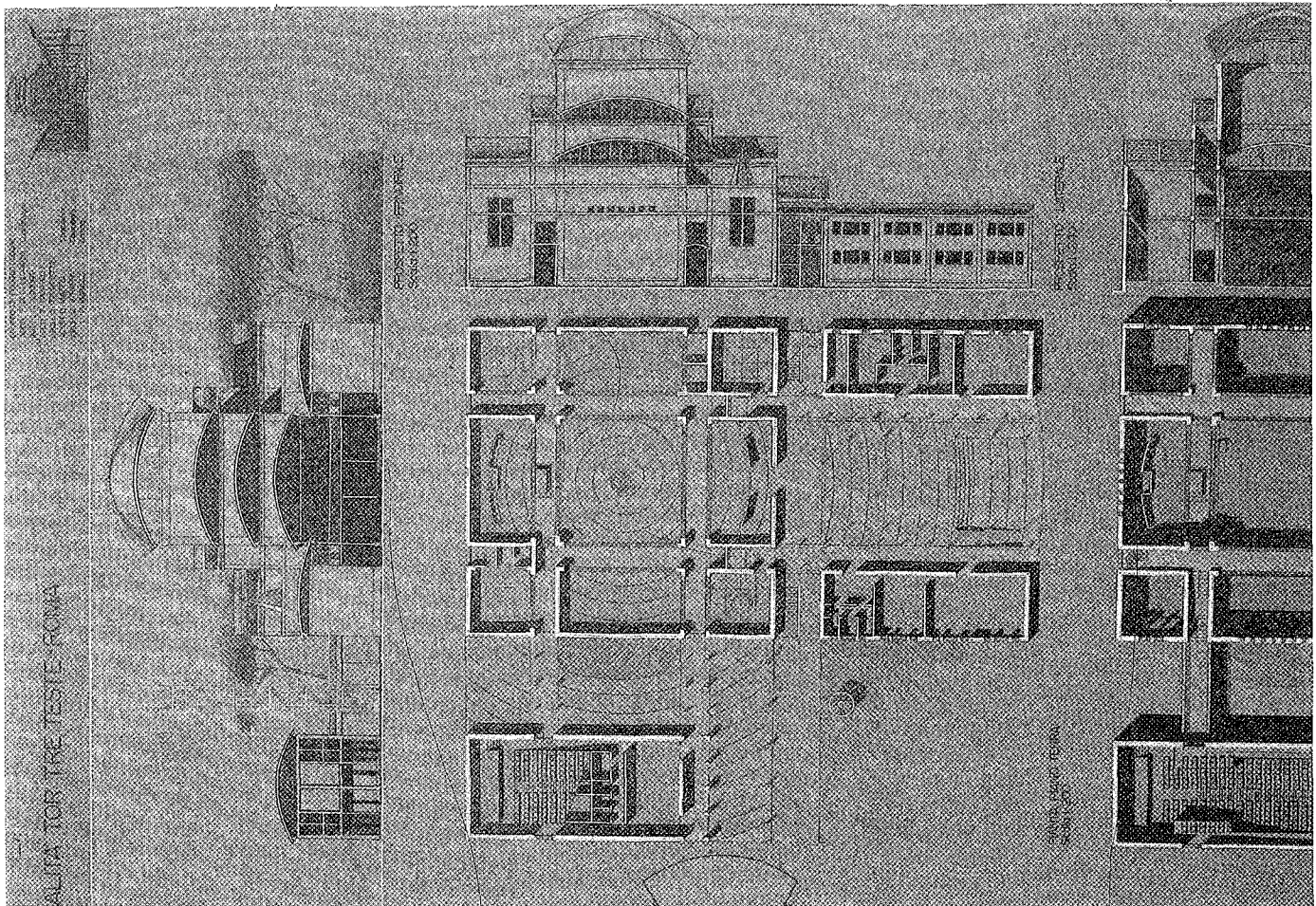
B

A- Special nodal type;  
B- Special polar type.

and nodal or polar buildings in which the repeatable series of elements (rooms, regular spans) are organized around an interior space dominating the spatial hierarchy.

In the building stratification produced by the Roman world, it is possible to retrieve evidence of typological as well as physical continuity between serial and nodal structures, through the transformation of ancient serial structures (base or special) into special nodal types. This confirms, among other facts, how the typological process not only develops through diachronic mutations of the type (identified by buildings), but also by transformations of the very architectural structures over time. Consider, for example, the formation of the San Clemente Basilica in Rome: on top of the original 1st-century BC structures- a special serial type with approximately six-meters deep monocellular rooms organized around a central court — an early Christian basilica was developed at the end of the 4th century, transforming the courtyard<sup>16</sup> into the nodal space of the assembly; the reuse of the ancient serial structures of the peripheral rooms created new serial structures forming the aisles, hence directly inheriting the module of the first ancient elementary cell. Notice how the geometric principle regulating the ancient serial transformations is transposed to the new buildings: the courtyard's axially, confirmed by the longitudinal layout of the larger rooms (which in the preexisting insulae determined the position of the mithraeum), also determines the analogous position of the early-Christian semicircular





*A competition for the peripheral area of Tor Tre Teste in Rome by Giuseppe Strappa and others. Section.*

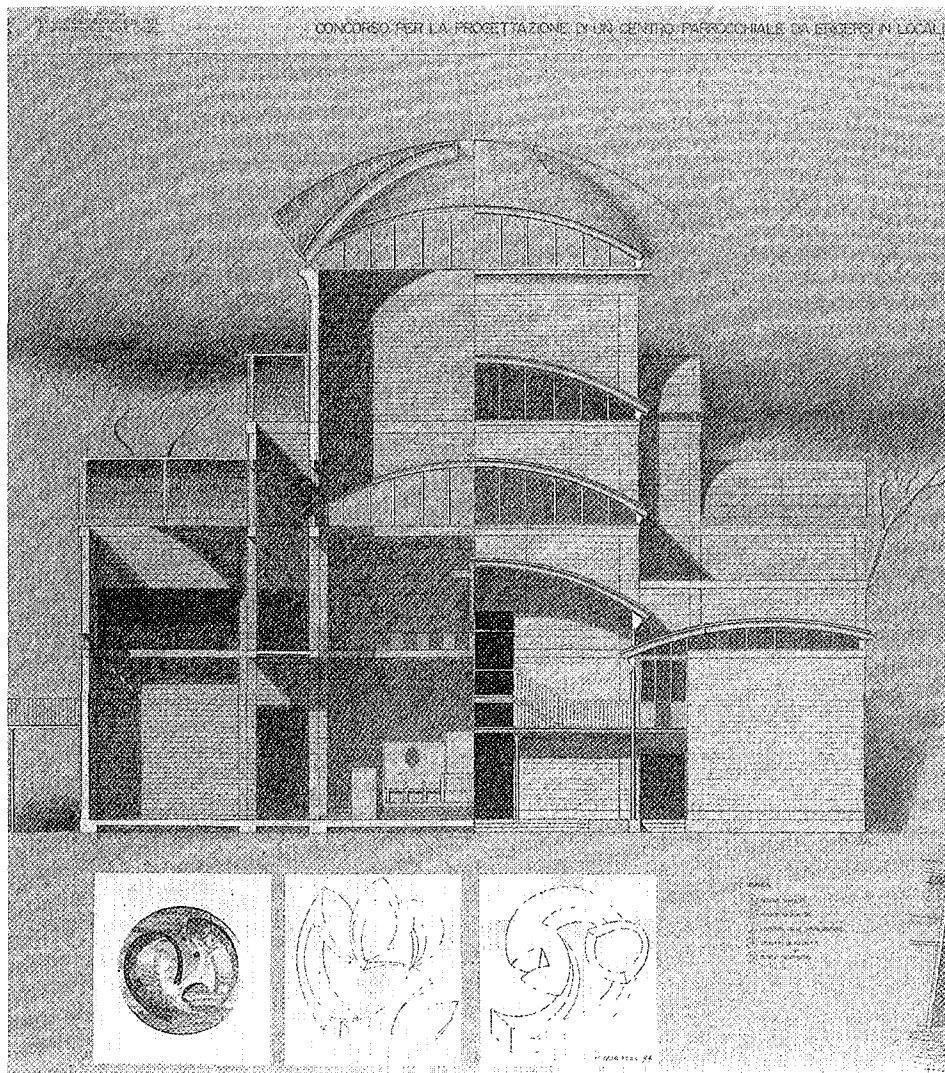
apse<sup>17</sup>. The present day's stairway, as well as the 15th century tombs, retain their anti-nodal position with respect to the ancient structure.

The correspondence of node and courtyard recurs in those cases in which the size of the ancient type is compatible to the new function. When this condition is lacking, nevertheless the adaptation behaves as far as possible according to the original formative matrixes. In the case of the Basilica of S. Lorenzo in Lucina, built over a 3rd-century insula, the preexisting structure conditioned the modular dimensions of the aisles (reusing the dimensions of the insula cell) and of the nodal room (using two cells as module).

To conclude, I would like to illustrate how the aforementioned reading criteria can be applied to the design of a complex special organism: a church and a parochial center designed last year for a design competition for the peripheral area of Tor Tre Teste in Rome. The project was done in collaboration with Gianluigi Maffei, Tiziana Casatelli, Paola Di Giuliomaria, and Amedeo Trombetta.

The suburbs can be considered as a set of dispersed buildings lacking those characteristics which make the city an expression of civilization, the city as carrier of the fundamental notions of aggregate (solidarity and complementarity among elements) and organism (relationship based on a shared necessity among the parts).





*A competition for the peripheral area of Tor Tre Teste in Rome by Giuseppe Strappa and others. Plan.*

The project proposes to re-stitch the chaotic layout of the suburbs. The parochial complex was designed as continuation of the surrounding urban fabric, mediated by complementary structures (open public spaces, the priest's house, the meeting hall, etc.), and generated as the most coherent prolongation of the serial fabric to create the node represented by the sacred space. As for the relationship with the context, we attempted to reconstruct the hierarchy among the parts by assigning specific roles to urban spaces and building types. The project area is individuated by the axis of via Francesco Tovagliari (a potentially "reaching" and not "passing" route, polarized at the other end by a commercial area) which comes from a high-density residential nucleus. At present, the church project-area is an anti-nodal space. We enhanced its potential polar role by choosing a strong polar type generated by the routes of the serial aggregation. Our intention was to make the meaning of the novel urban space legible through the polarity of its design.

The technical solutions are based on the use of static systems (vaults and masonry walls), spatial systems (the great node underlined by the higher cross-vault, the subordinated spaces covered by barrel vaults, the serial spaces sewing the fabric together and unified by a curvilinear roof), and

construction systems (metal roofs, pre-cast concrete block masonry), to bring out the aggregation logic of the serial spaces forming the four-side portico entrance, and the nodal rooms of the central-plan church.

The nodal space for worship is generated by the intersection of the double routes (coming from the four-side portico and the meeting hall), thus establishing a hierarchical order in the structure (four pillars, one at each corner, specializing in elevation).

The node formed by the route intersection is reinforced by the symbolic shape of the roof: the crossed-vault — structural node generated by the intersection of two barrel vaults - is meant to be expression of the organism's unity through one single building action.

The nodal sacred space is also reinforced by its elevated routes, memory of the ancient women galleries (*matronei*) and functional link among the different secondary spaces. Movement and stillness generate the space of the ritual and architectural node:

- the main route axis, coming from the urban nucleus, is symbolically concluded in the altar, and simultaneously hierarchizes the four main generating lines of the organism;

- the main architectural pole, center of the sacred space, is reinforced by the oculus in the covering and the marquetry in polychromatic marbles at the center of the floor;

- the anti-nodal axes, consisting of the four through-routes coming from the outside and, more peripherally, of the generating lines of the external masonry walls (margins), enclose the sacred space.

- the large anti-nodal rooms identify special spaces that are complementary, although functionally different, to the large assembly space:

- a. the chapel, to the right of the main altar;

- b. the vestry, to the left of the presbytery;

- c. the baptistery, facing the open-air square, and lit by a steel and glass pyramid;

- d. the assembly room.

As in the formative process of all religious buildings, this church stems from the idea of the sacred space generated by the notion of enclosure. Movement and ritual coincide with the order of the architectural elements.

I hope this project shows how we tried to transpose into design the reading of inherited types by deriving generating principles and not mechanical models, and how its architectural language is generated from contemporary techniques and the building's symbolic function, and not from inertial imitations of history.

## NOTES

<sup>1</sup> Caniggia-Maffei, 1979, pp. 131 and 175. For the general definition, see also pp. 169 ff., pp. 182 ff.; for the more technical definition, see Caniggia-Maffei, 1984, p. 154.

<sup>2</sup> Maretto, p. 121.

<sup>3</sup> Caniggia-Maffei, 1979, p. 131.

<sup>4</sup> In reality, the polar axis is not an axis by definition — for it does not represent a geometrization of spontaneous motion — but is rather a geometrical element introduced by the constructor's critical intention to organize the aggregates layout forming the tectonic node. Thus, the polar axis marks the conflict between the space generated by the building's real life - the structuring spontaneous motion — and the space generated by construction necessities or by novel functional needs. At the end, one of the organism's axes results inevitably polarized not only by the pole identified by the polar axis, but at least also by the entrance pole.

<sup>5</sup> "Form" is here intended as the visible (real or conventional) appearance of a structure.

<sup>6</sup> More rarely, traditional serial buildings, especially those less characterized by residential use, or those at their first formation phases, develop along a central route (sometimes doubled with the specialization of the rooms towards the interior) leading to the serial rooms.

<sup>7</sup> E. Dyggve, *Ravennatum Palatium Sacrum*, Copenhagen: 1941, quoted in L. Crema, *L'Architettura Romana*, *Enciclopedia Classica*, III, *Archeologia e Storia dell'arte classica*, vol. XII, tomo I, p. 613. Similar solutions seem to have also applied to the imperial palaces of Constantinopolis and Antiochia, strated by Galenus and terminated by Diocletian.

<sup>8</sup> Understanding the type formation process reveals the inconsistency of much design that claims its reference to traditional types on the basis of simple masonry structure. In terms of correspondence between type, organism, and legibility, Ignazio Gardella's work on the Zattere (1954-1958), praised for the sensitivity with which he inserted a modern design in Venice, shows an essentially imitative attitude rather than a contribution to the continuous evolution of the context.

<sup>9</sup> Serial special types, on the basis of all of the above, are characterized by modular repetition or by a hierarchization behaving according to specialization processes similar to those of urban aggregates: variants at the nodes, nodality and anti-nodality, derive from the position of the aggregated rooms both reciprocally and with respect to the route axes.

<sup>10</sup> See Guido Calza 1923-24, vol. 1. The distinction between the terms *domus* and *insula* was not, after all, as clear-cut as one may think, since their meaning most probably included also the notion of derivation of one type from the other and of specialization of types derived from the *domus* and from the *insula*. As Lugli remarks (Giuseppe Lugli, "Il valore topografico e giuridico della *insula* in Roma antica," in *Rendiconti della Pontificia Accademia di Archeologia*, ser. 3, vol. 18, 1941-42, pp. 191-208) in listing the damage wrought by Nero's fire, Tacitus includes in the terms *domus*, *insula*, and *templa* (Tacitus, *Annales* 15.41) all of the city's buildings: not only the residential ones, but also those specialized as schools, offices, etc., thus further confirming the close procedural relationship between basic and special building. Notice also that in reality the *palazzo*, at least in the type of the large Roman Renaissance buildings, is not precisely a single-family building type,

being often based on the aggregation of several apartments, while the domus is a common house also featuring rooms for the servants.

The apartment is actually clearly recognizable as an autonomous residential unit within the palazzo for featuring its own distribution, independent of the main one, leading to the sequence of interconnected rooms that, starting from the stairway, are distinguished in: footmen's room, first antechamber (possibly with a chapel), second antechamber, reception hall, chamber, rear-chamber, and bathroom. The size and composition of such sequence varies synchronically according to the importance of its inhabitant, and diachronically according to the trend of the time (i.e., beginning with the 16th century type, to increase the number of rooms in the 17th and 18th centuries (see Patricia Waddy, 1990).

<sup>11</sup> The initial formation of the palazzo, in its clearer and more legible form (and to be considered as the typological character to be found in following organisms) occurs through the increment of the elementary rooms (as for example in Palazzo Davanzati), with the ensuing loss of a direct relationship between external legibility and interior organization (formation of the "rhythmic wall" with equal piercing and interaxes; see Gianfranco Caniggia, 1990, p. 192).

<sup>12</sup> Especially through the transformation of the "insulized" domus in the multi-family organization based on the original substrate type.

<sup>13</sup> Gemma Pisceddu, 1989, p. 75.

<sup>14</sup> (Heinrich Thelen, Muenchen, 1961)

<sup>15</sup> The convent-related origin of special academic structures can also be observed in the Roman area in the reuse of the convents' scholae once belonging to the mendicant orders:

- the Franciscans, with a studium in the Aracoeli convent which will be transformed into a university at the beginning of the 15th century, later transferred to the SS. Apostoli convent in 1463;

- the Augustinians, with a studium generale in the S. Agostino convents since the 14th century, and an important public cultural center in the S. Maria del Popolo convent;

- the Dominicans, with the S. Maria sopra Minerva convent, the most renowned teachers of which also taught at La Sapienza.

Furthermore, there were at least two colleges at:

- Palazzo Capranica (Collegio Capranica, introductory to theological studies), built around the middle of the 15th century by reusing pre-existent portions of the fabric;

- Palazzo Nardini (today's Palazzo del Governo Vecchio), built in the second half of the 15th century.

<sup>16</sup> Although this space has not been excavated yet, several traces suggest the presence of an open space pertaining to the building located on the insula, possibly used by the mint.

<sup>17</sup> Today this continuity is legible only in the lower level of the basilica: the present day's apse is well out of axis compared to the early Christian building (which perfectly coincided with the position of the ancient structures) due to its rebuilding at the beginning of the 12th century; see Giuseppe Strappa, 1995, p.127 and 242.

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*Serge Santelli*

## **The Central Space in North African Architecture**

from the Medina to the Suburban Settlement

In North Africa it is always surprising to acknowledge the differences between official architecture—which is designed by architects and built by recognized contactors—and the “self-help” housing designed and built by the people themselves. The first, which includes all the major public buildings (administrative and office buildings and hotels) and large housing complexes for the middle and upper classes, refer to modern building types which express the progressive aspect of contemporary Arab architecture.

In Tunisia the majority of the new buildings—and especially the numerous hotels which have been built along the sea coast in recent years—are designed according to modern European standards. However, their outdoor and indoor decoration refer explicitly to a traditional Islamic architectural language: Arab arcades, green ceramic tiles, cupolas, and vaults, wooden bow windows give a picturesque oriental aspect to the buildings.

In Morocco, where the modern tradition in architecture is very significant, royal demands to increase both knowledge and imitation of traditional Islamic Moroccan architecture has had a strong influence on contemporary buildings. The Hasan II mosque, for example, shows a strong influence of the traditional aesthetic and ornamental Moroccan design. However, the reference to Islamic tradition in the design of contemporary buildings remains superficial and functions very much as decor stuck onto a Western structure.

In contrast, “self-help” housing settlements follow a specific typological process. Here, the reference to Moroccan traditions is not reduced to an ornamental language which decorates the architect’s buildings, but is connected more deeply to the traditional building process. Architects and engineers have little to do with the design and construction of this popular housing. Nevertheless, these structures must be precisely analyzed if one is to understand contemporary building processes in North Africa.

### **The Central Space of the Traditional House**

The traditional Arab house has been thoroughly studied by numerous European and Arab scholars. All have emphasized three main characteristics: (1) the house is built around a central outdoor courtyard; the rooms are lighted by windows that open exclusively onto this central



Figure 1. The gourbiville of  
Saida Manoubia, Tunis.  
Partial Plan.



courtyard; (2) the rooms are long and narrow and access to each room is from the courtyard only: there are no interconnecting doors between the rooms; (3) the most important room is situated furthest from the street and the service area is located close to the entrance. The house has no windows opening onto the street or any other public space. This results in the house having a blank outside facade with blind street walls in which only doors appear. The street is defined by continuous, plain walls, which make it difficult to read and identify each residential unit. All the buildings are attached and the urban texture is one continuous physical structure. Detached buildings do not exist in the medina. The mosque and all other religious buildings are part of one urban continuous urban fabric in which the buildings merge.

Houses are built by the owner with the help of local craftsmen. The plan is laid out on site, according to accepted and reproducible architectural standards and technical conventions. Everyone—rich or poor—has the same typical centralized house, and the urban house built in the medina has a structure similar to a rural one. The traditional plan is very old and has dominated for many centuries without major change until recent times.

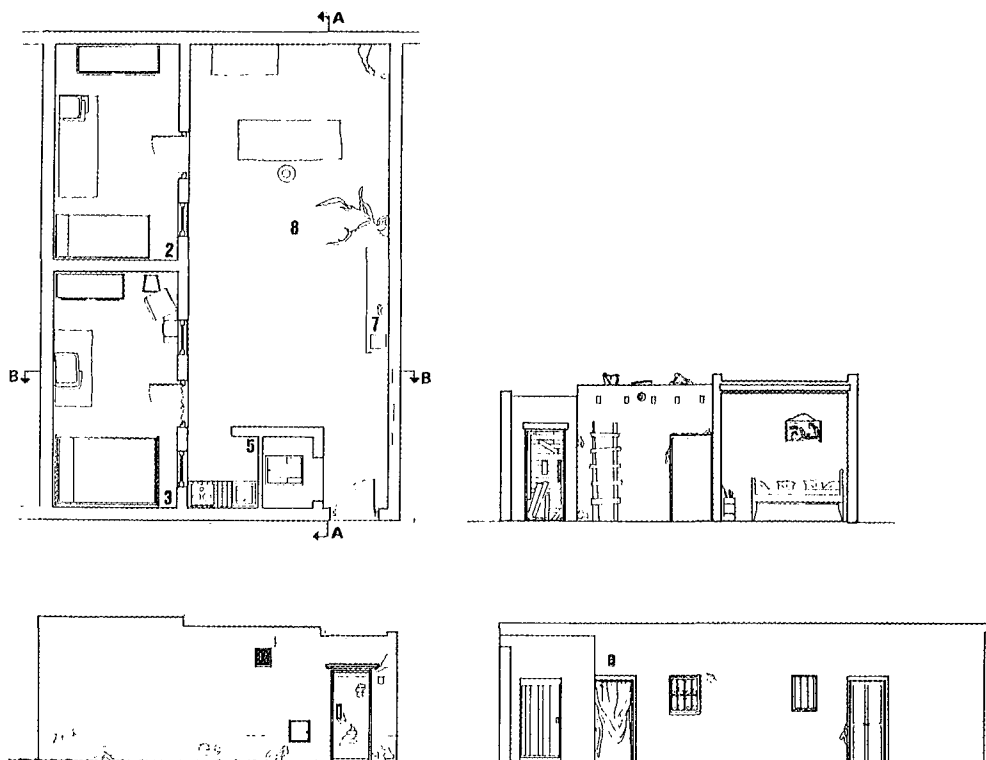


Figure 2. A house in Saida Manoubia, Tunis.

## The Arabic Facade of the Nineteenth-Century New Towns

The architectural and urban patterns introduced by European settlers and the French administration at the end the nineteen century completely transformed the traditional urban landscape in North Africa. New towns were built with their new architectural types—public as well as private—fronting the existing medinas. The architectural conventions were diametrically opposite to the traditional ones. The buildings were built along large boulevards or streets with front façades, which established strong connections between the built structure and the public space. The design of the public space, the street, the square, or the boulevard determined public or private buildings. The facades, with their ordered composition, their balconies and classical, monumental ornament, created a significant public space, which expressed the European colonial culture. The apartment buidings in the center of the city were contiguous, but the favorite residential types—detached villas—were isolated and disconnected elements built in the middle of private suburban gardens. The public buildings themselves, especially the major monuments, were lonely built structures composed in a colonial grid pattern. Thus the new European city and its buildings were in complete opposition to the traditional Islamic medina.

Figure 3. A house in Ettadhamen settlement, Tunis.

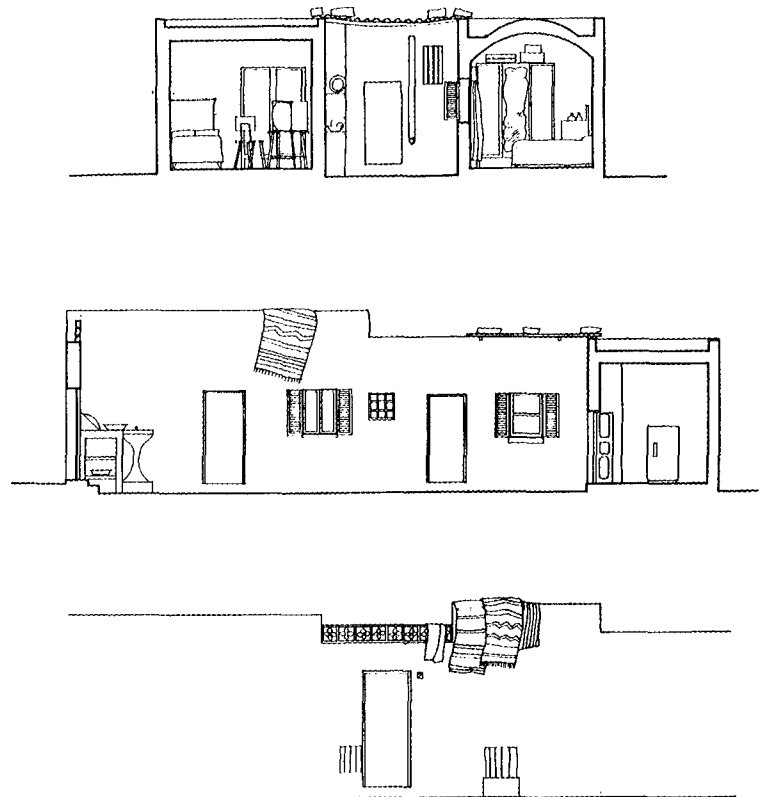
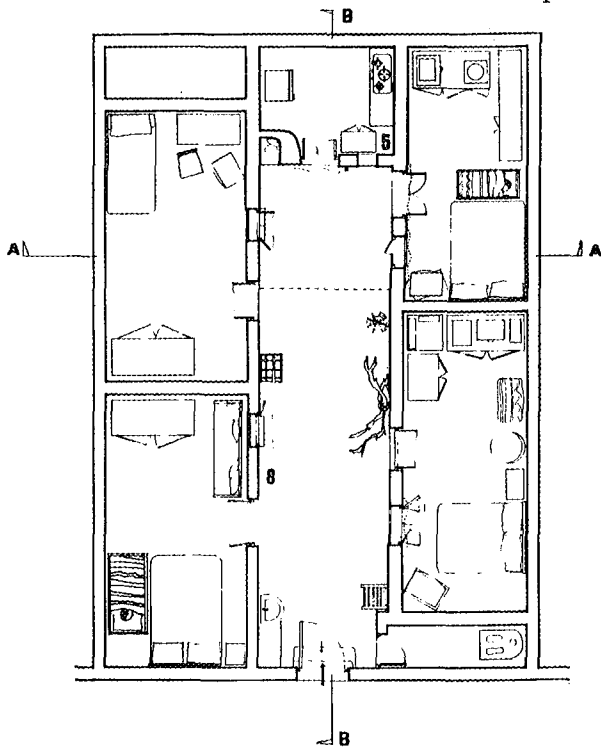
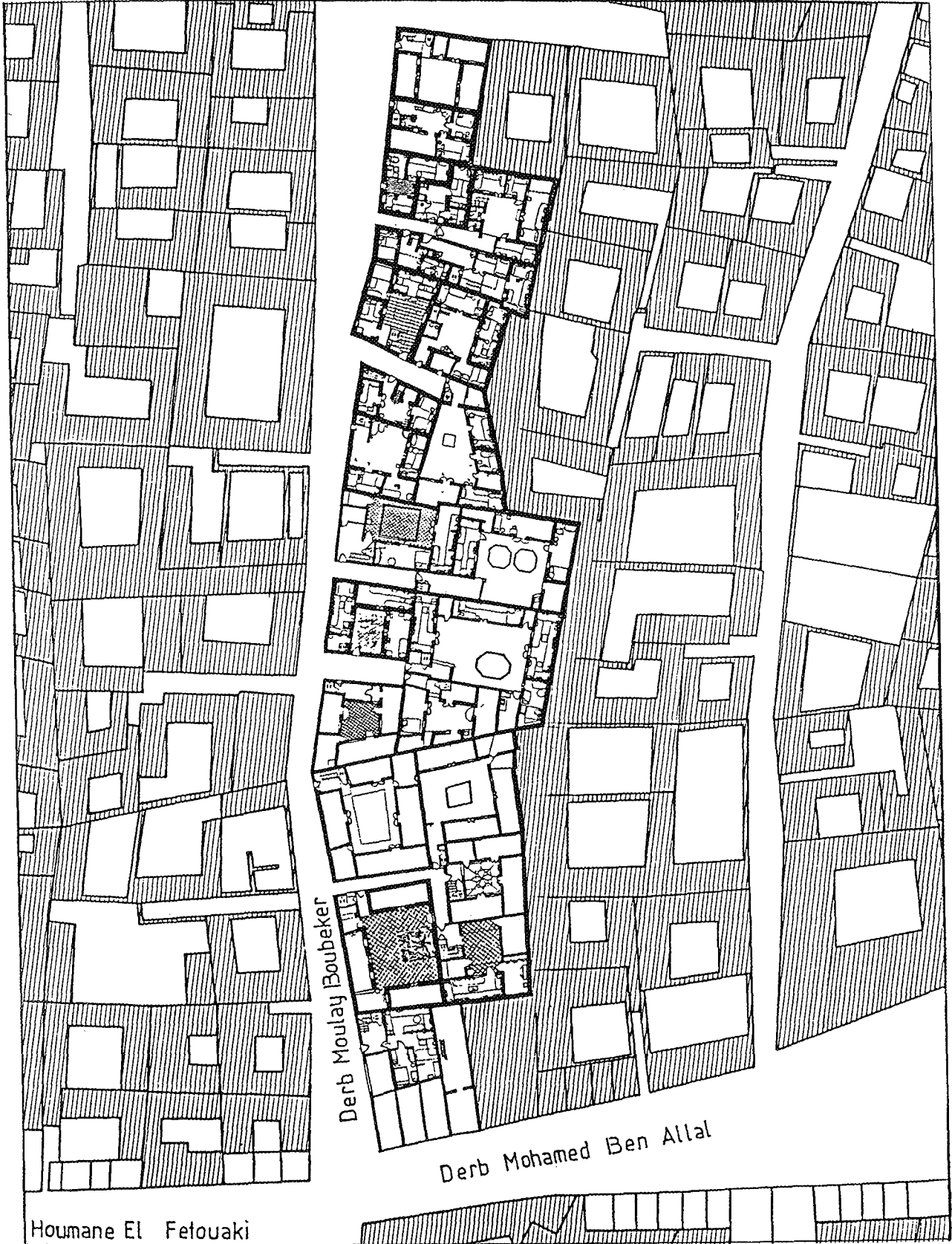


Figure 4 (opposite page). Houses along a street, Dour Sidi Youssef Ben Ali, Marrakech, Morocco.



Derb Moulay Boubeker

Derb Mohamed Ben Allal

Houmane El Fetouaki

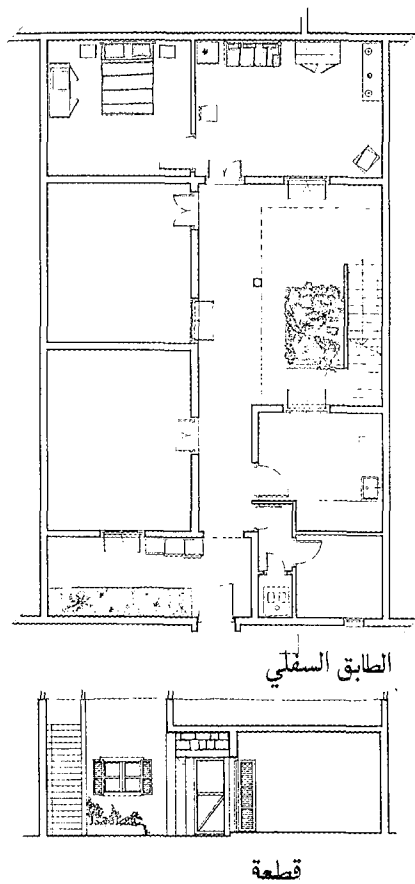


Figure 5 (above). A house in Ettadhamen settlement, Tunis.

Figure 6 (opposite page) Plans of three houses in Douar El Hajja, Rabat.

In the beginning of the colonial period, the new buildings were designed according to contemporary European architectural patterns. Most of their facades refer to the classical Western language of the Beaux Arts style in vogue at that time (most of the architects were French and many contractors were Italian). After years of classical dominance, a few architects, influenced by an exotic or oriental attitude, began to introduce Islamic ornament on the facades of their buildings. In Tunis the government buildings, built close to the Casbah, as well as some private buildings, such as banks and houses, have facades decorated with traditional Tunisian ornaments. In Rabat, Casablanca, and Algiers, the facades of the main public buildings mix both modern and traditional motifs. Although their spatial structure remains primarily Western, their front elevations were covered with traditional Arabic elements. Thus, there was a significant dichotomy in these colonial buildings: European in the layout of the internal spaces; they were Arabic on their exterior facades. This characteristic is very specific to the design of the new towns, and it demonstrates how French planners were able to integrate these new towns into the local cultural fabric.

Built outside the medina and the new towns, contemporary or later “self-help” settlements that house the native people provided the Arab component of the modern city. The analysis of these settlements built in the suburban zones of North African cities just before and after the Second World War shows a very specific phenomenon. Designed and built by people without the help of architect or professional contractor, these new popular neighborhoods follow the traditional Islamic way of building.

### The First Generation

Massive migration of rural populations into the cities and the development of squatter settlements in leftover peripheral zones were important developments after the Second World War. These *bidonvilles* (shantytowns) and *gourbivilles* (rural settlements on the urban fringe) were first built with natural materials (such as earth) reproducing the rural model, or with materials such as pieces of sheet metal or wood for temporary illegal structures. Fleeing the countryside, the rural population built, south of Marrakech, Sidi Youssef Ben Ali, a self-help settlement which after the Second World War became the largest *douar* in Morocco. With its main commercial street, residential alleys, mosques, and hammams, the settlement works like a large village. Its architectural and urban structure is similar to that of a medina. Parallel narrow streets give access to the houses, which open onto interior courtyards. The walls that face the public space are devoid of windows. Built completely of earth, the *douar* is similar to a *r'bat* (the traditional suburban settlements built on the outskirts of the medina during the pre-colonial period). It uses the same building process, the same urban structure, and the same house configuration. In Casablanca and Rabat large

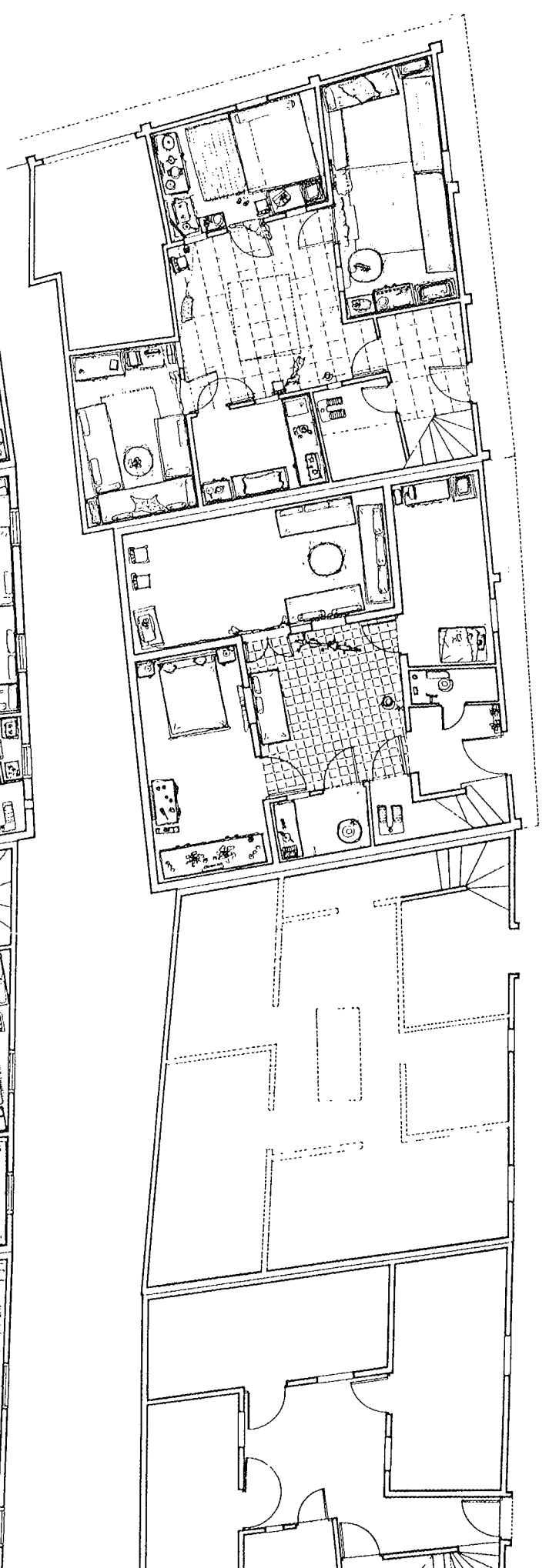
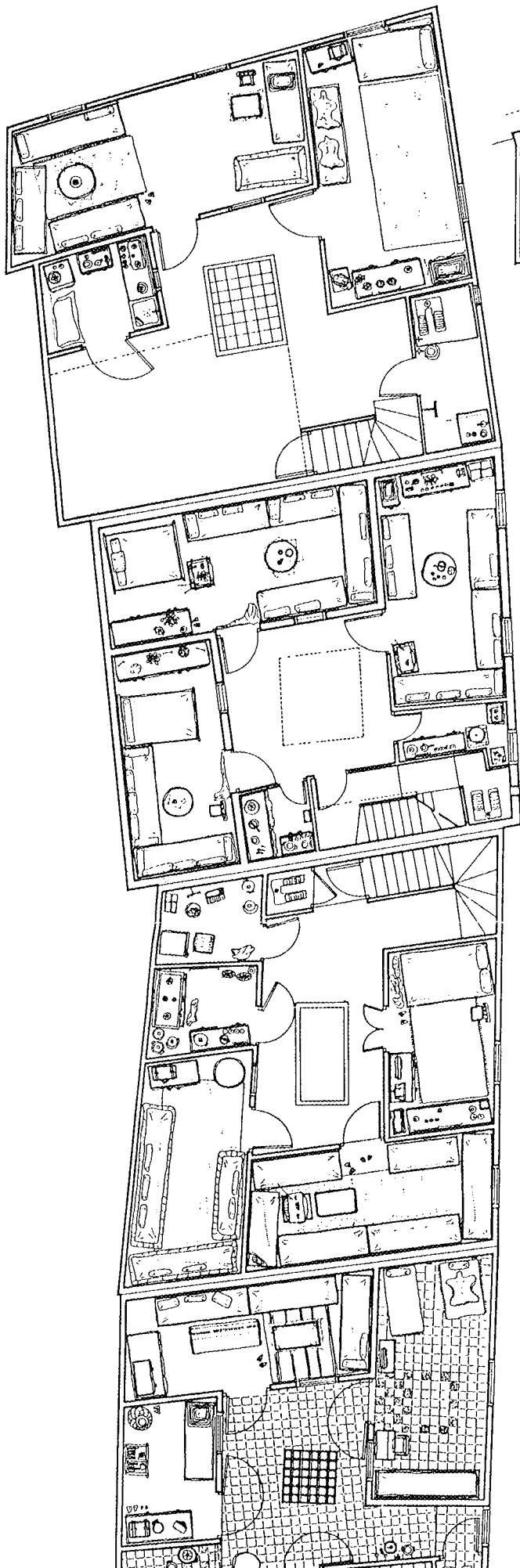




Figure 7. Section and street facade of houses, Douar El Hajja, Rabat.

*bidonvilles* expanded their fragile structures into peripheral zones close to the industrial areas. In Tunis, zones on the city's outskirts were covered with *gourbivilles*.

After a few years, as the social and financial status of the family improved, the original houses were rebuilt with permanent materials, that is, earth and sheet metal were replaced with cement blocks and concrete beams: terraces took the place of the old roofs. Their rural or squatted appearance completely disappeared and they were transformed into an ordinary traditional *r'bat* of a suburban neighborhood. Nothing now differentiates a traditional district of the medina from these contemporary settlements recently established in leftover urban spaces. The urban architectural type has been reproduced in its entirety.

### The Second Generation

In the seventies, the medinas and their new suburbs became dense and saturated, creating the opportunity for their inhabitants, an emerging urban middle class, to build their new houses in more peripheral areas. The

builders who build their own homes are the legal owners of the plot they built it on. They use permanent materials, such as cement block and reinforced concrete. With their public services (such as mosques and hammams) and their commercial thoroughfare, these new urban settlements function as small cities. In Tunis, the Ettadhamen *cité populaire* had more than 60,000 inhabitants in 1980; in Rabat, the *douar* Hajja also had 60,000 inhabitants.

Their urban fabric is very regular with its parallel streets resembling narrow blocks made of two contiguous houses. The houses are still structured around a central space. In Tunisia the plots are quite large, allowing the houses to be further divided at a later date. In Morocco, land is much more expensive, so the houses are small, but built upward, with two or three floors. Each floor contains the same centrally planned apartment around the *m'rah*. The central space is covered by a floor and open in the center with a *douaïa*—filled in with transparent glass bricks—which lets light penetrate into the apartment. The main or living room is located towards the street and opens on the street with windows. It is the only room that has windows on the street; all the others have windows oriented only to the central covered space.

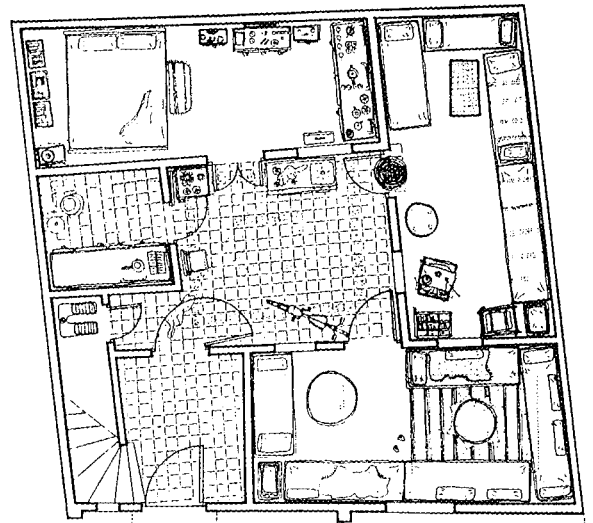
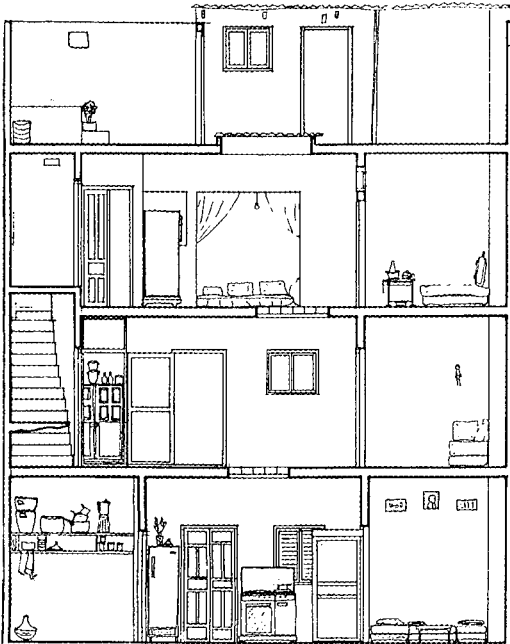
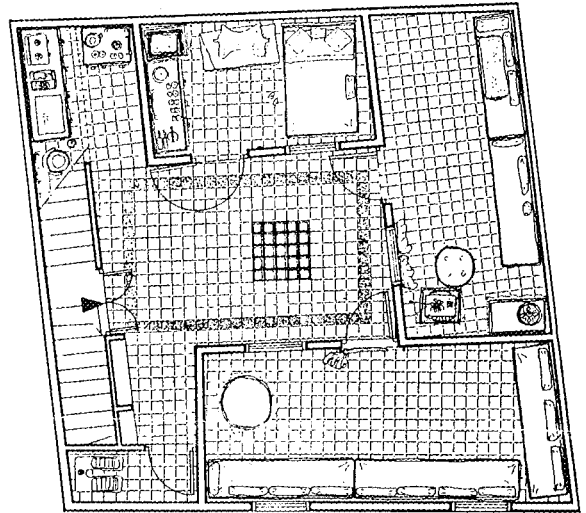
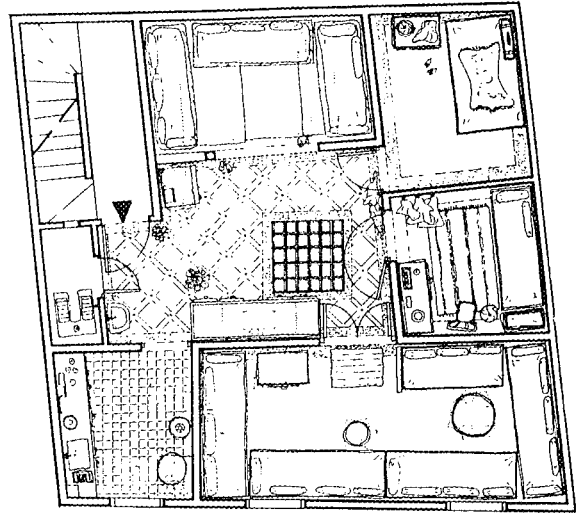
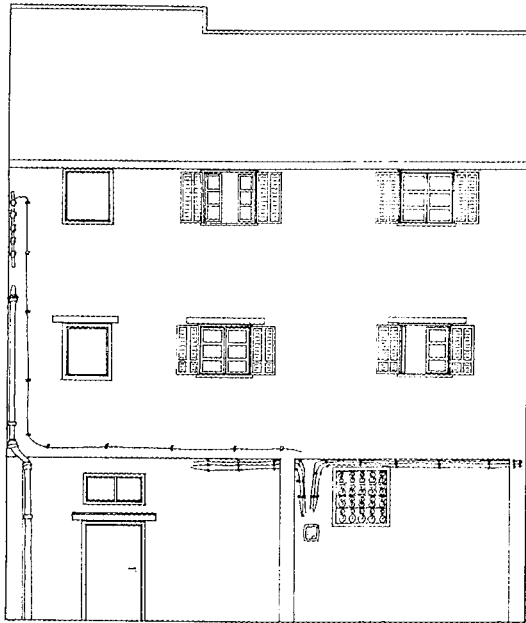
## The Facade

In Morocco and Tunisia, as well as in Algeria, the street facade becomes a space of representation, establishing a strong, new relationship with the public space. In Tunisia, the popular house is built on a single level in a U-shape; it opens onto the street, with a fence separating the courtyard from the public space. The top of this fence has a transparent decor, allowing one to look into the courtyard and the interior facade of the house. This “new” style of house refers explicitly to the suburban bourgeois villa, which has become the dominant building type in North Africa. In Morocco, the outdoor walls of the house are decorated with geometrical elements made of cement. In this case, the decor and the ornaments which are traditionally inside the house and seen from the indoor courtyard, become the major urban element of the housing settlements. The builders compete with each other to have the best decorated facade, which constitutes their personal creative contribution to a new collective and urban process.

After so many years of European influence, the contemporary building at last orients itself towards the street and contributes to a decorated urban facade. The break with the traditional model is complete, thereby asserting the continuity with the colonial period *arabisantes* or eclectic facades. This new facade has had a tremendous impact on the existing traditional landscape: street facades of the ancient villages or city houses are destroyed and covered with balconies, arcades, or decorated loggias. The traditional blank street is replaced by an over-designed urban statement. With the great building dynamism of the population, the traditional architectural



Figure 8. A house in Douar El Hajja, Rabat.



patterns disappear very quickly. A new urban landscape quickly develops all over the outskirts of the city.

Despite these numerous and spectacular transformations in the physical appearance of the city, the spatial type of the house remains very close to the traditional one. Centrality is still the determining concept in the structure of the house, and the central space is still its main indoor space. This reference to the Islamic tradition is in contradiction to the exterior developments of the facades and expresses the double aspect of these popular settlements. The house retains the basic principles of the indoor tradition to express the permanence of the cultural patterns in North African contemporary urban society. The second aspect, the openness of the house to the public space, shows the capacity of the traditional spatial model to adapt to the changing contemporary ways of living. Today's popular North African house belongs to two architectural traditions—a private Islamic one and a public modern one—which make the building a complex structure referring to tradition as well as modernity.

*Karl S. Kropf*

## Typological Zoning

At first glance, typological studies and zoning as a system of planning might seem odd companions—building typology and urban morphology have in part developed in reaction to the results of zoning—but, despite the apparent conflict, the two are not necessarily at odds. Rather, they have the potential to complement each other. On the one hand, the general structure and mechanism of zoning offer an ideal context for the application of typomorphological principles. On the other, typology and the type concept provide a means of overcoming some of the problems of zoning. In particular, a typological approach to zoning addresses the complaint that zoning tends to prohibit historical or traditional forms of building and urban fabric. This paper sets out the principles of such a fusion of typology and zoning, using an example of its application in practice as an illustration.

### What Is Wrong with Zoning?

The end product of land-use zoning has been the subject of increasing criticism for a number of years—in America, at least since the publication of *The Death and Life of Great American Cities* (Jacobs 1961)—and by now, the criticisms are both common and familiar. Downtown commercial zones are sterile, monotonous, and lifeless; urban residential areas are lively, but often run down and dangerous, abandoned by the middle classes who have fled to the suburbs. Those suburbs are, in their turn, car dependent and congested, anti-pedestrian, fragmented, and foster social isolation. Industrial zones are, and always have been, just plain nasty. The industrial or business park provides some relief but still sacrifices any gesture to the pedestrian for the sake of unimpeded traffic flows, fostering chaotic patchwork fringe development.

From all this it is not clear, however, exactly where the blame lies. Is it with land-use zoning or the images and ideals of twentieth-century architecture and urbanism? To a large extent, early- to mid-twentieth-century architecture and urbanism are difficult to separate from the principles and practice of land-use zoning. They emerged together, one informing the other. Segregation of uses accompanied the development of building types designed specifically for particular uses. Notions of minimum standards for dwellings and architectural ideals such as Functionalism provided a

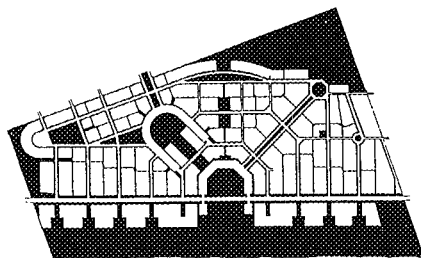
basis for the image and layout of particular zones.

Then again, one could argue that the blame lies elsewhere—with the developers or the economic system. It would be more productive, however, to turn the question around. Laying blame for a problem at best only initiates another task: coming up with solutions. It would be better to start by asking, does land-use zoning preclude alternatives, and if so, how?

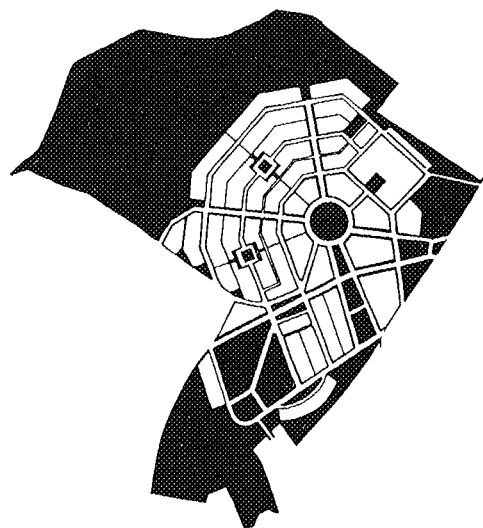
Recent criticism of zoning has focused primarily on the segregation of uses and the restricted range of forms allowed by standard zoning bylaws that often excludes traditional building types. In these respects, zoning does present a barrier to alternatives. This is not, however, part of the general idea and structure of the zoning system; rather it is a matter of the specific content of zoning ordinances. The mechanism of zoning can be used in different ways; it is relatively neutral, even if it does have problems of its own.

The solution is thus not necessarily to scrap the whole system of zoning, since the most pressing contemporary problems, in particular those centering on maintaining historical and regional character and mix of uses, can be addressed within that system. It is necessary, however, to change the emphasis of the bylaws and the basis on which the zones are defined. A general means of effecting that change is to move from zoning codes that are use-led to those that are form-led. This shift of emphasis is not a new idea: systems of land-use zoning have for the most part always regulated form as well as use and have thereby constituted a kind of form zoning. Over the past decade, a more explicit use of form-based zones has been taken up in some urban design work, notably that of Duaney and Plater-Zyberk (DPZ) and SOM in San Francisco under the direction of John Kriken. While this work has made important advances, a number of fundamental questions remain. Most pressing is that of regional and historical character.

*Figure 1. Planning projects by Duaney and Plater-Zyberk, showing the similarity of street-block patterns (from *Towns and Town-making Principles*, A. Krieger ed. Rizzoli, New York 1991)*



Seaside, Florida



A Village near Annapolis, Maryland

If this recent work has adopted an approach that creates zones defined in terms of form, the question then arises, what is the source of the forms prescribed? What is their relation to any existing built fabric, either in the immediate surroundings or the region in which the development occurs? In many cases, the source and relation are not clear. In the work of DPZ, for example, the types of street/block pattern and building types tend to be much the same wherever the development takes place. To a large extent DPZ has created its own style, paying little attention to local, historical forms (figure 1).

## **A Typological Approach to Zoning**

Applying the principles of typo-morphological studies to the framework of form-based zoning provides a means of overcoming these problems. Typology and zoning can be brought together to provide a powerful tool for planners and urban designers. The principles of typological investigation introduced by the Italian architect Saverio Muratori and further developed by Gianfranco Caniggia, Gian Luigi Maffei, and others, suggest a number of working assumptions for such a typological approach to zoning. Three of the most pertinent principles are:

1. Existing forms are at once the product of learning and a record of past experiments in accommodating human activities and needs. Those forms that have been developed through active use offer a starting point for new designs which accommodate similar activities.
2. Built forms and human activities are intricately interrelated but the relation is not fixed. While forms remain relatively stable over time, uses and activities tend to change more rapidly. A given type of form can accommodate a range of activities both at a given time and over a period of time.
3. The structure and character of a town result from both continuity and change at various levels. Some forms persist while others are transformed or erased, creating a palimpsest. The structure of a town at a given time is the result of all its previous history up to that point.

For a typological approach to zoning, the first of these principles leads to the working assumption that the zoning codes should take as a starting point local and regional forms. The diversity of built form, particularly in terms of regional and historical differences, is a product of learning and so an asset and resource. This approach treats the so-called historical built environment not as a museum but as a library. The existing forms of an area are viewed as potential solutions in the continuing task of accommodating human needs in that place. If particular forms of building have proved satisfactory and convivial over time and the core of human needs remain relatively unchanged, at the least those forms provide the most sensible starting point for new ones. Selecting local forms of building

which have proved most adaptable as a basis for regulations helps maintain character while the adaptability of those forms helps them remain viable. Selecting a range of local forms promotes the richness of diversity and allows for flexibility of use.

The second principle, that the relation between form and use is not fixed, leads to the working assumption that the zoning codes should allow for mixed uses. For a given form, there is a range of potential uses, some realized and some latent. Equally, there is a range of forms that might accommodate a given use. Industrial activities, for example, tend to need buildings with large floor-plates, though there will be a variety of specific buildings that can satisfy that requirement. There will be a range of sizes and arrangements for a given activity and a range of uses that might fit into a given size and layout of building. The limits of these ranges are set by the activity, the physical form of the building, and by social and cultural restrictions. Thus even the limits are not entirely fixed but may shift (Anderson 1978: 6-7).

Given this variable relation between form and use, there is a consequent tendency to find a diverse interaction between humans and the physical fabric of a town. A variety of forms and a variety of uses may be found within a single area. Using the principle of *range* and *limits* within a system of zoning (along with judicious application of direct restrictions to avoid the more unacceptable conflicting uses) makes it possible to control uses while still allowing for a mixture within zones. Selecting limits based on an analysis of existing relations of use and form will provide regulations that allow for variety and satisfy contemporary standards while at the same time helping to maintain the character of the town. Conversely, identifying and selecting existing forms that best accommodate a mix of uses helps to achieve the same ends.

The idea that the built environment is a palimpsest suggests the working assumption that the regulatory zones in a typological approach should allow for both continuity and change. The desire to maintain or restore areas to

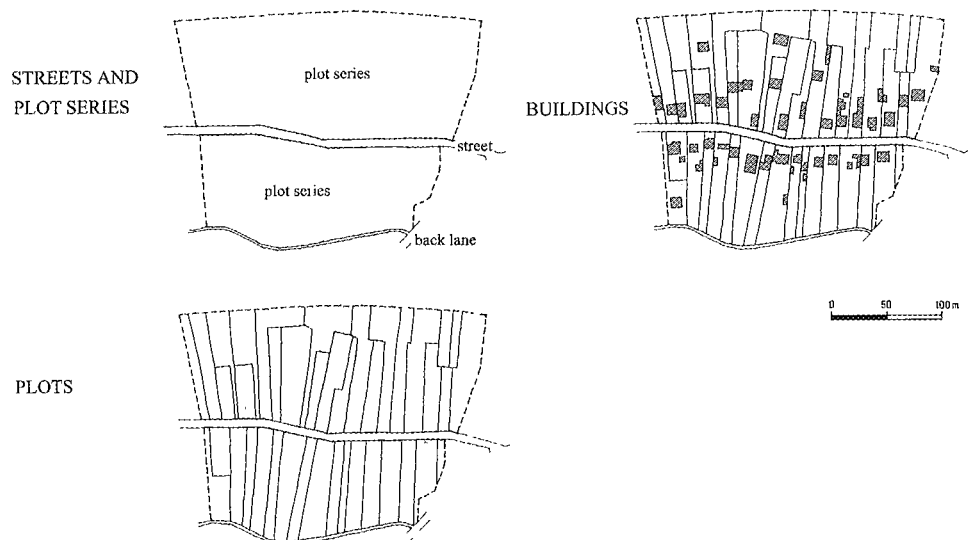


Figure 2. An urban tissue shown at increasing level of resolution.

an ideal historical state is at best problematic. Aside from the practical problem often presented by lack of information, any such ideal state is necessarily a reductive and static abstraction. Conceiving of a town or parts of a town as static objects denies the processes by which they arrived at any given state. The job of the planner and urban designer should not be that of a mortician but a doctor. The zones should be conceived as tools for promoting the life of the town and guiding future development. They should be viewed as a means of mediating between forms which, on the one hand, codify the historical "accidents" in the development of the town and give it its individual character and, on the other, those forms that constitute "good design". The forms prescribed by the zoning codes ought to contribute to the historical character of the zone and to the continuing life of the town as a whole.

## Urban Tissue

The key to realizing these principles in a system of form-based zoning is the *urban tissue*, a concept fundamental to typo-morphological studies. As a tool for analysis and explanation, it helps us to understand both the physical structure and the historical development of urban areas and the relation between urban areas and individual buildings. While the concept is in general use in the discipline of typo-morphological studies, perhaps the most fully developed conceptions of urban tissue are those of M. R. G. Conzen, the German émigré geographer, and Gianfranco Caniggia. Their work has provided the basis for the concept of urban tissue as applied to the task of zoning for the project described in the following section (Caniggia and Maffei 1979, 1984; Conzen 1969; Whitehand 1981). It is a conception which is in effect a synthesis of Conzen's *plan unit* and Caniggia's *tessuto urbano*.

This synthetic conception sees urban tissue as an organic whole whose form can be described at distinct levels of resolution. The levels correspond to the different elements identified in typo-morphological analysis. Again synthesizing Conzen's and Caniggia's conceptions, the elements are: (a) streets and blocks (or plot series); (b) plots; (c) buildings; (d) rooms or spaces; (e) structures, such as walls or roofs (encompassing details of construction); and (f) materials. As in Conzen's *plan unit* and Caniggia's *tessuto urbano*, these different elements are interrelated in a hierarchy. Smaller-scale elements combine to form larger-scale elements which in turn are parts of still larger elements. Using the hierarchy as a framework, it is possible to define tissues systematically at different levels of specificity by describing the constituent elements step-wise through the levels of resolution. At the most general level, a tissue can be described as an arrangement of streets and blocks. Greater specificity is achieved by describing the component plots of the plot series and on through component buildings, rooms, structures, and



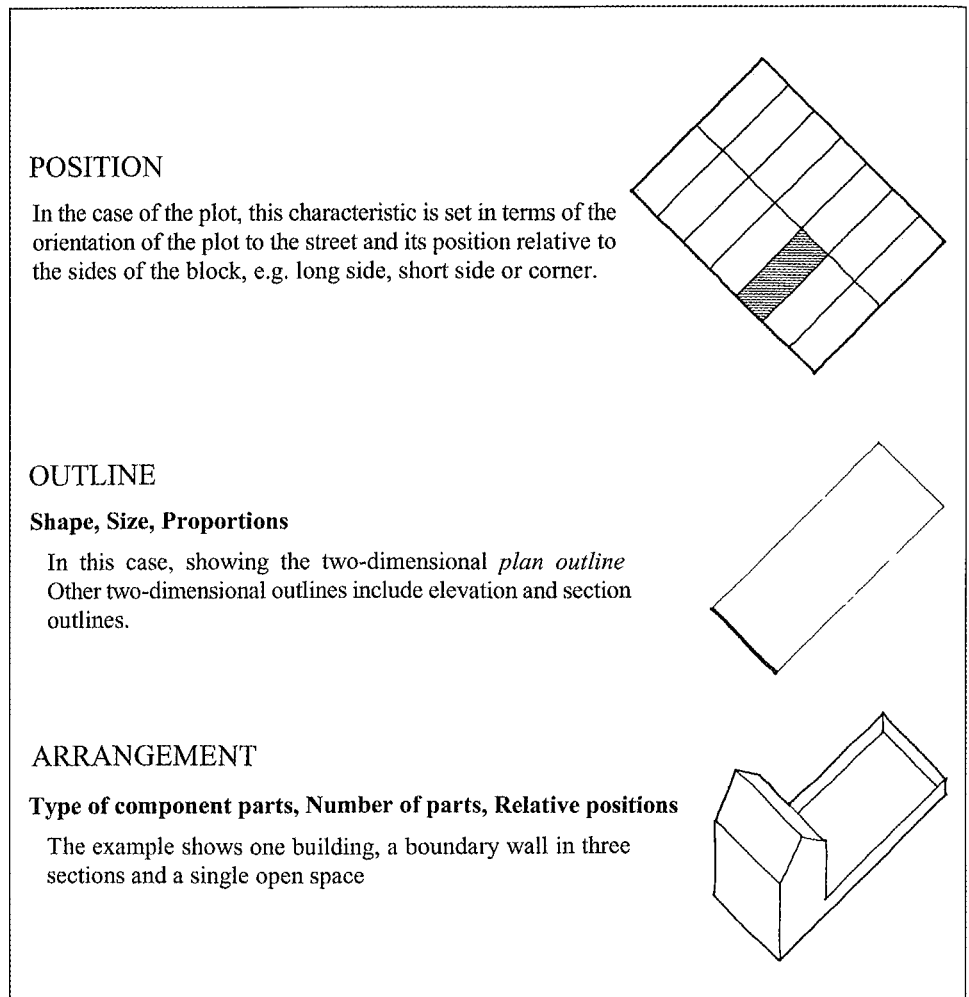


Figure 3. Characteristics used in identifying types, taking the plot as an

materials, depending on the level of specificity appropriate to the task (figure 2).

The specific characteristics used to describe each element are its *position*, *outline*, and *internal arrangement* (figure 3). Position is described in terms of the element's place relative to other elements in an arrangement making up a larger-scale entity. Thus, a plot can be described in terms of its position in a block, relative to other plots and the street (i.e., the edge of the block). One can then identify corner plots or plots on the long or short edge of a block. With rectangular plots, one can also distinguish between wide or narrow frontage plots, that is, between those with a long or short side on the edge of the block.

The outline of an element is specified by describing its external boundaries in terms of *shape*, *size*, and *proportions*. In some instances, either for convenience or because of lack of information, this is limited to the *plan outline*, that is, the two-dimensional outline on the ground plane.

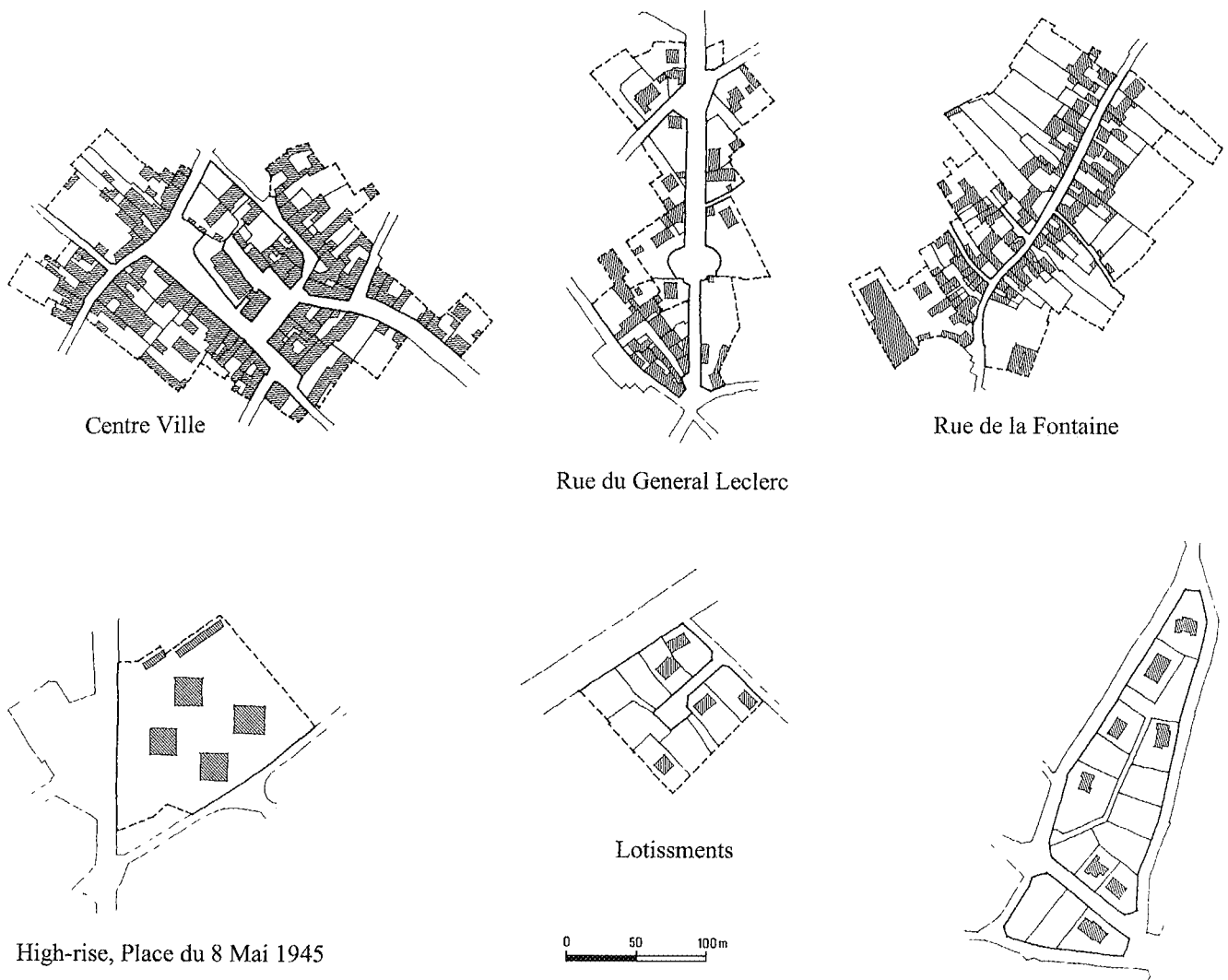


Figure 4. Examples of urban tissues from Mennecy, France.

Arrangement is described in terms of the *type of component parts*, the *number of parts*, and their *relative position*. In turn, the types of component parts are distinguished by their outline (as above). As an example, a plot (figure 3) can be described as an arrangement of a house (one), a garden (one), and a boundary wall (one, in three segments) all in the relative positions shown in the figure.

Different types of tissue can be systematically identified in analysis and described in terms of the characteristics of the constituent elements at each level of resolution. A typology of tissues can then be generated through comparative analysis (figure 4).

### An Application in Practice

How can this be used as a tool in zoning? A project in which I have been involved in France, in collaboration with the association *Doits de Cités* and

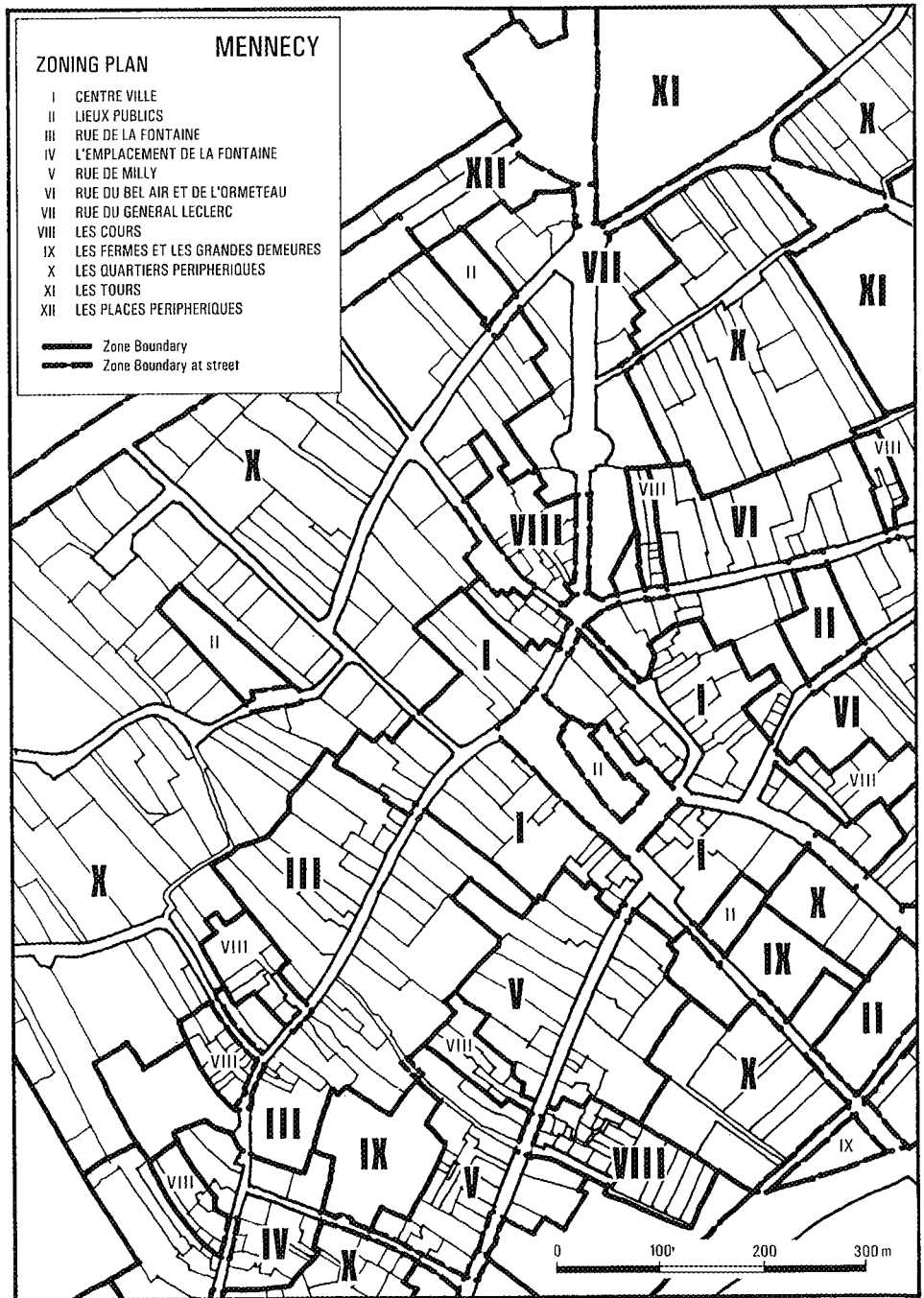
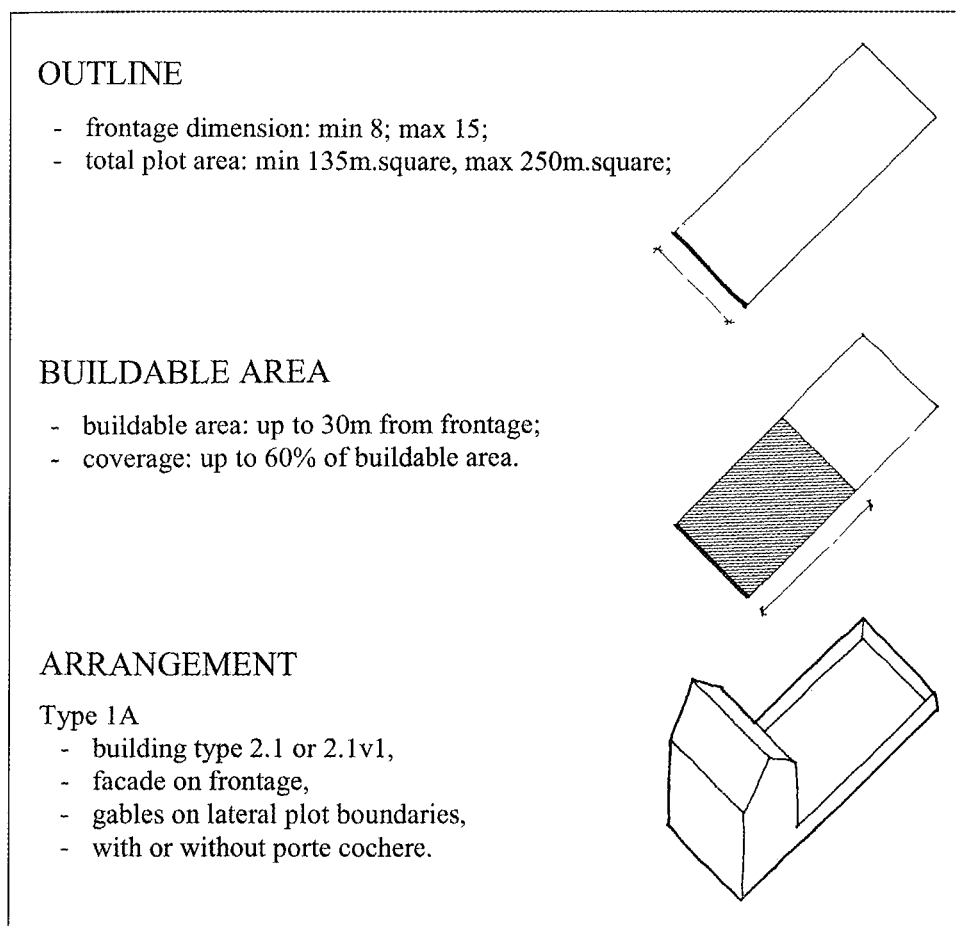


Figure 5. Part of a Proposed Zoning Plan for the center of Mennecy.

Ivor Samuels, can serve as an example. To put the project into some perspective, the job was to produce a Plan d'Occupation des Sols (POS)—the French local land-use plan—for the town of Mennecey, just south of Paris. The primary objective of the project was to provide a zoning plan and regulations for the central area of the town which would work to maintain its historical and regional character while still allowing for new development and change. The existing POS had proved ineffectual in addressing these concerns because, like most POSs, it was produced using standardized zone designations and codes. The typological approach offered an alternative, using zones and regulations derived from the specific structure of the town itself.

The procedure for creating the POS began with a typo-morphological analysis to identify the distinct tissues constituting the town and their characteristic components (see figure 4 for examples). The full process of analysis involves examining the specific elements and element patterns at all levels in order to identify and then describe the distinct zones in detail. A working assumption in analysis is that a distinct tissue is the result of a distinct process of formation. In general, that means different tissues are



*Figure 6 Example of regulations for plots from the Centre Ville zone. The regulations indicate minimum requirements.*

the product of different stages in the development of the town. As a result, the analysis has a historical dimension. Archival material, historic maps, cadastral surveys, and archaeological and art-historical information provide a picture of the historical development of the town which in turn provides a basis for identifying distinct stages and distinct tissues.

The analysis is framed in the terms described above, that is position, outline, and arrangement. These characteristics are used as a basis for identifying a range of types for each element—that is, for each generic element, such as plots or buildings, examples with similar outline, component parts, and arrangement are grouped together and identified as a type. The range of types is made up of those which most clearly constitute the zone, either numerically or historically.

The types as found in analysis are then taken as the basis for the prescriptions applying to the zones. The specific characteristics which identify the types are translated into prescriptive requirements for new building as well as changes to existing buildings. Thus, for the plot (figure 6), the regulations limit the frontage dimension and the maximum area (corresponding to the plan outline), the general distinction between built area and unbuilt area, and the possible arrangements of buildings within the built area (corresponding to arrangement), including the type of buildings (corresponding to component parts).

In terms of planning procedure, the prescriptions work as a minimum requirement. For a new building to be approved within a given zone, first, the dimensions and proportions of the plot on which it is to be built must fall within the range specified in one of the plot types. Secondly (amongst other requirements) the arrangement of buildings and the type of component building must correspond to one of the range set out in the prescriptions (figures 7 and 8).

The tissues identified in analysis were used as a basis for outlining zones and producing the accompanying regulations. The choice of zone boundaries and prescriptions were made in discussion with the mayor and council—as well as residents' associations—taking into account their wishes on a number of points including density, the location of any new development, and the maintenance of historical character. Figure 5 shows part of a zoning plan for the center of Mennecy, indicating the regulatory zones.

In brief, the analysis suggested that the Centre Ville, Rue de la Fontaine, and l'Emplacement (settlement) de la Fontaine were built up early in the life of the town, followed by the growth of Rue Bel Air and Rue de l'Ormeteau, Rue de Milly, and the creation of Rue du General Leclerc and the transformation of the Place de la Mairie (Centre Ville). Peripheral development followed, first of single-family houses along and between the routes into the center (Les Quartiers Peripheriques and Places Peripheriques) and then by the high-rise estates (Les Tours). Interspersed amongst the major zones are smaller zones and single parcels that constitute zones

including public places such as the church, town hall, schools, and police station (Lieux Publics); farms and large detached houses with large grounds (Les Fermes et Les Grandes Demeures); and collections of small houses around courtyards (Les Cours).

Since the goal of the plan was primarily to maintain the existing character of the town, the zone boundaries and regulations correspond for the most part to the tissues identified in analysis. Each zone represents, to some extent, a district with a distinct character derived from its particular position and historical development.

As the intention was not to freeze the town in the state as analyzed, the zones do not in all cases correspond to the outline of the tissues. The zones are intended to indicate the desired result of ongoing development in the area defined. In effect, they represent a range of possible modes of development for the town. So, for example, the Centre Ville zone, which allows for relatively dense development, was extended beyond the boundaries found in analysis in order to reinforce the character of the center and provide the potential for growth.

### Continuity and Change

How does all this help to maintain the historical character of a town while allowing for change? It does so, on one hand, by creating zones derived from the existing structure of the town and, on the other, by setting out regulations in terms of levels of resolution and types that are defined by position, outline, and internal arrangement of parts. These concepts build on two related insights of typo-morphological analysis. One is the recognition of variable rates of change between elements at different levels of resolution. Buildings tend to change faster than plots which tend to change faster than streets and blocks. The other insight is the identification of the hierarchical relation of part-to-whole between elements. Buildings are contained within plots which are in turn contained within blocks. Taking those insights as a starting point, the notions of levels of resolution and types characterized by position, outline, and internal arrangement make it possible to be very specific in identifying what changes and what stays the same in the transformation of urban fabric. In turn, that more specific knowledge makes it possible to formulate regulations which accommodate both continuity and change.

In Mennecy, for example, at the level of streets and blocks, the outline of the blocks is fixed in the plan, for the most part following their existing outlines. The outline of blocks is used as a tool for regulation by designating it, or not, as a buildable frontage: development can only occur on a plot with a buildable frontage. In the case of any new streets, the principle followed for choosing the alignment is that it should, as far as possible, lie along existing paths or property lines, thus again maintaining continuity in terms

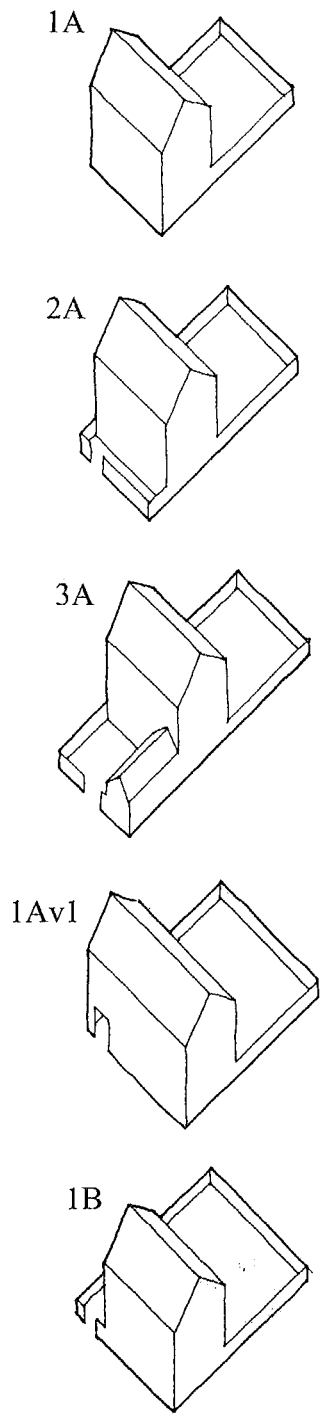


Figure 7. Diagrams illustrating a selection of allowable types of plot arrangement. Some types are allowed in all zones and others are limited to particular zones.

of position, while allowing for change in terms of the specific parts.

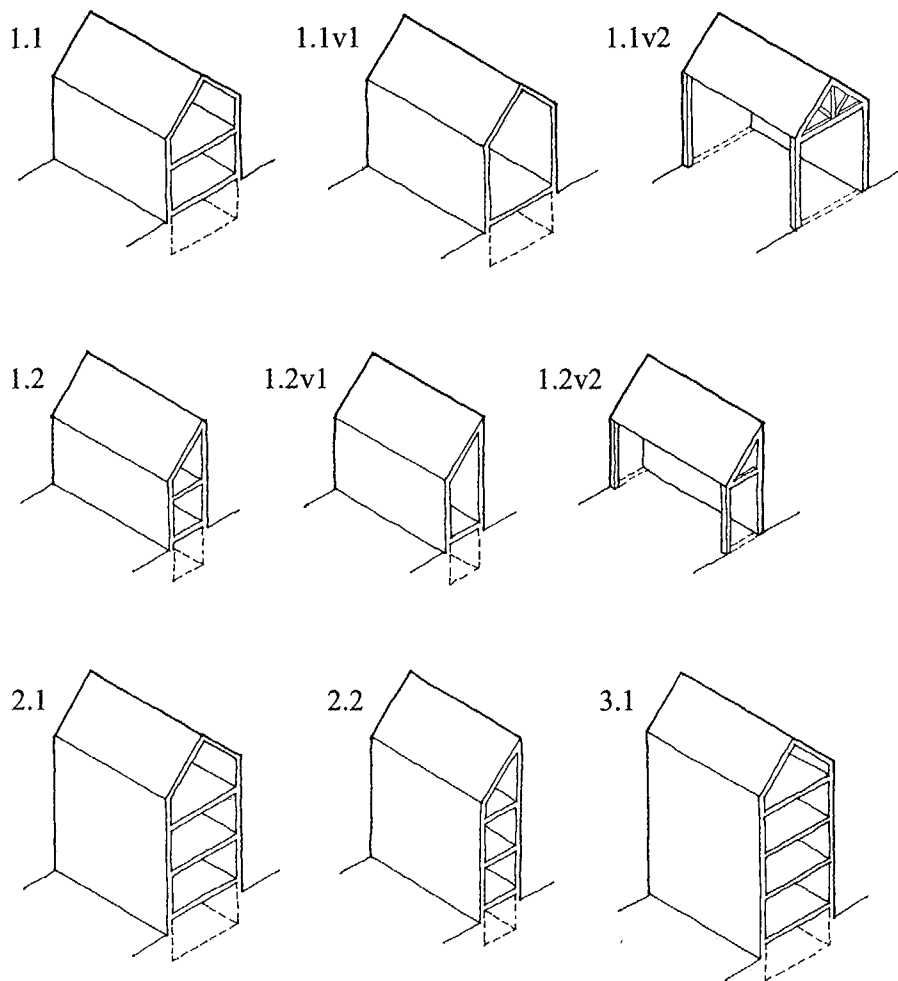
At the level of plots, the regulations identify a range of allowable plot types, first set in terms of outline dimensions and proportions (frontage to total area). This makes it possible to change plot sizes and the internal arrangement of the blocks while the outline of the blocks is fixed. Some continuity of plot boundaries is still likely, to a large extent because changes will tend to be in the units of existing plots by division or combination (figure 6).

In terms of the internal arrangement of the plots, the regulations maintain continuity at a low level of specificity by identifying a general division between buildable area and non-buildable area. Building is only allowed in the buildable area, which, in most of the central zones for example, is along the frontage. Within that area any new building or changes to existing buildings may be composed in accordance with one in a range of types of internal arrangement. Change and variety are possible in terms of the specific arrangement and within any given arrangement in terms of the component buildings (figures 7 and 8). The buildings which make up the arrangement might also vary or be changed—again, within limits. There is a range of allowable building types, defined in terms of their outline and to some extent their internal arrangement, specifically, the number of floors, floor-to-ceiling heights, and the position of the ground floor relative to the street level (figure 9).

Formulating regulations using levels of resolution and types defined in terms of position, outline, and internal arrangement in effect sets up limits within which change is possible. Different arrangements are possible within fixed outlines and different parts are allowed within fixed arrangements. Using the notion of an allowable range, either of positions, outlines, arrangements, or parts makes it possible to, so to speak, screw down or loosen up the limits by widening or narrowing the ranges.

Alternatively, in some situations it might be considered appropriate to do away with some limits altogether, while keeping others. For example, new development might be regulated at the level of streets and block, plot outline and arrangement, and building materials but left open with regard to building types.

Having defined the zones and formulated the regulations on the basis of differences in form, the allowable uses within the zones were based on those existing at the time the plan was prepared. The French zoning system allows for mixed-use development and particular uses are often not specified. To a large extent, control of conflicting activities is based on the concept of nuisance, and this was the approach taken in Mennecy. The regulations concerning form create implicit restrictions on possible uses, and the specific regulations concerning nuisance prevent particular conflicts. The result works to maintain the existing situation which has a greater mix in the central



*Figure 8 Diagrams illustrating a selection of allowable type of building form.*

areas—including office, retail, residential, public services and workshops—and some individual zones of relatively unmixed uses in the fringe areas, including residential as well as commercial and industrial areas.

### **Learning from Results**

As is true of any plan, formulation is one thing and implementation another. For political reasons, the plan for Menecy has so far not been put into effect. However, the approach was first developed in 1991 for the town of Asnieres-sur-Oise where it has since been passed into law and buildings have gone up according to its regulations.

The results are encouraging, but they also suggest that one must still learn from them. To a large extent, the typological approach to zoning is itself predicated on the notion of learning—that forms of building and urban tissue have developed through a cultural and historical process of adaptive experimentation, evaluation, and further adaptation and experimentation.



As an experimental adaptation of land-use zoning, typological zoning is itself a step in that process.

To learn from it, we must monitor and evaluate the results. First, the specific results of the regulations must be evaluated with respect to the goal of maintaining the historical character and improving the quality of the environment. Second, the whole approach must be evaluated with respect to its ability to accommodate change and experimentation. Only on the basis of such evaluation will it be possible to judge the approach effectively and further adapt it in the continuing effort to provide a satisfying and convivial environment.

By taking a more detailed and specific view of urban form, typological zoning seeks to provide a basis for making more informed experiments and, at the least, knowing what we are leaving out when we propose changes. It seeks to establish a means to, so to speak, learn how to learn from all previous results. It is an attempt to understand the value of the patrimony embodied in the built environment and at the same time learn to recognize its robustness and capacity for change.

This is not to have our cake and eat it but to have the cake and the recipe and to know how to bake. It may not always work, but we can always bake another.

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*Anne Vernez Moudon*

## The Changing Morphology of Suburban Neighborhoods

City building is the process by which urban habitats are created and landscapes made up of houses, buildings, squares, streets, gardens, etc., are produced. It involves landowners, regulators, planners, designers, builders, lenders, and so on; it also involves action and compromise, and the outcome of decisions made both separately and jointly by various actors and stakeholders. Once created, it is then continuously used, managed, and transformed.

Urban morphology is the field that studies the process of city building and its products. Some of its practitioners call themselves typologists (Muratori 1959, 1963; Caniggia and Maffei 1979; Caniggia 1985), because they study the pieces or cells—buildings and open spaces contained within the framework of a discrete piece of land in single ownership or use—that generate and change the cityscape. Others call themselves urban morphologists (Whitehand 1981, 1988) rather than typologists because they concern themselves with both the generative pieces of the urban landscape and the characteristics of groups and sums of cells that eventually constitute the city or the town. Although they differ in the way they begin their explorations, both morphologists and typologists agree that the essential component of an urban landscape is the historical process that shaped it: urban space can only be understood as a temporal phenomenon.

Urban scholars and professionals familiar with typological and morphological studies criticize them on several counts. Some planners and designers simply find them excessively tedious (Samuels 1990). They also lament the fact that their research is almost exclusively concerned with historic city cores and small historic towns. Geographers complain that the non-quantitative bias in urban morphology obliterates its potential use for predictive purposes (Carter 1976). Finally, Italian urbanists claim that morphological analyses only apply to cases of historic preservation; applications to contemporary design and building are limited because the atomization of contemporary suburban fabrics requires a different approach to understanding urban structure. Labeling this phenomenon the “typological crisis” (Aymonino 1976), critics of urban typology and morphology believe that the relationship between individual cells of the urban fabric has changed from one of dependence on the city as a whole to one of autonomy and dissociation: individual buildings in historic and traditional cities exist in relation to one another; buildings in contemporary

cities stand alone and only share a street with their neighbors. It follows from their arguments that morphological research on contemporary cities is not only difficult, but not even informative. Figure ground and other studies of land use yield only descriptive data that do not enlighten the design or planning process.

In this paper I will address two specific and practical applications of the morphological tradition to the study of city-building processes. First, I will attempt to show that contemporary post-industrial suburban environments and urbanized regions exhibit some of the same characteristics as their industrial antecedents and argue that urban morphology provides generalized knowledge of the city-building process which serves as a basis for urban and city design practice. Second, I will investigate how morphological analysis can inform urban-planning theory as distinct from the theory of architectural design.

### **Morphological Analysis of Post-Industrial Suburbs and Urbanized Regions**

Since the end of the Second World War, most of the extensive urban expansion that has taken place in the Western world has been in the form of suburban development. Cities now have multiple centers and spread-out residential patterns. Traditional central cities have lost their economic primacy to regional development and have become what I have called "urbanized regions."

Since traditional urban morphology studies historic cities, how can it be applied to these new urbanized regions? To answer this question entails first a brief review of the history of the field in Europe and as it has been received in the United States.

Typological analysis is a relatively recent concern of American architectural theory. As modernist theory subsided, architects and designers began to show an interest in rethinking the way we classify buildings, and to reject the modernist focus on building function (Pevsner) in favor of form-and space-based taxonomies (Rossi 1982). Typological approaches to urban buildings have by now attracted a sizable following among designers. While urban morphology has had a marginal impact on the North American design and planning professions, planners have exhibited a renewed interest in what they call urban form as a dimension of land use. That interest emerged as a result of the current crisis in transportation planning, as congested highways and lack of funds demand a reduction in dependence on single-occupancy vehicles and an increase in the use of collective and non-motorized transportation. Because successful use of these alternatives to the car is known to be highly dependent on the appropriate urban forms, planners are once again turning to their study.

Meanwhile, research in urban typology and morphology has developed a

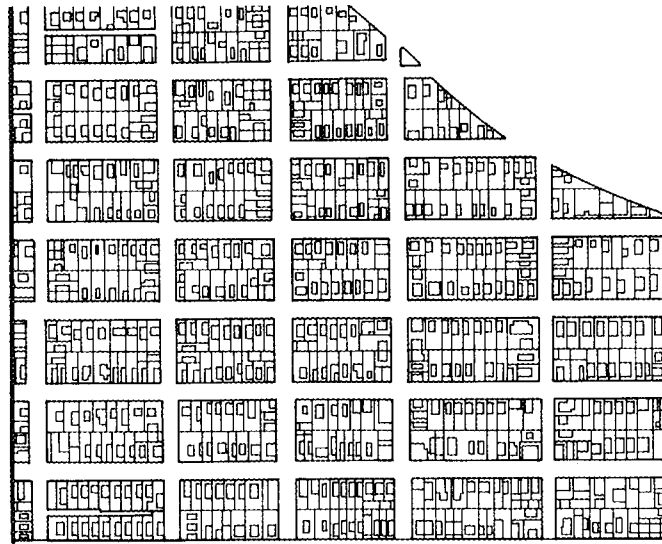
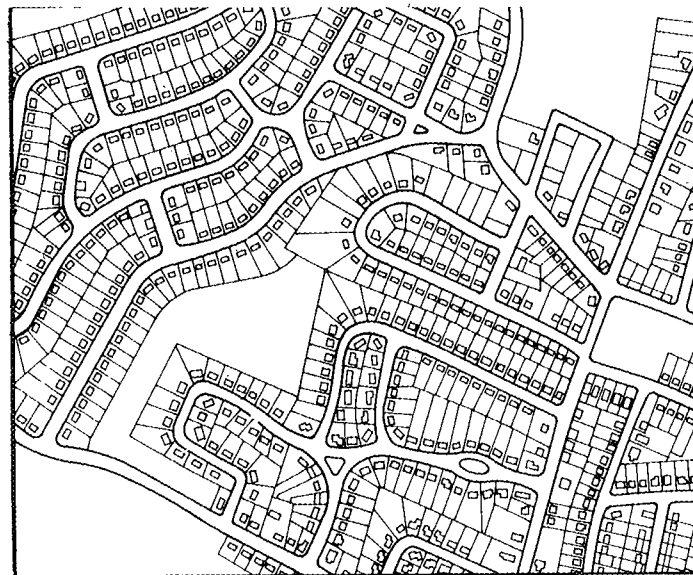
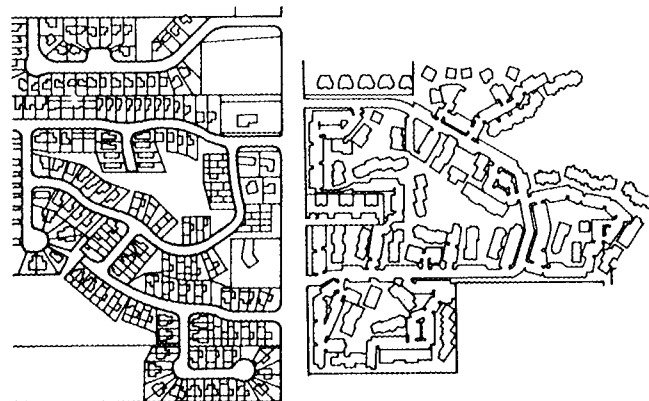


Figure 1. Basic residential plan units in U.S. suburbs. (Source: Moudon 1992).

Basic Plan Unit 1:  
Narrow, deep, lots and  
houses. Small grids of streets.



Basic Plan Unit 2:  
Wide, shallow, lots and  
houses. Continuous,  
curvilinear streets.



Basic Plan Unit 3:  
Zero-lot-line houses, garden  
apartments. Loops and  
cul-e-sacs.

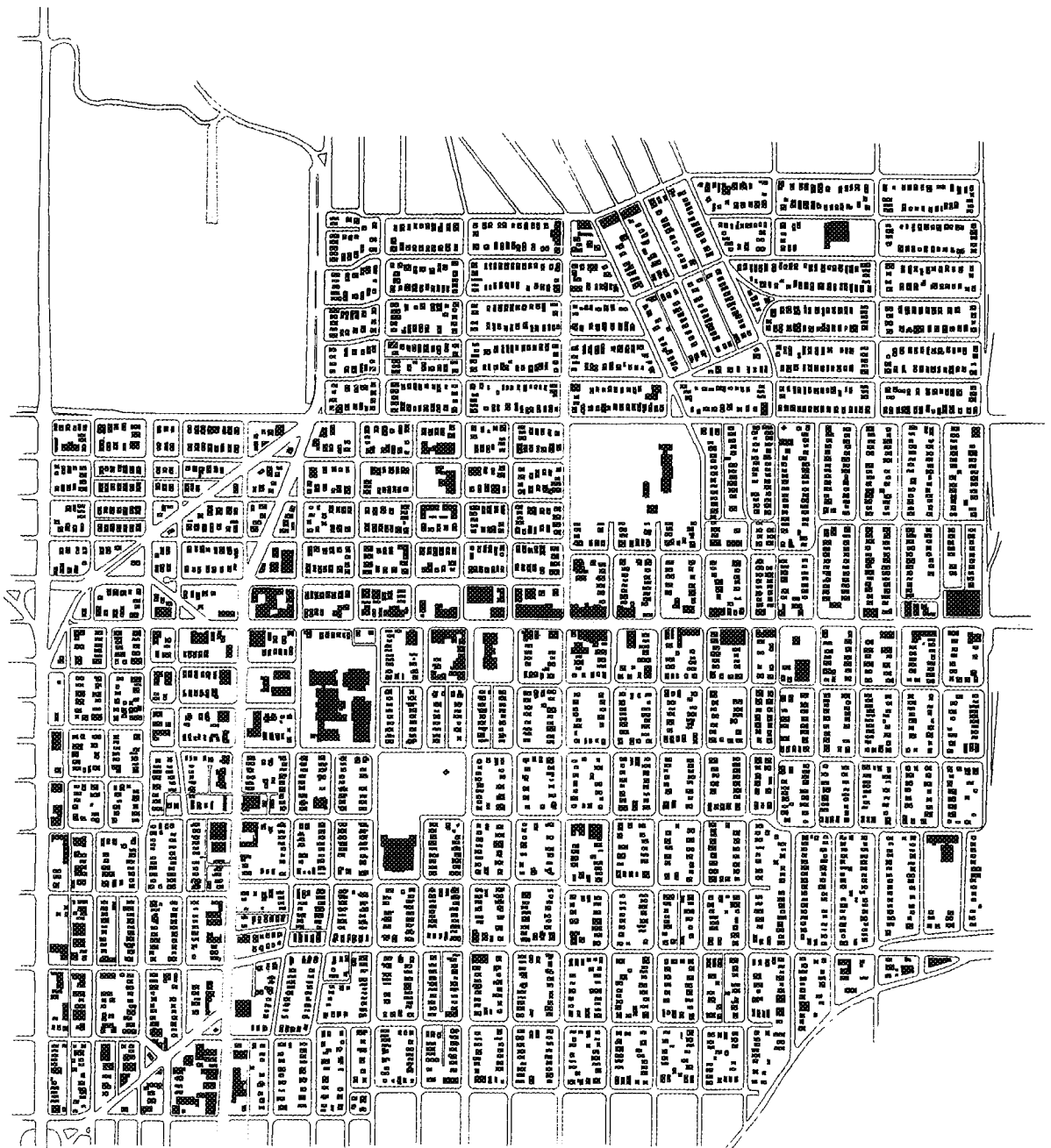


Figure 2a: Wallingford  
Figure-Ground  
(Source: Hess 1994).

strong knowledge base in the city-building process and the resulting urban forms. My own research in the history of urban typology and morphology has identified three basic schools of thought which continue to shape the field (Moudon 1994, Urban Morphogenesis 1994), providing different perspectives not only on the city and the urban landscape, but on the value and purpose of analyzing them.

The oldest school grew out of geography as studied in Germany at the end of the nineteenth century. This Germano-British school was founded by geographer and planner M. R. G. Conzen (1960) who moved from Berlin to England before World War II and has been there ever since. The school stipulates that the study of the urban landscape forms the basis for developing a theory of the city-building process which not only explains the history of urban development, but also guides future planning efforts, and specifically establishes a new science of townscape management. The Conzenian school continues today as the Urban Morphology Research Group at the University of Birmingham (see references to Whitehand, Slater, Larkham, and Urban Morphology Research Group).

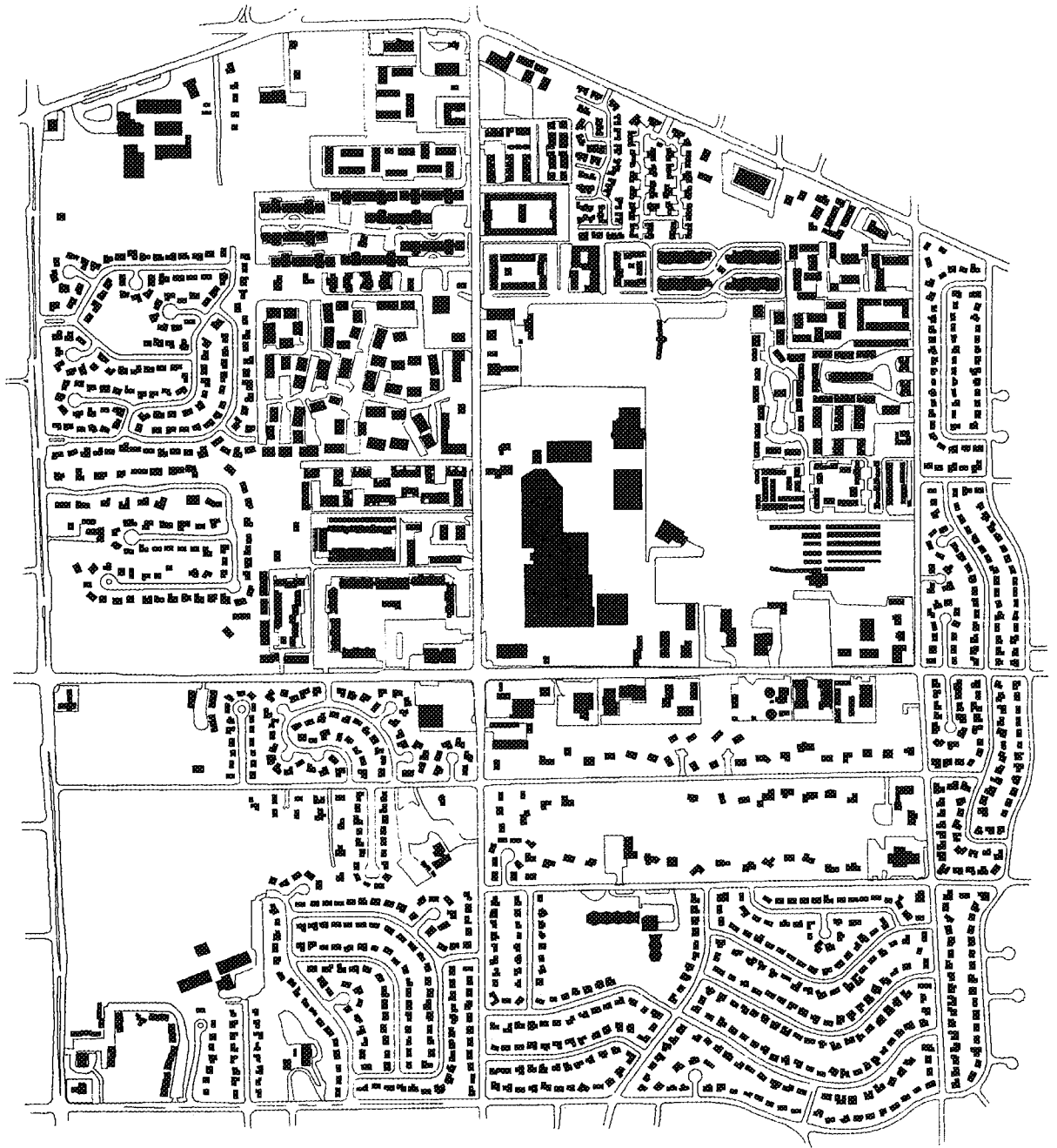
The second oldest school is Italian; architect Saverio Muratori founded it in the early 1950s. It is made up of architects who look to the study of the urban landscape as the basis for articulating a theory of architectural design. Its followers argue over the value of what they call typological analysis to contemporary design practice (Argan): some see it as a sure means of creating anachronistic places and embalming architectural design (Aymonino 1976), while others consider it an essential disciplinary framework for successful practice (see references to Caniggia, Maffei, Maretto, Cataldi, Strappa).

The third school is French, with architects Philippe Panerai and Jean Castex and sociologist Charles DePaule as its founders (see references to Castex, Panerai). First established in the late 1960s, the Versailles school has had the dual interest of developing a theory of city-building and a theory of design. It also has strong ties to the social sciences, exploring issues relating to the interaction between people and their environment. Finally, it seeks to relate the theory of design as idea to the theory of design as practiced. Morphological analysis has now spread to other schools in France, including Nantes and Marseilles (see references to Darin, Ville Recherche Diffusion, and Bonillo, respectively), and some of the courses taught at Versailles are now also available at the University of Paris (Choay 1986, Merlin 1988).

Most of this work has yet to affect research in the United States, aside from the works of J. Vance, Jr. (1990 at the University of California, Berkeley), M. P. Conzen (1978, 1980, at the University of Chicago), D. Holdsworth (1992, at Pennsylvania State), Brenda Scheer (n.d., at the University of Cincinnati), Spiro Kostof (at the University of California, Berkeley), Stanford Anderson (1986) and Attilio Petruccioli (1992) (both at MIT), and G. Baird (with B. Myers, 1978) and P. Rowe (1991) (both at Harvard).

## **Applications to American Suburban Environments**

My own experience using morphological research to further my understanding of American cities has been positive: I have found its application to suburban environments to be useful not only to students of



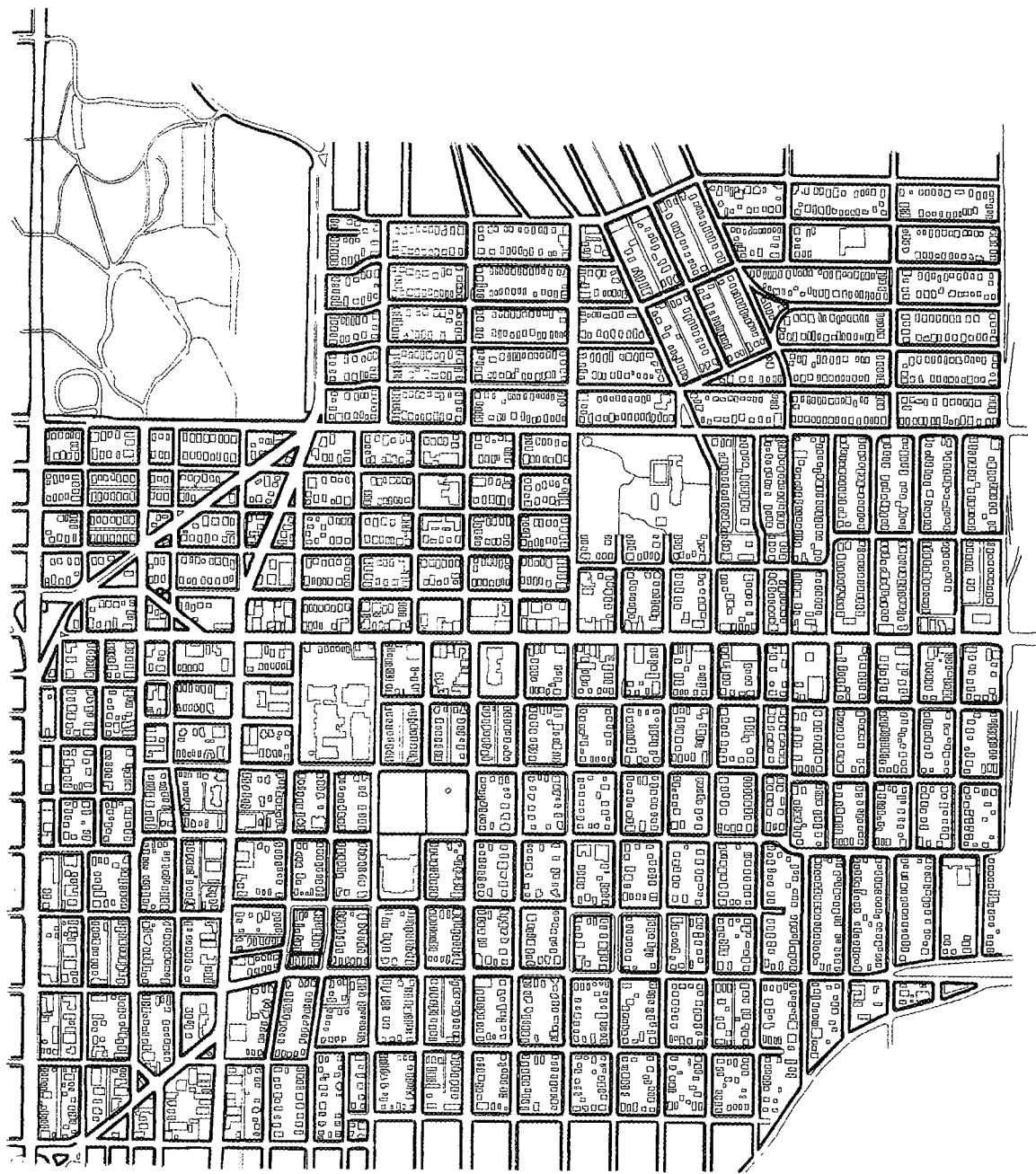
Crossroads: Figure-ground

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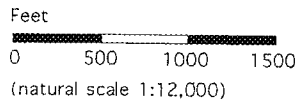


Figure 2b : Crossroads,  
 Figure-Ground  
 (Source: Hess 1994).

these environments and of cities in general, but also to residents, regulators, planners, and policy makers. Not only do the techniques used on historic towns apply directly to new environments, but they also yield information which corroborate the processes documented earlier in historic towns. Similar findings have been published by Panerai in his studies of the urbanization of agricultural areas at the fringes of metropolitan Paris and



Wallingford: Public Sidewalks



Cairo (Panerai et al., 1980) and by Demorgon in her studies of French suburbs (Demorgon et al., n.d.). Whitehand is now undertaking a massive study of English suburban development which should provide further verification that the morphological approach is suited to recent urban forms. The same elements found to structure historic towns exist in suburban landscapes: street networks, lot-subdivision patterns, buildings and their

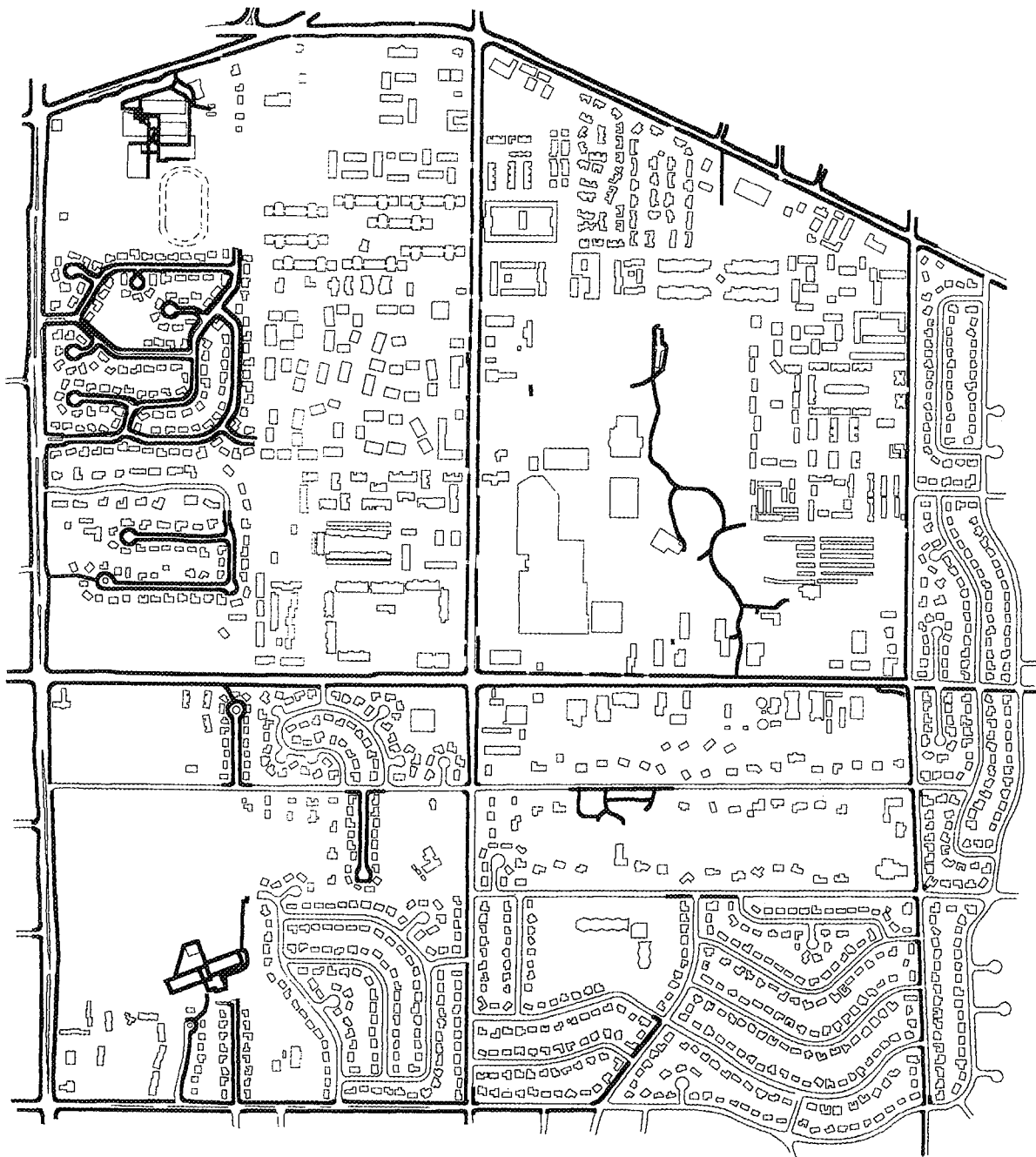
Figure 3a : Wallingford, Public Sidewalks (Source: Hess 1994).



related open spaces —what Conzen termed the “plan unit” and Caniggia called the *tessuto* in historic towns—remain the basic defining elements. To be sure, the characteristics of the elements of suburban landscapes differ substantially from their earlier urban counterparts: suburban lots and buildings are much larger than those of traditional cities, and open spaces related to these buildings have become enormous, and, in effect, often dominate the suburban landscape. Street networks have exploded as well—Brenda Scheer has shown how “supergrids” have continued to increase in size since the 1940s (Scheer n.d.). Thus the grain of the suburban fabric has coarsened substantially, the result of the switch to automobile transport, the availability of cheap land at the urban periphery, both transport and other infrastructure improvements being the products of hefty subsidies by federal legislation since the 1950s, and the increase in the standard of living since the Second World War. Changes in lifestyle have had notable effects on house and related garden types.

Extensive research on suburban cities has led me to identify several basic types of morphological elements in the suburban residential landscape (figure 1, Moudon 1992). Defined as plan units (which, according to Conzen, are composites of streets, property subdivision, and building type), each type corresponds to a particular era of development identified as pre-1930, 1940-1960, and 1970-today. Basic suburban residential plan-units highlight the radical changes which have taken place in the practice of city building in this century—changes which of course reflect radical changes in life style, capital formation, and economic power of the household over this period of time. Actual suburban areas are in reality hybrid combinations of these basic plan units. Recent work carried out independently corroborates the existence of both basic and hybrid plan units (Southworth and Owens 1993). Though similar to their antecedents, morphological elements of suburban environments show signs of behaving differently. For example, my San Francisco work identified different generations of building practices succeeding each other over time in a given place (Moudon 1986): a proportion of early Victorian houses were replaced with apartment buildings, some of which were built on several of the original lots. In contrast, most of the suburban landscape is characterized by a single generation of building and, relative to older towns, little transformation. Suburbs that are 60 years or older and which, according to trends established in the nineteenth century, should have gone through two or even three generations of rebuilding, do not show radical change in their structure. Newer suburbs accommodate at most two generations of buildings, with the second generation being developed as infill, on land that has never been built upon. Clearly, while our cities and suburbs were geographically expanding exponentially over the past several decades (the New York metropolitan area tripled its territory without adding a single resident), relatively little physical change took place in the inner suburbs.

This lack of transformative activity is unique in the 200 years of urbanization,



Crossroads: Public Sidewalks

Feet  
 0 500 1000 1500  
 (natural scale 1:12,000)



but it has yet to be either highlighted or even studied well. It appears that while most central cities have experienced rapid degeneration as the result of the suburbanization process, inner suburbs have remained morphologically stable for a period of time that is unusually long in the recent history of cities. New house and street types, which in themselves constitute different generations of suburban landscape elements, emerge in

Figure 3b: Crossroads, Public Sidewalks (Source: Hess 1994)

newly developed areas, as opposed to existing areas.

Let us turn now to two neighborhoods I have studied in great detail over the past decade. One is Wallingford, an inner suburb of Seattle which was first plotted at the end of the nineteenth century, but developed between 1910 and 1930. The other is Crossroads, itself an inner suburb of Bellevue, the second center of the Puget Sound region, which has developed since the 1950s. While these two neighborhoods occupy a similar place with respect to their respective city centers, together, they span the range of suburban development that characterizes North American cities.

Wallingford is a "small-grid" suburb which developed within thirty years from its southern edge toward the north, with core development taking place along street-car lines (figure 2a). An east-west commercial street quickly became the center of the neighborhood and remains as such to date. As a neighborhood made primarily of farm houses and bungalows—lots are 40 or 50 feet wide and 100 feet deep, Wallingford has had some infill of apartment buildings since the 1950s and some gentrification since the 1980s: old houses have been rehabilitated, and small apartments and condominiums have been built along principal arterials as permitted by zoning. The neighborhood, initially developed for working families, now includes a mix of middle- and upper-middle-income people, some 30 percent of whom rent their homes. Changes have been limited, however, and the neighborhood remains one where the car is considered a recreational vehicle. All streets are lined with generous sidewalks, themselves lined by 20-foot front yards, and a strip of lawn along the roadway itself. Parking and garages have gradually been inserted into this fabric in small increments. The retail area is 15 blocks long, with small outlets lining the street. Most retail fits the mold of "retail as necessity": small shops, one supermarket with a small parking lot in the front, and an old school building which has been rehabilitated for use as a small commercial center with residences on the second floor. Only one middle school remains of the three schools that originally served the neighborhood. Several parks include a neighborhood park as well as a regional park at the edge of the area.

Crossroads began as a loose assembly of single-family subdivisions (fig. 2b). A mall was built in the early 1980s, and groups of apartment complexes followed, built around the area of the mall, most of them on 10-acre parcels. The shopping mall includes regional anchor stores, small retail outlets, and numerous eating facilities which are spilling out into the central interior pedestrian area. The mall is built on the model of "shopping as entertainment." The entire area was conceived for people moving in cars. Sidewalks are few, cars move along a supergrid of arterials a half-mile apart, subdivisions and apartment complexes are served by cul-de-sacs. The area has a mixed population in both income and ethnic origin, but people are segregated into enclaves and only mix in the commercial mall.

Wallingford and Crossroads represent respectively the first and the third and last types of suburban plan units shown earlier (figure 1).

## Morphological Analysis as a Planning Tool

The analysis of the two neighborhoods serves to illustrate how the morphological approach applies to urban planning. Detailed studies of the morphological characteristics of these two neighborhoods were carried out to explore their capacity to support transit use, non-motorized transportation, and especially pedestrian movement. According to planning theories currently regaining popularity (Pushkarev 1977), the use of both non-motorized transport and public transit is directly related to the density of population living in a given area. These theories are supported by empirical research identifying seven dwelling units to the acre as a threshold below which alternatives to the private automobiles are unfeasible. These precepts make sense: higher densities conjure higher numbers of people, which in turn suggests both vehicular congestion (disincentive to drive) and safety in the numbers using the public environment (incentive to walk). More recently, the idea was advanced that the proper land-use mix is another prerequisite for non-motorized transportation—the premise being that people must be able to see to a variety of activities within a relatively short distance.

Urban designers have also long been aware that density and land-use mix are necessary but insufficient elements of a pedestrian-friendly environment. Many areas of from 7 up to as many as 15 dwellings to the acre and also of mixed-use still do not have a strong pedestrian content because they are designed for automobile travel. A third condition necessary to support substantial levels of pedestrian activity is the provision of a safe and interesting environment attractive to the pedestrian. Rapoport (1991) has proposed the concept of “noticeable differences” as a basis for measuring the relative interest of different environments. Gehl has provided empirical evidence of the importance of pedestrian facilities and amenities to pedestrian travel (Gehl 1987). Pedestrian activity is now increasingly understood as evidence of the quality of an environment, particularly of its public realm.

Planners and transportation engineers do not refute these observations. However, they typically want to be able to measure in a precise way the qualities of the environment which they project. To respond to their request, we asked the following question: given areas of similar density, similar land uses, and similar populations, what are the elements of the physical environment that support pedestrian travel and life on the street, and how can they be described quantitatively?

Wallingford and Crossroads offer characteristics that allowed us to test possible answers to this question. Casual experience of both neighborhoods shows higher levels of pedestrian activity in Wallingford than in Crossroads even though densities and land-use mix within a mile radius are remarkably similar. Two graduate theses provide the bulk of the data for comparing the two. Paul Hess (1994) focused on the physical characteristics of the

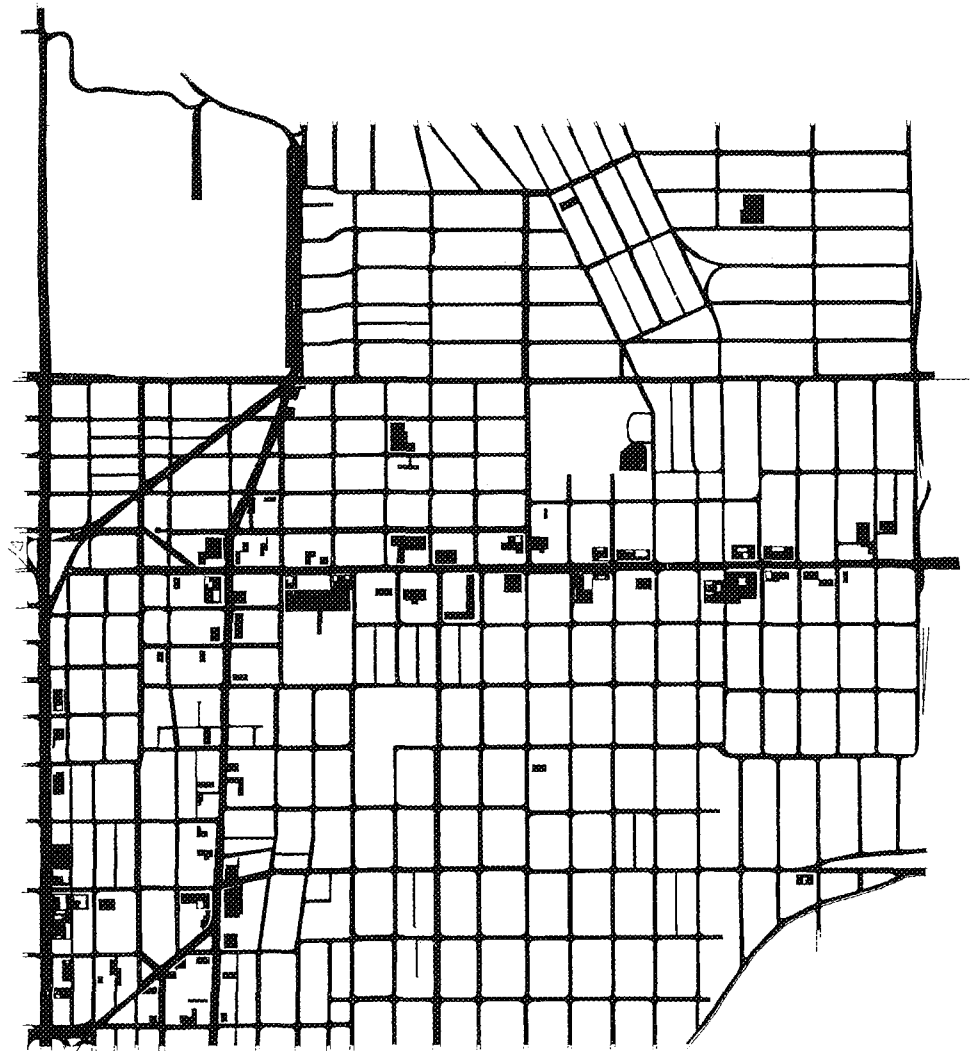


Figure 4a: Wallingford,  
Streets and Parking (Source:  
Hess 1994)

neighborhoods and provided the groundwork for the discussions that follow. David Saxen (1994) focused on the people on the streets. Time does not permit a detailed review of Saxen's work, but suffice it to say that he found almost three times as many pedestrians on the Wallingford streets as on the Crossroads streets, thus justifying further comparative studies of the physical characteristics of neighborhoods that support pedestrian activity. Paul Hess combed through the characteristics of the two suburban landscapes and reviewed in detail pedestrian facilities—where people walk, car-oriented facilities—where cars are driven and parked, as well as the distances covered by pedestrians. His focus was on the “potential environment,” i.e., where people can walk or drive, as opposed to the actual environment, which David Saxen studied. Detailed studies of the match between these two types of environments remain to be done, but we did

find that the scarcity of the potential environment in Crossroads led to people walking everywhere they could and finding or even creating additional non-conventional pedestrian facilities. In Wallingford, on the other hand, the relative largess and permeability of the potential pedestrian environment showed more variation in the use of pedestrian facilities.

Figures 3 and 4 show the principal differences between the pedestrian and automobile environments of Wallingford and Crossroads. Three important findings were that there are major differences in the pedestrian environments created in the two types of suburban areas; that these differences can be measured relatively simply, and perhaps most surprising, that the amounts of space given over to the automobile in these two suburban forms are, in the aggregate, not very different. Starting with this last point, it seems evident that neighborhoods designed for the pedestrian and the streetcar have been adapted to accommodate the car, and have done so in such a way that as many cars can be fitted in their fabric as in the fabric designed later for the automobile. The difference in the impact of the car on the two areas lies not in the total amount of land given over to the car, but in the way this land is distributed: in small areas in the former, and in large ones in the latter. This point alone warrants further research.

Returning to the pedestrian environment, the differences in formal and informal pedestrian networks, their connectivity, and the respective areas which are within reached of normal pedestrian travel all serve to show that the pedestrian contents of an environment can be measured. The ratio of sight distance to actual travel distance which, in effect, measures the relative efficiency of the pedestrian network and facilities, appeared particularly strong indicators of a good or not-so-good pedestrian environment. Specifically, an inefficiency of the pedestrian network of more than 30 percent seemed to indicate a lack of support. The 60 percent inefficiency of Crossroads was particularly disturbing in that few of the points of origin in the half-mile radius fell into residential areas—meaning that people are assumed to walk from nowhere to the mall.

### **Use of Morphological Analysis for Planning in Suburban Areas**

In the studies described here, we found evidence of the truth of the self-fulfilling prophecy that if one designs for the car, people will drive. These cases also show that morphological analysis provides a useful bridge between common urban-planning practice and actual city-building practice. Urban morphology has developed tools which permit us to identify and to measure common elements in the urban and suburban landscape. Having been tested in a number of very different landscapes, these tools show that comparative studies can provide reliable data for analysis. Results of analysis provide important information about the creation of the landscape and can therefore begin to assist us in managing this landscape. What the

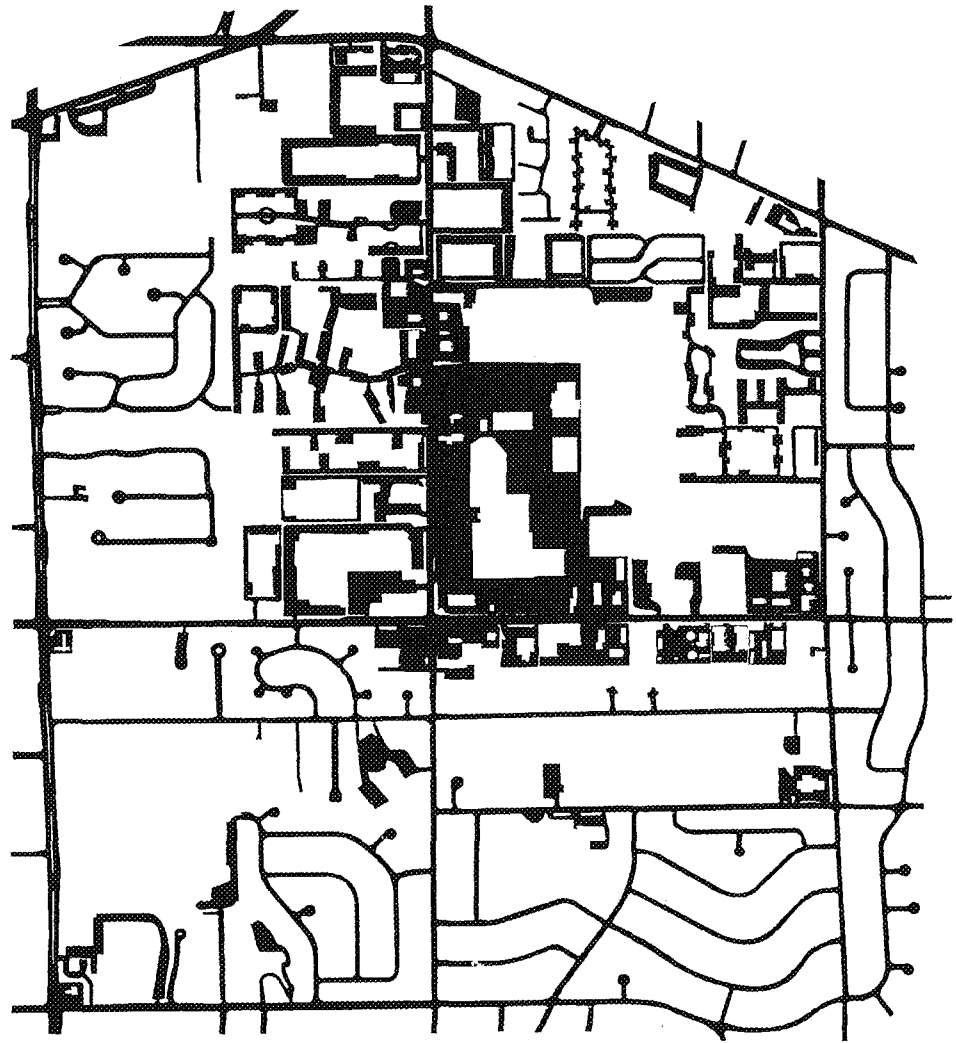


Figure 4b: Crossroads,  
Streets and Parking (Source:  
Hess 1994)

Crossroads: Streets and Parking

Feet  
0 500 1000 1500  
(natural scale 1:12,000)



Birmingham school calls "townscape management" is an activity that looks at cities in a very different way from urban planning and one that our cities badly need.

Urban typology and morphology have been practiced for several decades by both geographers and urbanists in different parts of Europe. They are now emerging as a bona fide field of study which serves to (1) describe and explain principles of city building; and (2) provide guidance in preserving and developing historic landscapes. Though not commonly known in the United States, the use of urban morphological methods to study the North American landscape has shown that these methods (1) help to describe and explain the formal characteristics of suburban environments; (2) highlight which aspects of urban form will have an impact on behavior and address the functional dimension and performance of built form which have long been overlooked in planning; and (3) permit us to measure quantitatively aspects of urban form which, so far, have been described only in qualitative terms.

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Peter J. Larkham

## Urban Morphology and Typology in the United Kingdom<sup>1</sup>

Urban morphology is, simply defined, the study of urban form. This broad definition reflects a growing awareness that progress in understanding and managing the built environment can be aided greatly by integrating knowledge from various other disciplines and culture areas into it. Although in the United Kingdom urban morphology is most often subsumed under urban geography, scholars outside that discipline—in architecture, planning and, to a lesser extent, urban and social history—are also active in the field though they may not regard themselves as urban morphologists. Within geography, it belongs as much to historical geography as to urban geography, reflecting the longevity of the urban landscape that is the urban morphologist's object of study (Whitehand, 1987a, p. 250).

In particular, the origins of urban morphology are traced back to the morphogenetic research tradition of Central Europe and the work of Schlüter, who postulated a morphology of the cultural landscape (*Kulturlandschaft*) as the counterpart in human geography to geomorphology in physical geography (Schlüter 1899), thereby making the urban landscape (*Stadtlandschaft*), at least in industrial countries, a major research topic. Although Schlüter's direct influence extended little beyond the German-speaking countries, his ideas were spread through the publications of the German emigré M. R. G. Conzen, who laid the foundations for urban morphogenetics in the English-speaking world. In the German-speaking countries, urban form remains a subject close to the mainstream of historical and urban geography, and less distinction is drawn there between the study of present-day towns and the study of their historical aspects than in the English-speaking world (Whitehand, 1987a, p. 250).

Recently, the study of urban form has developed in several directions, but the historical one has been particularly strong. Interest in the historical development of urban landscapes has extended beyond scholars concerned with the past to include geographers and others involved in "contextual" architecture and the planning, or management, of urban landscapes who attach considerable importance to the forms created by previous generations. Nor are urban morphologists limiting their attention to a narrow conception of urban form; they are also examining the individuals, organizations, and processes shaping that form (see examples in Slater, ed., 1990). This has led to a refinement of the definition of urban morphology as "the study of the physical (or built) fabric of urban form, and the people and processes shaping it" (Larkham and Jones, 1991, p. 55).

## The Decline and Resurgence of Geographical Urban Morphology

The history of urban morphology in geography during the first half of the twentieth century and its diverse research traditions have been the subject of recent investigation (Whitehand, 1981, 1987a, 1987b; Slater, 1990a), much of it concerned with the urban morphogenetic tradition and the central role played in it by M. R. G. Conzen. In the post-war period, German-speaking geographers continued that interest as is evident in, for example, the major study of Vienna by Bobek and Lichtenberger (1966). British urban morphologists, on the other hand, have been less interested in conceptualizations of process than in description and classification, as exemplified by Smailes's characterizations of present townscapes in broad terms, based on rapid reconnaissance surveys (Smailes, 1955). In the United States, though a significant school of cultural morphology developed in the late 1920s, it was largely independent of direct European influence, and the so-called Berkeley school was more productive in research on rural than on urban landscapes (M. P. Conzen, 1978, p. 130; Whitehand, 1981, p. 12, 1987a, p. 255). All these research schools (shown schematically in figure 1) remained small in their numbers of adherents and publications into the early 1960s. In the later 1960s and early 1970s, research on urban form seemed to be less susceptible to the "quantitative revolution" then dominating social science philosophy and research techniques than were many branches of geography. Nevertheless, this was a period when various quantitative methods were developed, mainly in studies that were largely morphographic, describing physical forms rather than analyzing their origins and development. They were for the most part ahistorical, even when they considered the survival and distribution of historical buildings (Davies, 1968; Johnston, 1969). The development of concepts based on economics and the study of land-use patterns in the United States and their widespread diffusion were contemporary with this phase of geographical urban morphology. The perspective of the urban geographers who adopted these concepts was morphological only in their concern with land-use patterns: "Town plan and building form were generally treated only as land-use containers, if considered at all" (Whitehand, 1987a, p. 255). There were few researchers with a historical perspective on urban form. By 1970, urban morphology was characterized by Carter as a "barren outpost of urban geography" (Carter, 1970). Fourteen years later, his view had apparently not changed greatly, for he regarded the subject as having been largely unaffected by those changing or shifting paradigms which supposedly have dominated geographical methodology. Quantitative analysis merely brushed ineffectually the periphery of morphological studies, while the present destruction of buildings is seen not in terms of its welfare consequences, but rather in its impact on the cultural inheritance. More recent considerations of the structure of socio-political systems and their determinant organisation of space have again had little impact other than

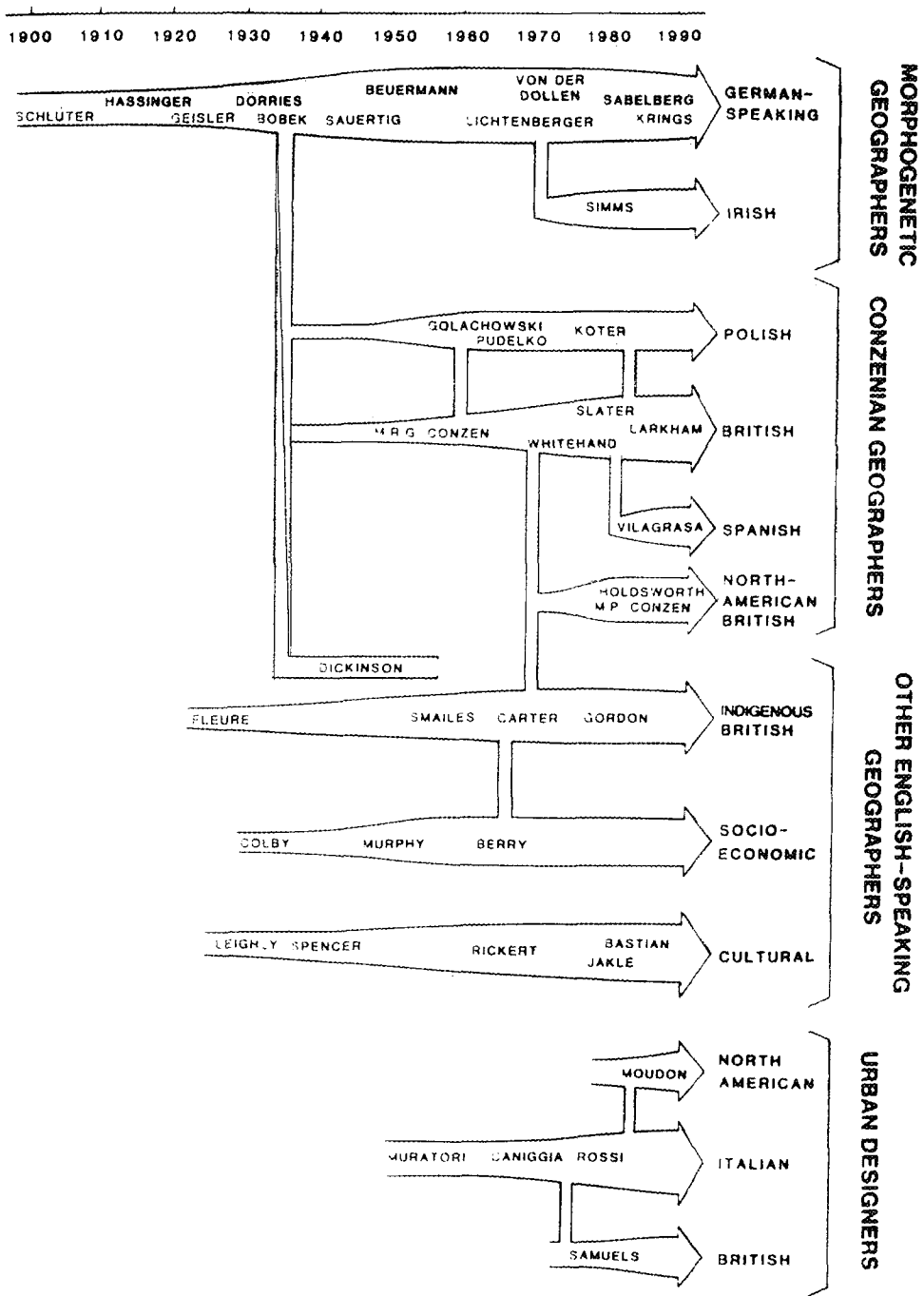


Figure 1. Research traditions in urban morphology: a schematic genealogy, showing a sample of authors. (Reproduced from Whitehand and Larkham (1992, see n. 1.)

on the most general of scales. (Carter, 1984, p. 145)

This passage was quoted recently in a criticism of urban morphology with the comment that, although a harsh judgment, "it does identify, however exact and meticulous the scholarship may be, a lack of reference over a long period . . . to more general trends in urban geography" (Thomas, 1990, p. 133).

Somewhat earlier, however, M. P. Conzen had been able to detect a resurgence of research in urban morphology after a period of quiescence (M. P. Conzen, 1978, p. 135). Publications dealing with the physical form of urban areas (itself an incomplete definition of morphology) became more common during the 1980s, though they still comprised only 12 percent of geographical papers on the internal structure of cities published in the middle of the decade (Whitehand, 1986). By 1994 Conzen could write that "there is more interesting work being done on the landscape character of North American cities by geographers now than at any time in the past" (M. P. Conzen, 1994, p. 771).

In Britain, geographical exploration of urban landscapes has been carried out mainly by the Urban Morphology Research Group (UMRG) in the School of Geography at the University of Birmingham, where a series of projects, broadly linked in methods and objectives, was undertaken (Larkham and Pompa, 1988) (Appendix 1). The *Urban Morphology Newsletter*, edited by T. R. Slater, began regular biannual publication in 1987, with a circulation approaching 200. During the 1980s, growing contacts abroad had encouraged a revival, albeit limited, of urban morphological research in Poland, which had earlier received inspiration from the work of M. R. G. Conzen (Larkham, 1987; Slater, 1989b). In the late 1980s several researchers in northern Spain used approaches developed by M. R. G. Conzen and Whitehand; this research is sufficiently similar to that of the Birmingham group for international comparative projects to be undertaken, such as that by Vilagrassa in 1992. British urban designers and "contextual" architects, occasionally spurred on by the interventions of H.R.H Prince Charles (1989, see also Jencks, 1988), became increasingly aware of the significance of urban history and urban form in designing future urban landscapes. The new academic and professional field of urban design began to use concepts of urban morphology, although some of their definitions and approaches differed from those used in geography.<sup>2</sup> This resurgence in urban morphology, broadly defined, occurred at much the same time as a renewed interest in the significance of "place" in geography (Johnston, 1984, 1991).

### **The Importance of M. R. G. Conzen's Ideas**

The most flourishing research tradition in geographical urban morphology, and the one with the widest distribution of adherents internationally, remains the one derived from the German morphogenetic school introduced into

Britain by M. R. G. Conzen (figure 1). This “Conzenian” tradition deserves elaboration since, directly or indirectly, it turns up in much of the published corpus of urban morphology in the United Kingdom.

Conzen’s upbringing and education in Berlin exposed him to a number of perspectives in the arts, humanities, and natural sciences that encouraged a remarkable breadth of vision. A geographer by training, he emigrated to Britain in 1933, on Hitler’s accession to power, and became a professional town planner (one of the first to be trained in the new department at the University of Manchester). During the Second World War he accepted an appointment as lecturer in the School of Geography at the University of Manchester directed by H. J. Fleure; after the war he moved to King’s College (later the University of Newcastle upon Tyne) where he spent the remainder of his career (Whitehand, 1987b; Slater, 1990a),<sup>3</sup> and continued his research on urban morphogenesis. He produced a map of northeast England showing settlements classified by characteristics of form and period (M. R. G. Conzen, 1949) and undertook detailed plot-by-plot surveys of a number of small British towns. He developed this type of work further, and applied his experience in planning, in his contribution to *A Survey of Whitby*, which was to form the basis for an integrated plan for the town (M. R. G. Conzen, 1958). Evident in his contribution to this project were a concern for the conservation of period buildings and an interest in townscapes as composite historical artifacts (Larkham, 1990, p. 352). His study of Alnwick (M. R. G. Conzen, 1960), a comprehensive and detailed study of the plan of a single town, further refined his survey technique. This monograph, which was innovative in conception and remarkable in its attention to the detail of the town plan, was regarded by the then editor of the Institute of British Geographers as “undoubtedly one of the outstanding research publications of the Institute . . . widely, and favourably, reviewed” (Steel, 1984; see also Slater, 1990a); it was reprinted in slightly modified form, with the important addition of a technical glossary, in 1969 (M. R. G. Conzen, 1969).

A significant part of Conzen’s contribution was his conceptualization of the way in which urban forms develop. His development of the concepts of the fringe belt and the burgage cycle and his tripartite division of the urban landscape into town plan, building forms, and land use have been widely accepted as fundamental advances (Whitehand, 1987a, p. 254). The fringe belt is a development of the *Stadtrandzone* identified by Louis (1936) in a study of Berlin. Fringe belts, simply described, are the physical manifestations in the landscape of periods of slow movement or even standstill in the outward extension of the built-up area; they tend to be used initially for purposes requiring large sites and having little need for accessibility to the commercial core. The burgage cycle describes the progressive filling-in of plots with buildings, leading to a climax phase of maximum coverage and, ultimately, the clearance of plots preparatory to redevelopment.

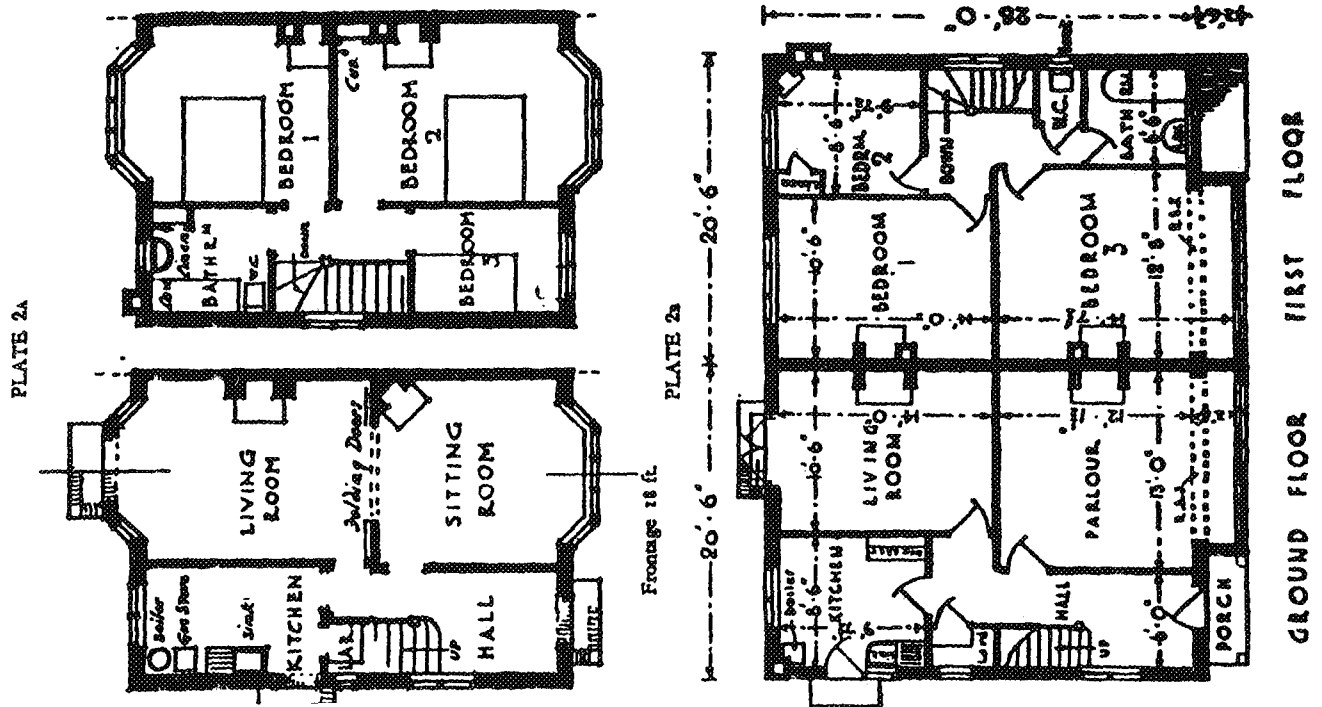
Conzen returned to conservation as a theme in his paper on historical townscapes as a problem in applied geography (M. R. G. Conzen, 1966), using as illustrations some of the small towns that he had surveyed in detail some years earlier. In it he introduced the idea of managing the urban landscape and the key attribute in determining management priorities as historicity or historical expressiveness. The nature and intensity of historicity he expressed in practical terms by dividing management into the three basic form complexes—town plan, building forms, and land use—which he regarded as to some extent a hierarchy in which the building forms are contained within the plots or land-use units, which are in turn set in the framework of the town plan. These three form complexes, together with the site, combine at the most local level to produce the smallest, morphologically homogeneous areas that might be termed “urban landscape cells.” These cells are grouped into urban landscape units, which in turn combine at different levels of integration to form a hierarchy of intra-urban regions. The hierarchy of units is the geographical manifestation of the historical development of the urban landscape and encapsulates its historicity. It provides the reference point for all proposals for urban landscape change (M. R. G. Conzen, 1975). These ideas on conservation and historical townscape are further discussed in Larkham (1990).

A number of current lines of research on urban form by geographers in the UMRG stem directly or indirectly from Conzen’s ideas. Three of the most important are concerned with the nature and amounts of urban landscape change, especially viewed over long time spans, the agents involved in the process of change, and the management of that change. In all cases there is a concern with features in the urban landscape that have been created by previous generations: the influence of the “morphological frame” on subsequent developments is a recurrent theme (Larkham, 1995).

The first of these lines of research builds directly upon the concern for history, through the analysis of historical, usually medieval, towns. A combination of historical documentation and plan analysis leads to a more thorough understanding of the development of current urban landscapes (M. R. G. Conzen, 1988). In particular, the practices of medieval town planning are examined in detail by using, for example, the relative sizes and shapes of individual plots (or burgages) as clues to successive phases of planning, and by studying the differences between the ideal and reality in the layout of towns (Slater, 1987, 1988a, 1990c). Some of the towns that have been studied in this way are not commonly perceived as being of historical interest, because their medieval features may have been largely destroyed by industrial growth, as was the case with Wolverhampton and Doncaster (Slater, 1986, 1989a). The refinement of rigorous and replicable analytical techniques is an important facet of this work (Baker and Slater, 1992; Lilley, 1995).

In the second line of research, the study of urban landscapes has been linked more explicitly to the types of agents and the specific organizations and





individuals responsible for their creation. Attention has centered on the period since the mid-nineteenth century, when sources permitting detailed building-by-building analyses became available in the form of building plans submitted to local authorities (Aspinall and Whitehand, 1980). For the post-1947 period, similar data have been recovered from the records of local authority planning departments (Larkham 1988b). Using such data sources, reconstructions of urban development of unparalleled detail and completeness have been pieced together, sometimes for quite lengthy periods (Whitehand, 1987c, 1992).

These types of detailed data have aided greatly a third strand of current research, namely planning, or management of, the urban landscape. The processes of decision-making are reconstructed, the agents (where surviving) are interviewed, and management procedures and policies are examined. This type of research has been successfully carried out on commercial cores and residential areas, with particular emphasis on conservation (Freeman, 1988; Larkham, 1988a, 1992; Whitehand, 1990; Whitehand, Larkham and Jones, 1992). Combining it with work in other disciplines, most notably urban planning and design, has allowed a critique of the detailed operation of the English planning system (Whitehand and Larkham, 1991a, 1991b). This inter-disciplinary link can be seen in the references to UMRG research by the practitioners Lowndes and Murray (1988).

### Typo-morphology in the United Kingdom

Even a cursory glance at the literature in architectural, planning and social history over the past two decades will show that studies of building typology are increasingly popular. It is from these disciplines, but particularly from architectural history, that the most significant studies of building types have

Figure 2. Ground plan for standard semi-detached house, 1930s. The so-called Universal Plan. (Reproduced from House Building 1934-36, also reprinted in Oliver et al., 1981.)

emerged.

One classic study is Brunskill's *Handbook of Vernacular Architecture* (1978). Dealing only with one set of buildings in a largely rural vernacular tradition, this handbook enables the non-specialist or student to identify and classify buildings from external characteristics alone. Both form and function are discussed, and dating guidelines from building materials, styles and details are provided. Its relevance here is the emphasis placed upon the building plan, especially in the section on "plan-form families", which allowed a typology of English rural vernacular buildings—particularly farmhouses—to be developed ranging from long-houses (house plus barn in line) to double-pile (double depth, marked by two roof ridges) Victorian structures. This is a practical book, but immense amounts of observation and scholarship are reflected in it.

No less scholarly are the numerous volumes devoted to particular types, of which recent examples include the terraced house (Muthesius, 1982), the Edwardian house (Long, 1993), the inter-war semi-detached (Oliver et al., 1981), the town hall (Cunningham, 1981), and the tower block (Glendinning and Muthesius, 1994). None of these volumes is written by scholars who consider themselves urban morphologists or for a morphological readership, and all of them illuminate the building type's origins, form, construction, structure, details, décor, and users to a greater or lesser degree in terms of typology. In this they are generally frustrating. Dealing with such broadly defined building forms, they find it difficult to identify archetypes ("the original pattern or model," as *Chambers's Twentieth Century Dictionary*, 1901 edition, defines it). They also seem reluctant to discuss them in terms of the more recent use of archetype as the "typical specimen": although Oliver et al. (1981) deal with a standard building type, with a common (if not universal) floor plan (figure 2), the thrust of their volume is to identify variety in inter-war suburbia, despite its denigration by John Betjeman ("Come, friendly bombs, and fall on Slough; It isn't fit for humans now..." [Betjeman, 1937]), Osbert Lancaster, and others. Two examples from this architectural art-historical tradition will serve to show the approaches used, and their failings from the morphological and typological viewpoint. Long's book on the Edwardian house (1993) is both closely researched and scholarly, but also morphologically frustrating. Four introductory chapters illustrate the development of taste in the period, setting it clearly in its Victorian context and usefully reminding us of new developments in shaping taste—large-circulation magazines, books on tasteful decoration and domestic management, etc. The introduction also covers the contemporary growth in middle-class suburbia, and the trades and means of production employed. Little is new in this section, particularly as the whole thrust of the book is on the middle-class Edwardians and their houses. Yet the middle classes are difficult to define, as is the era itself (p. 5). The study of "the dissemination of taste" requires a far more thorough treatment; it is a useful foretaste but frustrating in its brevity and selectivity. Chapter 3 does contain some new

material, with case studies on parts of Cardiff and London; again, particularly for the morphologist, these are fascinating but frustrating in their brevity. The second and main part of the volume deals with the form of the Edwardian house and its components, with chapters on specific interior and exterior features—doors, porches, fireplaces, lighting, heating and plumbing, and more. This section is more comprehensive and more confidently handled, as it is drawn directly from the author's Ph.D. thesis, "The British Domestic Interior 1880-1914." Extensive textual and illustrative use is made of contemporary trade journals and catalogues. But there are few details on floor plans and layouts; captions on some illustrations do not identify location, date, architect, or builder. More problematic, perhaps, is that this is emphatically not a book on the Edwardian house, but a useful and interesting book on the middle-class Edwardian, mainly large detached or semi-detached house. Mansion apartment blocks, garden suburbs, and terraces are not mentioned; there is little discussion of differences between speculative and bespoke, owner-occupation and rental development. This is introductory or contextual material which would greatly assist, but not materially further, a typological study of even Edwardian middle-class villas. The second example is the study of tower blocks by Glendinning and Muthesius (1994), which is perhaps even more thorough and well-researched than Long's book. One of its key aims is to document the forces shaping the tower block and allowing its rapid spread across the country. It suggests that the local authority-led drive for higher numbers of dwellings produced the contractor-led prefabricated design-and-build solution that supplanted the individual architect-designed, site-specific scheme, even though those could also have used prefabrication. Interviews and contemporary documentation support their assertion. The volume contains a comprehensive gazetteer and many photographs (often contemporary), plans, and diagrams. The typologist is thus given far more ammunition than in Long's work, with the gazetteer being particularly useful in guiding specialist follow-up examinations. There is an added typological bonus in that the authors do identify and give considerable space to "typical" blocks and schemes, sometimes architecturally of poor quality, in addition to architecturally innovative and otherwise atypical developments. Interestingly, one reviewer of this volume remarks that she sometimes found herself "uncomfortable with this qualitative levelling" (Kay, 1995, p. 144).

### **Approaches in Geographical Urban Morphology**

Geographical urban morphology in the United Kingdom has not dealt in detail with individual building types; geographical, as opposed to architectural, influence has dominated. There is no parallel to the detailed evolutionary typological research that has developed in, for example, Italy, and its close links with planning and architectural practice. Even studies

which have identified building types and illustrated typical examples have been concerned more with historico-geographical process at the city scale than with building typology. M. R. G. Conzen, for example, discussed the generalities of industrial dwelling types in the industrial era in the United Kingdom (M. R. G. Conzen, 1981; see also 1952) and Slater studied the growth of the "ornamental villa" on the Victorian urban fringe (Slater, 1978), but these two works are unusual. More consideration has been extended to architectural styles and the processes whereby they may change from one period to another, particularly in the well-documented twentieth century (e.g., Whitehand, 1984; Larkham and Freeman, 1988). However, geographical bias has also led to a number of studies on plot typology and developer strategies that lead to particular estate typologies.

The plot typology thread developed directly from M. R. G. Conzen's conception of the burgage cycle (Conzen, 1962). Plots were laid out in urban and suburban areas from the medieval period, often with considerable regularity, and thereafter metamorphose. Narrow but deep medieval burgages, particularly when alleyways give rear access, may be subdivided laterally. Alternatively, burgages could be divided medially to give yet narrower plots. Changing uses over time lead to increasing building coverage, with rear extensions and outbuildings. Eventually, a high point of coverage occurs, which may be 100 percent of the plot; thereafter buildings may be cleared and redevelopment occurs (fig. 3). In the twentieth century in particular, large-scale redevelopments have led to the amalgamation of earlier plots (Whitehand, 1988) and the institution of new plot series, or comprehensive town-center redevelopment has produced new urban forms that lack separate plots. Subtle differences in the proportions of plots laid out at different times has led to the identification of separate plan units, particularly in studies of medieval towns (e.g., Slater, 1989a; Lilley, 1995). Outside the United Kingdom, but working squarely in the Conzenian tradition, Koter (1990) has shown similar trends in the planned plot series of the Polish industrial town of Łódź.

Studies of development in English suburbs show processes similar to the burgage cycle in that residential plots may be amalgamated or subdivided during periods of complete or partial redevelopment (Pompa, 1988; Jones, 1991). Developers have used various strategies to increase residential densities even in planned residential layouts, often through patient assembling of a developable site through a lengthy period of piecemeal purchase. Rear gardens of long plots are particularly vulnerable to these processes, with the occasional original house being purchased and demolished to form a driveway to the new "backland" housing estate (Larkham and Jones, 1993) (figure 4).

These studies deal with plot and development typology only implicitly. As with the non-geographical tradition, very rarely is there explicit reference to a type or archetype. Although it is sometimes suggested that the forms or processes examined are "representative" or "typical", the statement is rarely

statistically substantiated. The only study in geographical urban morphology to deal with typology as a concept is Kropf's comparison of Conzen's work with that of the Italian architect and typologist Gianfranco Caniggia (Kropf, 1993), in which Kropf makes the useful distinction between levels of resolution and levels of specificity. Streets and buildings are elements of the urban fabric identifiable at one level of resolution; plan units are at another level. Street types can be identified at different levels of specificity using, for example, widths, block sizes, associated landscaping, or other features. This work represents a great advance in bringing the complex conceptions of typology into geographical urban morphology, but it is not widely available in print and needs further elaboration in its practical applications.

### **The Concept of Type and Archetype**

The concepts of "type" and "archetype" are relatively unfamiliar in geography because descriptive and analytical techniques rarely need to refer to "types" or typical examples; far more common are references to published case studies relevant to the concept or area studied. Type is much more familiar in palaeontology, where a "type fossil" is a widely recognized term for the actual specimen first discovered or described and named, to which reference is then made when attempting to verify the identity of later specimens.

Type is more widely used in architecture, particularly in studies of architectural history, not least because of the popularly used (although hardly technical) term "building type". Here, too, may be found rare but explicit mention of "archetypes" as, for example, in the comment that the medieval form and image of Salisbury Cathedral was a powerful archetype influencing nineteenth-century architecture (and, probably, church restoration) (Brock, 1994, p. 204).

A further example of potential linguistic confusion occurs in Markus's review of building form and power relations (particularly in terms of users versus staff). This is an interesting and innovative view of building morphology, potentially of considerable use to urban morphologists. In discussing the library as a built form, he states that "its antiquity and epistemological totality makes the library an *archetype*. And since from the beginning other objects of knowledge were stored with the books it is also a *prototype* of the later museum and art gallery" (Markus, 1993, p. 172).

One of the main problems for the development of typological or typomorphological studies will therefore be the dissemination of the technical concepts and terms into the disciplines most likely to benefit from their wider use. Unfortunately, this is unlikely to prove easy. Problems of international, intra- and inter-disciplinary terminological misunderstandings prompted M. R. G. Conzen to add a substantial technical glossary to the

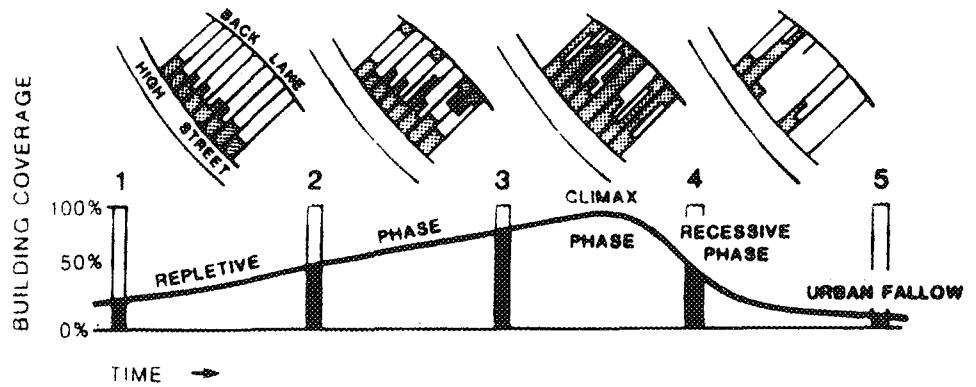


Figure 3. Idealized plot redevelopment cycle. (Redrawn after M. R. G. Conzen, 1962.)

second edition of his monograph on Alnwick (M. R. G. Conzen, 1969); a repetition of the same problems in the same areas (English and German-speaking urban history and geography) during the Third Anglo-German Seminar on Urban Historical Geography in 1988 led to the *Glossary of Urban Form* (Larkham and Jones, 1991).

### Typology, Morphology, and Its Wider Relevance

The Conzenian tradition of geographical urban morphology as practiced by members of the UMRG offers a rich body of theoretical concepts relevant to the historical study and potential future management of urban form. Typology is a recent introduction to this research tradition, but there is considerable potential in developing these concepts within the geographical approach while using the equally rich body of studies in the non-geographical, architecture-art-historical tradition as a vital information source. Moudon considers that a developed typo-morphology would offer practitioners "a rich data base on forms and form-making processes. And, more importantly, morphogenetic research grounds this design work in the history of city building. Types no longer need to be arbitrarily borrowed icons" (Moudon, 1994). This could be useful at a time when new urban forms and post-modern architecture in general appear to be borrowing almost at random from past urban and building types, with varying degrees of accuracy, but often merely to put a superficial stylistic gloss on standardized design solutions. Quinlan Terry's Richmond Riverside development in London, for example, clads speculative open-plan office space in a veneer of Georgian classicism, while Duany and Plater-Zyberk's Seaside is an exclusive resort for the wealthy clad in a particular conception of the appearance of the "typical" small American town.

Unfortunately, few practicing urban designers and planners are aware of the UMRG's body of research. Of those who are, many assert that its thoroughness precludes its use in practice or suggest that it is useful only



Figure 4. Plot redevelopment typology: examples of plot truncation and amalgamation during piecemeal redevelopment, Northwood, London. (Reproduced from Larkham and Jones, 1992.)

for managing historic urban landscapes (Samuels 1985, 1990; Bandini, 1984). English Heritage, a government agency, has dismissed it as being too complex a set of ideas even for historic towns (B. Hennessy, English Heritage, pers. comm., 1992). The challenge is thus to “operationalize” typomorphology in terms acceptable to practice in the United Kingdom. The irony is that Kropf has begun to do so, but in the very different social and legal context of preparing the Plan d’Occupation des Sols for a small French commune (Kropf, 1993; Samuels, 1993).

It is promising that some aspects of the typo-morphological debate have appeared in the pages of the most relevant professional journal in the United Kingdom, *Urban Design Quarterly*, the journal of the Urban Design Group.<sup>4</sup> Although Lane’s brief commentary was incomplete and contained errors (Lane, 1991; also n. 3), it did spur two responses (Kropf and Samuels, 1991; Hubbard, 1992). Lane suggested that typo-morphological studies of urban

fabrics could provide a comprehensive method for analysis and could suggest appropriate design solutions. Both responses, however, agreed that urban morphology and, by extension, typo-morphology, are essentially descriptive analysis and thus meta-discourse to criticism and design; morphological analysis alone need not necessarily yield any, or suitable, design solutions. A promising development would be to combine typo-morphology's detailed analysis of the history, development, and form of the physical fabric with systematic assessment of the qualities associated with such forms (e.g., Gebauer, 1983) and exploration of the expectations, or "social landscapes," of the user groups (Donovan, 1994) before proceeding to design solutions. In this manner, typo-morphology would be a positive component of the process of urban design (cf. Moudon, 1992, fig. 1 and p. 342). Such dialogues are far more advanced in Italy and France than in the United Kingdom. Thus the work of Kropf is again welcome and requires dissemination, and the first hesitant steps towards a European academic network, which held its first meeting in Lausanne in summer 1994 (spurred by Anne Vernez Moudon), must be encouraged.

### Notes

<sup>1</sup> Part of this paper is adapted from J. W. R. Whitehand and P. J. Larkham, "The Urban Landscape: Issues and Perspectives," in J. W. R. Whitehand and P. J. Larkham, eds., *Urban Landscapes: International Perspectives* (London: Routledge, 1992).

<sup>2</sup> Urban-design literature defines "urban morphology" as "... a method of analysis which is basic to find[ing] out principles or rules of urban design" (Gebauer and Samuels, 1981); Lowndes and Murray (1988) use it in this manner. In conversation with the author in 1994, Kevin Murray noted that his ideas had developed significantly since that 1988 paper, but these developments have not been written up for publication. Gebauer and Samuels also note that the term can be understood as the study of the physical and spatial characteristics of the whole urban structure, which is closer to the geographers' definition.

<sup>3</sup> Biographical information on M. R. G. Conzen is drawn from the published sources cited and a 3-hour videotaped interview between Conzen, Whitehand, and Slater. The videotape and a 1-hour edited version are available from Dr. T. R. Slater, School of Geography, University of Birmingham, Edgbaston, Birmingham, U.K.

<sup>4</sup> "By the mid-1970s the planning profession had become process and systems orientated with the processes strongly socio-economic and the systems essentially political. The architectural profession in the meantime was raising barriers and establishing definitive positions in order to fight the aesthetic control of its designs. The third major environmental profession, landscape architecture, was not involved to a significant extent in the urban debate. The discontent amongst a group of professionals resulted in the founding of the Urban Design Group in 1978. . . . [The Group] considered that everyone acting in the environment were urban designers, be they performing positively, negatively or just passively, because the decisions they make (or disregard), affect the quality of urban spaces" (Linden and Billingham, 1994, p. 30).



## Appendix 1

### *Funded Research Projects Undertaken at the UMRG from 1980 to May 1996*

- J. W. R. Whitehand, P. J. Aspinall and S. M. Whitehand, Investigation of changes in the town centers of Northampton and Watford, 1916-79 (Social Science Research Council)
- J. W. R. Whitehand and P.J. Larkham, Post-war changes in mature residential landscapes: comparison of the South-East and Midland regions of England (Leverhulme Trust)
- P. J. Larkham, Managing historic townscapes (British Academy)
- T. R. Slater and N. J. Baker (jointly with the School of History), Mediaeval towns and the church (Leverhulme Trust)
- J. W. R. Whitehand and C. Carr, The changing English suburb (Leverhulme Trust)
- T. R. Slater and K. D. Lilley, The Norman town in England, Wales and Ireland (Leverhulme Trust)
- T. R. Slater and J. Higgins, Economic change and built form: early-modern Shrewsbury (Leverhulme Trust)
- J. W. R. Whitehand and S. W. Marshall, Built form and control in Category C prisons (Home Office)
- J. W. R. Whitehand, I. Samuels, and K. S. Kropf, The description and prescription of urban form (Leverhulme Trust)

### *Higher-Degree Theses Submitted by UMRG Members from 1980 to the Present*

- R. F. Broaderwick (1981). "An investigation into the location of institutional land uses in Birmingham" (Ph.D.)
- R. J. Talbot (1984). "The analysis of the modern residential townscape: a comparative study of 52 settlements in northern England and southern Scotland" (Ph.D.)
- M. Freeman (1986). "The nature and agents of central-area change: a case study of Aylesbury and Wembley town centres, 1935 to 1983" (Ph.D.)
- P. J. Larkham (1986). "Conservation, planning, and morphology in West Midlands conservation areas, 1968-84" (Ph.D.)
- T. R. Slater (1986). "Studies of the genesis and morphology of British towns" (Ph.D.)
- I. A. Thompson (1987). "An investigation into the development of the building fabric of Huddersfield's CBD 1869-1939" (Ph.D.)
- N. D. Pompa (1988). "The nature and agents of change in the residential townscape: South Birmingham 1970-85" (Ph.D.)
- P. N. Booth (1989). "Owners, solicitors and residential development: the case of a Manchester suburb" (M.Phil.)
- A. N. Jones (1991). "The management of residential townscapes" (PhD)
- J. C. Horn (1992). "Townscape transformations in dockland areas: case studies in the UK" (Ph.D.)
- K. S. Kropf (1993). "An inquiry into the definition of built form in urban morphology" (Ph.D.).
- J. Hubbard (1994). "Attitudes to redevelopment in Birmingham city centre: an examination of architectural interpretations" (Ph.D.)
- T. R. Hall (1994). "Urban regeneration and cultural geography: the International Convention Centre, Birmingham" (Ph.D.)
- K. D. Lilley (1995). "Mediaeval Coventry: a study in town plan analysis" (Ph.D.)

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*Maurice Cerasi*

## Type, Urban Context, and Language in Conflict

Some methodological implications

The typological approach to architecture has remarkable potentiality but it has to change in order to exploit it fully.

The typological concepts developed in Europe in the Fifties and Sixties have afforded us instruments which had not pertained, up to then, to the field of architecture proper. The relationship of town structure to building types, the emergence of architectural forms through slow and long processes of sedimentation both cultural and physical (through change and transformation of the elements of town structure) and the very notion of an "architecture of the town" were well known to the historian from Fustel de Coulanges to Lavedan, from Von Gerkan to Roland Martin, from Gantner to Lavedan. But they had been so far assumed by architects intuitively, not systematically. And not by all.

The work of the Italian school, in the first place of Muratori and later of the Milanese-Venetian school, with Aldo Rossi as its leading theoretician, was revolutionary. Not so much in the conceptual categories it introduced — which, I repeat, were not at all new for the international community of historians and archeologists — as in the use it made of these categories establishing new references for architectural design.

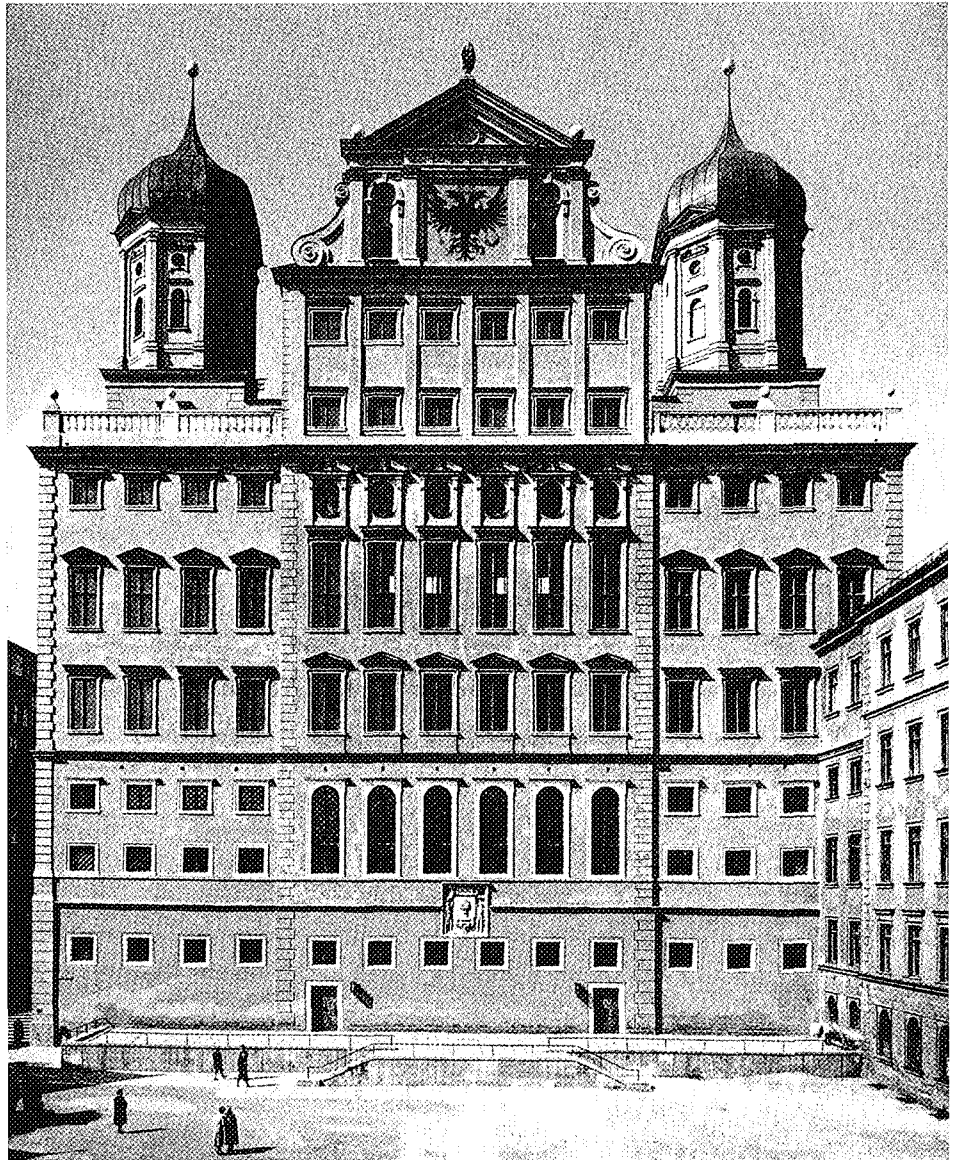
Their success was due to the epochal change in architects' mentality that no longer made 'tabula rasa' of historical town structures and textures but sought ways and means for obtaining continuity with the past of town and architecture. In those years architects were only mildly 'Modernist' and all vestiges of 'futurist' feeling had vanished. On the other hand the recurrent terms of 'feeling for' and 'sense of place and environment' had proved too inconsistent to substitute 'Modernism's strong philosophy and too vague to be used either for analysis or communication.

It was at this stage that the 'typology-morphology' school of thought gave new impulse to research both creative and scientific.

It certainly introduced objective criteria and instruments for the judgment of plans, volumes and some aspects of architectural form in the urban context.

The point of emphasis on type for the acting architect is that it allows him awareness of the deeper structures of his own design processes, of their roots in repeated collective, social proceedings.

The attention to typical plan, to the orientation and layout of street grids, to the town plan as expression of an approach in the relationship of each



*The Town Hall of  
Augsberg, Germany.*

building to its context, to elements and alignments which 'generate' form and plan, to the specificity of region and town had great pedagogical impact. And not only in education. It taught acting architects to look at context not as a fascinating if mysteriously compact and inarticulate entity, but as an objectively definable and articulate reality which could be explained through its elements, and through their interplay in the multiple processes of formation of that reality.

But there it stopped.

Why has that school of thought lost its fascination on the later generations? Why have some of its more active members concentrated on professional and esthetic achievement, losing much if not all interest in analysis and theory? Biography of school and individual is irrelevant. The fact is that methods and theoretical approach had fallen short of the aim of giving architects, practitioners or theoreticians, an effective working instrument. First came the too obvious discovery that such methods, at their state of development, could not be used beyond the very first steps of any creative process.

They would not grasp complexity. One of the principal cultural assets of that approach — its capability to define the multiple processes of formation of architectural reality — had been undervalued by the same men who had pioneered in typological research and had been used very little. Type analysis was descriptive and often tautological: it unveiled what was already known and perceivable.

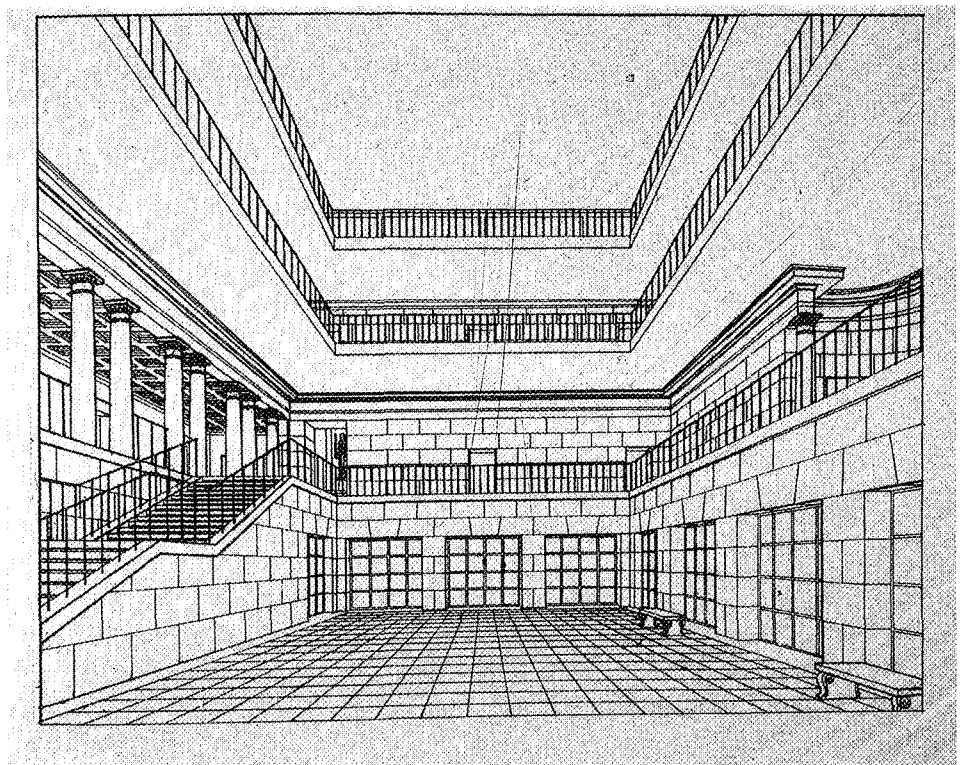
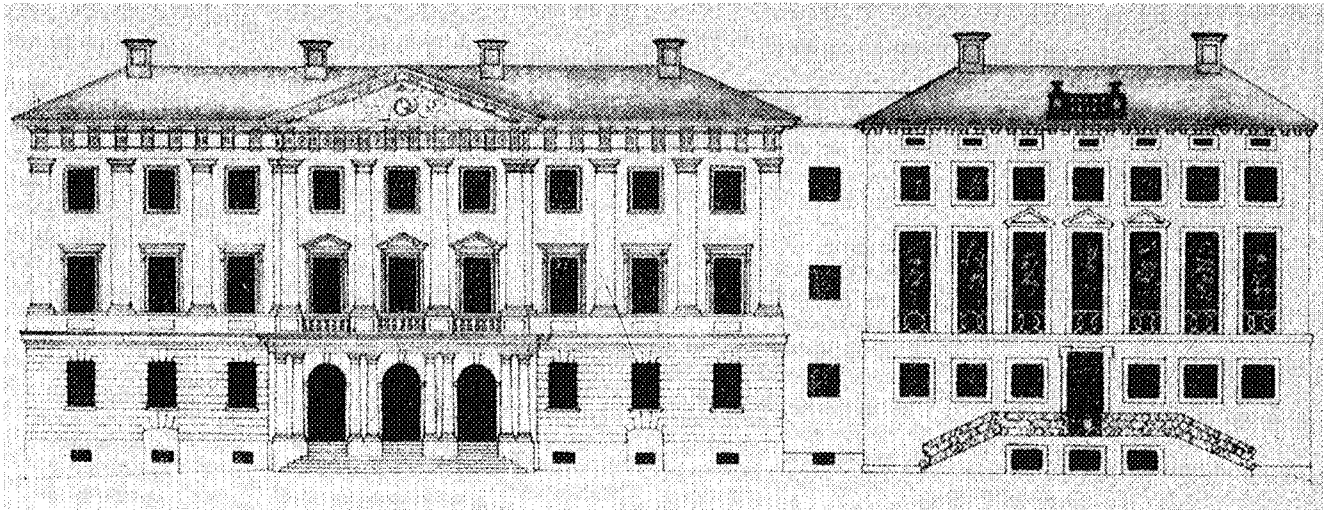
The categories referred to were too simple, too rigid and too deterministic to account for the linkage of type (and hence town history) to language and meaning.

Although not explicitly declared, the typo-morphological school did imply a general theory of architecture. But it was never declared. Since the XIXth century there has been no general theory of architecture and we probably shall have none in the coming years. (The ethical or vitalistic theories of the first half of XXth century — which dealt with how architecture should be and not with how it is — have not touched the argument of how architecture comes to being.

The typo-morphological school seemed to assume type as a point of equilibrium in historical development; in other words, as an organism which is born, changes and dies as a whole; language being incorporated in it and its relation to context being predetermined in its nature as a type. The implication was that a type would maintain certain well-defined characteristics until it changed completely.

After all, a large number of architectural historians of the late XIXth and early XXth centuries had shared this point of view. Both schools had a strong distaste for breaking up the individual work of architecture into the fragments, etymon, morphemes of which it is a compound. Both were reluctant to acknowledge the importance of archetypes and of loanwords (to use again the terminology of linguistics), that is of elements which reach





*The extension of the Town Hall of Goteborg, Sweden by Gunnar Asplund. The facade of the earlier version and the interior of the court*

out from the past and from distant cultures, from a sort of architectural subconscious. To acknowledge such complexity and apparent irrationality was considered a danger for the noble individuality and integrity of the work of art.

In other words, it was postulated that architects (whether individual or collective) create or inherit typological solutions as deeply unitarian works of art, which cannot or should not be dismantled or used partially.

This attitude misrepresented the course of history. Gradual transformation and separateness of levels of decision and sensibility are part of architecture's reality.

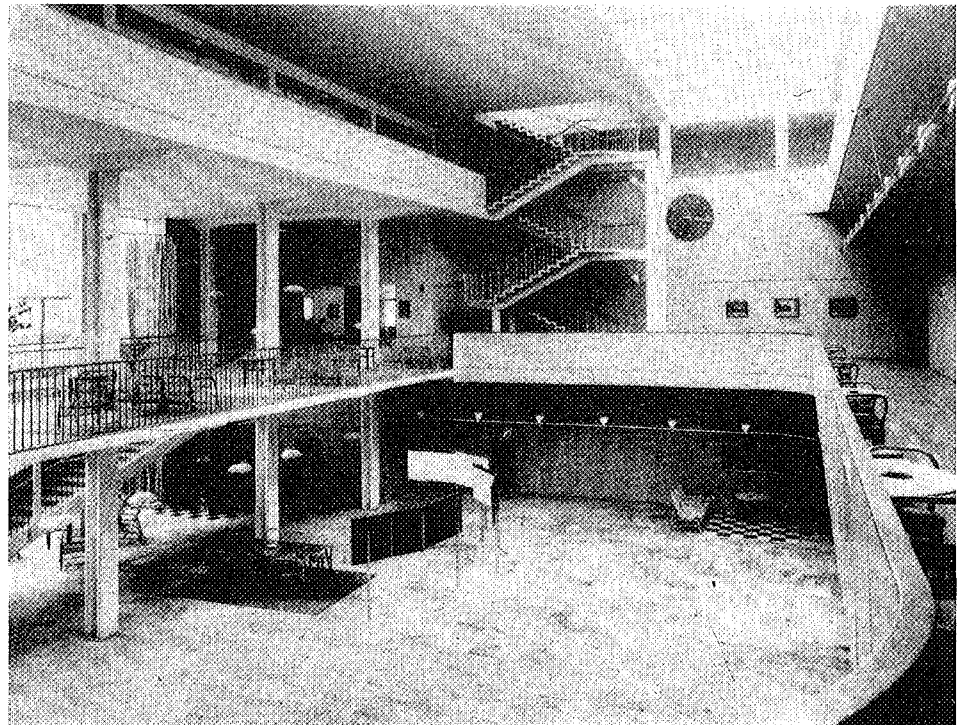
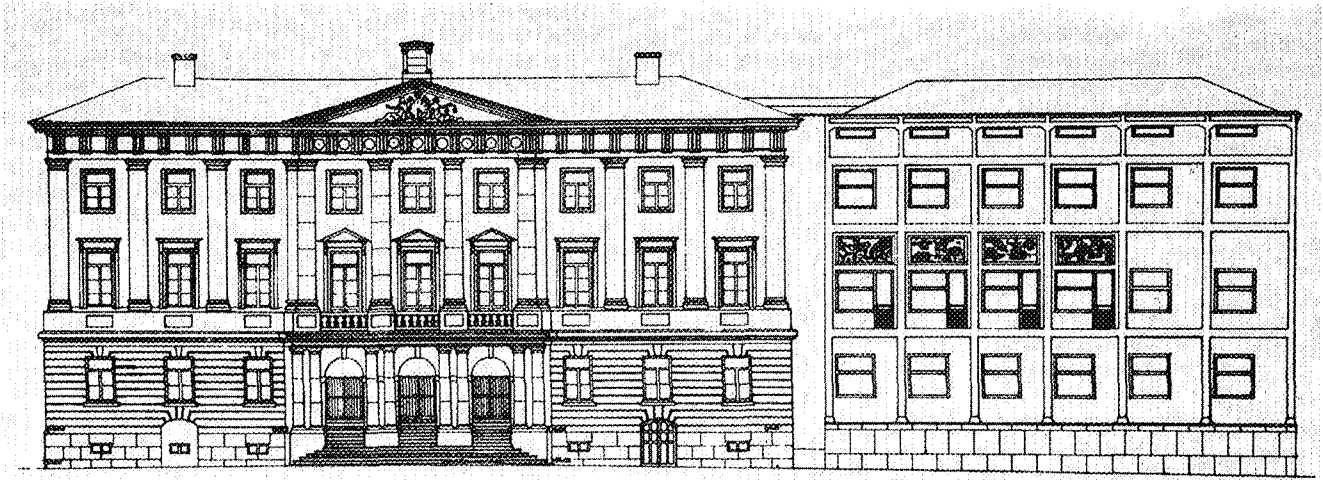
I would like to discuss very briefly some situations of typological transition in which the divarication of plan, volume and language is easier to analyze. (This divarication does exist also in more stable and historically persistent types but is of course much less evident).

I am thinking of the French Renaissance up to Philibert de l'Orme and of German 'bourgeois' housing up to Elias Holl. In both cases Italian Renaissance concepts were applied to facades and detail but late gothic plan and volume typology were kept. Change in the basic concept of house or palace gathered momentum gradually, at different speeds for different levels. In both cases the typological concept of the house or palace did not change at once but accumulated differential factors, at first at superficial levels and later at structural levels until each type was transformed completely.

The drawings of de l'Orme show how his work incorporated artisanal late Gothic techniques (the wooden arch construction, his own house's combination of various volumes and accessories) in contemporary post-Gothic types or, vice versa, contained Renaissance composition techniques and articulation in apparently still Gothic types.

During the evolution of Sixteenth and early Seventeenth century German town architecture which culminated in Elias Holl's Augsburg town hall, previous combination of Gothic (in volume and response to urban context, and sometimes in layout) to Renaissance (in ornament and composition and again sometimes in layout) gave way to a new synthesis of type and language which still contained many elements of both periods.

We observe a similar process in the synthesis which produced the late Ottoman house. Here the transformation is due to many overlapping phases and components. We see the type change softly (through almost imperceptible transitions as in a high-tech video effect) from a model wholly non-European to a final product which could easily be imagined in a Western context. Here too — it has often been held — change in taste and in so-called 'superficial' elements had brought about a total transformation of the basic type which thereby was supposed to lose its 'real' historical character. That is not my point of view. In the design process, 'types' (i.e. a given combination of architectural factors) have no 'original' character to lose but fall upon new aggregates or new combinations in the course of a



*The extension of the Town Hall of Goteborg, Sweden by Gunnar Asplund. The facade of the final solution and the interior of the court.*

creative movement of long duration.

Another apparently fringe situation example is the Ottoman imitation of Saint Sophia's plan, inner volume and (partly) technology but not of its language and meaning. This is no matter of deeply felt cultural influence but of a determined reuse (or reappropriation) of selected elements from a distant (and dead) culture. Which proves that architecture can be fragmented and disarticulated.

I could mention, though in a very different context, Asplund's projects for the Goteborg court of justice. In the two versions of the project the main hall has a similar though varying dimension, comparable overall space concept and role in the distribution and articulation of the building. The older version is neo-classical in an eclectic way, the second modernist. Forms and lighting have brought about a change in meaning and not only in style; and yet the spatial type has not changed radically. This may sound a paradox but it could be said that type, in a general sense, has not changed and yet the archetypes are not the same: in the first version we have the idea (not the type) of the grotto-like atrium, in the second, transparencies and ample column rhythms produce a 'piazza' or open space-like version of the inner volume. In a deeply ethical architect such as Asplund this is no mere infatuation for a new style or trend. Nor is it the rejection of previous attitudes. His thought on the site and on the character of the building have matured but not changed. It is above all, a long reflection on that which is important in architecture and that which is not, on what can be changed and what should not... on that which can be separated... All this amounts to an analysis of architecture and of its roots and is very far from the classical typological approach.

Many critics would see in such examples as those I have given, the signs of eclecticism whereas each of them simply reflect their architect's struggle to give form to conflicting forces in his heritage. General types, language, spatial concepts have always been in conflict or, to put it in a different way, have had each a different rhythm of change. These 'glissandi' from one decisional level to another, these hidden or evident contradictions are part of the creative design process which is neither totally anchored in urban structure and typological tradition nor totally free of them. There is in architecture an inner tension and an interplay of forces which come from contrasting or converging but heterogeneous ideas even within a given typological concept. They pertain to style and language, to personality. They play on a substratus of collective acts (memory of the locus, the peculiar mode of each city to become an immense pedagogical building site, a workshop for future architecture).

It is therefore impossible to paraphrase within the bounds of a 'type' the specific vitality of each building, rooted as it is in the micro-history of material contingencies and of sensuous love for materials and forms not less than in general concepts.

What happens within an architectural body can be referred only very vaguely

to the concepts of type (to belong to the same type how many parts of that body should resemble other bodies ?), context (where does that body stop and where does its outer context start' does it not condition and reform its own context?), language (on which elements is its language based and to what degree can it be separated from its typological 'hanger' and from its response to context?).

Architecture's complexity is in its making. Architects accept, reject or re-elaborate more conflicting concepts extant in their 'milieu', town or cultural heritage than they are consciously aware of. To understand the making of architecture we must understand those clashing forces and the mechanisms of their unification.

When applied to active design or to education, theories such as Muratori's or Rossi's imply analysis 'a priori' (prior to invention) as a set of rules and guidelines both for the interpretation of the urban and cultural context and for the project.

At their best, their conception of the unity of types as a point of equilibrium, for the acting architect meant striving for total coherence in each project, trying to bolt down 'type' as the final response to a given design problem. At their worse they brought the arbitrary assumption that a typological repertory should always be derived from the tradition and history of an urban context, that is, that only certain types should be designed in that given context.

I believe that an analysis which operates 'a posteriori' on concepts in the making, would fit better the design process — whether individual or collective — and its erratic progression. After all, criticism (self-criticism) is functional to the design process as well as to any creative process. Both the active architect and the historian are not looking for rules but trying to understand the making of architecture and its inner logic.

From this point of view I find very interesting Bruno Fortier's insistence on the analysis of the single 'locus' and of the specific architectural work, apparently in contrast with the classical typo-morphological approach but actually bringing new blood to it.

This may sound blasphemous, but a partial return to XIXth century academicism's (Durand et al) exploded view of architecture — in which plan, elevation, distribution, language were analyzed separately — might suggest new methods of analysis of typology; of course, if we set aside the too facile design rules of that period and its inveterate eclecticism. This might overcome basic typological approach's tendency to conceive type as a unit and consequently as monolithic, non-fissile material.

Fundamentally, the question is how to render typological analysis systematic and yet keep it close to the nebulous constitution of architecture.

Typological research has yet to acquire its exact role, place and interaction in the design process. But we should try to keep the imperfect categories of 'type', context and 'language' nearer to the live processes of the project. Used in a deterministic way the concept of 'type' is inhibitory.

On the other hand, we cannot accept the definite loss of its role in our architectural thought: it would mean capitulation to purely intuitive and irrational creation and to the never dead moronic love for freedom from all conceptual discipline.

I find it promising and liberating that typological factors, fragments of type derived from analysis be involved in the construction of the project because it frees language from unnecessary subjectivism and rhetorics. Implicitly this has been Le Corbusier's working procedure in purging himself of the formal conformism of his time though it is true that he applied such piecemeal analysis to works of architecture and buildings distant in time and culture and that his aim was to disrupt the structure of the contemporary Western town. More recently, others have moved from the opposed position, applying that same quest to the contemporary city's image and types. However this search has often become a sort of razor's edge venture between subjectivism and systematic analysis.

Take Alvaro de Siza. His 'artistry' has played more than once on the negation-affirmation-negation of type. He has often used a given type as a starting point, free to transform its basic concepts and its technology. In his Evora housing, in Berlin's 'Bonjour Tristesse' and in the unbuilt Kreuzberg corner house, he has taken given types of each of those contexts and deformed certain of their characteristics and introduced innovations. He probably did this to extol the linkage of his buildings to their built context and to enforce his own personal language. He used type as semantic structures or as partial meaning enforcing instruments, strengthening his overall poetical devices. (The substantial homogeneity of his site-analysis and of his project sketches seem to prove this. Apparently not interested in historicist or theoretical procedures, nevertheless his trained eye squeezes out pertinent though unsystematic observations on the character of types.)

Unfortunately, in less gifted and not so well-trained hands, similar proceedings either fall short of their aim or become too emphatic. Many a mediocre project has taken up, say, a current terrace housing type, adding here a curve, there a spire in the quest for the Siza-like poetic touch. In such cases it is much wiser to keep to the banal reality of the basic type. After all, a town is made of a mix of obvious and banal buildings and emergent architecture. Simple and unpretentious projects would probably do better service to the town scene and acquire more depth simply doing hard (and perhaps boring) work on existing typology, seeking out its expression potential.

Once accepted the notion that type is an abstraction and that the typological story and structure of a building has a life apart though parallel to its architecture, typological study can help the individual project acquire a skeleton, a conceptual structure, even a clearer linguistic structure. It can be meter, frame or paradigm for architectural language. It can be no more.

In conclusion, to renew the typological approach to architecture, I feel we

should accept the fact that type is not created or is not completely created (if it is difficult to perceive a 'kunstwollen' for buildings, a 'typ-wollen' simply does not exist), that type happens, and hence, that we should define the divarication of plan concepts, of volume and its relation to town morphology, of architectural language, that is, that we should define an exploded view of architecture capable of grasping the multiple processes of the making of architecture.

Though apparently complicating the methods of analysis and increasing the distances from the material techniques of the daily practice of architecture, this should get us nearer to the heart of the design process and gap the distance between creative work and scientific-cultural work.