Chapter 9 (new)

THE AGGREGATION PROCESS AND THE FORM OF THE FABRIC

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The form of the Italian city produced in the Middle Age, often derived from the consumption of ancient and decayed urban organisms, expresses the solidarity between housing units that join together to form higher-level organisms.

This organic character, which binds in one unit different components (the route, the building, the pertinent area) in a "society of houses" is certainly the shared heritage of a building and urban custom that was born in the Roman world and is, in turn, linked to a cultural koine that belongs to the Mediterranean masonry -plastic world. Tacitus had clearly focused on this subject by noting, by difference, the "serial" character of Germanic settlements: "Vicos locant non in nostrum morem conexis et coherentibus aedificiis: suam quisque domum spatio circumdat, sive adversus casus ignis remedium sive inscitia aedificandi" (1). The type of housing at the origin of most of the formative processes of the Italian cities developed starting from the XIII-XIV century is above all the row-house, declined in different local variants in the whole peninsula, from the Venetian types that translate into masonry building organisms originated from wooden courtyard matrices, to the markedly plastic examples of central and southern Italy.

This type of dwelling, which communicates through its own forms the predisposition of the single building to collaboration and aggregation, is remarkably constant, It is identifiable in its transformations process, within the different cultural areas, both in the *bicellular* type (to which reference will mostly be made), and in the *monocellular* one derived from the consumption of the courtyard house (pseudo row-house).



Early form of aggregation and the profferlo house



bottega and atrium row-houses

The XIII-XIV century row-house building is structured on an organic form of land use that has recognizable features: the construction takes place by occupying a rectangular plot of land facing onto the short side, the rectangular shape of the lot meeting evident economic criteria. The most valuable part of the land is, in fact, the part that faces onto the route, the part on which the entrances, the shops and the facades of the houses will overlook.

The land division must therefore make the street front profitable at its best, according to rules and conventions that translate spontaneously rooted elementary needs becomeing, over time, norm and language.

The resulting land parcelling produces lots of almost constant thickness and variable depth. The lots repeated thickness (and, therefore, of the dwellings) is explained by the strength of the customs, which correspond to the unitary constructive, economic and distributive needs of the house.

In other words, a rule that binds together land use, housing type and type of aggregation (fabric) is already present, in some way, in the mind of those who divide the soil. In other words, the relationship between the urban organism that will derive from this division, and the building type adopted in balanced societies is intimately linked by rules imposed by use and spontaneously accepted.

A part of the plot will be used for housing while a pertinent area will be left free and initially used as a vegetable garden, for work, or for storage . The thickness, of the built can vary within narrow limits, because the needs and abilities of the inhabitant are similar for all the constructions. The thickness of the lot, and therefore that of the dwelling which for economic reasons will make full use of the side facing the path, after an initial phase in which between the various dwellings a minimum space is left for the flow of water (*ambitus*), coincides with the thickness of the built unit, giving rise to the rowhouse.



Fabric forming starting from the routes hierarchy (source, Caniggia)

It could theoretically be assumed, only as hypothesis, that the aggregation of the row units could continue to infinity: it is a "serial" structure and at the variation of their number nothing changes in the character of the structure and the building type. The houses are organized by specializing in time the components within them, beginning with maximizing the economic use of the ground floor, and assigning the space by road to the shop. The medieval domestic space is, however, still basically homogeneous and all the activities take

place in the same place (in the same way the city has not yet specialized its parts in productive, commercial and housing).

Thus, housing, production and trade take place within the same building. The functions overlap and very often the shop is, at the same time, a place of production and exchange.

The typified aggregation of building elements into horizontal and vertical structures also contributes to the definition of the type. The size of the beam that will cover the free span between walls, parallel to the path, is almost constant, established by building habits that reflect, at the same time:

- the **geometric needs** of the living space inherited from elementary antecedents;

- the **builder's technical skills** relating to the pertinent cultural area;

- the specific forms of **identification of materials in the matter** available at the site.

Therefore the thickness of the lot coincides with the useful size of the building. It varies over time and in different areas, always around 4/6 meters. The walls have a dimension derived from the building tradition, which is an integral part of the type formation process.

Since the walls have to bear a greater load on the lower floors than on the upper ones, their thickness often varies from one floor to the other depending on the different stresses, also depending on the building techniques established in that area and in that particular period and on the available materials. A wall in brittle stone will have a greater thickness than a masonry of resistant material (in compact limestone, for example, or bricks). The builder has a spontaneous knowledge of varying stresses, acquired through experience and tradition.

He also knows that, according to a technique refined through successive improvements, the opportunity to decrease the thickness of the masonry in correspondence of the floor (singular point which coincides, as we shall see, with one of the "nodes" of the building), where the loads vary, constitutes a useful support for the beams that bear the floor itself. Other times, when the masonry has a more constant cross-section, shelves are set up supporting the perimeter beams. In general, anyway, the row-house has strongly specific characters, it"individualizes" a type as a result of "necessary" equilibrium conditions between different components.

From the above it is clear how the built environment can only be instrumentally studied for parts. Buildings cannot be considered autonomously, but constitute units of a larger scale structures that determine their characters. The notion we have expressed for building types are somehow also extendable to urban fabrics. In fact, as it is clear from the above, we mean by **fabric the sum of the characters determined by their forming process that mark the formation of a building aggregate**. In other words, a fabric is a type of the aggregate. A building fabric is therefore characterized by a recognizable law, iterative and identifiable in different aggregates synchronically, according to the specific cultural area, and diachronically, in successive phases in the transformation process of the aggregates.

The forms of land use are comprehensible above all, for what concerns the fabric formative process, through the routes structuring the territory preceding the urbanization. We briefly mention here the forming and hierarchy of the courses, referring to the studies mentioned several times for further details.

The original route, from which the aggregate originates, is the visible trace of a crossing that links two particularly relevant points in the territory, called "poles". In the built reality four main types of routes can be found, schematically corresponding to as many phases of development and transformation of the urban aggregates:

A- The **matrix route**, which exists before the construction intervenes. Therefore the construction built on a matrix route corresponds to the first phase of construction and is the oldest one, on lots that are generally less regular than the subsequent ones, as the building does not yet have institutionalized conventions (there is a "spontaneous awareness of the norm"). to which over time a "critical and institutionalized conscience of the norm" is replaced. At the same time, the value of the soil still allows extensions of the lots spontaneously adequate to the building needs rather than conditioned by their market value as is the case in later phases where, in some cases, there are real building regulations, indicated in the statutes of the municipalities



Via Lata substrata route, transformed in the actual matrix route of Via dei Coronari (source Muratori)



Via del Corso substrata route, transformed in the actual matrix route of Via del Corso (ground floor map the mid-18th Century).

B - **Building routes**, chronologically following and hierarchically subordinate to matrix one, are traced according to the construction in depth. With the progressive departure from the pole, the soil value on the route decreases compared to that behind. For intuitive economic

and functional reasons it is easily explicable how the aggregate tends to use the rear areas instead of continuing a linear expansion. This second phase of construction, in general, takes place by orienting the new building routes orthogonal to the matrix one and distant from each other the depth of two lots. At the intersection between the matrix and building route, due to the double façade of the corner building and the opportunity to exploit its pertinent area (which overlooking the building route), synchronic variants of the basic type are inevitably formed (infilling variants).

C - Connection routes, which link the building routes together.

D - **Restructuring routes** intervene at the end of the building process, in "mature" fabrics in which new poles are formed generating new connection needs. It is therefore a "traumatic" route that overlaps the pre-existing organism considered obsolete on the basis of a new notion of fabric. They can be recognized by the following data:

- give rise to irregular lots. See the example, shown in the figure, of Boulevard Voltaire in Paris, after the demolition by Hausmann, where the lots are often trapezoids or triangles, with the consequence that new building types develop "unusually", often as synchronic variants of base types formed in the orthogonal grid.

- give rise to specialized building to be the areas, obtained by demolition of consolidated building aggregates, of considerable economic value.

- give rise to large-sized roads, and in any case larger than in the consolidated fabrics.



Boulevard Voltaire, Paris. Haussmann's restructuring path generates trapezoidal or triangular lots, with the consequence that the new building types are synchronic variants of previous types developed on orthogonal grid.



Viale Trastevere with the ground plans of the new buildings on the restructuring route, mainly synchronic variants of the *in-linea* house type (*source* Salamone 2016)



Theoretical scheme of the formation of an urban block (source, Caniggia)

The formation of the connection route completing the perimeter of a set of integrated lots gives rise to the block, one of the most stable components of the modern aggregative organisms which, by transforming the aggregation process from continuous to discrete, constitutes the premise for the construction of the nineteenth-century city.

It is evident that land use and property regime contribute together to the notion of fabric. In fact the form of the route cannot be separated from the particle division that generates the geometry of the block. Historically, the structure of the territory does not demonstrate immediately the priority of one component over the others, as it is possible to find lots formed on matrix route as well as routes drawn between property boundaries. However, reading the land structure of an area as result of a transformations process, there is no doubt about the vital role of the route.

In this sense the continuity in the congruence relationship that must necessarily be established between the building type and aggregative type (fabric) is clear. Despite the formation and transformation of building and aggregates are necessarily diachronic (to be building types most easily updatable of the routes that govern its forming), the former must be compatible with the latter even when these have become obsolete.