Article

The Legacy of CIAM in the Netherlands: Continuity and Innovation in Dutch Housing Design

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Abstract

This article discusses how CIAM (*Congrès Internationaux d'Architecture Moderne*) influenced Dutch housing and urban planning. It starts by looking at programs and policies of the 1920s and 1930s Dutch housing design, and the way in which the new ideas of CIAM were there incorporated. In this history, the design of the AUP (*Algemeen Uitbreidingsplan Amsterdam*, or the General Extension Plan) is crucial, marking the transition into a new spatial model for large scale housing areas. CIAM thinking and its successor, TEAM X, strongly influenced the idea of the social-cultural city before and directly after WWII. This becomes evident in the urban extensions of Amsterdam and Rotterdam. This practice influenced urban planning and housing design and culminated during the 1970s in the design of the Bijlmermeer. Though legendary and still detectable in the urban developments of Amsterdam and Rotterdam, CIAM thinking came forward as both visionary and problematic. This article will trace the CIAM history in these two cities to depict concepts of innovation, but also continuities in modern housing design and planning practices by focusing on spatial models, typo-morphological transformations, and ideals vis-à-vis the urban public realm. In addition to relevant writings, typo-morphological maps, drawings and street photography also serve as tools of analysis and interpretation. The article will conclude with some future perspectives regarding the relationship between the CIAM legacy and contemporary urban issues.

1. Introduction

The Netherlands has a long-standing tradition in housing, or to be more specific, in what could be called the Dutch City of Houses, which can be traced back to the 14th century. In this model, the individual house is the basic building unit of the city. (Ledent & Komossa, 2019). The Amsterdam inner city and the extension area of the canals (the Grachtengordel), along with the extension areas of the 19th century, such as Amsterdam Oud-Zuid and De Pijp, are famous examples. The transition from the 19th century city and the pre-war Dutch city of the social reformers to the post-war social-cultural city in the late 1930s and 1950s is marked by the difference between Berlage's design for Amsterdam Nieuw-Zuid, in 1914, and van Eesteren's *Algemeen Uitbreidingsplan Amsterdam* (AUP), or the General Extension Plan, between 1929–1933. After WWII, Rotterdam became the most famous case as a Modernist urban experiment, not only in its extension areas but most of all because of

the reconstruction of the city centre which had been bombed. Here, Jaap Bakema's famous Lijnbaan ensemble was built. In this article, we will start with a reflection on Amsterdam, which we consider to have been paradigmatic for the shift to CIAM (*Congrès Internationaux d'Architecture Moderne*) thinking before WWII. After WWII, due to the bombing, the Rotterdam city centre became the laboratory of modernist thinking and planning.

In 1985, the CIAM concept of division of functions was replaced by new ideas regarding the "integrated city" which pleaded for a fusion of functions. Even during the financial crisis, a series of complex and hybrid buildings were completed. Rotterdam was the only city in the Netherlands that was offering new building types and hybrid experiments (a+t Research Group, 2011; Fenton, 1985; Floris et al., 2011). The international press arrived and 'discovered' an exciting city. Later, Rotterdam became European city of the year 2015, not only because of the so-called new icons, but also because the city's public realm was experienced as 'lively' for the first time since the end of the war. The number of inhabitants who had opted for the city centre had increased considerably and, therefore, allowed them to leave their mark on the urban atmosphere. Since then, more people have wanted to live in Rotterdam.

The article will conclude by discussing the post-war transformation of the inner city of Rotterdam that was marked by CIAM thinking and the successful transition to the concept of the "integrated city".

1.1. A Multifaceted Method

Regarding the method of typo-morphological research, we make use of a mixed approach based on the Italian ideas of Sergio Muratori and the French School of Jean Castex, which try to link typological change to social-economic developments. These approaches are not only relevant for housing, but also the typology of public buildings and hybrid combinations within condensed urban blocks:

> 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 transformation processes of urban form in respect of building configurations. According to this school, a type can be described as a common root…a limited set of spatial attributes of form…..While studying processes of typo-morphological evolution, 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''….*Within these definitions, function and purpose remain implicit. (Caniggia & Maffei, 2001, p. 244; italics in original)

Typo-morphological research developed into a vast field which combines different approaches depending on local needs and questions. All over Europe and the West Coast of the United States, typo-morphological research groups are active, such as Carlos Dias Coelho in Lisbon and Anne Meudon in Seattle. Only recently, Benoit Jallon, Umberto Napolitano, and Franck Boutté compiled the atlas and exhibition of "Paris Haussmann; A Model's Relevance" at the Pavillon de l'Arsenal 2016. According to these authors: "The corpus is grasped through drawing and classification to reveal the rules and constants that govern its form, while a dimensional and comparative analysis points to the logic and efficiency of this form" (Jallon, Napolitano, & Boutté, 2017, p. 13).

2. The Dutch (Hi)story

2.1. De Pijp, Amsterdam

The former 19th century embellished Dutch cities of the civil engineers, Rotterdam and Amsterdam, were characterised by perimeter blocks that followed the ditch pattern of the agricultural landscape surrounding the existing city. The De Pijp neighbourhood is a typical example of this urban practice. Housing in De Pijp also shows the classical merchant house type and its derivate, stacked housing, above a ground shop and dwelling. Usually, this type has a double entry to the shop house on the ground floor and the upper apartments starting on the first floor, as seen in Figure 1. The upper apartments may consist of one layer or a layer split into front and back house. These apartments are reached via a shared indoor staircase.

The urban pattern of De Pijp basically follows the radials of the existing tissue that lead to the city centre. These streets are usually lined with shops. The more modest apartment houses are located on the side streets, while the central Sarphati-park is surrounded by single-family terraced housing in the classical typology with a lifted *bel-etage* overlooking the park in the front. This fabric was based on a real estate developers' model, in which plots around a park and streets leading to the inner city were the most expensive ones. Towards the rear, the houses became cheaper. Notwithstanding financial motives, this model basically represents a socially mixed city where poor and rich live in each other's vicinity. Today, this model is extremely successful due to its flexibility, which allows housing in various sizes, from one room to a complete terraced house and its programmatic neutrality, because the rooms do not have a clearly delineated function. Being relatively neutral in its programmatic articulation, this type is also able to accommodate economic change.

2.2. The Amsterdam Zuid of Berlage, 1914

The extension plan for Amsterdam Zuid by P. H. Berlage is, in a way, grounded in the 19th century tradition of urban extension. So, for example, the streets leading to the

Figure 1. De Pijp, Amsterdam. From left to right: Ground floor plan 1:500; housing area, typical street view with 19th century stacked housing; access system directly from the street. Source: Authors.

centre are lined with shops and very carefully arranged. However, there is one big difference. Berlage's ambition was an urban architecture, "a modern metropolitan architecture" influenced by the German theories of Stübben, Brinckmann and Sitte (Polano, 1988, p. 54). Using the historical plan of Amsterdam as a reference, Berlage, in fact, reaches an interpretation that stresses

the big building block as an entity that has to create a complete and consistent townscape, as visible in Figure 2. In this townscape, urban space had to be articulated precisely. Superblocks format streets and squares 'enclosed' by the architecture of housing facades. At the same time, Berlage was conscious that in a modern city a vast number of affordable housing units had to be built.

Figure 2. Berlage's Amsterdam Zuid city extension. Top: Ground floor plan 1:500. Bottom, left to right: Aerial image of Amsterdam Zuid city extension; streets lined by shops and the boulevards linking the city extension areas of the south and the quiet living quarters grouped around squares. Notes: The hierarchy is clearly distinguishable, and the last photograph shows an urban corner between the boulevard and the street leading to the inner city. Source: Authors.

This meant that the building blocks had to be bigger than before, and the land had to be efficiently parcelled. Moreover, the facades had to express greater unity and conformity. The conventional architectural detail, such as tile ornamentations and coloured brick stripes of the 19th century, were no longer suitable. According to Polano, "the building block containing houses speculatively developed by investors, the so-called 'mass housing', forces the architect to roughly design bigger units along general lines" (Polano, 1988, p. 47) The whole approach to housing design became more rationalistic and with less ornamentation.

The former City of Houses, including Berlage's extension plan for Amsterdam, is closely related to the idea of a public interior. In this tradition of direct access to houses, the of the perimeter block corner and the consistent use of red brick as a material produces, especially during the day, a feeling of being outside 'inside'. This was increased since the backyards were mainly used as gardens and were not intended for any public use. The street was intended as a stage setting with a clear hierarchy from green boulevards to main streets leading to the centre and back streets for mainly housing and schools, which were usually connected to a square.

2.3. Berlage and CIAM: Van Eesteren in Amsterdam

In Le Corbusier's ideal city, the public realm, and hence public life itself, practically disappeared. In a sense, the end of the public realm also meant the end of the issue of how to house the working and middle classes and their respective cultures. This was replaced by the notion of the ideal dwelling, and perhaps even an ideal human being living in non-descriptive parkland. (Komossa, 2010, p. 49)

CIAM thinking and methods arrived in the late 1920s with C. van Eesteren as their representative and most productive protagonist. During the 1930s and 1950s, this thinking led to the division of functions at the scale of the city (extensions). The new city was divided into areas where one of these functions was predominant. Moreover, the perimeter block crumbled in a block composition of different volumes combining high and low building slabs. Often, this division was based on statistics, calculating the percentile size of each group based on age and family composition.

The AUP, also designed by De Graaf and Van Loohuizen, is a plan *op grondslagen* ("on basic lines"), that does not define the city extension in detail. Each area was dedicated to a main function, like housing, work/industry, leisure, or infrastructure (see Figure 3). Urban green was located between these areas. In that sense, the AUP was very flexible during its realisation and the division made it possible to change one part without interfering with another, and to develop different characters of separate urban entities. Notwithstanding previous urban extension plans, the AUP propagates statistical research, industrial planning, and production as prerequisites. All decisions were supposed to be based on demographic and additional data. Neighbourhoods were designed with their own facilities/amenities to reduce dependency on the urban centre. As such, shops, schools, parks, sports fields, and graveyards were carefully distributed in the functionally organised neighbourhoods:

In the parts of Amsterdam that would not be built until after the Second World War, only fields were specified within the road and green structure. However, a striking detail of the General Extension Plan was

Figure 3. The Amsterdam AUP by Van Eesteren de Graaf and Van Loohuizen, 1939, which shows the field for new construction (red) divided by connected urban green zones (green). Source: Wikipedia (2019).

that van Eesteren drew a series of high-rise "slabs" along the edge of Rembrandt-park and the park in Buitenveldert. These marked the "through" roads and the transition from housing district to green space….The 1950's garden cities, like Buitenveldert and Osdorp, marked the end of a (well-functioning) public realm in new expansion areas. Owing to declining density, a socioeconomically one-sided population structure, the lack of public facilities that were not directly geared to housing, the role of green space as a dividing device, and the lack of spaces for the urban economy, the new districts became large "housing estates in leafy surroundings". (Komossa, 2010, pp. 185–187)

Though the city's population did not grow as expected, around 1955, it became evident that the target of the AUP, the existence of sufficient dwellings for the population of Amsterdam until the year 2000, would not be reached. New building sites had to be found in Amsterdam-Noord, Amstelveen, and the Bijlmermeer polder in Amsterdam Zuid-Oost. Density dropped once again due to the extensive urban models and an increasing amount of dwelling space of square meter per person. During this period, the city's built area extended more and more.

2.4. CIAM Thinking: The Lijnbaan Ensemble in Rotterdam

After WWII, the rebuilding of the bombed city centre of Rotterdam was based on the so-called Basic Plan—Basisplan voor de Wederopbouw van Rotterdam 1946, a scheme for the whole inner-city area, designed by Van Traa, who worked for the municipal planning office. The starting point of the scheme was a shift to the west. The heart of this new centre was composed of the architectural ensemble of the Lijnbaan. Next to the shops, there are apartments, reached by galleries on the upper floor, garages, collective bicycle stores, and individual storage rooms on the ground floor level. The architects involved were Van den Broek & Bakema Associates (for the shopping mall) and the Associated Architects Van Gool, Van Tijen & Maaskant, Krijgsman (for the houses).

Though owners of the destroyed shops in the former centre were financially compensated, the amount of money was usually not enough to re-build on newly distributed plots and on a bigger scale than before. As a consequence, in post-war Rotterdam, various models of ownership and financing were put into practice. The Lijnbaan-project was collectively financed by the association of shop owners. Operating in this way, the small units allowed shop owners to participate in the building. The model of the Lijnbaan is the most radical because it separates the program of shops, housing, and offices into different building volumes, as can be seen in Figures 4 and 5. The shops were mostly housed in volumes of two layers, which form the first traffic-free pedestrian shopping area in Europe. Behind the low-rise volumes, the 8-14-layer slabs with dwellings were situated, which were owned and rented out by professional investors.

The highest slabs line the north sides and the medium-height slabs line the east sides of the three-dimensional composition of building volumes. The apartments with two to four rooms (85 to 100m2) were intended for shop owners and 'professionals' such as doctors, lawyers, architects, and the like. In the space between the low-rise Lijnbaan pavilions and the medium-height housing slabs, expedition streets were located to reach storage rooms of shops and dwellings by car. The adjacent spaces were intended not only for shop supply and storage of the apartments but also for parking. The ensemble is completed with two-layer-high slabs of dwellings above shops, lining the west side, allowing sunlight to enter the public gardens and courts.
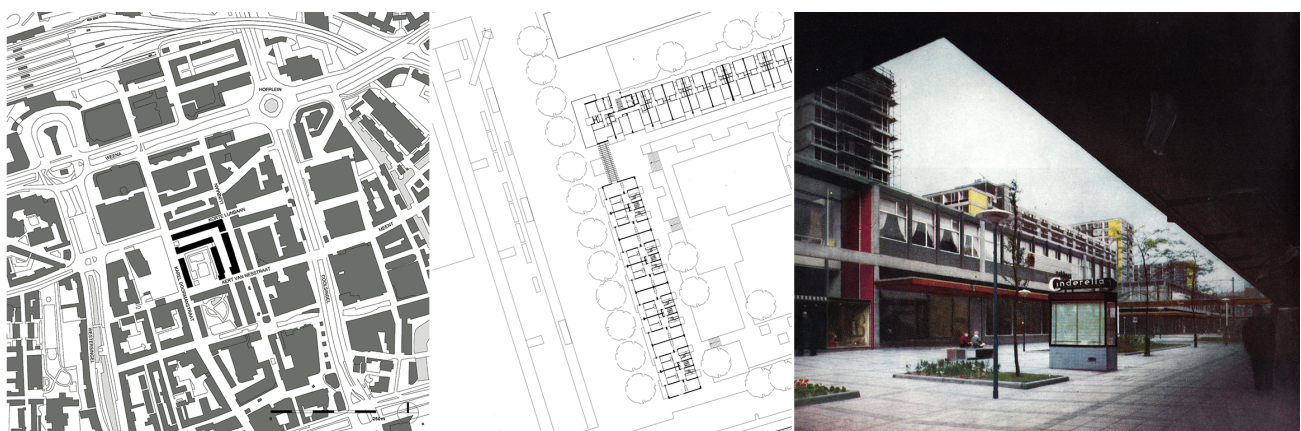
Figure 4. The model of the Lijnbaan. From left to right: Floor plan 1:5000; fragment first-floor plan 1:500; the Lijnbaan ensemble as a three-dimensional composition of high-rise slabs, medium-height, and low-rise volumes, which forms the shopping street designed as a public interior. Notes: The sketch shows the coherent measurement system in the shopping area; the colour scheme of yellow, red, and blue refers to the De Stijl movement and stresses unity and identity. Source: Authors.
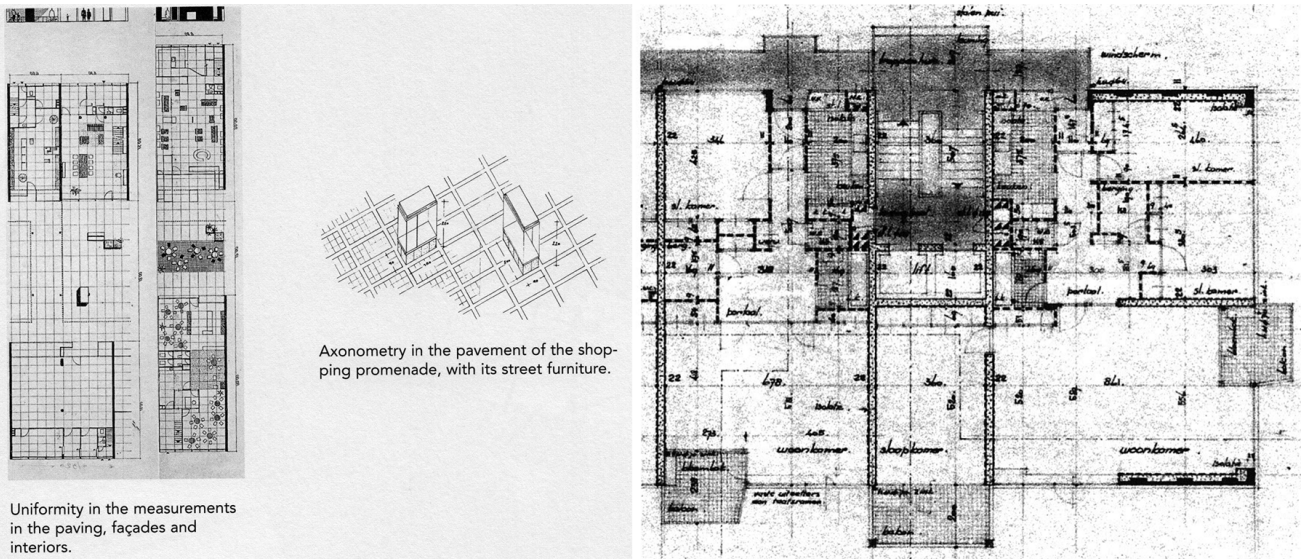
Figure 5. Original drawings of a floor plan of the apartments by H. A. Maaskant, 1:200 scale, with interior measurement system. Source: Komossa, Meyer, Risselada, Thomaes and Jutten (2005, pp. 164, 169).

2.5. TEAM X

In reaction to, and critique of, the results of CIAM thinking, namely the separation of functions, Dutch TEAM X architects, such as Aldo van Eyck and structuralists like Herman Hertzberger pleaded for a return to low-rise housing, i.e., building heights and type in compliance with the urban context. This often led to village-like housing areas, sometimes even in the centre of the city, such as the Blaak Overbouwing by Piet Blom, and the Heliportterrein of Jan Verhoeven (Hertzberger, 2014, pp. 56–76; Lüchinger, 1981). Basically, these were anti-urban projects that could not be 'absorbed' by the public life of the city. They remained isolated islands.

However, Aldo van Eyck got actively involved in the protests of the Nieuwmarktbuurt in the city centre of Amsterdam. The protest opposed the intended demolition and rebuilding according to CIAM principles of the neighbourhood (De Loches Rambonnet, 1995). His reaction can be recognised in the design of the Pentagon

block that tried to reconcile the City of Houses with modern principles while allowing high density. In a way, the work of Aldo van Eyck and others in the early 1980s opened up a new interest in urban architecture, as seen in Figure 6. The need to condense the city became evident and the concept of the "integrated city" was promoted in the Netherlands, which advocated a functionally and socially mixed city with a high degree of social inclusion, not depending on car transport but on bikes and pedestrian movement.

2.6. The Tradition of Grounded-Ness

Derived from the City of Houses in the Netherlands, there is a long tradition of "grounded-ness", i.e., dwellings that are directly accessed from the public domain of the street. Giovanni Fanelli called this *al gusto Olandese*, "the Dutch Taste" (Fanelli, 1978, pp. 16–17), as shown in Figure 7. From the 19th century until today, various Dutch housing types show this preference

Figure 6. The Pentagon project in the Amsterdam Nieuwmarkt area, 1981. Top: Ground floor plan 1:500 by TEAM X and Aldo van Eyck. Bottom: Photograph of the Pentagon. Source: Authors.

Figure 7. Grounded-ness, the tradition of the own front door. From left to right: Photographic examples of the own front door in in Amsterdam Zuid; comparison of Amsterdam access types ranging from De Pijp, Spaarndammerbuurt, Pendrecht, and GWL terrain in Amsterdam and Rotterdam. Source: Authors.

in different ways. It seems to be a recurring question, how to connect (or disconnect) the individual dwelling to the public realm of the street and ultimately the city. In the 19th century, the so-called "under house/upper house" type was introduced, which features two front doors next to each other. One door gives access to the two-story dwelling on the ground and first floor, the second climbs directly to the double-layered dwelling on the second/third floor. This way, there was enough room for a shop as part of the ground-floor dwelling.

From the beginning to the middle of the 20th century, this system transformed into what we call "the battery of front doors" and the "Hague portico" as the most distinguished variants. The "battery" may include four front doors next to each other. Here each dwelling has its own staircases directly leading to the first floor and second/third floor. The ground floor usually has a separate door directly onto the street. The so-called "Hague portico" is characterised by an open staircase to a public balcony on the first floor. Here, four separate front doors depart for the two houses on the first floor, and two or four front doors for the second/third floor. Here, the ground level also has its own door.

CIAM planning would result in a disruption of this tradition by moving the collective staircases into the middle of the building where two front doors are usually reachable from each staircase landing. So, in this way, the direct relationship between the public realm of the street and the dwelling had been broken because of two instead of one door, which separated these realms.

However, from the 1970s and 1980s onward, grounded-ness reappears in TEAM X's dwelling designs. They emerged not only in the proposals of Aldo van Eyck for the Nieuwmarkt neighbourhood in Amsterdam, but also in the urban renewal designs for Zwolle, Alvaro Siza's

Transvaal project in The Hague, and Neutelings Riedijk architects on the former GWL housing estate (Water Factory Terrain) in Amsterdam.

This grounded-ness was also reflected in the relationship between the living rooms of the ground floor dwellings and the street because of the direct view the pedestrian would have into the interior space of each house. Basically, this meant that during the day the street would constitute the public realm of the city. At night, this relationship inverts, as soon as the lights inside are turned on. Now the living room is the stage where the *flaneur* of the streets is welcome with his/her gaze.

What did not change, regarding all urban models and ideologies, is the Dutch sensitivity for the materialisation and design of the public realm and collective spaces. Ranging from the 19th century ornamentation of brickworks and tiled entries up to the inner city Lijnbaan, the street is always included in the (housing) design. As a whole, the Lijnbaan was conceived as a three-dimensional architectural composition of building volumes. The original colour scheme indicated the high-rise slabs as yellow, in fact, yellow bricks, the canopies of the shops and some of their facade elements painted red and the lampposts blue. This scheme, as shown in Figures 4 and 5, is influenced by the Dutch De Stijl movement. In fact, the Lijnbaan was considered a shopping arcade without a roof that alluded to the Coolsingel Shopping Arcade that had been demolished before. The shops and the walking area in between share the same measurement system, as if it were one single space like inside an arcade, lined by the adjacent low-rise volumes of the shops. Also, displays and showcases follow the same overall measurement system. The choice of materials regarding pavement and showcases, in fact, transform the walking space into a public interior

space (Komossa, Meyer, Risselada, Thomaes, & Jutten, 2005, pp. 160–171).

2.7. The Specific Case of Rotterdam

Due to the fact that around 1900, the port of Rotterdam became the largest in Europe, Rotterdam wanted to transform its typical Dutch city of Houses into a more metropolitan environment. At that time, the modern city of Haussmann-Paris was a convincing example. Following Jallon: "Devoid of its function and varying in its uses, each architecture reveals its true nature and, paradoxically, its identity", and Paris "revealed capacity encourages us to reconsider the axioms of current urban planning and design within a context where performance requirements exist harmoniously with the pleasure of habitation, where resilience becomes architecture" (Jallon et al., 2017, p. 5).

However, after WWII, another concept of modernity, very different from that of Paris, became a new source of inspiration: cities like New York or Chicago, with their downtown districts exclusively for business, shopping and cultural events, served as an example. However, the American dream and CIAM did go hand in hand and were therefore easy to adapt. So, without any opposition, a brand-new layout was projected upon the then completely bombed city of Rotterdam, based on the accessibility by cars. Only a few houses were allowed for shopkeepers and some very dedicated city dwellers, but for most people, a home in the suburbs was provided. Although the reconstruction of the city was not a success, even after 40 years, the idea of this concept was so politically correct that no one dared criticise it. Moreover, people started to get used to it and defended the inner city as a typical port-city identity. In the meantime, students left the city after their study, theatres hardly had any audiences and there were almost no cafes or restaurants. In fact, the result was the exodus of middle-ranking professionals to other cities (Schrijer & van der Zwan, 2004). However, there was a turning point in 1985 (Aarts, 1987). For the first time, the question emerged: why can't people live in the inner-city? In those days this actually meant: why only social housing, why not also middle-class housing for people who longed for an inner-city lifestyle?

The historic decision to become a radical CIAM city was questioned during those years. From 1985 onward it was possible to build some houses for higher income groups. The first steps taken were plans that were made and carried out to develop the neglected old city harbours for this typical inner-city audience. Rotterdam's cherished identity may have been modern, but the fact that the city had an interesting history was almost forgotten. This newly discovered history meant relief for most residents who were proud of the 'old' and the 'new'. Meanwhile, all plans developed for the inner city were explicitly based on adding housing. More residents moving to the inner city was undoubtedly part of the success that gave the city its current fame (Tillie & Aarts, 2012).

Nevertheless, in order to be successful, there should be around 60,000 inner-city dwellers instead of 30,000. This figure is the result of research that shows that in the larger cities of the Netherlands about 10% of the city dwellers actually inhabit the inner city.

During the financial crisis of 2008–2013, studies showed that synergy is important for a successful city: synergy between the enterprising inhabitants of inner cities, employment, culture and, for example, culinary meeting points (Marlet, 2009); or as Jacobs (1969) put it: "In successful cities, everything is about people who challenge, compete, and stimulate each other so that innovation can come about". As a result of that, more research was done to accelerate the densification process by looking for more, alternative strategies. Two of the most important indicators for achieving this goal were: more differentiation strategies and better public space (Tillie & Aarts, 2012). The study showed that it is very plausible to build extra housing for 30,000 inhabitants. The overall computer assessment also showed that more inhabitants lead to more bicycles and pedestrians and less car use, more cafés, restaurants and culture, better use of the urban space, and 30,000 new jobs.

Despite the financial crisis, Rotterdam by now was determined to make the city centre a success and refinanced housing projects with the slogan "Never Waste a Good Crisis". As there was a shortage of projects that were too complex to build even before the crisis, the city helped to realise them. Some examples are the Market Hall by the MVRDV, Calypso by Alsop, and The Rotterdam by OMA. Upon completion, these projects were seen as icons of the 'new' attractive city in 2014. They turned out to be the symbol of the ambition to become an integral city.

2.7.1. Criteria

Nowadays, not only are the old harbour areas in the inner-city and the historic centre up to densification, but so is the icon of the CIAM-city: the Lijnbaankwartier. Altogether, the number of inhabitants in this area has doubled. This is a very important fact because the densification-process introduced urban life in this area and thereby defines the atmosphere of a vital city.

2.7.2. Identity

A look at the recent experiment made in the urban development of Rotterdam indicates that the inner city is very important for the identity of the whole city. When a city centre has a bad reputation, it affects the entire city and even the region (Marlet, 2009). To become a convincing city centre, all CIAM ideology had to be rotated 180 degrees. Instead of dividing functions, they should be mixed and reaching for synergy, which makes inner cities exceptional. Despite the adaptation of a series of densification schemes, the Lijnbaan-quarter is still a monumental part of Rotterdam. It retains its strong identity,
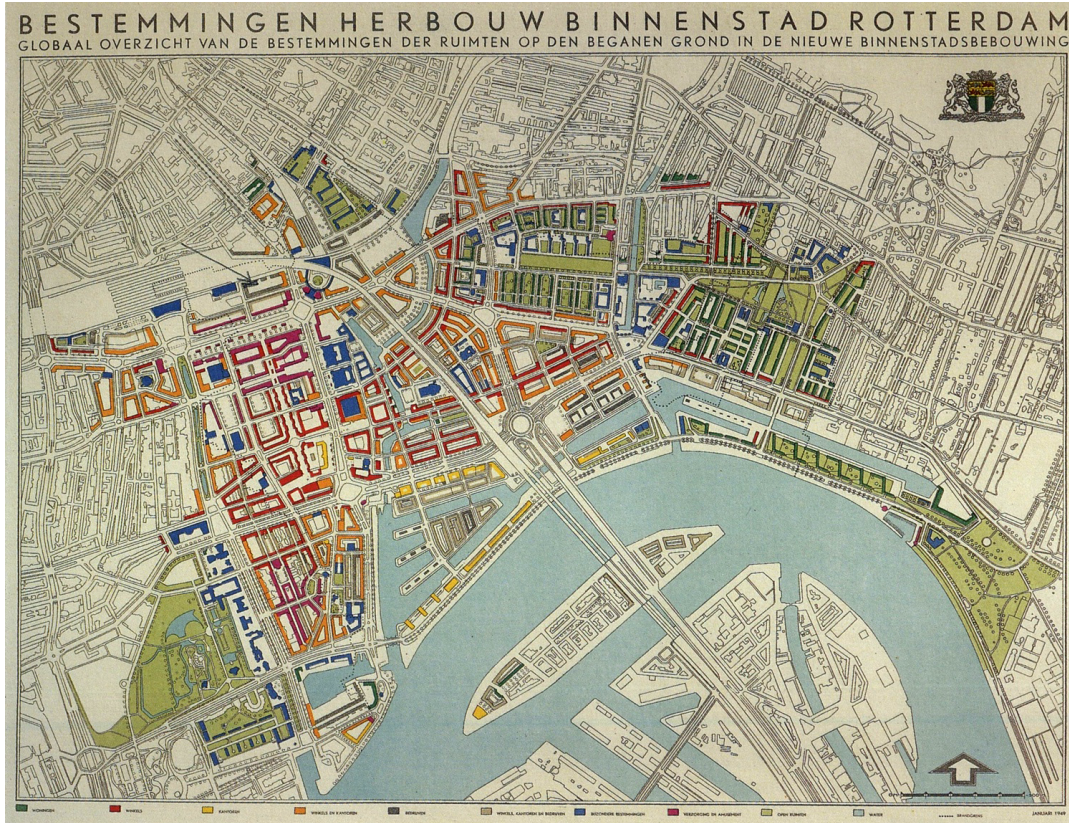
Figure 8. Bestemmingen herbouw Binnenstad Rotterdam, by Van Traa in 1946. Source: Van de Laar and van Jaarsveld (2004, p. 60).

Figure 9. Investigation of on-going and future urban densification in Rotterdam, 2010. Source: Tillie, Borsboom-van Beurden, Doepel and Aarts (2018).

but now as part of a vital urban inner city, as seen in Figure 10.

2.7.3. Density (Inhabitants and Jobs)

As mentioned, to achieve the goal of a successful critical mass in the inner-city, enough residents will have to live there. These inhabitants only want to live in inner cities with all the amenities possible and public transport facilities which connect them with other (international) places. As a result, the computer model showed that 30,000 more inhabitants would also result in 30,000 jobs. Later on, the annual city monitor showed the same result.

2.7.4. Resilience Programmatically and Socially

The aim of a condensed city is not only based on an inspiring atmosphere but also on the demand for comfort. This means a healthy environment for grownups and their children, which also includes parks, green rooftops, and courts. As a matter of fact, this leads to a new lifestyle in which cars are less and less important and in the future: no more fossil fuel vehicles and heat islands, but more space for bicycles, pedestrians, terraces, playgrounds, and other green areas as part of the inner-city design.

2.7.5. Connectedness

The result is already visible in Rotterdam. The parking garages in the high-rise in walking distance from the train station are empty. The people who live there feel cosmopolitan and do not understand why they should have a car. On the other hand, they will only settle in cities with a good connection to an international airport.

3. Conclusion

Taking into account the long history of housing in the Netherlands, it becomes clear that it is marked by a high degree of continuity regarding urban planning. Urban extension plans, ranging from the Grachtengordel in Amsterdam to the 19th century embellished city of the civil engineers show an integrated city. Only in the 20th century does urban planning diverge. Berlage's extension plan of 1914 still tried to integrate the city, and even TEAM X returned to a low-rise tradition that maintained the existing city fabric. However, this (hi)story shows that urban transformation is an on-going process. CIAM ideas were a moment in history and finally became incorporated into today's urban planning.

The inner city of Rotterdam is an example of how CIAM ideas were not a sustainable urban concept. Moreover, it was unavoidable to change the city into a place where people can find their way. It meant transforming from a car-orientated reconstruction plan into a pedestrian and biking orientated inner city. Nowadays, it is mainly about a mixture of living, working, pleasure, culture, and in addition, more and more about a healthy environment. That means no more fossil-based traffic, a greener environment, and lots of meeting places in the future.

Figure 10. Photograph of the Schouwburgplein with the Lijnbaan ensemble on the left, indicating the identity, continuity and change of the area. Source: Rotterdam Make it Happen (n.d.).

To achieve a successful city centre, the administration had to reset planning practice from a sector-orientated to an integrated policy. Instead of separately planning housing, traffic, public space, working facilities, and other amenities, the goal should be to get challenging, inspiring, and comfortable, "integrated" cities. This was not just a break with the former planning tradition: it set a completely new goal, namely, to realise a liveable city. Basically, this meant synergy between CIAM and the "integrated city".

Conflict of Interests

The authors declare no conflict of interests.

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