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Referential types as clues for housing design

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Abstract. *A place or city can be characterized by a particular housing type – a 'referential housing type'. It is usually embodied in the housing form that was widely produced in the golden age of a region. It may be conceived as an inseparable combination of spatial and socio-cultural features. Such a type sheds light on the socio-cultural character of a particular place. It enables a better understanding of the other housing forms in the place. These other forms can be comprehended in relation to the referential type. Bearing in mind that the 'genius loci' is a key to designing new projects, referential types can function in two ways: through a contemporary interpretation of their spatial features, or through the creation of new spatial features that are able to support the socio-cultural inner logic informed by the referential types. The concept of referential types is illustrated in Brussels and Amsterdam. Paradigmatic examples with identical conventions allowing for objective comparisons are explored.*

Keywords: type, housing design, basic buildings, Brussels, Amsterdam

Every city has an identity that is forged by socio-cultural conventions embedded in daily interactions and practices. These socio-cultural conventions are related to space (Colquhoun, 1995) and the built environment, which has a major influence because of its longevity (Conzen, 1960; Muratori, 1959). However, space not only supports social interactions; it is also influenced by them (Lefebvre, 1974). This reciprocal influence is significant for urban morphology as an inter-disciplinary discipline.

Referential type

The sheer extent of residential space means that it has a major role in determining cities' identities. It has been frequently explored through the concept of type. The Italian school of typo-morphology thoroughly explored type as an analytical tool to understand the trans-formation processes of urban form in respect of building configurations. According to this school, a type can be described as a common root (Argan, 1995) – a limited set of spatial

attributes of form (Rossi, 1982). While study-ing processes of typo-morphological evolu-tion, Caniggia defines the 'foundation type' (*tipo di base*) as 'a type of building which, in a certain time and place, represents the majority of buildings because it identifies the codified family residence standard' (Caniggia and Maffei, 2001, p. 244). Within these defi-nitions, function and purpose remain implicit (Kropf, 2009).

The French school of typo-morphology involved social sciences from the start (Panerai *et al.*, 2009). Accordingly, the definition of type was complemented by an important trait: its relation to socio-cultural meaning. In the view of the French school, type expresses the relationships between spaces and uses (Devillers, 1974; Huet, 1986). Hence, whereas urban morphology is usually defined by three components (Moudon, 1997) – form, scale and time – this interpretation of type adds a fourth constituent: socio-cultural significance.

Within this particular interpretation of type, the referential housing type can be defined as the archetypal and most ordinary residential type in a particular place. In most cases, it is the residential type commonly built during a demographic boom such as the Haussmann period in Paris or the eighteenth century in Naples. Given this definition, the referential type is distinguished from the foundation type on two levels. First, it embodies a clear association of spatial and socio-cultural char-acteristics rather than solely spatial features. Secondly, although a place is characterized by only one referential type, there can be a foun-dation type for each historical period.

The referential type provides valuable knowledge about the social and spatial condi-tions of a place. First, it contributes to socio-logical knowledge. Indeed, given its double nature and its referential position, identify-ing the tangible side of the referential type through architectural analysis helps in appre-ciating the socio-cultural identity of its envi-ronment. Secondly, it aids identification of the changes to dwellings in a place: it can be used as a standard to which other housing con-figurations can be related. Thirdly, it can be a clue for contemporary interpretations. For

example, types can be interpreted into new forms.

These three aspects of the referential type's description – socio-cultural definition, hous-ing variations, and interpretations – are the core of this paper. They are particularly rel-evant to contemporary urban challenges, such as defining local identities and producing new urban housing.

Brussels and Amsterdam

Two case studies have been chosen to illustrate the concept of referential type and to clarify its outcomes: Brussels and Amsterdam. The housing configurations of both cities have been thoroughly studied through time (Komossa, 2010; Ledent, 2014). These cities were selected for the variety of housing they have and more importantly for the continuing debates about them in relation to contemporary urban development and the production of housing (Aarts and Stoopman, 1995; Bruxelles-capitale, 2012; Rotterdam, 2007). Interestingly, in these debates, typo-morphological research has gained renewed attention among architects, urban planners and policy makers (Doucet, 2015).

A thorough and systematic survey was car-ried out to identify the different residential forms found in the two cities throughout his-tory. Building data were acquired from the archives of the municipalities, private develop-ers and architects. Dwellings were redrawn at various scales in order to compare them objec-tively. Subsequently, a typological analysis was conducted to classify these housing forms in catalogues and atlases representing over 10 000 dwellings in Brussels and 5000 in Amsterdam.

Definition

Based on this typological analysis, the defi-nition of the referential type was pursued in two stages in each city. First, the most rep-resentative referential types were extracted from the housing catalogues assembled by the researchers, questioning when, where and

how they were constructed. Out of this collection, a limited set of spatial features was identified by which the referential types could be recognized.

Brussels: archetypal housing

Since its foundation in 976, Brussels has had a long history of row housing (Ledent, 2017). Even though large parts of the city have been burnt down in the course of history (Heymans *et al.*, 2007), the city fabric remained extremely resilient from a typo-morphological point of view, producing recurrent spatial arrangements (Heymans, 1998). From 1875 to 1914, the city experienced a golden age (Ledent, 2017): the economy thrived, the population tripled and Brussels expanded rapidly. It was during this period that the city's referential type was implemented on a very large scale. These constructions still house more than one-third of the dwellings in the city (Ledent, 2014).

To accommodate the city's expansion, several urban plans were prepared. Out of these Victor Besme's plan was adopted. His proposal relied on a typo-morphological articulation of a new urban scheme – public institutions along a peripheral boulevard – and standard residential buildings (Zitouni, 2010). While the authorities took care of the infrastructure and the institutions, the rising middle class built the ordinary city fabric. According to this arrangement, the city grew substantially beyond its second belt of ramparts.

The dwellings that were produced at the time were the culmination of a long formation process of uses and techniques, engendering the local referential type. Interestingly, although several authors described this type as *la bonne maison moyenne* (Cloquet, 1900), it remained largely an implicit set of composition rules within which architects produced only aesthetic variations.

Brussels: a set of spatial features

Brussels's referential type (Figure 1) is defined by four characteristics (Ledent and Masson,

2014). The first feature is its interwoven relationship to closed urban blocks that create a clear distinction between the fronts and backs of the buildings. Additional dwellings form the perimeter of these blocks, to a depth of 10 to 15 m. Housing contiguity is governed by party walls that are, on average, 6 m apart. They extend outdoors to delineate private gardens. Cumulatively, the gardens form an interior compound, shared only visually by the inhabitants of the block.

The maximum height is the type's second characteristic. Row houses have a maximum height of 10 to 15 m, in direct proportion to the width of the streets. The first inhabited floor – *bel étage* – is 0.5 to 2 m above street level to enhance privacy on the main floor and to allow light in the sunken basements.

The third feature is the type's individual aspect. Initially, the buildings were designed for single families with domestic servants.

Fourthly, the internal layout is based on a double division. The first is longitudinal, dividing the building into two uneven parts (1/3, 2/3). The second is parallel to the street. It partitions the house into two to three equivalent segments, creating adjoining rooms. These divisions produce a layout with two distinctive kinds of rooms in terms of dimensions and which lack predetermined functions.

Individual variations were developed from these four characteristics.

Amsterdam: archetypal housing

During the seventeenth and eighteenth centuries, a municipal council (the *Schepen of Amsterdam)* formed the political organization of Amsterdam. The councillors were usually merchants and co-opted. This was essentially a democratic structure, but dominated by several *bourgeois merchant* families. The city layout and planning reflects this focus on trade: nobility and royalty had no specific expression. The form of the city reflects a clear hierarchy: the horizontal plan was based on egalitarian daily life and trade, and the vertical divisions reflected the influence of the churches and bourgeois institutions (Komossa,
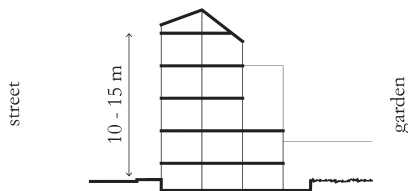
BRUSSELS

1. Closed urban blocks
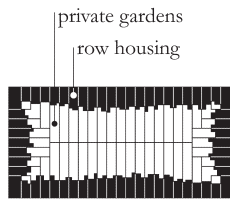
- *Clear front/ back distinction in the buildings.*
- *Enables differentiated dwelling practices and intimacy values (hidden or shown).*

2. Limited building height

- *Housing heights limited to sensorial relationships.*
- *Creates personal relations on the active front of the dwelling (no anonymity enabled by a height difference).*

3. Individual housing
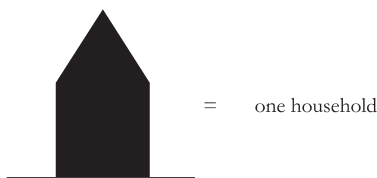
- *Housing for one household and domestic staff.*
- *Emphasises the strong individualistic nature of citizens towards political authority and collective efforts.*
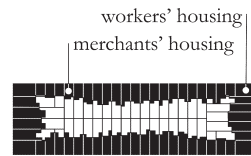
4. Function-free floor plan
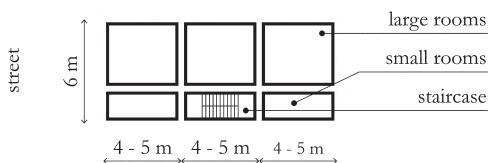
- *Two kinds of rooms and various possible circulations.*
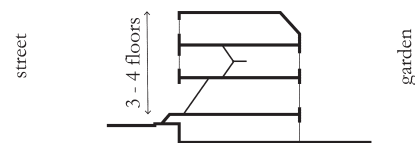- *Supports the proxemic relations of the traditional Brussels households and evolving lifestyles.*

AMSTERDAM

1. Elongated urban blocks

- *Elongated blocks supporting two kinds of buildings.*
- *Enables differentiated dwelling and working practices.*

2. Limited number of floors

- *Limited number of floors with individual street access.*
- *Permits all dwellers to have a direct relation to the public realm of the street.*

3. Stacked housing
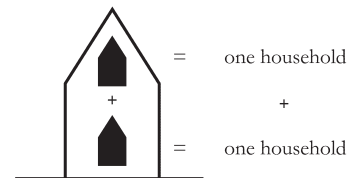
- *Individual housing assembled on top of each other.*
- *Illustrates the traditional Dutch cohabitation of commons and individuality.*

4. Function-free floor plan
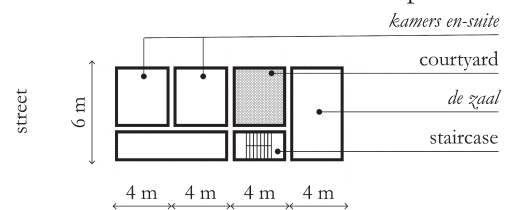
- *En-suite succession of rooms of similar dimensions.*
- *Supports the proxemic relations of the Amsterdam households until the 19th century and evolving lifestyles.*

Figure 1. Basic characteristics of the referential types of Brussels and Amsterdam.

2010; Komossa *et al.*, 2005). In this period, the referential type flourished and it remained the principal housing type until 1930.

In the nineteenth century, owing to large-scale migration from rural areas, the city expanded outside the canal ring onto agricultural land reclaimed from the sea – polder land. This surrounded the city. The new urban structure followed the regular division of the former polder, which consisted of agricultural lots and irrigation ditches. The streets were positioned on ditches infilled with sand, whereas the houses were built directly on polder ground. The houses served as retaining walls between the low polder land and the higher streets.

Amsterdam: a set of spatial features

Amsterdam's referential type, like the Brussels type, can be summarized in four features (Figure 1). The first is the elongated block, which was influenced by two factors. First, during the nineteenth century, it was influenced by the existing polder structure, which generated agrarian land-division strips. Secondly, this urban form enabled the coexistence of workers' housing on the side streets and terraced merchant houses along the streets leading to the centre.

During the nineteenth century, migration and the need for higher densities gave rise to 'stacked' dwellings – several on top of each other. The upper dwellings had long stairs going all the way down to ensure privately owned front doors at street level. Two new access forms were created: the *series of front doors* and the *Hague porch*. The first of these could add up to three doors next to each other, all with stairs starting at street level. This access form is very space consuming compared to the *Hague porch*, in which the street entrance led to a straight staircase to a publicly accessible balcony on the first floor. There, four front doors could be located: two for the apartments on the first floor, and two for the apartments on the third and fourth floors, which shared one set of stairs. These arrangements led to buildings with a maximum of four floors, which constitutes the type's second feature.

These access systems allowed for stacked dwellings with a direct connection to the street. This illustrates the type's third feature: a strong individual character within a collective project. This feature characterizes the seventeenth and eighteenth centuries, when all dwellings and workplaces formed single units with their own front door at street level.

Owing to the peat soil, houses were built on piles and were not rigid but hinged. Hence, large spanning dimensions were avoided, leading to average spans of 4 to 6 m that also proved to be economic for the production of wooden floors. This construction mode determined the dimensions of the fourth feature of the type: the *kamer-en-suite* layout. This is a house with front- and back-rooms divided by built-in closets and sliding doors. When plots were deep enough, the houses could be extended in the form of a courtyard and an extra room – *de zaal* – or even a second sequence of en-suite rooms. In this layout, the *comptoir* is the name of the front room of the merchants' houses. Initially, it served as a trading room and as a place to show merchandise.

Outcomes

Types create principles of spatial organization supporting socio-cultural relations. In this way, the domestic space of the city can be read as meaningful (Devillers, 1974). From the limited spatial features of the referential types, a series of socio-anthropological characteristics can be extracted to describe the identity of the two cities (Figure 1).

In Brussels, the four spatial features of the referential type illustrate the city's identity. First, front and rear positions created by the closed blocks enable contrasting dwelling arrangements. While public practices are supported on the street side, very private ones (ranging from drying clothes to self-built additions to the fabric) are made possible at the rear of the dwelling. Secondly, even at the highest position in the dwellings, the distance to the public realm remains limited to about

15 m, a threshold within which sensory relationships are still possible (Alexander *et al.*, 1977, p. 118). Thirdly, the individual character of the dwellings emphasizes the individualistic nature of Belgian society. Indeed, Belgian citizens demonstrate a great sense of autonomy regarding political authority and collective efforts. Finally, the function-free floor plan reveals the socially-conditioned relations of traditional Brussels' households. The plan enables a genuine hierarchy within the dwelling (front/back positions, small/large rooms, low/high situation) as well as various possible relations between the dwellers through a variety of circulation spaces.

In Amsterdam, the referential type also reflects the socio-cultural conventions of the city. First, the elongated block allows for different kinds of buildings sheltering a multiplicity of dwellings and working practices. This illustrates a trait of the Dutch society in which people with high and low incomes live in immediate proximity. Secondly, the limited number of floors enables a direct relationship with the street. No isolated position is created in this egalitarian society. Thirdly, the tradition of the personal front door reflects the status of the individual within a collective urban project. The layout of the referential type allows for adaptable and ever-changing interrelationships. It reflects the relationships of households in Amsterdam, including the widespread tradition of working at home.

Variations

The referential type is not the only residential form built in a specific urban area. However, since it is a central feature, other forms of housing can be described in comparison with its general features.

Brussels

Various forms of housing exist in Brussels alongside its referential type. While some display similarities, others have been produced in partial or complete contrast.

Two housing forms relate directly to the referential type. First, the earliest forms of social housing are in line with the referential type, generating variations based on its four basic spatial features, yet often complementing them and contributing to a collective meaning. The *Cité Fontainas* (Figure 2) is an example of this, with a palace-like building made out of traditional row houses.

Secondly, after the First World War, the spread of privately-owned automobiles did not modify dramatically the referential type. Indeed, cars replaced the servants' spaces in the sunken basement and the houses were set back from the streets to allow access ramps for automobiles. In both variations the socio-cultural conventions borne by the referential type were preserved.

All the other forms of housing display deviations from the referential type. First, innovative schemes were conceived in the social sector at the turn of the twentieth century. Apartment buildings proved more cost-effective than the archetypal individual housing. Besides rejecting the individual character of the referential type, these schemes also questioned its connection to closed city blocks (Figure 3). While allowing more light in the dwellings, these housing forms disrupted the traditional front/rear opposition.

Secondly, the Art Nouveau movement led to another evolution. While often referred to as a stylistic revolution, in Brussels it has much more to do with its reconsideration of the main housing type. Indeed, the referential type had three rooms in a row with no natural light in the central room. Art Nouveau architects greatly modified this layout by creating light wells combined with staircases in the middle of the houses, allowing natural light in all the rooms. While the other spatial features of the referential type remained unchanged, this evolution modified the dwelling hierarchy as the central rooms acquired a higher status.

Thirdly, the brief success of the garden-city movement in the 1920s incorporated other kinds of deviation. Those settlements built at the fringes of the city (Figure 4) maintained three features of the referential type: low-rise

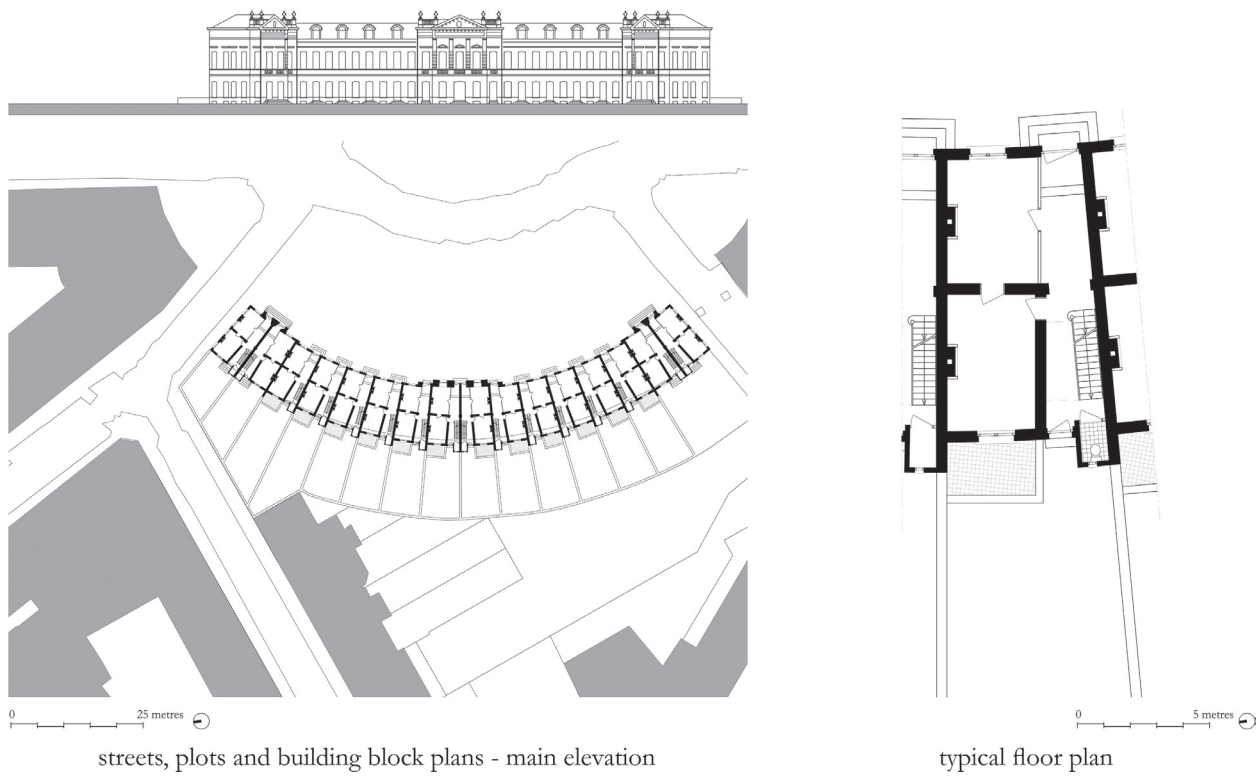streets, plots and building block plans - main elevation

typical floor plan

Figure 2. Beyaert - Trappeniers, *Cité Fontainas*, 1867.

streets, plots and building block plans

typical floor plan
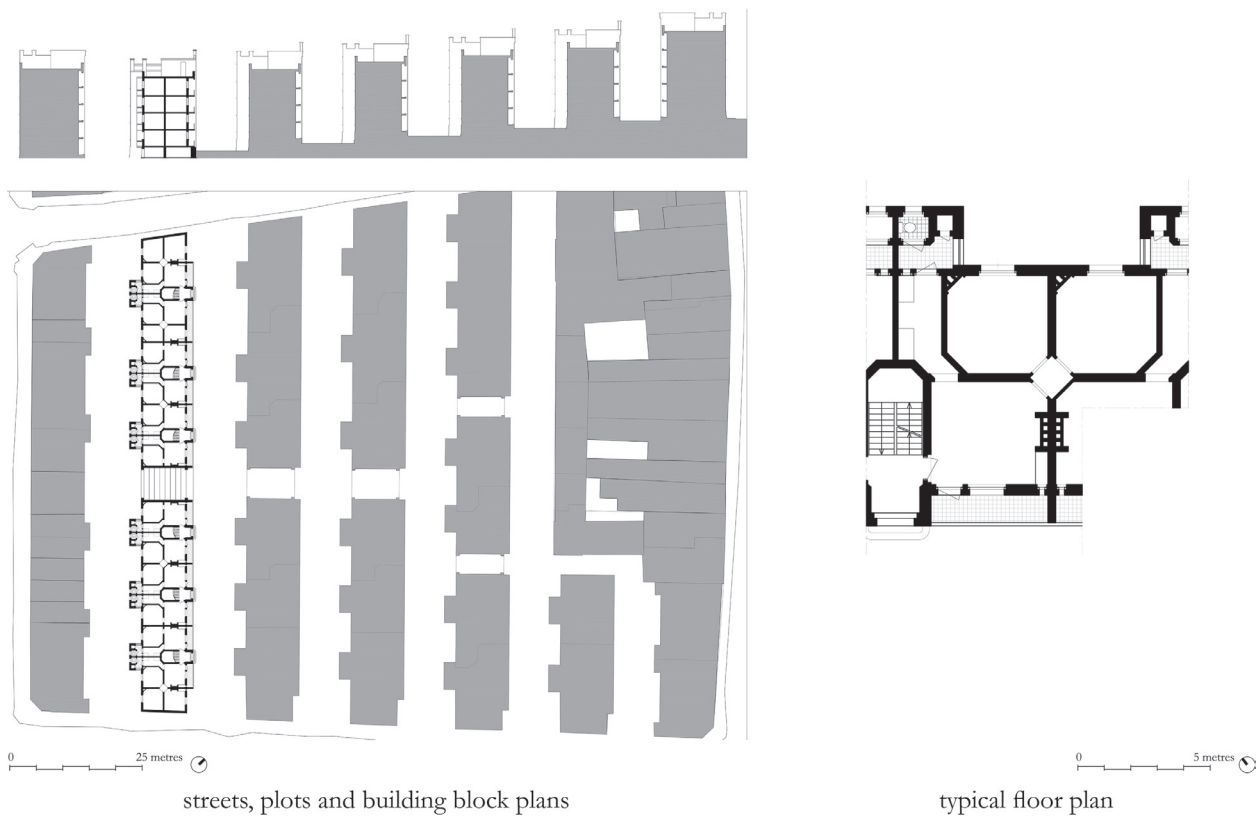
Figure 3. Hellemans, *Cité Reine Astrid*, 1912.

streets, plots and building block plans   typical floor plan
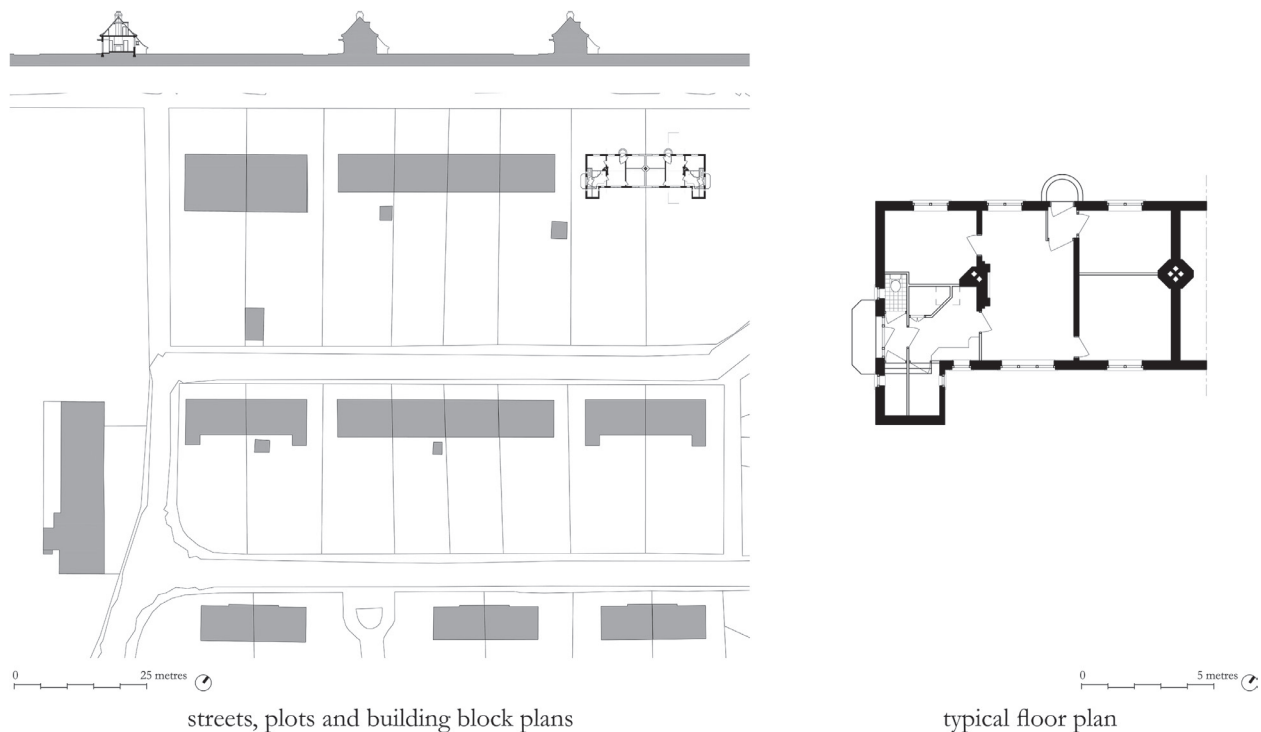
Figure 4. Eggericx, avenue de l'Arbalète 6, 1922.

housing, individual character and function-free layouts. However, the blocks were opened up to allow nature to spread within the developments, while reducing the dwellers' visual privacy.

Fourthly, after 1918 private domestic staff became unaffordable by the common bourgeoisie. This change, coupled with the new affordability of lifts, modified the housing type. In order to aid the sharing of services, apartment buildings were erected, mainly on the boulevards and avenues of the city (Figure 5). Since these streets were wider, it was possible to build higher without compromising lighting. Hence, the skyline of the principal roads evolved dramatically and personal interactions made possible by low-rise housing were lost.

Eventually, the main divergence from the referential type came from modernist architecture, which was implemented on a large scale in Brussels after the Second World War. The closed city block was superseded by free-standing buildings. Apartment buildings replaced individual houses and higher structures were favoured. Even the function-free plans were modified. Each dwelling space was designed according to its purpose (Figure 6). Thus, modernist housing was markedly at variance with the local referential type.

Amsterdam

In Amsterdam, the referential type remained the norm until the 1930s. Over the course of the period over which it dominated, it was continuously transformed and adjusted to meet the needs of mass migration from the countryside, increasing industrialization and the use of large-scale labour. However, during this process the city became socially more segregated in its late-nineteenth century extensions. Each new 'quarter' of the city had its own character and social composition. Amsterdam's Oud Zuid was considered of higher class than the middle- and working-class areas of De Pijp (Figure 7). Nevertheless,

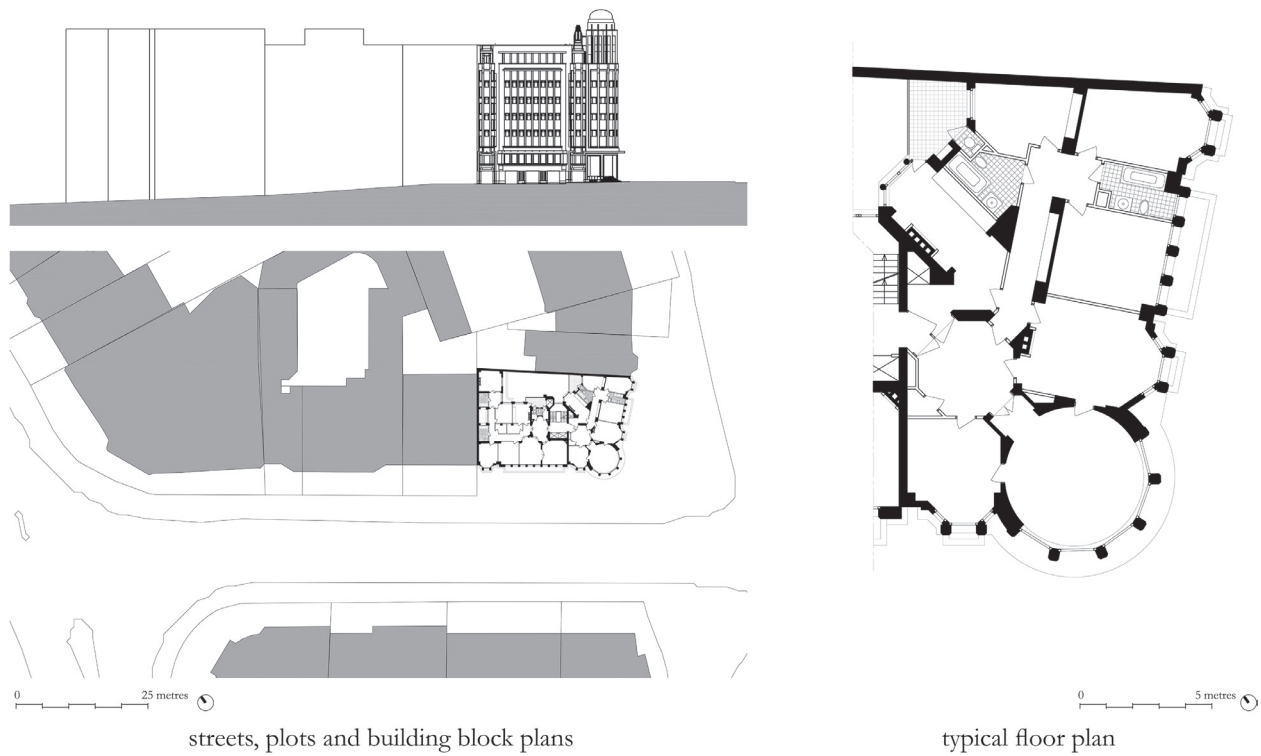streets, plots and building block plans

typical floor plan

Figure 5. Courtens, *Palais de la Folle Chanson*, 1931.

streets, plots and building block plans - cross section
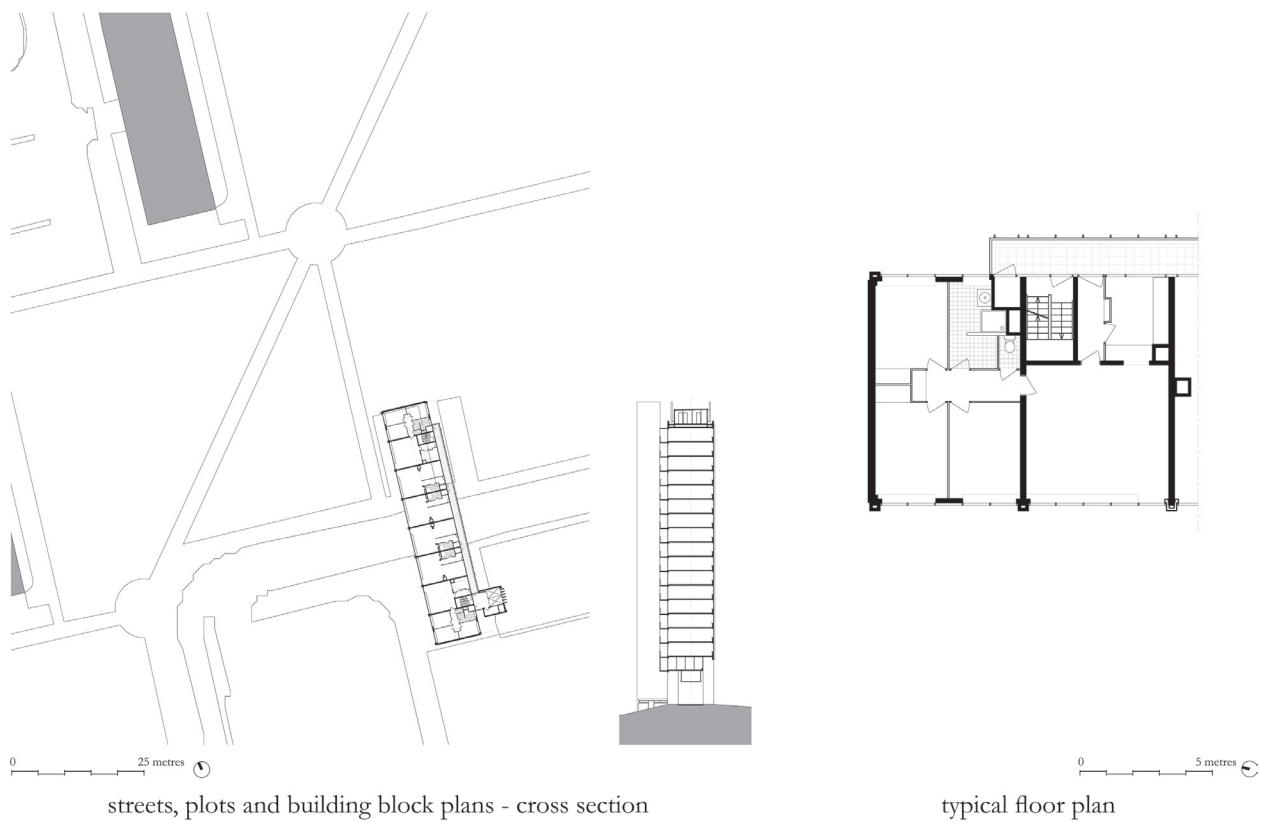
typical floor plan

Figure 6. Braem, square de la Cité Modèle 3, 1958.

these new neighbourhoods shared the basic features of the referential type.

At the beginning of the twentieth century, housing corporations built larger complexes. The Zaanhof in the Spaarndammerbuurt is an example. In this project, housing and collective amenities were developed in a double ring of buildings around public spaces (Figure 8). In both rings, the *onderhuis-bovenhuis* type appeared, with two-storey dwellings one above the other.

The motif of the double ring was also utilized in Berlage's extension plan for Amsterdam Zuid. Inner-court facilities for car parking were included and small squares were formed where collective amenities were located. Within this fabric of double-ring perimeter blocks, specific areas for workers' housing were inserted, as on the Diamantbuurt (Figure 9).

Essentially, two features of the referential housing type – individual street access and limited building height – were preserved in the first half of the twentieth century, while the additive elongated blocks and traditional layouts of the dwellings evolved. The latter were transformed by the insertion of separate bathrooms. Nevertheless, en-suite rooms were often maintained between the parents' bedroom and the living room, sustaining a certain mixture of functions.

Shortly before the Second World War, the connection with the referential type came to an end. The perimeter blocks were separated into free-standing pavilions set in green surroundings. Modernist access systems with shared staircases were promoted. The house or apartment became functionally and programmatically more defined and the rooms were no longer interchangeable (Figure 10). Eventually modernist architects modified the traditional character of the Dutch city, which ceased to be a city of houses.

Outcomes

The history of housing provides an indication of why housing choices were made at

streets, plots and building block plans   typical floor plan

Figure 7. Various real estate developers, *De Pijp*, 1880–1901.

0   25 metres   0   5 metres

streets, plots and building block plans   typical floor plan
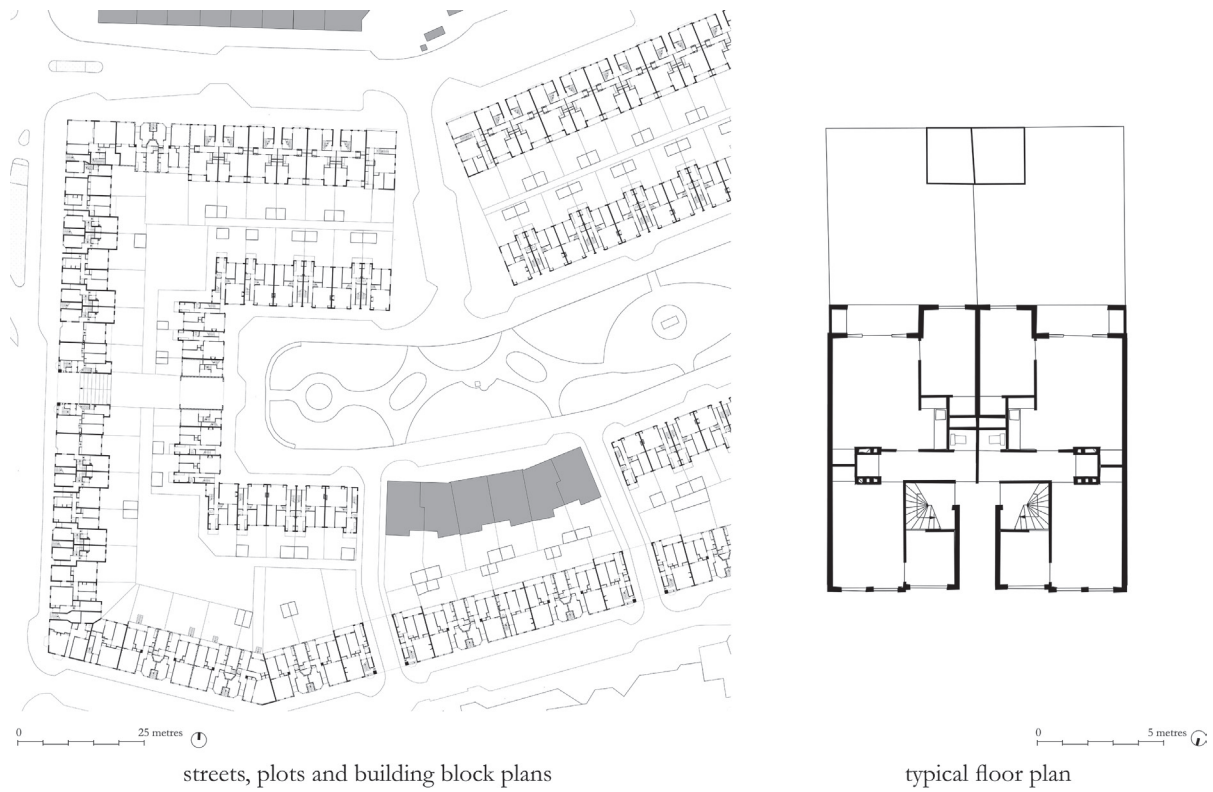
Figure 8. Walenkamp, *Spaarndammerbuurt*, **1919.**

0   25 metres   0   5 metres

streets, plots and building block plans   typical floor plan

Figure 9. Blaauw, Westerman, Bot, Van de Nieuwen-Amstel, *Amsterdam Zuid*, **1927–1929.**

0   25 metres

streets, plots and building block plans
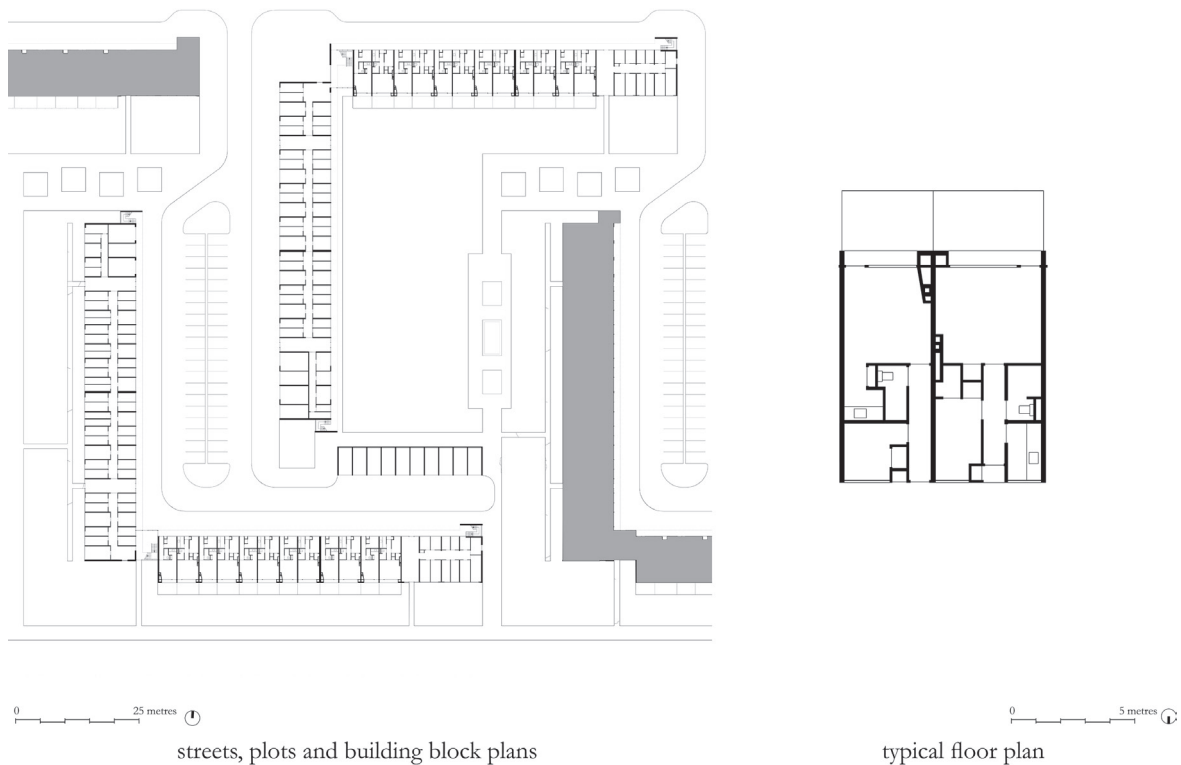
0   5 metres

typical floor plan

Figure 10. Groosman, *Buitenveldert*, 1960.

various times (Figure 11). These choices may be related to economic conditions, societal changes and/or technical developments. Such histories allow future housing developments to be planned. They also shed light on how particular ideologies were ingrained in certain environments. However, similar housing configurations may be neither perceived nor inhabited in the same way in different locations. Identifying the referential type can clarify how a new housing proposal will be assimilated. In Brussels and Amsterdam, modernist architecture marks a fundamental break with the referential type. In fact, it led to reconsideration of the constituent features of the local referential types.

Interpretations

Once the referential type is characterized, it can also be a basis of interpretation for innovative designs. The referential type can be interpreted in two different ways. First,

designers can re-interpret its spatial features in a contemporary language. Secondly, inventive design can emerge from creating new spatial compositions able to cater for the socio-cultural characteristics revealed by study of the referential type.

Interpreting spatial features

Two main approaches regarding housing in the past 30 years were identified in Brussels and Amsterdam. In one approach citizens' protest spurred by the modernist *tabula rasa* generated renewed interest in the city's traditional fabric. At first this interest led to the construction of several postmodern projects mimicking the ancient city. But in Brussels the awareness of the traditional city's quality matured and prompted the creation of 'neighbourhood contracts' (Cohen, 2007). These public initiatives called for contemporary projects to revitalize the city from both spatial and social standpoints. Interestingly, a distinctive
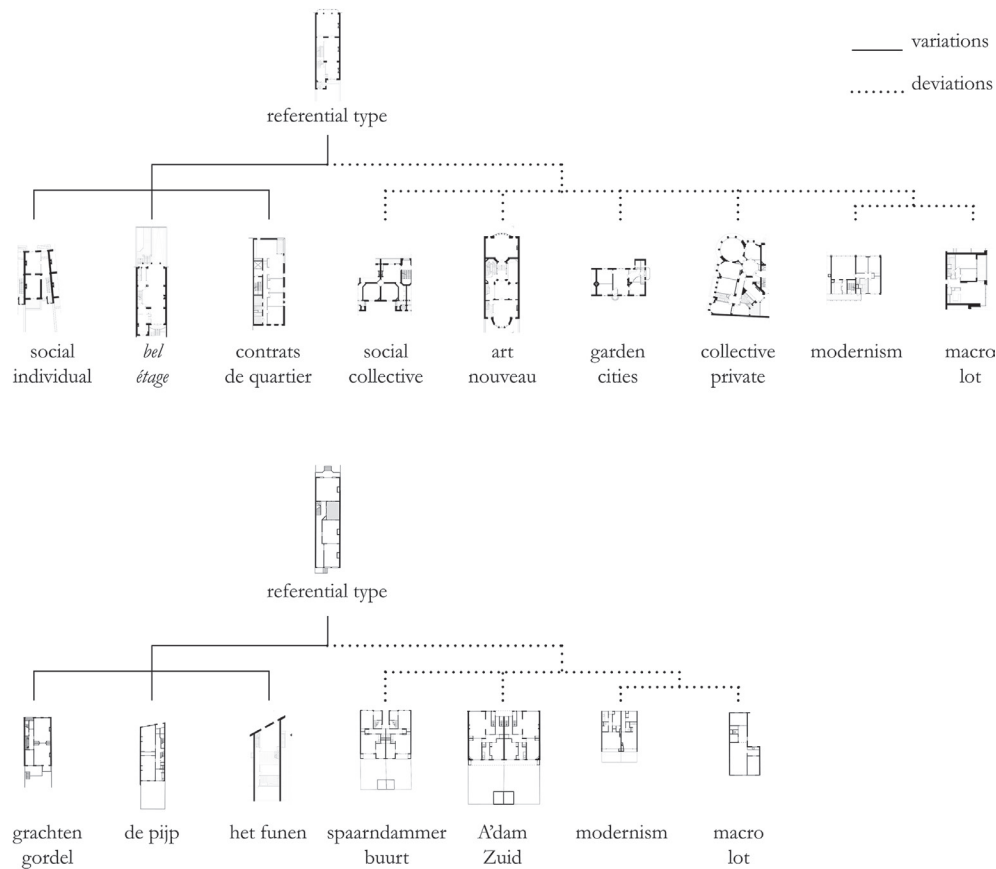
social
individual   *bel étage*   contrats de quartier   social collective   art nouveau   garden cities   collective private   modernism   macro lot

grachten gordel   de pijp   het funen   spaarndammer buurt   A'dam Zuid   modernism   macro lot

Figure 11. Housing genealogies in Brussel and Amsterdam.

characteristic of the architecture of 'neighbourhood contracts' was reinterpretation of the traditional city fabric, creating housing directly linked to the Brussels referential type (Figure 12): relationship to closed blocks, limited heights, and varied layouts. However, for economic reasons, multi-residential buildings were built rather than individual houses.

Likewise, in Amsterdam, a return to the referential type was evident following the advent of postmodern architecture at the end of the 1980s. The perimeter block re-appeared in new housing forms and, in stacked dwellings, the 'own front door' reappeared. In *GWL* (*Gemeentelijk Waterleidingbedrijf*) terrain – a former waterworks location – a new form of multi-layered dwellings was introduced, in which each 'house' had stairs leading to the public floor. Similarly, in *Het Funen* (Figure 13), the idea of the city of houses was resurrected within a freestanding building.

However, while this first tendency directly refers to the referential type, another relates to modernist precepts. The latter is mostly evident in housing by private developers. It exists in entire city blocks, erasing the individual character enshrined in the old parcel divisions of both cities. This *Macro-Lot* tendency (Lucan, 2012) has generated new urban forms, such as towers or freestanding blocks, in both Brussels (Figure 14) and Amsterdam.

Interpreting socio-cultural features

Another interpretation strategy was to create new spatial compositions able to accommodate the referential type's social characteristics. The *Mémé* building in Brussels (Figure 15) illustrates this. Indeed, although it is an apartment building, a sense of individuality is introduced through the creation of dwellings

streets, plots and building block plans   typical floor plan

Figure 12. Matador, rue Brichaut, 2012.

streets, plots and building block plans   typical floor plan
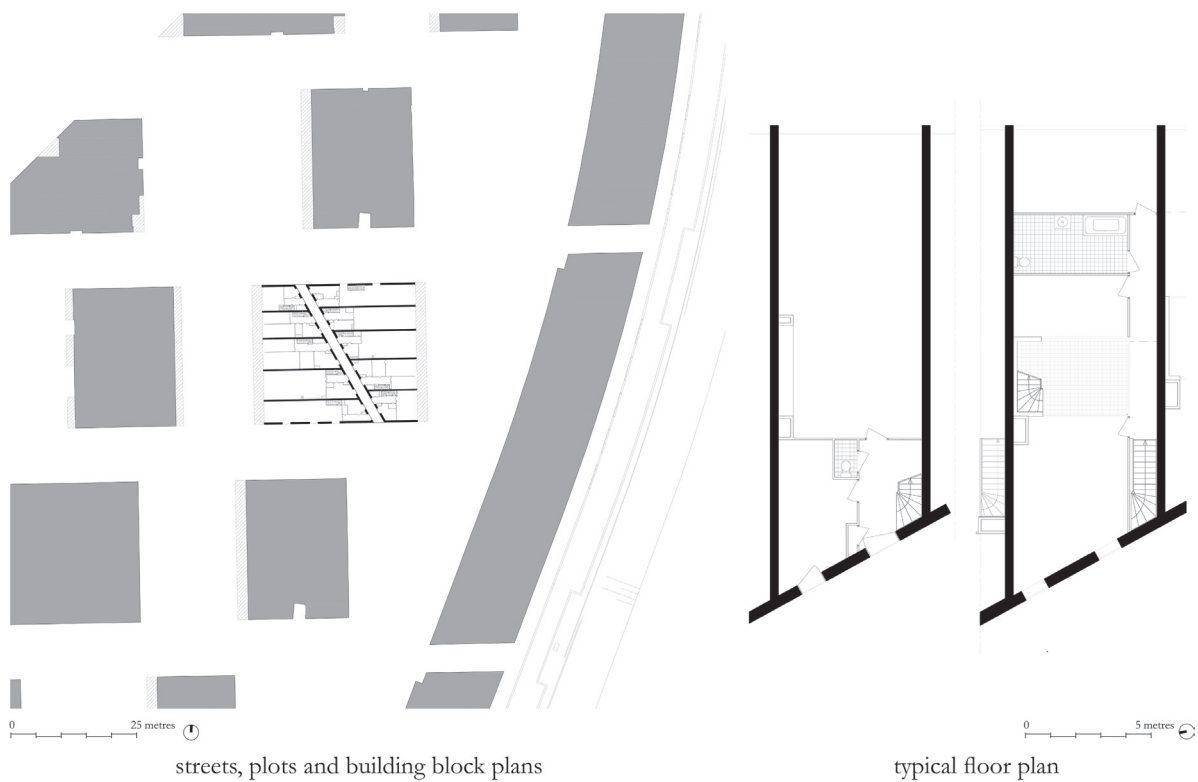
Figure 13. NL Architects, *Het Funen,* 2009.

streets, plots and building block plans
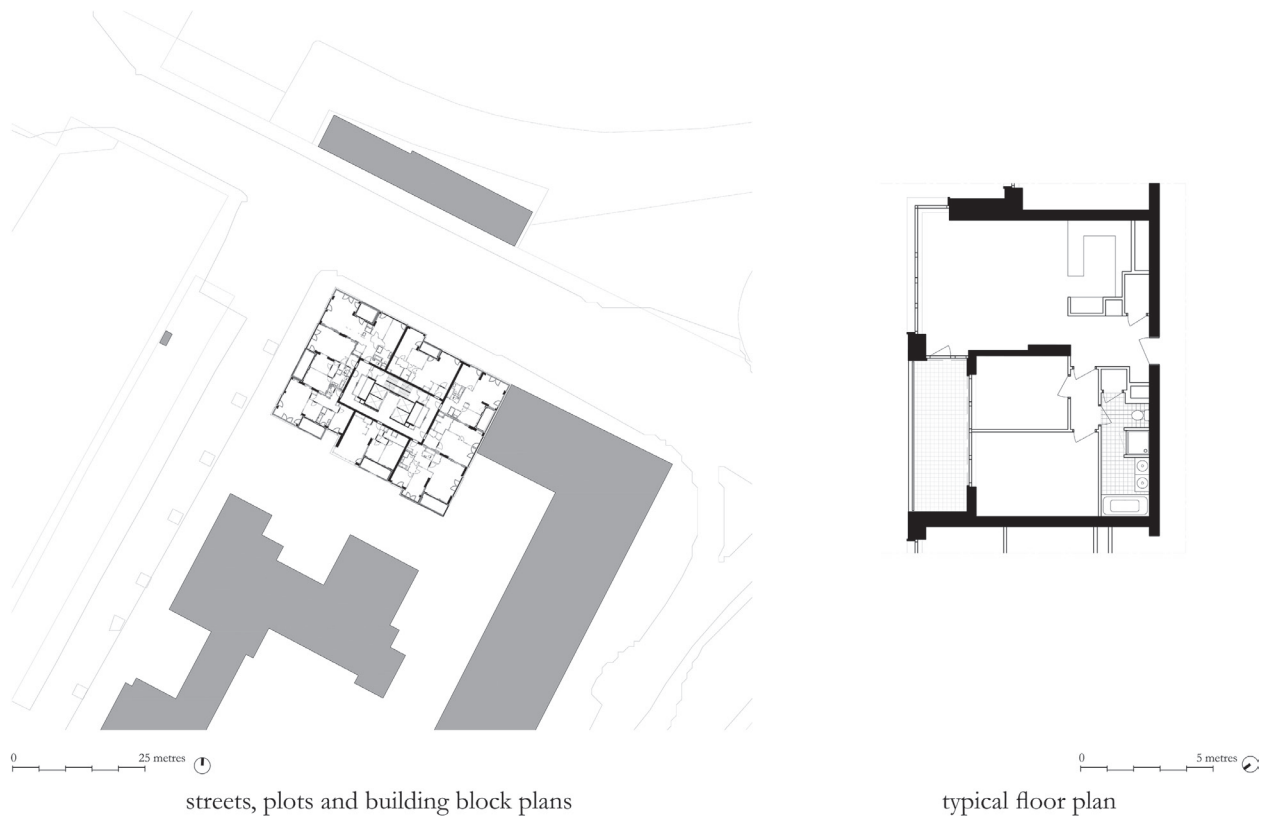
typical floor plan

Figure 14. A2RC - Ateliers Yves de Lion, *Upsite Tower*, 2014.

that vary both in layout and formal expression. Moreover, despite being much higher than the referential type, public routes are incorporated within the building, enabling personal interactions between the inhabitants and the public realm. Furthermore, even the function-free plan is interpreted in the *Mémé* through the idea of flexibility by enabling walls to be repositioned by the inhabitants.

Outcomes

In both cities, two main trends can be noted regarding contemporary housing production. One relies on the city's identity, directly referring to the inertia inherent in housing described by Taut (1928). According to him, since habits evolve slowly, so do dwellings. The other trend exposes the cities' multinational character. Generic housing types appear in both capitals. They can be considered as reminiscent of the 'International Style'.

Although these opposite trends might hint at some kind of schizophrenia, they illustrate the dual character of cities today: rooted in their local contexts on the one hand and opening up to an international identity on the other.

Conclusion

Type, as a fundamental tool for spatial analysis, is not a new concept. However, it can be used to describe spatial arrangements (Caniggia and Maffei, 2017; Muratori, 1959) as well as socio-cultural meanings (Devillers, 1974; Huet, 1986). This association of tangible forms and culture of living is a valuable asset for urban morphology as an interdisciplinary field since it bridges the interests of the humanities and spatial studies.

The specific comparison of Brussels and Amsterdam through the concept of referential type brings to light the particularities of both cities in terms of uses and spaces. While both

streets, plots and building block plans   typical floor plan

Figure 15. Kroll, *Mémé housing*, 1972.

cities display a low-rise built environment, they differ in terms of relation to the collective, social diversity at the scale of the block. Interestingly, Amsterdam's characteristic stacked dwellings allowed its referential type to last longer than its Brussels strictly individual counterpart.

From a methodological point of view, the notion of referential type can be operative in order to comprehend past and contemporary urban typo-morphological arrangements as well as to propose innovative housing schemes. Regarding housing design, the benefits of the referential type are manifold as demonstrated in this paper in three respects.

First, the referential type provides an understanding of present conditions. Through the spatial analysis of the referential type, sociocultural specificities of local environments can be understood. The spatial definition of the referential type is beneficial since it accommodates more than just history or techniques but a series of socio-cultural codes.

Embedded in these spatial characteristics, these codes shed light on the identity of a specific context. Hence, 'in any given city, identifying the various types makes it possible to understand the culture of the city' (Komossa, 2010, p. 10). This knowledge is valuable for both scholars and policy makers in order to ground their positions in an effective understanding of their environments. It is an opportunity to create bridges between research and practice.

Secondly, identifying the referential type of a place helps in discerning its past. Housing variations can be understood through comparative chronologies. The choices made at various periods are clarified in contrast to the referential figure. This comprehension yields reasons why housing solutions thrived or were abandoned following, for example, societal changes and/or technical transformations. The built environment is not arbitrary, and understanding its evolutionary mechanisms can be a basis for addressing future changes.

Thirdly, the referential type provides perspectives for future design. Indeed, it delivers a systematic comprehension of indigenous dwellings. In a design process, this comprehension is preliminary to the connection with the idea of 'research for the purpose of practice' (Archer, 1995). Hence, by shedding light on the present and past conditions of the dwelling as well as articulating its tangible and intangible sides, the referential type can be a tool for housing design that is context conscious. Compared to the analytical and spatial approach of the foundation type, the concept of the referential type offers a more dynamic approach within typo-morphology.

In view of these benefits, further research on referential types from various environments could be useful in both fundamental and applied research. While this wisdom is often tacitly acknowledged, thorough and systematic surveys could make it explicit and yield valuable debates and designs in the fields of urban studies and housing design.

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