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Paper: **Generative Design Mechanism: City as a Physical Construct, An analysis of the urban context within post-war housing in Amsterdam - Java Island**

Topic: Architecture

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References:
[1] Komossa, S. (Ed.) et al., "*Atlas of the Dutch Urban* Block", Thoth, Bussum, 2005
[2] De Kool, D. et al., "*De Monumentale Stad"
Plan Zuid Amsterdam H. P. Berlage*",
http://daviddekool.nl
[3] Fraenkel, Francis F., H.P. Berlage's plan for the southern extension of Amsterdam, Canaletto, Alphen aan den Rijn, 1976

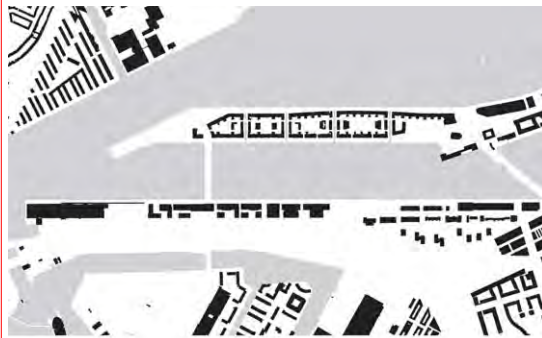*Abstract:*
In this present paper, we would like to postulate that the generative design mechanism is intrinsically experiential within architectural and urban design sensibility. Our current research focuses on the comparative study of past 17 century urban planning solution as a set of formal structures and geometrical patterns that can provide the logic and future direction as the possible complete immersion of architectural forms within urban configurations.

This paper shows a brief analysis of the urban configuration of the Java Island in comparison to the Ring Canals and Amsterdam South.

The key questions that we hope to address include: to what extent the past medieval as well as Renaissance planning solutions were used in the geometric patterns for the urban configurations in Java Island and in what extend they help in creating an identity of the place with important social, economic and specifically health implications for the communities in question as well as reinforcing the identity of the city in which they belong.

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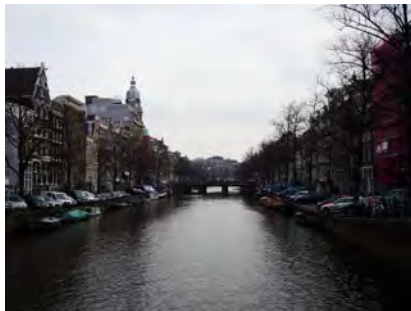
NIEUWE SITUATIE
Image of Java Island, plan

Image of Java Island

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Generative Design Mechanism: City as a Physical Construct, An analysis of the urban context within post-war housing in Amsterdam - Java Island

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Premise

In this present article, we would like to postulate that the 'generative' design mechanism is intrinsically experiential within architectural and urban design sensibility. Our current research focuses on the critical analysis of the 17th century urban planning solutions as a set of formal structures and geometrical patterns that can provide the logic and future direction of the possible complete immersion of architectural forms within urban configurations.

This article provides an initial analysis and overview of the urban configuration of Java Island in comparison with the Ring of Canals and Amsterdam South.

The key questions that we hope to address include: to what extent do the Renaissance up to early to early 20th century planning solution such as the Ring of Canals and Amsterdam South were simulated in the urban configurations of Java Island (1995-96)); and to what extent do these help in defining the identity of the place as well as reinforcing the identity of the city in which they belong.

1. Introduction

In a way this paper follows the line of inquiry that is briefly touched upon by Komossa and Meyer [1] in their introductory essay to the Atlas of the Dutch Urban Block. They argue that most contemporary research done on cities, and structural units of the urban maps, proceeds from the assumption that with the modern movement, there has been an inseparable split between the classic and modern city and that not infrequently the loss of urbanity and urban qualities is connected with this break.

Having said this they argue that in the case of Amsterdam this is only partially true and that there is a great deal of continuity from the 17th century ring canals to recent projects such as the GWL terrain in Amsterdam.

Historically Amsterdam's Ring of Canals and Amsterdam South provide an excellent example of a 'generative design' mechanism that is intrinsically experiential within its context and urban sensibility. The key questions that we hope to address are: to what extent do the Renaissance up to early to early 20th century planning solution such as the Ring of Canals and Amsterdam South were simulated the urban configurations of Java Island (1995-96)); and to what extend do these help in defining the identity of the place as well as reinforcing the identity of the city in which they belong.

2. Ring of Canals [1]
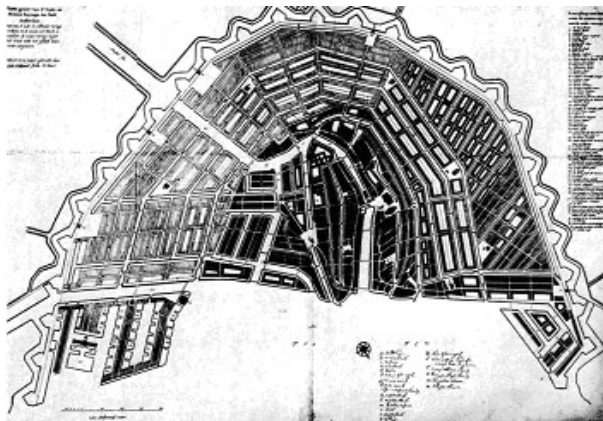

The Ring of Canals

In his essay on the ring canals, Meyer [1] observes that in this case the urban block cannot be considered the generator of the urban plan. Since in the case of the Ring of Canals, the land was divided according to the drainage of water and was aligned with those of the farm land. Thus the streets were set out first and the 'inbetween/leftover' was subdivided into lots by the developers over time, in accordance to the need of the specific buyers. This created an instance where the size of lots vary dramatically from large expansive lots to some exceptionally narrow ones – thus providing a unique quality to the city with very pronounced variations in the width of the facades of the buildings, as compared to the height. This provided a gradual built up of an urban block that was mixed used, pedestrian oriented, sustainable and most importantly with a spatial flexibility that allowed it to remain intact over the past centuries, despite continued interventions and reconfiguration.

Here the public and private spaces were inherently distinguishable and ever-present. According to Han Meier, the urban block, as we know now, "was born" when individuals begun to buy in the Ring of Canals, more lots to build them for rent. Then the buildings were built at once and were similar in form and function. We think that he meant that once we can see the whole as an (urban) object, the resultant 'block' becomes distinguishable such as in Amsterdam South.

Introduced in the 17th century the Ring of Canals were a completely new urban intervention, based on the model of the 'ideal city' that was projected in concentrated rings around the existing city – thereby connecting the suburb of early 17th century with the main historical center of the city.

City expansion showing ring of canals, 1st phase and projected 2nd phase, circa 1625

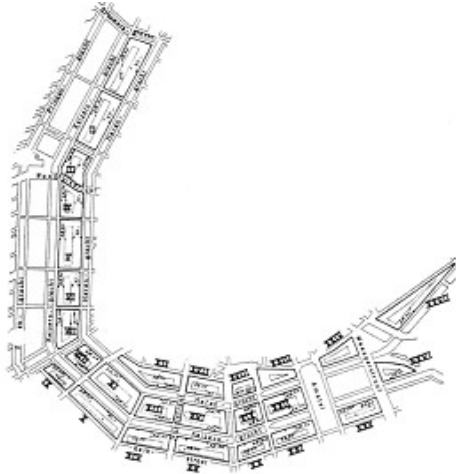Map of the 'old and new works of the city of Amsterdam' by D. Stalpaert 1662

Expansion of 1662, the final phase of ring of canals

It took almost 200 years for the ring canals to be realized in what can be considered to be its current spatial configuration. Space was created for housing for the rich, the less well to do and the craftsmen.

2.1 Function:

The Ring of Canals was primarily a large scale expansion, that was only made possible as the city's administrators had the right legal instruments at their disposal, for instance for the expropriation of land. Moreover among the important considerations in planning the expansion were the construction of new fortifications, water management and making the new areas accessible, the subdivision of the area into saleable lots, and the establishment of Keuren (Keur in this sense in Dutch is normally translated as by-laws, but at this period refers to both the urban block and the regulation for construction which were connected with them).

Overview of the keur blocks, map from the building ordinances of the City of Amsterdam
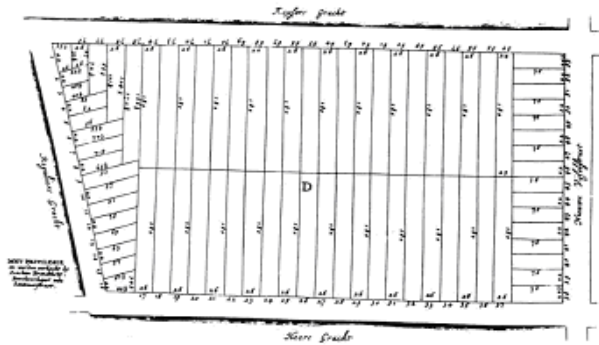
In the early days after 1616, the canals lots were mostly developed and sold as houses and possible workshops by the carpenters, masons and the ironmongers. Over the years and particularly during the first building boom after the 1625, the canals lots became more up market and were reserved for merchants who both lived and worked there. It was only after the second building boom of 1658 that houses were built for purely residential purposes. The new large houses built in the second part of the canal belt as well as the lifestyle which went with them, was modelled on the Dutch version of the classic country house or' villa' developed around 1640 developed by the first generation of Dutch architects: Jacob van Campen, Pieter Post and Philips Vingboons.

At present the Ring of Canals includes town houses, dwelling over shops and double residences. Most dwellings consist of 3-8 room built structures. There are generally private gardens and services in the block which include:, workshops in the basement, storage and commerce, coach houses, stables and shops.

2.2 Grid:

Detail of the parcellation of 1614 is an excellent example of identifying the grid that was in place in the ring canal from the outset. This is further substantiated by the uniformity of the size of the block which remains to the present day; 100 x 150 m.

The average number of dwelling is 84 and dwelling size remains within the confines of 105m2 -795 m2.

Detail of the parcellation of 1614.

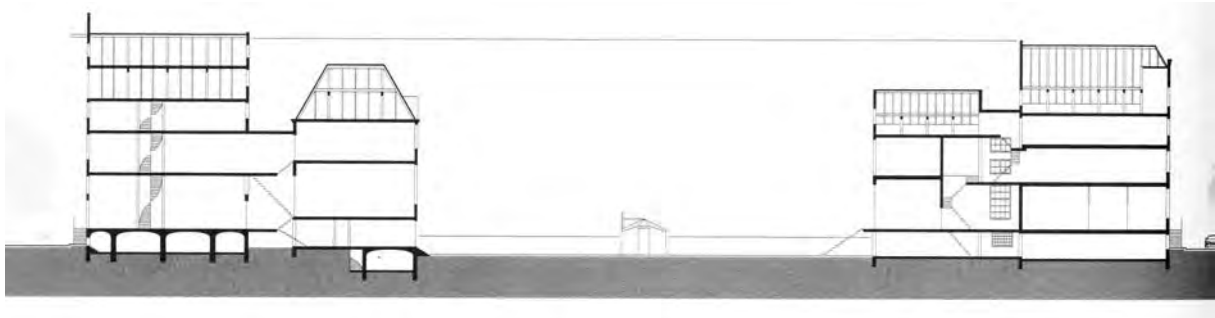## 2.3 Block characteristics:

As noted in the detail of the parcellation of 1614, originally the canal plots were of fixed and regular dimensions for instance 30feet wide and 190 feet deep. Although these parcels were sold individually, multiple lots next to each other were regularly purchased by the same individual. This meant that either a wider structure was built or several smaller houses were built. The lot width therefore could vary between 5.75 meters and 14.75 meters. The lots could also vary from being 55 meter deep including the pavement in front in comparison to the average house being 30 meters deep. During the late 17th century the 'garden house' with a maximum height of 12ft and depth of 15ft was also introduced as part of this build up lot. Building deep into the parcel was made possible by the introduction of the lightwell – first introduced within the extensions of the existing house at the front of the property but later after 17th century it was incorporated into the original design. The lower ground floor of the lot was generally used for commercial and enterprise usage. The main building or dwelling included upon entrance a long corridor that led to the highpoint of the spatial layout of, the salon or the staircase.

Recent drawing of the façades of keur block VII along the Herengracht

General Cross_section

In older type of merchant residences, the front room was called the comptoir and was often used as an office. The wider section of the front corridor close to the front door could be used as the storage space for goods and samples of merchandize. There is generally a small stair located at the front of the house, where this entry and the corridor meet. This was the original stair of the house, which became less common in later residential dwellings after the commercial aspects were no longer active.
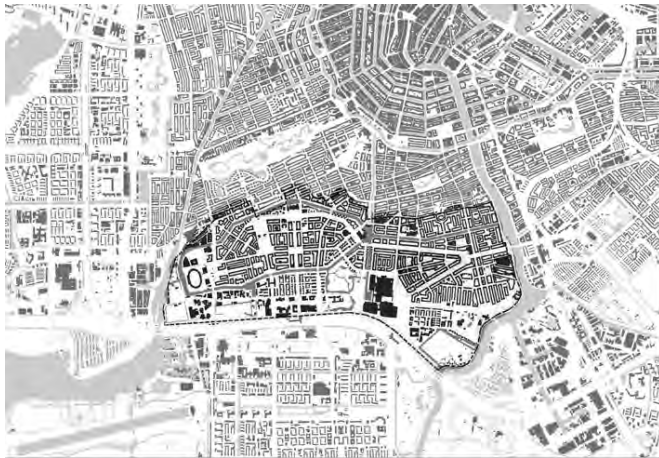
Proceeding along the corridor towards the rear of the house, one ascends several steps and ultimately comes into the salon. It occupied the full width of the house and over looked the garden. It was the most representative space of the house. By raising the salon slightly above the level of the bel-etage of the front house, it was possible to situate the kitchen under it, on the same level as the garden. The cellar under the light well and salon were part of the dwelling; even after the 1700 the cellars under the front of the dwelling were intended for rental.

The dwelling program thus incorporated the residential and commercial, the public and the private within a single specification of the urban residential lot. Here the lot equally represented the mixed used multitasking elements so common and rampant with the block itself. This was a unique and practical solution within the confined of very rigid parameters - thereby making it equally pertinent and applicable within the 20th and 21st century sensibility of the ring canal.

2.3 Final comments:

The Ring of Canals in a way introduced a new sense of identity within the city, here the mixed-used urban blocks with the added complexity of pedestrian paths overlapping with an array of land and water based transportations created a new city dynamics. The public and the private realm of the blocks although well demarcated and pre-eminently consistent in its presence over the centuries remained very much part of a single urban identity. Although initially it was the merchant class and the bourgeois that defined the new realm of the city, this moneyed class was in many cases replaced by the downtrodden and extremely poor families. Within the span of the four centuries, despite the ups and downs within its social status, the poor, the bourgeois and the odd foreign nationals all encompassed the main element of this city's sense of identity and rationale.

3. Amsterdam South [1] [2] [4]:

 Map of Amsterdam showing Amsterdam South

The extension designed by Berlage in 1917 is located at the South of Amsterdam in land exppropriated by the municipality. Amsterdam South has an interesting location: the Berlage Bridge connects the district with the center. Amsterdam South is not too close to the center, avoiding the crowded center, and not too far, which makes it possible to reach the center by common modes of transportation such as the bicycle.

Berlage made two urban plans for the South part of Amsterdam, the first being in 1905 and the second in 1917. The first plan was accepted by the municipality; however, it was only built in the area nearby earlier expansions closer to the center of the city.

Berlage was influenced by theoreticians, in particular by Camilo Sitte's picturesque view of the city and his preference to medieval cities as stated in Sitte's "*De Stadtebau nach seinen Kunsterichen Grundsatzen*" from 1889. However, when he was designing the second plan, he took some distance from Sitte's approach, probably by recognizing the need for a more pragmatic line serving the program of a modern city.

It was not that he could not see the beauty of the medieval center and of the Ring of Canals; in fact he appreciated very much the Herensgracht in its perspectives and picturesque façades. But, according to Berlage, as the ring became bigger in diameter, the perspective lines didn't provide the same effect and the individual houses all together became chaotic. Also to make expansions following the line of the rings would make a very monotonous city. Taking this into account, he realized that the Baroque street pattern with broad avenues and straight lines would solve many of the then present problems such as transit in the streets. Berlage was however aware that the Dutch culture was more close to the picturesque than to the monumental.

Therefore the second plan presented two dialectic concepts into work, Camilo Sitte's picturesque and Albert Erich Brinkmann's "monumental" as stated in Brinkmann's "Platz und Monument" from 1908. Berlage put the two concepts together creating a monumental structure (symmetry, axes and a high density allowing for the plan of

compact urban blocks) while allowing the picturesque for the detail, being the ideal style the one provided by the architects of the Amsterdam School such as Michiel de Klerk, Piet Kramer and Johan van der Mey.

Beside theoretical approaches, Berlage, a syncretist mind, also analyzed urban plans and diagrams such as, respectively, Howard's Garden City and Haussmann's plan for Paris. It is often cited that Berlage referred to the garden city in his Amsterdam South plan, in particular showing his pedestrian routes with abundant number of trees as well as the Block courtyard. In what concerns Haussmann as a precedent in Berlage's plan. One may see more differences than similarities [4]. First, Berlage's plan didn't limit itself to the design of boulevards, but also to streets, squares and courtyards. Their objectives were also very different from one another. While Berlage wanted to solve housing problems for the working class, Haussmann intended to "save" the bourgeois society from the risk of a revolution. Beside aesthetical reasons, the wide streets allowed for the interference of military troops if the people, living in great poorness, decided to revolt against the richer classes.

The land where Berlage planned involving nowadays Apollobuurt and Rivierenbuurt was expropriated what allowed for great freedom in particular in comparison with his colleagues who were responsible for earlier expansions [4]. Berlage only had to take the following issues into account:

1. The 3 water ways
2. The railway dike which forms the limits on the South side of the plan
3. The plan of a road connecting the new district with the old city
4. The plan of a canal that would connect the 3 waterways

3.1 Function:

The district was idealized to solve the housing problem of the work class. Amsterdam South plan is divided into two parts: the Apollobuurt and Stadionbuurt aimed at upper classes and the Rivierenbuurt, focusing on the middle class. The Berlage Bridge was meant as the entrance to the district from the city center. Numerous urban blocks had shops and offices to serve the whole district in low scale. Amsterdam South shows a kind of segregation concerning religion, culture and politic such as at the De Dageraad block. This block was built by the socialist housing association of the same name. The block was designed by Michiel de Klerk and Piet L. Kramer (not only the façades but the apartment layout as well) with council subsides to house workers of the socialist party [3].

De Dageraad

3.2 Grid:

From the 19th century urbanism, a need has arisen to wider street profiles. Berlage asserted that the geometric plan was more suitable for the transport in a modern cityand could be also, aesthetically speaking, of great beauty. He used a right angle grid with some star form radiation. The streets were ornate by rows of trees and many pedestrian roots what show a reminiscence to the Garden Citiy diagrams of Howard.

The monumentality of the district can be felt by the combination of the broad streets and the urban blocks which show austerity due to their materials, height (maximum of four levels), its symmetry and axes.

3.3 Block Characteristics:

In contrast to the Ring of Canals, the urban blocks in Amsterdam South were constructed as one object. The corners of the blocks were embellished giving an accent on the intersections.

Facades:

The "schoonheidscommissie" (beauty commission, group of people who judge the quality of the architectural production in The Netherlands) had a great influence in what the buildings would look like. This commission praised to a morphological consistency deciding about roof heights, shapes and accents. The "schoonheidscommissie" even decided about the style, selecting those architects belonging to the Amsterdam School. They aimed to façade unit and therefore the materials and style was a main concern [4].

The facades of the building blocks were built with the most used material in The Netherlands: the bricks and were not designed as individual house facades but as a whole. The façade had a double function, on the one hand giving privacy to the inhabitants and on the other hand, giving form and character to the streets and squares. Here one may find Sitte's influence who asserted that facades should be designed as the walls of the streets and squares. The façades were in fact designed independent of the house layouts making them, later, unsuitable to new comfort standards of for example light and subject to modifications [5].

Access:

There are three types of access to the urban block: first, a series of doors (sometimes 6 doors) each giving access to an individual apartment. The social importance of this private access to outside world has reminiscence of the villa, the house of the rich which has access to the public space through their own door. A second type is called the "*Haagse Port*" which reduces the number of main doors by bringing together access to up floors through a staircase. On the first floor, there is a subdivision; there are main doors for the inhabitants of first floor and other doors to access the staircase of upper floors. The third type is the "portiek" which is a

collective staircase for all floors. Collective stair cases are often accentuated elements on the façade.

Courtyard:

The courtyard is the heart of the urban block which is often cited as an interpretation of principles found in Howard's Garden City. However, the importance of the courtyard as a centre of every-day life depends of the apartment layout. Some apartment layouts emphasized more than the others the relationship between living-room and dining room with this green heart. For example, one of the wide spread type in Amsterdam South has the living-room and diner room interconnecting the courtyard with the public space, here, courtyard and street have the hierarchy. However, the diner-room on the side of the courtyard was often used as one extra bedroom.

Most apartment-layouts did not have bathrooms. Later, when bathrooms were introduced into the layout of each apartment, the new layout often "turns around" interrupting the relationship between the apartment and the courtyard. The new layout had the living-room and diner-room only facing the street and the douche in the center of the apartment.

In Spangen, Rotterdam, the architect J.J.P. Oud in the 1920's decided to emphasize the relationship living room and dining -room with the courtyard, placing the bedrooms on the street side making the courtyard, visually, the real heart of the block as well as well as the collective space used by all residents of the block.

3.4 Amsterdam South versus the Ring of Canals:

Monumental in structure and picturesque in detail. Amsterdam South does not follow the structure of the medieval city or the ring of canals. However, it keeps few similarities in function (shops under and living above) and access to the apartments of the blocks which had their individual door towards the public space.

Amsterdam South is the result of a syncretist mind which recollected elements of different plans and theories. Its main difference with the ring of canals is that the urban block of Amsterdam South is designed as one element, while the "blocks" of the ring of canals were built through 200 years. Also, the grid of the ring of canals were determined by the drainage canals being the left overs built. In the case of Amsterdam South the canals were not determinants for the size of the urban blocks. The South plan had few constraints such as the waterways and the canal mentioned above.

Other differences are to be seen in the form of type and construction. So the blocks of Amsterdam South has apartments stapled on each other and are standardized to facilitate its construction by the housing associations. In contrast, the houses in the medieval center are done by private initiative, its dimensions depending of the owner necessities and with many variations within the type (shops, office, living areas). Constructed by individual parties, its form can be translated as the unity in variety.

Amsterdam South did not reinforce the identity of the old centre of Amsterdam, but created new possibilities. Its success is to be noticed in the way that contemporaneous extensions show diverse elements recalled from this plan as we may see in Java Island and in IJburg. The district still has its attractiveness, and, though interventions were carried out, it continuously attracts people to live in the area. Part of its attractiveness is surely due to the proximity to the centre for bikers, the presence of many lines of public transport and parks.
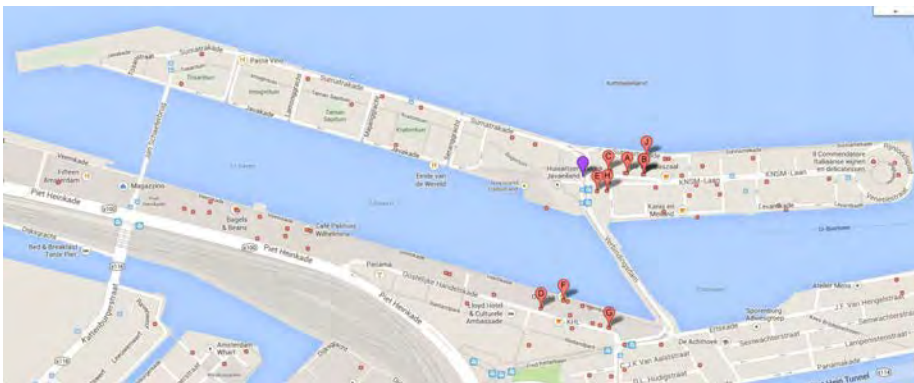
4. Java Island [1]:

View of the South

Java Island was planned by Sjoerd Soeters and it is located at the Eastern Harbour District of Amsterdam. It was built from 1995 to 1996. Java Island can be easily reached by car. Due to its proximity it can also be easily reached by bicycle or by foot.

4.1 Function:

Java Island is a residential district. It was developed together with other artificial islands to solve or at least diminish the shortage of houses in Amsterdam. Java Island is linked to the KNSM Island in its Eastern side on the Azart Square (Azartplein) where shops, facilities and public transport are situated. Also from Azart Square one may cross the bridge towards mainland where immediately after the bridge one may find several cafés, shops and supermarkets.

Shops and facilities

4.2 Grid:

Java Island is an artificial Island which measure 130m wide by 1200m. It is connected to the old city of Amsterdam via two bridges. The grid seems to be determined by the concept of the 5 rooms which creates an internal route for pedestrians and bikers. This island is cut by 4 canals. Perpendicular to the four canals, on the North and on the South of the island one can find a car road, being the one in the South local and interrupted by intervals, so that only bikers and pedestrians can walk the whole quay area.

Canal streets

4.3 Block Characteristics:

In the courtyards

Soeters' Java seems to be generated by the concept of the block and not by the streets. The buildings that compose Soeters' blocks differed from each other like in the Ring of canals. Contrary to the ring of canals, the blocks were divided regularly according to a modular rule. This similarity (variety) and difference (regularity) created an estrangement which one may feel when crossing the bridge to "enter" Java.

Facades on the South

Soeters planned 5 Blocks accommodating 3 living environments: dwellings along the quays, dwellings along the canals and dwellings in the interior of the blocks. Dwellings on the quays could be divided in 2 living environments, because living on the North of the Island is considerably distinct from living on the South side. The buildings follows the same modular structure (5 x 5.4m per building with its entrance from courtyard or quays in the middle where one also find the elevators) on both quays, but the dwellings along the North Quay have their living rooms facing the courtyard what give them a complete different experience of space in comparison with the apartments facing the South quay, the IJ and city (most living rooms of apartments in Amsterdam South also faces the street). Modular bays which is not found in the ring of canals.

The buildings on the quays have some similarities with the medieval part of Amsterdam, the ring of canals and even Berlage's Amsterdam South. However the precedents are defamiliarized when applied in Java Island.

For example, from the ring of canals, Soeters recollected the variation of buildings that composes the block while from Amsterdam South he applied the modular bays.

In the four canals that cross the island there are great similarity in the urban level with the ring of canals. So dwellings directly reach the public space via a small set of steps, typical element of the houses of the ring of canals. There are also houses instead of apartments and the façades are all differing from each other. However, the width does not vary; the size of each house is 4.5m and the height is from 4 to 5 storeys. The façades are different from each other and each canal has a recombination of some of the 19 projects designed by young architects.

Facades on the canals / detail: entrances

The courtyard is an element present in the whole city; however, here Soeters turns it public. The courtyards houses gardens and are connected to each other by a route only for pedestrians and bicycles protected from the cold Northern wind. This route brings one inside the courtyards making one fill in and out the block reinforcing the idea of the block.

4.4 Java Island versus Amsterdam South and the Ring of Canals

Contrary to Amsterdam South, where the whole block often belongs to a cultural, political or economic group, in Java Island, the buildings, which composed the blocks, are the ones which are made for one cultural or economic group. In other

words, each building in Java was meant for people with the same cultural background and aspirations.

In Java Island, there is a recombined and often defamiliarized use of precedents which create an identity of the place and reinforce the identity of the city. The proximity of the district to the center of the city favours the integration of the part with the whole, while the pedestrian route linking the 5 rooms favours the identity of the place.

However, Java Island often seems to be a montage of various (defamiliarized) scenarios of Amsterdam wrapped up with the idea of the block and the canals which is probably caused by a weaken integration between the urban planner and architects.

5 Insights

The article discusses two plans, the Ring of Canals and Amsterdam South, which seem to have powerful generative design strength and their hypothetical influence in the planning of Java Island.

The Ring of Canals introduced a generative design element that went beyond its physical design sensibility – it defined a new sense of identity and life style for its residents – irrespective of their social standing and time frame. It provided a generative design element that encompassed both the urban and architectural elements within its array of design solutions.

Thus the 'urban block' as quite randomly introduced within the Ring of Canals, generated a series of design directions for the current and future expansion of the city. The most prominent being the use of the courtyard as a central node that connected the urban and the architectural, the public and the private space, particularly in the case of Java Island.

Amsterdam South is the result of a syncretist approach. It recollected elements of different plans and theories. Though keeping some details of the Ring of Canals, it is an unprecedented development in the city. Its main difference with the Ring of Canals is that the urban block of Amsterdam South is designed as one element, while the "blocks" of the ring of canals were built through 200 years; the urban blocks and streets of Amsterdam South were also not determined by the drainage of waters.

It belongs to different time in history and is provided to solve the problems for housing for the working class. Its monumental plan and picturesque blocks express a new kind of identity for this working class which was becoming emancipated.

Both plans provides an identity of the place however, the Ring of Canals reinforces the identity of the existence city in a stronger way then Amsterdam South. Now almost a 100 years after the construction of this district, it seems though not to be possible to discard it from the city. It is part of the history of the city and of the

numerous movements, connecting the 19th century city plan with the modern city. We believe that Amsterdam South, despite its almost abstract use of precedents, is a successful intervention in its relatedness to the identity of the city's history and identity.

Java Island absorbs both plans, not always in a successful way. In the case of the Java Island despite at times the 'literal' replication of urban block and building typologies presented, there is an acute sense of chaos; of, at certain instances, a loss of essence that these very design elements were able to provide in the city centre. This seems to be the result of, on the one hand, the amount of rules governing the architectural design (the quays South side of the Island), and on the other hand due to an uprising of the architects against the rules of the game (see the architecture of the 4 canals). It would do no justice to the plan if we did not mention the successes of the plan, such as the opening of the blocks and its interconnection by a route for pedestrians and bikers turning the former collective into public space. This route is the strongest element of identity of the place.

Having said that it can be argued that both Berlage and Soeters in their later planning interventions introduced a series of innovative new dimensions to this city, however their interventions primarily iterated within and through the nodes of the courtyard centred design sensibility – thus generating a design sensibility that connected the past with what was considered their 'present or contemporary' sensibility, along with the expansions and interventions that continue to be practiced today.

3. References

[1] With exception of the conclusion of the section, most historical facts found in this section were collected: In: Komossa, S. (Ed.) et al., "Atlas of the Dutch Urban Block", Thoth, Bussum, 2005

[2] Fraenkel, Francis F., H.P. Berlage's plan for the southern extension of Amsterdam, Canaletto, Alphen aan den Rijn, 1976

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[4] With exception of the conclusion of the section, most historical facts found in this section were collected in De Kool, D. et al., "De Monumentale Stad, Fragment II:, Plan Zuid Amsterdam, H. P. Berlage", http://daviddekool.nl

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