

# Assemblage and aggregation. Reading the ancient city and urban composition methods

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**Abstract.** *It is well known that on the reading of the historic city (as Alnwick, Venice, Como) has been based some of the classical methods of analysis in Urban Morphology (MRG Conzen, S. Muratori, G. Caniggia etc.).*

*Taking the ancient Rome as an example, the essay examines how the reading of the ancient city gave also rise, from the Renaissance to our days, to different ways of designing the modern urban form. In particular, the notion of aggregation, understood as a system of formative laws, gave rise to synthetic design methods tending to continue an ongoing process. Today this statement seems far from obvious: indeed, one of the characters of contemporary culture seems to be the impossibility of a synthesis. The idea of assemblage, historically opposite and complementary to that of aggregation, is then examined. Intended as a gathering of autonomous and self-sufficient parts, this notion has had and continues to have, from G.B. Piranesi to C. Rowe, a great success among the architects.*

*The author believes that the distinction between the two different methods of reading the ancient city, one based on perception and the other on morphological analysis, can contribute to understand the current condition of the urban design.*

*Keywords: urban design, ancient city, aggregation, assemblage, Rome*

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The interpretation of the historic city has been, over time, one of the main tools on which has been based the classical methods of analysis in Urban Morphology. The study of the city of Alnwick by M.R.G. Conzen is exemplary. The author uses the case study of a medieval city to demonstrate how each form is the result of the progressive association and transformation of parts: it makes sense to investigate the urban form components if their general forming laws are taken into account.

This interpretation is based on a notion of organic growth of the built form following an additive process intended as a succession of increments starting from a given matter, a "sequence of activities whereby new forms are created" (Conzen 1981)<sup>1</sup> giving rise to the early idea of the urban landscape as "integrated entity" developed later by the Conzenian school (Whitehand 2010).

The same effort to understand the visible aspect of things not only for what they are, but in their historical growth, corresponds, albeit with the undoubted differences due to the dissimilar goals and cultural conditions, to the spirit of the Muratorian school studies. Using terms closer to their design interests, they studied the fabric as a system of aggregative laws "inherent the being together" that can be reconstructed, at all scales, after "changing them into logical categories and inferring the parameters that will guide the reading" (Caniggia 1979).

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<sup>1</sup> The notion of "additive process" is well known in linguistics where it indicates a series of operations performed on an original base. The notion originates from the Edward Sapir studies on the language considered as a historical product (Sapir 1921). The Italian translation of his work appeared, edited by Paolo Valesio, at the end of the 1960s and it is likely that it influenced the interpretation of the urban form transformation developed in those years by Gianfranco Caniggia often in analogy with linguistics.

The notion of aggregation, understood in these terms, gives rise to design methods that tend to continue an ongoing process. So reading the city as an aggregation is not just a method of investigation: bringing the diversity of the built landscape to unity is also a design choice. Today this statement seems far from obvious: indeed, one of the characters of contemporary culture seems to be just the impossibility of a synthesis.

In the same years in which some geographers and architects read the city as a form in the making, another method of reading the built reality as "assembly", of great success among the designers and based on the gathering of self-sufficient parts, was in fact practised.

As the terms "assemblage" and "aggregation", in the modern architectural tradition are not neutral, their study poses ontological problems as they concern the fundamentals of the design discipline, having direct connection with the urban and architectural composition. We could even distinguish, over time, two ways of conceiving it: on the one hand as a group of autonomous parts; on the other, as a connection of elements linked by a relationship of necessity, whose form is subordinated to a law of proportion and congruence.

## Terms and definitions

I consider it helpful to provide a morphological definition of the terms of the dyad of opposite and complementary terms "assembly" and "aggregation", specifying their meaning in urban morphology studies<sup>2</sup>.

**Assemblage**, from late XV century French "assemblance", is the act of gathering (in the literal sense of "putting together"). In the Oxford Dictionary it also means "a work of art made by grouping together 'found or unrelated objects'". The definition also has effect in architecture, where it indicates the collection of different, autonomous elements, at different scales.

The meaning we will attribute to the terms is conventional as it has different meanings in the different disciplines.<sup>3</sup> The specific sense we will attribute for our purposes is that of composition made by generically grouping together elements in a loose way, not tightly set in a common, general form. The combination of elements is autonomous or able to be detached. The result is a configuration made by pre-formed objects. Corresponding modern terms are bricolage, patchwork, miscellany, mixture, assortment, mélange, pastiche, agglomerate, montage etc. They are, as we can see, terms used in some modern artistic techniques ("informal", in fact) and borrowed from them by architecture. In this framework it is particularly important, as we will see, the term "collage", a technique also adopted in the XIX century by avant-garde artists consisting in assembling materials in an apparently casual way. It is the way of producing architecture widespread in contemporary culture, starting from the research of Colin Rowe in the 70's, up to the recent experiences of Rem Koolhaas and Bernard Tschumi.

In terms of morphology, these words correspond, to use a Muratorian expression, the extreme of irregular seriality intended as independent forms collected without a recognizable order.

The notion of *process* is thus lacking in the resulting composition. Defined in these terms, the assemblage is *unpredictable*: knowing some parts, it is not possible to read the whole because it does not identify any demonstrable law.

**Aggregation** is an organized collection obtained by the conjunction of specific elements to form a whole. The late Middle English term derives from Latin *aggregatum* 'shepherd together', from the verb *aggregare*: *ad-* 'towards' and *gregem* 'flock': joining the flock, unite with a constituted group.

In the classical Morphology the term plays a central role in the Muratorian school. In this context, the observation by Paolo Maretto introducing the notion of "relational modalities" is of particular interest: what allowed the historical city to transform a plurality into an aggregative

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<sup>2</sup> Note that in the Isuf glossary the terms are not even reported.

<sup>3</sup> In linguistics, for example, the term "aggregate" is sometime differentiated from the term "structure" precisely because it consists of independent elements (Dubois 1979). In sociology, on the contrary, it means meeting and collaboration of individuals with common interests and tendencies and in chemistry, association of molecules in a substance etc. The different ways of reading the ancient city differ also in relation to the different disciplinary sectors interested in the problem, as has been noted in some contributions published in *Urban Morphology* (Thomas, 2018; Whitehand, 2015).

unity is "the structurally" open "character of the urban building type, its intrinsic *associative valences* that allow it to make system with other similar types" (Maretto, 1979).

The Composition deriving from it is made by grouping elements organically composed in a structure intended as an ordered system of rules recognizable through the reading.

The composition openly refers to the paradigm of the *process* and is *predictable*: knowing some parts, it is possible to reconstruct the general structure of the whole because it is possible to identify its law. Note the affinity with linguistics, where the notion of predictability is the tool with which we consider the greater or lesser property of a sentence. In architecture it is obvious: while in a classical temple the general shape can perfectly be reconstructed knowing some elements, in most contemporary architecture this is quite always impossible.<sup>4</sup>

This duality concerns both the reading of the city and its production, *aggregation* and *assemblage* being the terms connected to the society that generates them.

This is what I will try to demonstrate, making use of an extreme acceptance of the two terms as opposite limits and taking into account how they are complementary giving rise to intermediate forms of reading and design.

If we look without prejudice at the history of the ways in which the elements have united to form buildings and cities, we realize that even in the past, the two different interpretations have been given.

The case of the ancient city, particularly of Rome, will be used below as by its interpretation many of the ideas that have shaped the history of modern architecture were founded, from the Renaissance (Serlio, Alberti, Palladio, Vignola etc.) to the present ( Kahn, Venturi, Rowe, Muratori etc.).

## Ancient city as assemblage or aggregation

To give a morphological order to the different readings, we can establish a dyad of opposite terms by pointing to one extreme, the definition of autonomous forms gathered without any common structure; to the other, the definition of a form composed by parts necessary to each other, an organic aggregation of complementary forms in a unitary organism.

Considering also the intermediate forms, we could fix an indicative scheme of the different modes of reading, derived from the Muratorian method:

Assembly

- irregular serial (s) = autonomous forms gathered without order;
- systematic serial (S) = composition of autonomous forms in ordered series (modular forms);

Aggregation

- episodic organic (o) = aggregation of serial<sup>5</sup> forms in organic structures;
- totally organic (O) = organic aggregation of complementary forms in a unitary organism.

By ordering things in this way, we realize that the terms of the progression do not characterize successive phases, but synchronic ones.

The two different ways of interpreting the ancient city are in fact evident since the first experiments of cartographers who tried to reconstruct the original form of Rome.

**(D)** The plan of ancient Rome drawn in 1538 by the German cosmographer and cartographer **Sebastian Münster** is a clear example of autonomous forms assembled without a common structure. It is obtained from the collection of separately perceived parts of the city, a gathering where the parts are objects that appear without any organic order(s). The bridges do not

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<sup>4</sup> It should be noted that the transformations, according to this point of view, take place not only through growth (aggregations of parts into units) but also by "dequantification" (disaggregation of the unit into parts), which explains the importance of the notion of " substratum ", as will be seen, as a form that subtends the built landscape originated from the ancient city.

<sup>5</sup> The term "serial" is here used in the particular sense that each of the elements of the composition can be replaced without compromising the nature of the whole

connect to any route, no city gates are indicated and the seven hills are objects similar to each other, each surmounted by its monument.

In other reconstructions of ancient Rome it is possible to recognize, instead, a unifying thought that orders the elements within a general order.

The three drawings of ancient Rome by the cartographer **Fabio Calvo** in 1527 are an astonishing example of coincidence of reading and design<sup>6</sup>.

The sequence of drawings are a true formative process for phases of progressive organicity, based on successive doublings in the main parts of the structure (4, 8, 16) from the original "square Rome", to the octagonal city of King Servius Tullius up to the sixteen regions of Imperial Rome.

In the first plan, "Roma quadrata", the parts are still objects, but arranged according to an ideal hierarchy. Like in the Münster's plan, it is a serial form, but ordered according to a design strategy. Trying to interpret the Plinius's description of the mythical Rome founded by Romulus, the four main hills occupy the four corners of the walls enclosure and correspond to the four main gates of the city.

The octagonal Rome of King Servius Tullius is already organized around a center, the "Umbilicus Urbis", the navel of the city.

The process is concluded by Imperial Rome, again based on a double number of parts compared to the previous one. The structure consists of regions, according to the ancient administrative division, each with its own gate.

The whole structure is organically aggregated (O) around the central Milliarium Aureum, the "golden milestone" erected by Augustus in 20 BC<sup>7</sup>.

The structure, it is important to note, is totally abstract. In fact the Augustan regions were not sixteen but fourteen. Fabio Calvo, of humanistic education, certainly knew it. He adds, however, the non-existent Regio Vaticana and the Campus Martius Maior to respect the law of organic progression in the number of sides. His, evidently, is not the product of a cartographer in the proper sense of the term, but rather a Renaissance idealised urban plan where nothing is left to the empirical solution (to the *ars mechanica*) and the parts are brought together according to the principles of congruence and proportion of a classic architectural organism<sup>8</sup>.

In an exemplary way, reading coincides with design. It is easy to recognize in his plan of imperial Rome, in fact, the project of an ideal city. **(D)** See the plan by Francesco di Giorgio Martini for an ideal city divided into sixteen radial sectors. Sixteen sectors converging in a pole also compose the ideal city of **Sforzinda** designed by Filarete which appears in his *Treatise on architecture*, written between 1460 and 1464. It has an eight-pointed star plan and sixteen radial sectors whose routes converge in the central pole where the special building of the city is concentrated. Sixteen nodes are placed at any intersections of an intermediate circular routes with radial axes.

With regard to the purpose of these notes, it is interesting to mention a plan ideally referring to an abstract polygonal city with 16 sides has also been recognized in the tracing of the new structures of modern Rome (Spagnesi 1979).

It's evident that, from the beginning of the ancient city reconstruction, two different readings are opposed: one based on the perception, as assembly / collection of elements, the other as aggregation / organization, that is the recognition of a general and abstract law, corresponding to a regulatory will.

## Origin of interpreting the city as assemblage

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<sup>6</sup> The reconstructions are probably linked to the project of Pope Leo X who in 1519 had commissioned Raffaello to design a plan of ancient Rome.

<sup>7</sup> It was a marble column clad in gilded bronze with respect to which all distances of the cities of the empire were measured.

<sup>8</sup> It is known that the plan of urban organisms of ideal cities has been made to correspond to anatomical metaphors of human organism (Marconi, 1973). This reference is rather complex. Some Renaissance geometrizations were in fact based on the pentagon, while the ideal cities to which we refer seem rather to refer to the Vitruvian "Homo ad circum et ad quadratum" as interpreted in a long tradition of drawings, from Villard d'Honnecourt to Cesare Cesariano.

**(D)** A very evident example of reading ancient Rome as an assembly of pre-formed elements is the work of Giovan Battista Piranesi.

His "informal" reconstruction of Campo Marzio, published in 1762 under the pontificate of Clemente XIII Rezzonico, is, in fact, a modern city and often considered the beginning of the crisis of the urban project as a concluded form (Tafuri 1980).

The *Campo Marziodell'Antica Roma* is a city "analogous" to the real one, to which the discovery of ever new parts of the *Forma Urbis Severiana*, the marble map placed in the Temple of Peace at the beginning of the III Century, certainly contributed. Piranesi reproduced these fragments, which had been accumulating since the second half of the XVI century, in a seductive table where the different parts seem crowded around the uncontaminated river bends in which they should be placed, as in a puzzle.

**(D)** Piranesi's Ancient Rome is composed of autonomous elements, each with its own orientation and its own internal structure. Nothing seems to remain of the many surveys carefully carried out together with the Scottish architect Robert Adam. Indeed, the design seems the result of an intellectual work almost independent of the real city, in evident controversy with the accurate, organic plan that Giovan Battista Nolli had executed six years before and that was enjoying enormous success.

**(D)** The structures of the most relevant monuments, the ones that determined the shape of the real urban layout, as the Mausoleum of Hadrian, the Pantheon, the Theatre of Marcellus, are traced to minor episodes.

According to a method that will be extensively reused in the second half of the XX century, the ancient city is a text open to even extreme interpretations, to which one can approach with the only instruments of perception<sup>9</sup>.

Piranesi's Campo Marzio is a miscellaneous composition, a collage of autonomous and self-sufficient objects. It is systematically (and polemically) lacking in everything that gives a structure to the fabric:

1. the layout of routes as a system that links buildings together, replaced by a set of interstitial spaces.
2. the hierarchy between the parties that establishes the order of the built environment.
3. the formation of poles and nodes, which give an urban structure to the city and a meaning to the placement of special buildings
4. the housing fabric, base building that allows the distinction of the continuous forms from the exceptions of the special building (a city of only monuments)

**(D)** The reading of the ancient city composed by autonomous parts generates the idea of "freeing the monuments", of isolating them by demolishing the fabric that they themselves have generated. It is at the origin of a phenomenon that will become systematic, as in the five years of **Napoleonic** administration (1809-1814). In this period urban projects are elaborated according to the idea of two parallel and independent cities: the archaeological one, autonomous urban assemblies subject to restoration or simple conservation; the modern one, for which the ancient is the object of "embellishment"<sup>10</sup>.

### **Colin Rowe and assemblage as a reading/design method**

**(D)** Piranesi's Rome was an extraordinary legacy to the modern architects indicating a way to read the city by parts. The periodic rediscovery of its relevance confirms how the impossibility of a unitary notion of the urban organism is at the center of contemporary thought.

The most obvious heir to the Piranesian exploration is Colin Rowe's **Collage City**, which has been the reference for generations of architects (**Rowe 1978**).

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<sup>9</sup> Of course Villa Adriana was considered the perfect example of an assembly of architectural objects.

<sup>10</sup> "To embellish Rome it is more a question of destroying than of building," wrote Pietro Piranesi, another son of Gian Battista, in a letter to the Minister of the Interior of 1810. It is well known how, in the inter war years of XX century, this idea took on the aspect of a political project with the systematic isolation of the city of monuments from urban life.

Reconsidering his proposal introduces to the idea of the contemporary city read and designed in fragments, as an opened form.

It is an expression of the post-modern cultural context in which, in the wake of Friedrich Nietzsche's nihilist thought, there are no truths but only interpretations.

**(D)** Colin Rowe believed in the identity between reading and design. He noted that the contemporary city is a collection of struggling forms and drew the consequences: "... if this is the situation – he writes- if the only outcome to be sought is collision of interest (...) then why should this dialectical predicament be not just as much accepted in theory as it is in practice? (Rowe, 1978). Collage City is an open gathering, derived from the individual perception of phenomena, which avoids any synthesis in contrast with the unifying work of the planner.

(D) The unifying thought is anti-modern, Rowe declares. It is expressed, in its extreme forms, by the many utopias that have occurred over time, starting with *Utopia*, the work by Thomas More, which in 1516 used the term for the first time. And modern urban utopias are abstractions, from the ideal cities of the Italian Renaissance to those of Wright and Le Corbusier. Rowe also establishes a dyad of opposite forms: a city composed in an open way and an ethical city, produced by abstract plans destined to fail, governed as they are by rigid rules through which the elements are composed in a unitary way.

On the one hand, ancient Rome as interpreted by Piranesi, "illustrating something – he says - of the 'bricolage' mentality at its most lavish", on the other, Filarete's Sforzinda, the city of aggregation where the parts bind together to form a unitary organism,

For Rowe, even in baroque times, Rome was a city of buildings and urban spaces in conflict with each other, a "collision of palaces, squares and villas, that inextricable fusion of imposition and accommodation, that highly successful and resilient traffic jam of intentions ...."

But beware: Imperial Rome, Rowe tells, is not only the symbol of an assembly by parts, where monuments, the forums, the baths, lie side by side without rules. All interpretations are indeed possible. On closer inspection, the objects could also have links between them, depending on the reading angle. Ancient Rome is a city with "multiple interpretability".<sup>11</sup>

**(D)**

Also Aldo Rossi joined this post-modern idea of interpreting built reality. Invited to comment on his architectural bricolage exhibited at the Venice Biennale of 1976 entitled "The analogous city" (collective work performed together with Eraldo Consolascio, Bruno Reichlin and Fabio Reinhart) he wrote: "Everybody can rediscover himself in fixed and rational elements, in his own history, and accentuate the peculiar character of a place, a landscape or moment."<sup>12</sup>(D) The historical reference is, inevitably, the "Similar Venice" that Canaletto reassembles by freely collecting Palladian projects".

(D)

The method that Rowe proposes is the multiple interpretation of built landscape: the object found, extracted from the context of the original meanings and recomposed according to an individual vision.

The ideal center of Collage City is the image published by the author of the Bull Head produced by Pablo Picasso in 1943. The painter's commentary on his own work is also, in fact, a clear explanation of Rowe's thought. In an interview to André Warnod, in 1945 he says: "... Do you

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<sup>11</sup> Note the predilection of Rowe for Luigi Canina's drawings. Among the many cartographers of ancient Rome, Rowe chooses, so to speak, the most post-modern. As Giuseppe Riva wrote "Canina delighted to fill its surface with all the streets, squares, temples, arches, libraries, basilicas and similar other things that you know well to have been, but which is not known where they were, not another direct that gives a lively imagination, thus making a picture that would belong more to the art of brushes than of compasses." (Riva 1842)

<sup>12</sup> "The definition "analogous city" originated from a re-reading of my book *L'architettura della città*. In the preface to the second edition, written some years later, it seemed to me that description and knowledge should give rise to a further stage: the capacity of the imagination born from the concrete. In this respect I stressed Canaletto's painting where, through a most remarkable collage, an imaginary Venice is built on top of the real one. And this construction takes place by means of projects and things, invented or real, quoted and put together, thus proposing an alternative within reality. In my opinion this painting has a major historical and political significance. Venice is shown as the analogous city of the Venetian Republic and of a broader modern nation. Everybody can rediscover himself in fixed and rational elements, in his own history, and accentuate the peculiar character of a place, a landscape or moment". (Rossi, 1976)

remember the Bull's head that I exposed recently? Here's how it was conceived. I had noticed in a corner a handlebar and a bicycle saddle arranged in such a way that they looked like a bull's head. I put these two objects together in a certain way." ..... "In short, I made that handlebar and saddle a bull's head that everyone recognized as such. The metamorphosis was accomplished and I hope that another metamorphosis will be carried out in the opposite direction. Suppose my bull's head is thrown into the wreckage. One day maybe a boy, seeing it, will say: 'Here is something that could serve very well as a handlebar for my bicycle'. Thus a double metamorphosis will have been accomplished ". (Warnod, 1945)

## **SaverioMuratori and aggregation as a reading / design method**

### **(D)**

SaverioMuratori seems "to find the Picasso's bicycle handlebars" bringing things back to their real meaning: art, like architecture and even the city and the territory, are not just individual creations, they are the shared aesthetic synthesis that concludes a forming process. Muratori's one is also an architectural vision, but not an abstraction.

Where everything seems independent and conflictual in the Rowe's city, everything ends up binding in the fabrics of Muratori; where truth is an impossible task for the first, everything is explained and demonstrated for the second.

Muratori is fully aware that the territory, the city, the modern fabrics have lost their organic character. His morphological reading is, anyhow, a critical one, an indication to change. Which, if we know how to read it, is also the sense of Utopia by Thomas More who imagined a city without a place (u-topia, οὐ- τόπος) precisely because it is so abstract and perfect as to be impossible to construct in reality. And yet, in reality, utopia was not simply an impossible and useless model, according to Colin Rowe's interpretation, but a criticism of the English society of the time. And a criticism is also the meaning of the ideal cities of the Renaissance, of the Garden City of Owen, of Wright's Broadacre City. They disclose the forms of a better world for the life of men.

Muratori's work on Rome stems from the practical need to study the medieval neighbourhoods in relationship with the new fabrics, but the need to extend the study soon becomes clear. The medieval city can be explained only as a derivation from the pre-existing city, the ancient one, which thus ceases to be only archaeology, it becomes a morphological transformation phase.

**(D)** The study of Rome necessarily becomes the study of a method. Rome, with the advance of research, is "discovered" as an infinite set of aggregations of forms. It potentially contains all the possible phenomena, far more complex than those that are posed in contemporary urban planning, having to do, for the most part, with linear and serial developments.

In the introduction to the *Storia operante della città di Roma* (Operating History of the City of Rome) Muratori places a short chapter entitled *The problem of Rome as a method problem*. I think it's one of the most relevant texts he wrote about Rome.

" But it soon appeared - he writes - that it was not a sample of heterogeneous juxtaposed in an order merely corresponding to physical case data in different cases, but of the results of a specific historical process particularly incisive and broad in extension, density and individual historical developments ..... So that each element always drew new validation and characterization of its original structure as the new increases were multiplied in an increasingly precise, irreplaceable, identified process of structure, insertion and implication". (Muratori 1963)

**(D)** Gradually the study of Rome becomes the study of a method (and of the theory that governs it) of which the city is, together, the source and the verification.

In the wake of the many reconstructions produced in the past, even the ancient Rome of Muratori is a Rome based only in part on documentation, and therefore, in some way, is a re-design (using his words). Although Muratori carefully studied the *Forma Urbis*, all historical cartographies and investigated the fabrics on the spot, the huge gaps in the documentation are filled by following a general law recognized in the ancient organism.

See, for example, the structure of the northern area of Trastevere, where the plan, admirably clear, is articulated, as the method requires, in matrix and building routes starting from the Pons Aemilius pole, from where the fabric develops into serial *insulae*, aggregate along the ancient route of the Aurelia Vetus.

## (D)

In reality, not much archaeological evidence supports Muratori's hypothesis. The excavations of 1873 - 1889 brought to light the paving of ancient Aurelia, others the remains of the Roman Fire Brigade Station and little else, as reported in the plan of Rodolfo Lanciani<sup>13</sup>. However the notions of type, organism and process guide the redesign. Not only does the ancient city explain the forms of the current one, but also the current city, with its formative phases, explains the ancient. (D) From the overlapping of the different formative phases it becomes evident how the present fabric is the product of organic transformations that ancient remains demonstrates.

For this reason the shape of the ancient city (any city), read as a product of an organic aggregation of elements, is not an erratic magma. It is *predictable* in the same way that, in an organically structured sentence, we know how to recognize the syntactic, grammatical and logical role of the missing words. Those words are part of a whole, they are necessary, to the text: they belong to a group of *admissible* words. These statements, in the climate of intellectual liberalism of the years in which Muratori (died 1973) proposed his method sounded completely counter current, as well as were those of **Caniggia**, who developed the Muratori's notions about aggregation in a systematic and didactically transmissible way.

(D) His 1984 study on the Tiber bend on which Via Giulia and then Corso Vittorio was formed is a particularly clear example. He proposes the reading of the existing city formative process in order to reconstruct its organic continuity in the traumatized parts. Caniggia first reconstructed the fundamental characters of the "early building fabric" and then reconstructed the aggregative laws, starting from the hypothesis of the Imperial Age land subdivision that guided the configuration of the *domus* fabric. The aggregative phases are legible in the XIX Century Gregorian Cadastre and in the actual fabric, through the medieval increases of the *domus* type that infill the court, finally giving rise to three row houses each. The new row house type is the aggregative units on which the Renaissance city is founded, adapting the old fabrics to the new restructuring routes.

Caniggia exemplifies the coincidence between reading and project with an intervention proposal in the Piazza della Moretta area, on Via Giulia. The demolitions carried out here during the Fascist period are "riammagliate" (mended) with a fabric based on the (hypothesized) early structures of the imperial age. The ancient *domus* are transformed over time in different ways according to the hierarchy of the routes giving also rise to row houses which along Via Giulia are melted in "palazzetti" (small palaces).

The building units are continuously renewed, but their aggregative laws are based on previous experience, in a sort of continuous recovery and self-correction. The project is a transformation phase (the most recent) of an ongoing process.

## Conclusions. The substrata as a text

In the previous pages I tried to propose a distinction between two current different methods of investigation of the built reality, one based on perception and the other on morphological analysis, which correspond to two different design methods. It is, as I said, a schematic subdivision, however useful to interpret the contemporary condition.

It is evident that, in many respects, this is not a symmetrical condition: today's architectural design production, the one advertised by the media networks, is mostly based on the forms perceived as objects (Eisenmann 1984) and assembled in the project.

The study of urban forms based on the notion of aggregation process does not seem to have produced so far, it must be said, equally convincing results, except for a niche of urban morphology scholars. I believe that one of the problems lies in the fact that the relationship of modern architectural design with history, essential, as we have seen, to the notion of aggregative process, has long been interpreted as a regressive approach, according to late romantic parameters: the beauty of the remains of ancient city lead to admiration and imitation. The ambiguous fascination of ancient vestiges does not allow, in fact, to read their operating value.

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<sup>13</sup> The Lanciani's plan of the archaeological excavations of Rome was drawn between 1893 and 1901, and was a basic document for all studies on ancient fabric at the Muratori times (Lanciani 1901).



So much so that Le Corbusier believed Rome was a "negative" example for the modern architect (Le Corbusier 1923).

Indeed, the series of *insulae* that Muratori has identified in the Trastevere area, the *domus* fabric that Caniggia has read in the Tiber bend, are not just submerged ruins that appear here and there. They are layers of successive stratified fabric that transmit essential knowledge for the contemporary project.

I believe that we should abandon the romantic term "ruins" and assume the more appropriate term of "substrata" (Strappa, 2019, 2015). Dissimilar from a ruin (from the Latin *ruere*, to collapse), a substratum (from *sub sternere*, to spread beneath) is recognised as a beginning, the living basis from which new organisms can spring.

Substratum is the architectural and urban aggregation of elements underneath the current built form that contribute to the life of new buildings and fabrics also persisting in multicultural transformations (Gauthiez 2019). We can define it as the aggregation of elements once forming an architectural and urban organism which, despite having lost the internal organic relationship that bounded them together, still nevertheless transfer specific characters to the buildings springing from them. When a set of these characters are transmitted in a typical and recurring form, they can be defined as a 'substratum type'.

The courtyard house for example, as studied by Caniggia, becomes a substratum type when it is transformed into 'pseudo-row houses', single-family single-facade unities aggregated around the atrium common space that often becomes a public area.

This is true, at the same, when it comes to development processes considering the primary dwelling types, where, at least in Italy, we have gone no further than the housing type with external *profferlo* staircase. Where do these types come from? What did the 'second nature' of ancient ruins create? How was it used to expose the *crypta* that could be inhabited, how did it generate the basic *domus terrinea*, and as a result the *domus solarata*, essential steps in a growing complexity that led to new forms of dwellings (Hubert 1990), not to mention the medieval *palatium*, *domus maior* and *turrisas* the dawn of a new form of public building that developed in the late 14<sup>th</sup> century (Strappa 2015)

Similarly, the *orra* and *portici* structures became the substratum type of nodal public buildings when the central courtyard became, as in many cases, the node of an aggregation of cells, the main inner covered space (served, supported, central) of the new layout through a 'knotting' process.

Again, the analogies with linguistics are evident, where 'substratum' is understood as the layer that precedes and influences the overlapping of a new language, as occurred, for example, with Etruscan and Latin or the Celtic and English. However, we should note how the term, when used in architecture, indicates the basis of an action. It implies the presence of critical consciousness, the ability to interpret and choose and, therefore, an identification of what has already been given, of what 'lies beneath': the *sub-stantia*, the essence of a thing, according to the metaphysical Aristotelian concept of substratum.

The expression not only then contains the idea of rooting and the transmission of forms; it also refers to their universal being. This universality, a quality that the actual fabric did not possess, constitutes a fertile abstraction: an identification as well as a design, the way in which we give a new aggregative unity to the multiple and scattered forms of the remains we have inherited. For this reason, while the city of assemblage is the synchronic city where everything is coexistent and the parts are assembled to form ever new and timeless forms, the aggregative, organic city endlessly re-uses its substrata<sup>14</sup>.

If we extend the notion of substratum to that of a text from which we always learn new lessons (to the immaterial inheritance of the substrata) its definition involves new, broad, and useful meanings: every construction, on any scale, is an invention intended in the literal, etymological meaning of *invenire*, a finding. Any fabric is a re-aggregation, any building a reconstruction, the city itself a rediscovery.

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<sup>14</sup>In a more general and abstract meaning, the substratum could also be understood as a sort of matrix, an universal form the past conveys to us, not very different from the *πρωτον* of the Stoics, you might say.

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