Typology & Mixity: An Approach to Retrofit Production in the City?

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Abstract

Due to zoning policies and increasing real estate pressure on urban land, a major part of the space-extensive productive activities has disappeared from Brussels' urban areas, taking jobs and artisanal knowledge towards the outskirts or further. Whereas European cities were rich of productive spaces, they now only host consumption. This is problematic. Brussels urbanists, architects and policy makers now plea for the inversion of this process by reintegrating productive enterprises in the urban fabric. This planning enthusiasm, however, is confronted with a lacking support base among the public and is therefore subject to research. In order to overcome the gap between romanticized theory and practice, my ongoing PhD-research aspires to bring architectural knowledge to the ongoing planning debate. By using the typological system as the methodology for architectural and urban research, an interesting tension field between permanence and temporality arises. Typology is fundamentally concerned with the idea that an architectural object is to be considered as an entity, whereas it at the same time can belong to certain group, here named 'type'. Contrarily to the fact that the study and recognition of such 'types' is per definition an a posteriori analysis of existing predecessors, it is logically also used as a framework for design. Architecture hereby obtains an autonomous and self-referential character. In contradiction to the concept's theorizing, typological studies have so far been mainly occupied with the study of functionally determined types: types of churches, schools, houses, etc. The presented paper attempts to discover the range of the methodological approach for the research of mixed-used, productive buildings through the re-reading of its theoretical development.

Rezumat

Datorită politicilor de zonificare şi presiunii dezvoltării imobiliare asupra terenului, o mare parte din activităţile productive consumatoare de spaţiu au dispărut din zonele urbane ale Bruxelles-ului, mutând locurile de muncă şi experienţa artizanală spre periferiile viitorului. În timp ce oraşele europene erau bogate în spaţii de producţie, acum ele găzduiesc doar consumul. Urbaniştii din Bruxelles, arhitecţii şi factorii de decizie pledează acum pentru inversarea procesului prin reintegrarea producţiei în ţesutul urban. Acest entuziasm al planificării se confruntă totuşi cu lipsa sprijinului din partea publicului şi din acest motiv devine subiect de cercetare. Pentru a depaşi ruptura dintre teoria romanticizată şi practică, cercetarea mea doctorală încearcă să aducă expertiza arhitecturală în dezbaterea în curs. Prin utilizarea unui sistem tipologic ca metodologie pentru cercetare urbană şi arhitecturală emerge o tensiune interesantă între permanenţă şi temporalitate. Tipologia se ocupă cu ideea că un obiect arhitectural va fi înţeles ca entitate şi în acelşi timp poate să aparţină unui anume grup numit tip. Contrar faptului că studiul şi recunoaşterea unor tipologi este o analiză a posteriori a precedentelor existente, este de asemenea

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folosită logic ca si cadru de design. Arhitectura primește un rol autonom și autoreferențial.În contradicție cu teoretizarea conceptului, studiile tipologice s-au ocupat în principal cu studiul tipologiilor determinate funcțional – biserici, școli, locuințe etc. Această lucrare de cercetare încearcă să discute aria de abordări metodologice pentru cercetarea clădirilor multifuncționale, de producție, prin trecerea în revistă a dezvoltării teoretice.

Keywords: Type and typology, Mixity, Productive City, Brussels Capital Region

1. Introduction

The presented paper attempts to scan the scope of the typological methodology in the systemic architectural research of existing, mixed-use productive buildings. The, by Aldo Rossi denoted [1], analytical moment in architecture can be described as the act and interpretation of grouping building types to their inherent similarities [2]. Taxonomic studies of architectural objects have, in contrast to its methodological scope, solely produced insights on functionally determined types: the Venetian row houses, churches, school buildings etc. [3]. Seen the notified gap between 'romanticized' theory and practice concerning mixed-use development in general, and urban production in the Brussels Capital Region (BCR) in particular, this paper explores the methodological scope of *non-functionally* determined *typology*.

Like Pier Vitorio Aureli argued [4], Vitruvius was first to define the boundaries of the architectural discipline when he wrote his 'De Architectura Libri Decem'. Through the separation of the reasoning on, and construction of a building, the work of architecture became a *project*: a precise reading of a contextual problematic followed by a (political) proposal. The encyclopaedic character of Vitruvius' work attempted to contribute *authority* to the *author* of a project [4]. Ever since, defining the scientific nature of the discipline has been a striving force in the yielding of architectural theory [5]. Inspired by emerging natural sciences, architects of the Enlightment Period attempted to establish a rational methodology to research the built environment. Similarly to the classification of organisms in a biotope, the complexity of the built environment was to be decomposed into logical classes, referred to as *types*, of which the study is named *typology* [1], [2], [6]–[8]. *Type-recognition* happens through the elimination of particularities over a series of built artefacts and functions as the logical knowledge tool in the research of the urban fabric. Consequently, the emphasis lies on the methodological framework that embraces the abstracting parameters albeit functional, formal, compositional, structural etc. [8]. We can, for example, naturally grasp the notion of a *two-storey row house*, a *duplex* or *bel-étage* home as categories or types, however, when solely considering the internal circulation as the decisive parameter for classification, the *duplex* and *two-storey row house* could be regarded one and the same *type*. Grassi therefore emphasized on the importance of the methodological setup of the typological knowledge tool. According to Rossi, the classification of architectural and urban objects is as valid as its point of view [1], [9]. The glasses through which the built environment is read, therefore need to precisely articulate a delineated problematic: here it concerns mixed-use development.

The presented paper is engaged with the recently notified urban and architectural problematics on mixed-use development. In state-of-the-art discourse on sustainable, micro-central development of European cities, it is widely accepted that the urban dynamic is to be strengthened and diversified with a healthy mix of living and working [10]–[16]. The qualitative densification of central urban districts with a variety of functions and agendas, has, however, unintendedly posed a contradiction. The dual desire for density and mixity has caused space-extensive, industrial land to be developed into more profitable programs that enable densification on the one hand, but exclude production on the other [11], [12]. Brearley states that "What used to be the place of production, now solely hosts consumption."[11]. Recent studies and policy development engaged to inverse these dynamics, are

highly featured by economic-geographic and socio-economic points of view. The in-depth and systemic study of the built environment of such productive activities, however, is often subordinated to romanticised and non-academic research by design. Piloting, mixed-use projects that intend to experiment with proposed policy tools, have revealed a lacking knowhow on the qualitative implementation of industrial activities in proximity to housing [17]. Anticipating the forthcoming industrial activity by design appears to be a major stumbling stone. "There is no catalogue or typological matrix of spatial requirements like it exists for housing: the studio, apartment, row house or villa." [17, p. 55].

The proposed paper will therefore theorize and reflect on the adequacy of using the typological approach as a research methodology for the analytical reading of the patrimony of productive activities in the Brussels Capital Region. In order to fully grasp the method's range of operation, the following will be dealt with:

- A concise chronological overview of three centuries of discourse on type and typology that ranges from the Enlightment period (0), to the Modernist Movement (0) and Neo-Rationalists (0) [18].
- A critical reflection on the feasibility of this research method as an analytical knowledge tool on the built environment of urban productivity.

2. Type and typology: a chronological overview

The etymological meaning of type can be derived from the Latin word *typus*: figure, image, form or kind and the Greek word *typos*: a blow, dent, impression, mark effect of a blow. In Greek philosophy, *typos* embraces the notion of model as a set of characteristics that are present on a group of concrete individuals [5]. Whereas type represents the abstraction of such individual works, *typology* is fundamentally concerned with the study, discourse or science of *types*.

When delineating the notion of type, Madrazo [5] argues for the importance of the terms *form*, *idea* and *structure* that find their origin in philosophical discussions. Even though these concepts were proven to be incapable of covering the notion of *type*, their delineation eases the understanding of the term. Plato's notion of *form*, which he equals to *idea* and opposes to *experience*, can be defined as the universal, basic element and blueprint of *what it is* without being temporal and physical. Plato argues that they are immutable, eternal and non-spatial ideas that can only be experienced through immanent, spatial and sensible images [19]. Aristotle later argued that in his conception, *form* and *matter* were inseparable components of the same substance, because "how could the substance and that of which the substance should exist, be apart?" [5, p. 20]. Form, for Aristotle, is the potency concealed in the matter seeking to become the actual form. He argued that "the proximate matter and the form are one and the same thing, the one potentially, the other actually" [5, p. 20], [20]. This conception gave birth to the idea that the classification of such forms is the logic operation that allows to obtain insights in these underlying, governing principles.

Opposed to the Aristotelian belief in the ability of classification of species and genera on the basis of natural kinds, Locke rejects this claim of a single classification of things in nature. Contrarily, he argues for the usefulness of this reducing system as it is directly dependent on one's personal purposes [21]. The British empiricists define *ideas* to be the imprints or copies, taken by the *mind* after the impression ceases to be present.

Our modern understanding of the *type,* however, originates from the emergence of science in the 17th century, particularly that of the natural sciences. The concept of *type* as a mere taxonomic category, purely based upon biological morphology, came under question when Goethe introduced the concept of *gestalt* and *typus*. He defined it to be the *immanent cause* of any life form that designates *potential* rather than actual *forms* [22]. In that same period, Cuvier shifted accordingly

towards the conception of type as the inner-structure of beings and held their constitutional form, or logic, as the ultimate criterion for categorization [5], [23].

It was in the late 18th century that the ongoing debate reached architectural theoreticians like Durand (1760-1834) and Quatremère de Quincy (1755-1849). Whereas the former was actually first to embrace the typological approach to categorize architectural artefacts, he never defined the term as such [24]. It was Quatremère who introduced and defined *type* in the architectural discourse.

2.1 Type in the Enlightment period

The first notable mentioning of the concept of *type* was provided by Quatremère de Quincy in his 'Dictionnaire Historique d'Architecture', published in 1832. Type, in his reasoning, was "the element that served as the rule for the model, rather than an ideal image intended to be copied or simply imitated as such" [23]. It can be identified as the *logic* of *form*, connected with *reason* and *use*, which leads to a strong relation between form and the nature of the object [6]. "Whereas the model is fixed, the type is more or less vague" [25]. Therefore, the idea of *type* can be considered as being rather the laws that govern nature than the product of it. Through the analysis of the homes for shepherds, hunters and farmers, he further developed Laugier's theory on the 'primitive hut'[2] with the notion of culture. Quatremère's deduplication of nature-culture defined type as the *imitation through understanding*, rather than *direct copying* of nature [25] and thereby emphasized the importance of history, context and evolution as the type adapts to it.

At about the same period, Jean-Nicolas-Louis Durand contributed to the emergence of an architectural science through his attempts to "discover generic principles that are implicit in the works of architecture, by using reductive formal exercises" [24]. Freeing architectural objects of their temporal and spatial context and abstracting these to schemes with equal level of detail, allowed the juxtaposition of classes according to their architectural program: (amphi)theatres, churches, villas etc. Durand abstracted, adapted and systematized the graphical representation of historical buildings and thereby rationalized the plans into irreducible schemes. In his method of decomposing complex urban artefacts, he "lit up general principles from shared characteristics among sets of buildings with similar functions and usage" [27, p. 78].

Durand's 'Recueil et parallèle des edifices de tous genres, anciens, et modernes' offered the encyclopaedic rationality that was, in his opinion, needed for architecture to claim credibility as an emerging science at the École Polytechnique in Paris [28]. The taxonomic elements that resulted from the abstraction were to be recomposed through horizontal arrays in plan, which promised to lead to infinite combinatory elevations and designs of buildings [24]. Whereas the design process entirely depended on the laws of universal geometry, the selection of the relevant elements was solely based on two factors: *economy* and *utility*. The ornament was superfluous [29]. This latter could, as Tahersima suggests, be interpreted as the introduction to the Modernist interpretation of type: *prototype* [18].

The architectural debate over the course of the 20th century was largely concerned with the ideas of rationalism in architecture. It is, however, important to frame the notion of 20th century rationalism as it covers two divergent theoretical conceptions: Modernism and Neo-rationalism. Apart from their diametrically opposed content, a constant strive for authority and legitimacy by means of logical reasoning binds them as *rational architecture*.

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[2] Laugier believes that beauty is to be found in Nature alone; it is from nature that all rules are derived, but all architectural rules so far proposed seem to Laugier to be 'rules of chance'. Architectural principles are imitations of the processes of nature. Just as Rousseau envisages a blissful primitive condition, so Laugier posits a primitive hut as the origin of all possible forms of architecture [26, p. 153].
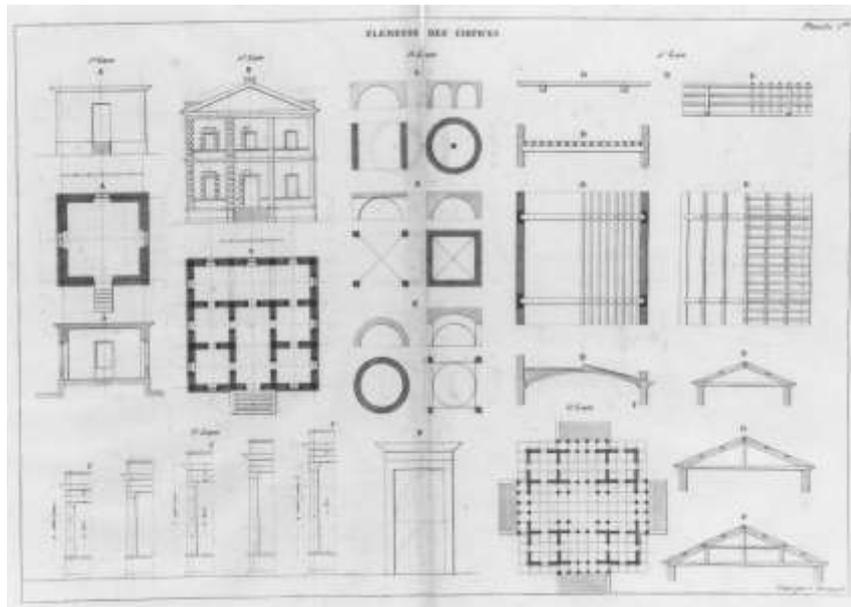
Figure 1. The logical decomposition of buildings into formal elements. (J. N. L. Durand, Précis des leçons d'architecture données à l'École Royale Polytechnique. Paris: J.N.L. Durand, 1802.)

2.2 Type in the Modern Movement

Much like Durand's design theory of recomposition, governed by *economics* and *usage*, the Modern Movement reinterpreted the notion of type to the economic situation of that time: mass-production through standardization. Now that the needs of human kind could be scientifically derived, industrial, standardized production could deliver the unique solution for all. Therefore, the social project of modernism did not allow for the individuality that differed the object from the type [30]. Hence, the type became a prototype: a model to be reproduced. Moneo argues: "The pyramid of production from the smallest tool to the most complex machine was now seen as analogous to the link between the column, the house, and the city" [6, p. 32]. The type became the production model for a number of series, rather than the series defining the type [31].

The type was regarded to be the standard solution to a standard problematic. New architectural knowledge had to be developed by science, like the machine, and the discipline was therefore in need of a new language. The predilection for the design of spaces in which activities can *grow*, made typology-based architecture superfluous. Theorists like Walter Gropius criticized the 19th century understanding of *type* for being too static and immobile [32]. In order overcome, new materials and techniques had to be added to the architectural design process, whilst any interest in history disappeared [32]. Sigfried Giedion argued in 1928 that: "The only history that mattered to (modern) architecture was that of iron, steel and concrete technology, because their capabilities outstripped any formal, typological laws." [33]. The design method was thus entirely oriented on technology and the belief in all-embracing solutions coming from science, not history. Through the discourse of the Modern Movement, *type* had lost its broader interpretation and as its sole significance was that of the *use*, it had been distanced from the philosophical concept of traditional deliverance and exchange of cultural value. The historical vacuum that was created, could, according to Thomas Moldanova only be replaced with the "cancer of typology" [6].

2.3 Type in Neo-Rationalism

Opposed to the ideas of the Modern Movement of the first half of the century, was the Italian group of Neo-rationalists around key-figures like Aldo Rossi, Giorgio Grassi and Carlo Aymonino that emerged in the 1960's. Opposed to modernism's functionalist interpretation of (proto)type, their

focus was targeted towards the historical and morphological continuity of/and the city [34], [35]. The typomorphological studies were used for the systemic analysis of the urban fabric and its buildings: the architecture of the city [1]. In his plea for a coherent reconstruction of the public realm, Léon Krier repudiated the failure of refunding architecture in another discipline than itself [35]. Neo-rationalism pled for architecture to become an autonomous, self-referential discipline. As such, Antony Vidler defined the urban context to be the *third typology*, the first being *nature* and the second the *machine* [23], respectively referring to the Enlightment Age and the Modernist Movement.

About 140 years after Quatremère's definition of *type* in his 'Dictionaire', Giulio Carlo Argan sheds his light on the meaning of *type and typology* in architecture. Argan describes his vision on the subject of type in his book 'On the Typology of Architecture' [2]. In contrast to Quatremère, he defined the type as an *a posteriori* subject: one that can only begin to exist after a series of buildings, having between them an obvious formal and functional analogy, are found. Argan states: "When the type is determined, it already has an existence as an answer to a complex of ideological, religious or practical demands which arise in a given historical condition of whatever culture." [2, p. 565]. It is, in his opinion, through the regression of sets of objects over their individual characteristics that a *typological diagram* will emerge. Konig agrees: "an architectural type must be treated as a scheme of spatial articulation which has been formed in response to a totality of practical and ideological demands" [2, p. 565]. In response to the Modernists' critique of typology to be static and immutable, Argan argues that "a type has to be understood as the interior structure of a form or as a principle which contains the possibility of infinite formal variation and further structural modification of the type itself." [2, p. 564]. This dynamic concept of embracing change relies on the renewed methodological boundaries of *type-recognition*: if urban artefacts are added to the series, the type might alter. Consequently, it justifies *typological invention* when the type can't adequately answer to a practical or ideological question. Altering cultural, economic, political or social contexts therefore require the emergence of new types [2], [6]. According to Moneo, the architect is capable of interpreting or changing the type entirely as he defined it to be the frame in which change operates. He encouraged architects to look for new formal relations and the new types that are born from it. He considered this moment of emergence, the most intense moment in architecture [6].

Besides his addition to the theorizing of typology in architecture, Moneo was first to provide an overview, published in Oppositions in the 1970's, of the history and debate on the subject [6], [7]. Concluding on the precedent work he defined *type* to be "a concept which describes a group of objects, characterized by the same formal structure. It is fundamentally based on the possibility of grouping objects by certain inherent structural similarities. It might be said that typology is the act of thinking in groups" [6, p. 23].

The most hands-on studies of the typological system can be found in the work of Caniggia and Maffei [36]. In their studies on the Florence row houses, they defined *type* as follows: "the logical diagram as an attempt to map the mental plan that is responsible for the resemblance between very similar end products" [36, p. 52]. Their reasoning is based on the dual nature of *type* being *a posteriori* derivation over a series of artefacts with inherent commonalities and the idea that these structuring principles had to, *a priori,* be in the mind of the builders. This critical understanding of "what it takes to make a building, not mere imitation" [3, p. 293], is what the authors defined as *spontaneous consciousness*: the common-sense in basic building types [3], [6], [36]. The study of the persistence and alterations of *basic types* over time can reveal societal strongholds and modifications to which it had been susceptible [36], [37]. The notion of *consciousness* therefore leads to the hypothesis that urban form is the ultimate readable sediment of human culture. Grassi agrees that "the forms of realized architectures are entirely attributed to mankind and influenced by their societal context in the time they were conceived that the logical classification of these forms

will unveil important insights on base types and modifications of it." [9, p. 286]. Opposed to *spontaneous consciousness*, Caniggia defined *critical consciousness* to be the "critical self-conscious thought process guiding the building activity which may not refer to its cultural context" [3, p. 45].

These highly specialized structures are often interpreted as *monuments*, places of symbolic function [1]. Rossi's theory of permanences in the city fabric analogously divides two concepts: types (dwelling) and primary elements (monuments). He argues that these persistent primary elements structure the mental map of the city and are of monumental value in the way they condition the collective memory of the city. Their form and locus attribute to this memory. According to him, the type is indifferent to function as it only relies on configuration and form ("The logic of the architectural form lies in a definition of type based on the juxtaposition of memory and reason. The type preserves and defines the internal logic of forms, not by techniques or programs. In fact, type can be called functionally indifferent.") [6, p. 36]. Rossi considers types as being historically immutable, irreducible primary elements of architecture that are distilled from the urban fabric. Seen this conception of 'frozen time', he argues that the changes in the urban fabric take place due to cultural changes in the order of the type [38].

3. Conclusion: the possibility of non-functionally determined typology

As mentioned in the introduction of this paper, the main objective is to determine the scope of the typological methodology when researching mixed-use building structures. Even though the theoretical reasoning on *type and typology* would suggest differently (Aldo Rossi: "I believe that any explanation of urban artifacts in terms of function must be rejected if the issue is to elucidate their structure and formation. The concept of classification according to function is far too superficial; it assumes an identical value for all types of functions, which is not the case." [1, p. 47].), typological studies have so far been mostly interested in functionally or aesthetically determined types: row houses, bel-étage houses, garden city houses, modernist blocks, residential towers etc. [3]. In their' reading of the architecture of the city, they intrinsically divide, analogous to Rossi, between *dwelling* and *monuments* and subdivide the latter in various subcategories: types of churches, genres of railway stations, types of schools etc. Similarly, studies on the 'typology' of urban productive activities have most often been interested in types of *monumental* presence (warehouses, urban factories etc.) that most often have lost their original, productive function. However can, for example, the built structures of small and medium enterprises, which form the largest part in Brussels Capital Region, not be counted among the monumental artefacts. In contrary, their analysis often reveals growth processes that originate from the residential, basic type. In order to provide a taxonomic overview of the entire gamut of production in the BCR, the methodological framework has to be critically re-read. In order to do so, the earlier elaborated literature will be reviewed on its capability to research mixity, followed by a concluding methodological proposal.

3.1 Enlightment Period

When considering the research (and design) methodology during the Enlightment Period, it can be said that Quatremère's interpretation of Laugier's hut is interesting from a particular philosophical stance, however not precisely delineated. Even though his elaboration on the different types of settlements for hunters, shepherds and farmers logically embraces the *working-living* environment, it implies a functionalist categorization for which the structure cannot be inhabited by any other way of life but that of the hunter, shepherd or farmer. Besides, his *a priori* conception of type that serves as the rule for a model excluded any ability to change or invent when the type has to answer new societal problematics, like that of mixity. Contrarily, Durand's method of classification is attributed to function as well as to form. Respectively he defines *types* of load-bearing columns, grids and arches, plans for temples, theatres or housing, but also *forms* of plinths, pillar-feet and

cornices [29], [39]. According to Durand, the recombination of these abstracted elements by design, had to follow the logic of *utility* and *economy*. Hence, it could be imagined to functionally mix spaces in plan and section and therefore typologically invent and meet the mixed-use standards of today. However, whereas *types*, by Durand defined as taxonomic objects, embrace the notion persistence through time and culture, it does not logically imply that the recombination of these elements will be considered fit for a societal context. A renascence of this discussion can be found in Aldo Rossi's reasoning on type-image in the Analogous City [38].

3.2 Modern Movement

As earlier described, the interest of the Modern Movement in researching precedent work of architecture in the historic city disappeared. Therefore it can be said that their ideas on machine-based generic floor plans where activities can grow to one's personal identity, did not provide a logical tool to analyse existing artefacts. However, it should be noted that this remark concerns the establishment of a methodology, without stating that the analysis of generic (mixed-use) space is superfluous.

3.3 Neo-rationalism

The regained interest in the historical continuity of the city of the Neo-rationalists led to a shift in its systemic analysis. Exemplary is Argan's *a posteriori* analysis of existing works of architecture in order to define his typological diagrams. Type-recognition is, according to Argan, purely based on formal, configurational and functional parameters which enable to study mixity as such. The type can be discovered through precisely formulating the abstracting parameters. If the methodological framework evokes sufficient and representative artefacts that have among them inherent formal, or configurational similarities, a type can be recognized. This exactly enables mixed-use types to be studied when a series of exemplary cases can be found. Hence, type-recognition can be adapted to altered societal needs, which in its turn alters the type again as the produced artefact is added to the series. These series that define the type are therefore part of a continuous, self-referential loop and in constant dialogue to its economic, social, cultural and political context.

Argan's dynamic interpretation of type and its ability to alter, is theorized differently in the work of Caniggia and Maffei [36], who interpret change in the temporal and spatial dimension of the type as an interpretation and alteration of a static, *basic type*. In his attempt to link the urban scale with that of architecture, he proposes that modifications of this basic type reveal a notion of persistence or deflections when proliferated under certain societal circumstances. Considering, in this case, the economic and spatial logic of Small and Medium Enterprises (SMEs) in the fabric of the BCR, we can accordingly discover, *basic types*, even of residential origin. These structures grow in accordance to their internal economic development and external constraints. They, therefore, are the ultimate readable study-object. As depicted in Figure 2, many of today's urban productive activities are, for example, accommodated in residential-looking structures of which the plan is altered and annexed with peripheral land over time. These processes of growth can, again, be typified and categorized in logical classes through the analysis of Caniggia's alterations of the basic type. Whereas in Argan's reasoning, the type itself alters through the addition of artefacts to the series, Caniggia proposes the study of altered proliferations of the basic type.

Figure 2. Overview of productive types in the residential area of Jette-Koekelberg. Images produced by author.

A contradiction can be found in Aldo Rossi's elaboration on type and its determinacy. He namely argues types to be functionally indifferent and solely attributed to form and configuration. The hallway of a school, in his example, does not (typologically) differ from that of a student housing block [1], [6]. Contrarily, in his division on the urban level between *types* and *monuments* as the two constituting permanences of the urban fabric, he states the first to be housing and the latter functionally indifferent. The approach thus limits for the studying of mixed-use buildings of monumental importance in the urban fabric, excluding the undiscovered patrimony of, for example, SMEs.

In general it can be concluded that the history of theorizing on the concept of type did yield an adequate methodology for researching mixed-use types. The earlier stated notification that the larger part of the so-far performed typological studies are functionally determined and therefore not entirely conform the theoretical reasoning can be subscribed to a lack of interest in mixed-use structures on the one hand, or a misinterpretation of the method on the other.

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