Design to last

*Positive societal impact in the built environment
through timeless & evident-based design principles*

Marcella Wong
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Design to last

Positive societal impact in the built environment through timeless & evident-based design principles

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A thesis in preparation for the graduation design on the case of Wielewaal, Rotterdam.

Rotterdam is niet te filmen
De beelden wisselen te snel

(Jules Deelder)

ABSTRACT

Sustainable development in the built environment is not self-evident. Urban design is seen to be carried out in the midst of unsustainable societal (social & environmental) and economic development (Meijer & Adriaens, 2010). Often in a world of many quick changes, urban design react heavily on the societal problems within a certain context or time frame. This leads to designs that function on short-term with possible negative societal impact in the future. This thesis studies the principles behind ideal neighbourhoods based on (historic) literature study and plan analyses on case studies. Throughout time many different neighbourhood ideals and theories are seen. Often these ideals and theories are very specific to certain eras which makes each era have its own expertise that can be learned from. The principles per era are collected, sorted by spatial aspects and further organised. This forms a framework consisting of ten principles that should be contained in an ideal neighbourhood for a long-term positive societal impact. To test this framework, it is used as an analysis tool projected on two case studies: Agnetapark and De Bijlmer. Both projects with idealistic intentions but with contrasting results. Additional to the framework, through case studies different findings are made that contributes to the principles found in this thesis.

Key Words
Urban sustainability - neighbourhood design - long-term development - long-term design principles - societal impact - framework

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Dear reader,

Before you lies my graduation thesis that forms a part of a collaborative graduation with Management in the Built Environment student Lena Marie van der Wal, for the design studio Explore Lab. We started this graduation journey with the same fascination for *social entrepreneurship*. Striving to change the built environment in an entrepreneurial way with societal impact as first priority. Together we try to *transcend the boundaries of our own fields* within this traditional building industry to truly find innovative solutions *for a fair and sustainable built environment*.

On a personal level the exploration for this graduation thesis already started many years back. I found myself in a less fortunate situation of growing up in a less privileged household. Years of hard work have passed, and now I am in a position of (1) graduating from university and (2) changing the fates of the less fortunate. Through this graduation I try to explore different solutions for a fair and long-lasting built environment, mainly from the perspective of a designer. Throughout different scales I try to find principles for a timeless lay-out, including the needs of both people and nature, for it to be highly appreciated on the long-term.

"Voor wie zijn wij de stad aan het inrichten?"

Translation: For whom are we creating the city?

(Dean Bowen, city poet of Rotterdam)

It is now that I can say that I am glad to have had the opportunity to experience segregation, the deterioration of social cohesion and the loss of overall care for space at first hand. With this knowledge and within my capabilities I try to turn things around for the better in the built environment. But this journey of creating impact in the built environment is not one that I can do by myself. Along the way during my graduation I have met many people that inspired me and have taught me from their own experience. Be it a teacher, a local resident from our case study or an external mentor, from all different layers of society these people have taught me many things. But mostly they taught me to be warm and kind to one another. *I am thankful to have met all of them.*

Enjoy reading this newly gained knowledge and let's make positive societal impact together for a fair and sustainable built environment!

Marcella Wong
Architecture graduate '19/'20
Explore Lab 29

Exodus

We vergaten dat we stadse wezens waren
We vergaten jou, Rotterdam
We vergaten wie zich hier thuis noemt
We vergaten dat thuis weinig meer is dan een plek
Waarvan je verdreven kan worden
En als onwenselijk gebrandmerkt
We vergaten hoe wij marketingtaal werden
De aantrekkingskracht van de meerdere minderheid

-

We forgot that we were city people
We have forgotten you, Rotterdam
We forgot whom called 'here' home
In which you can be driven away
And stigmatized as unwanted
We forgot how we became the language for marketing
The attraction of the major minority

(Dean Bowen, city poet of Rotterdam)

1. Introduction

Contrasting impact of best intentions
Since the existence of civilisation, sustainability has been an important factor for urban planning. There has always been an awareness of the fact that urban complexes have to fit the needs of both current and future generations. From the 19th century on this led to taking certain elements into account such as health, liveability, mixed population, housing for all groups in society, availability of work, and other facilities (Meijer & Adriaens, 2010). But many principles and ideas that are taken into account are dependent on the contemporary context of a specific design period.

Although the intentions behind many urban designs are idealistic, the outcome is just a mere snapshot of the ideals from a certain time. This is usually shaped by another generation reacting on its own context. So to say, even though with the best intentions, the outcome may not always likely to be desirable nor will it be appreciated in the future. This can be seen in one of the biggest deficient projects in Amsterdam, The Netherlands, called *'De Bijlmer'*. A supposedly hopeful project, providing many people with housing during a shortage at the time when The Netherlands was reconstructing after the World War II. Pending on the hopes and ideals of great old-fashioned believes, the realisation of De Bijlmer was rushed in order to make this dream of having a modern utopia come true.

While on the contrary there are exemplary projects that show the possibility of success in making an idealistic neighbourhood. One of these examples is *'Agnetapark'*, located in Delft, The Netherlands. This project is founded and developed by the first Dutch social entrepreneur Jacques van Marken in 1882. Initially, Agnetapark was developed for his employees to live closer to his factory. Over time the focus shifted towards offering the best living quality for his workers with many different reasons. Therefore he designed Agnetapark to be an utopic neighbourhood. Almost 150 years later, currently Agnetapark still succeeds in performing as a great neighbourhood to live in. Both projects, De Bijlmer and Agnetapark, show great ambitions and best intentions, but were executed differently and have proven themselves with contrasting impact. This has left to the questioning of why one project has succeeded and another has not.

Problem statement
As defined by Park & Turner (1967): the city is a man-made product, and thus is the idea of the built environment developed. This environment is opposed to the natural environment from which people have separated themselves. It is a world created by humankind from their heart's desire and for that, people are condemned to live in their own creation. It is a place where people work, live, grow and eventually survive. Yet, the built environment does not turn out to be the way that would resemble the desires of people.
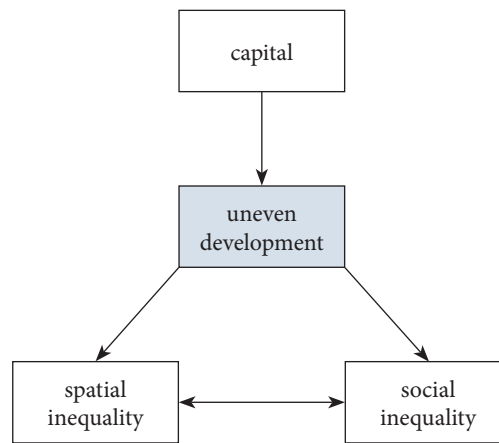
This becomes evident in society as people experience more inequality (OECD, 2015). In the built environment this is expressed by (spatial) segregation of certain, mostly low-income, minority groups. The umbrella term for socio-economic inequalities is called *uneven development*. It is a process in which social relations in capitalist societies are expressed in social classes (Smith, 2001). The competition-driven and profit-aimed economic system causes for social classes to be deliberately maintained for conserving one's own social status. This makes it difficult for people of lower class to be equal in opportunities and living space (Nesbit, 2010). In short it can be said that spatial inequality is a direct result from capitalism. This can be confirmed by the definition of uneven development by Harvey (2000). His definition describes capital being the input for uneven development which causes for both social and spatial inequalities, see figure 1. As the correlation between the two is strong, often the term socio-spatial inequality is used to address both.

And it is unfortunate that the built environment is dependent on the investment and withdrawal by capital (Smith, 1984). Given is that capital is more prone to be invested in capital centres where profit rates are higher and risks of loss are lower. This translates into short-term thinking in urban developments within the built environment, where the highest profit rate is chosen over the needs of people. The investments are primarily led to already well-developed areas of lesser need for more capital. This causes for the overall developments in society to be even more out of balance. This leads to underdeveloped places not getting the spatial quality required.

As the world population is growing, more people will live in the built environment. At this current rate of increase in segregation more people will experience socio-spatial inequality. For a great amount of people this means that the living quality will not be sufficient. Nevertheless, all people have their right to live by their standards (Harvey, 2012). To conclude, mainly two problems are noticed within this process of uneven development, see figure 2. (1) The short-term thinking inherent to the capitalist character of society and (2) the outcome of negative societal impact that comes along with it.
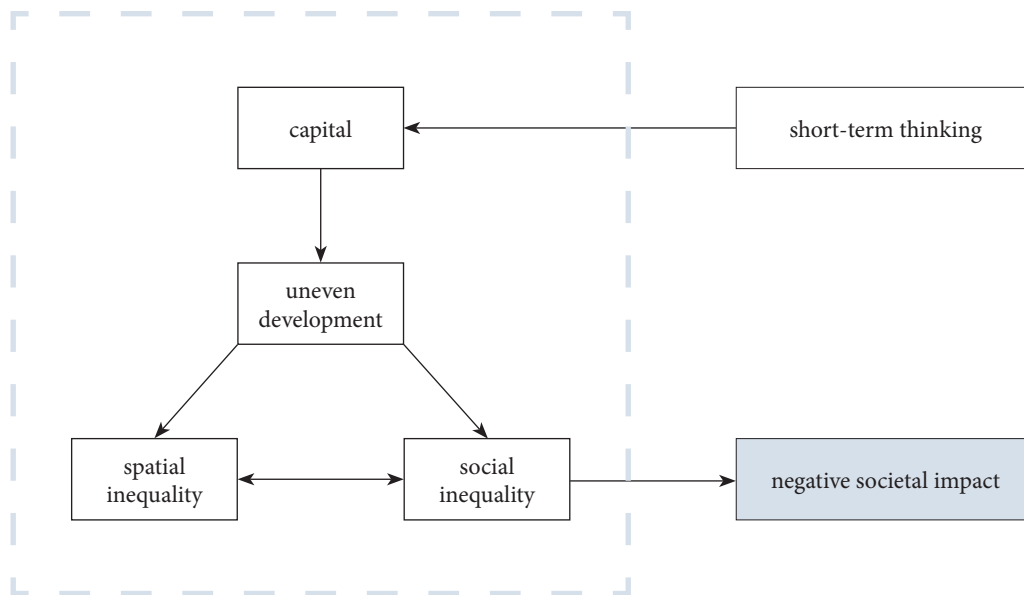
Figure 2: Conclusion diagram problem statement, own image

Research question and aim
The problem as described in the statement combined with the personal perspective and position of the designer has led to the following main question:

'What design principles create long-term positive societal impact?'

This research limits to the scale of a neighbourhood. and the main question will be answered from two components. One component that finds the principles behind an ideal neighbourhood design and another component that tests these principles on case studies. This all is formulated into the following sub-questions:

- What are design principles for an ideal neighbourhood?
- What can be learned from realized projects?

There is a great urgency to change the built environment into something that meets the desires of people. Although the complexity of the societal problems exceeds many disciplines, the role of the designer can still play a part. Of course the capitalist system will not change in the near future. Until then the tendency of investment going to higher profit rate instead of people's needs will remain. Nevertheless the population growth will continue and more neighbourhoods will need to be built for these people. As societal problems are interwoven in the complexity of the built environment, eventually this is translated into spatial qualities. The designer has influence on this spatial translation. For that, the importance is to know, apart from socio-economic situation, what principles make a good neighbourhood. In the long run a project may be appreciated more, fulfilling the needs of people for many generations: *a long-term positive societal impact.*
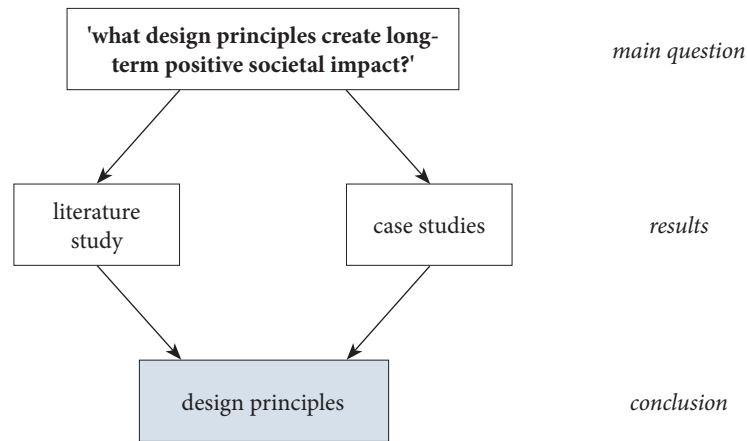
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Figure 3: *Diagram research structure, own image*

2. Methodology

In this thesis, the research will be conducted through a combination of literature study and plan analyses. Both studies will explore the long-lasting design principles behind well-functioning neighbourhoods where the outcomes will complement each other in the conclusion.

Literature study
The first part of the thesis will thoroughly explore the historic context behind different ideal neighbourhoods. As ideals can change over time, this will be clarified with an overview based on existing facts and literature. This overview forms a starting point for the rest of the (academic) literature study in which there will be further exploration on the subject of the ideal neighbourhood. The different elements that are found in this study that determine the success of a long-lasting neighbourhood form a framework of design principles that will be used in the second half of this thesis. The framework itself is mainly based on the findings of Adams & Tiesdell (2012) in *Shaping Places*.

Plan analyses
In addition to the literature study, this thesis consists of plan analyses that focusses on mainly two projects, taken as case studies: Agnetapark and De Bijlmer, both realised in the Dutch built environment. As both projects have existed for a long time, the design principles used in these projects have proven themselves either to be successful or not. The plan analyses form a more tangible counterpart for the (abstract) framework that is created from the literature study of this thesis. This is for the reason of (1) reflecting/testing the framework and (2) to add missing design principles that might not have been written about.

The findings of both the literature study and the plan analyses, form the toolbox as an answer to the main research question. Furthermore, this design toolbox will be implemented in the architectural part of this graduation.

3. An ideal neighbourhood

Learning from different era's of ideals

Urban design is primarily based on societal needs (Heeling, Meyer, Westrik & Hoekstra, 2002). The societal needs differ from generation to generation, making urban design very dependent on the context. Therefore different ideals are seen throughout the history of urban (and architectural) design. Each time period has its own interpretation of a 'best' solution. This is translated into different variations of spatial design.

Most notably, urban complexes became more important for The Netherlands during the industrial revolution around 1850 (Korthals, 2004). At that time, many people moved from the rural areas to the city for work opportunities. The awareness of building neighbourhoods started during this period in which the early urban design movements start to develop. Initially people lived in very poor circumstances. In some cases this had led to factory owners to act by creating higher quality neighbourhoods for their employees. This is also where studies and theories about the ideal neighbourhood began to emerge. One example is the Garden City movement, based on the theories of Ebenezer Howard.

Often neighbourhood ideals change after big societal events or differences in urban development regulations and policies, see timeline 1. As described earlier the industrial revolution had a lot of impact on how neighbourhoods were built. But other occurrences have had a large societal impact as well, e.g. World War II, reconstruction, economic crisis and so on. These negative societal changes or problems lead to different needs and ideals of people which translates into very different urban designs. In general, urban design is seen to be carried out in the midst of unsustainable societal (social and environmental) and economic development (Meijer & Adriaens, 2010). As both of these developments are highly dependent on the historic context, there is a tendency to build for current problems rather than to build for the long future as well. In line with the rise of capitalism, the short-sightedness of this economic system seems to influence the ever-changing neighbourhood ideals. The fastest changes of ideals are seen after World War II, see figure 3.

Main problems	Period	Policy	Control
War damage and housing shortage	1945 - 1970	Reconstruction	State government
Living quality	begin 1970 - end 1990	City renewal	From state government → to municipality
Liveability, post-war neighbourhoods, lack of attractive cities	end 1990 - 2010	Big city policy, intermunicipal structure vision, neighbourhood approach	Municipality, corporations
Shrinkage & overgrowth, crisis, energy, care, finance	current	Renewal in local coalitons	Market, municipality

Figure 3: Categorisation Dutch urban developments from World War II, own image (Platform31, 2015)

The Ideal Neighbourhood

150 years of Dutch urban development and architecture

1850

The beginning of the Dutch industrial revolution. A lot of factories open in many different fields. There is plenty of work opportunity for people.

1901

Aggravated social conditions has led to the Dutch Housing Act. The legislation is aimed at bettering and improving the lot of the less fortunate and the lower class.

Beautiful city

The desire behind this period is to improve the public housing. The aesthetic frame was important, often inspired by neo-baroque urban developments.

Social democrats

The lead of social democrats in the government has led to several urban extension plans.

CHOLERA-COMMISSIE.

De Cholera-Commissie waarschuwt nogmaals met nadruk tegen het gebruik van

ONRIJPE VRUCHTEN, PRUIMEN, KOMKOMMERS, MELOENEN, GARNALEN.

OUDERS behooren zorg te dragen dat hunne kinderen zich niet in 't geheim vruchten verschaffen.

Voor goed Drinkwater behoort steeds gezorgd te wor-

Poor living quality

As the production industry at that time was growing, people left their homes from the rural areas to the city. In a rapid speed there was a lot of work available. This led to a high demand in housing, as people want to live close to their work. Usually the factories were placed near the cities. In desperation often the workers get exploited and have the lot to live in very poor and unsanitary living environments. This in many cases has led to outbreaks of different deadly diseases such as cholera.

Example project

(CANON Volkshuisvesting, 2015)
(Barbieri & Van Duin, 1999)
(Korthals, 2004)

Urban extension plan

In line with the government led by mostly social democrats, there are more plans for extension for mostly social housing. The introduction of the Housing

The Garden City

Arised from alliance of mostly sociologist who advocate for neighbourhoods with local cultural traditions, enhancing the nature in the design.

Not just a beautiful city

The difference of the garden city opposed to the beautiful city is the emphasis on creating neighbourhoods with a focus on harmonious society. The garden city movement conducts both socially and ethically inspired experiments for public housing.

1910 - Start of experiments: buildings industrialised

The industrialisation begins to emerge in the building (construction) industry. Different prefabricated components are being developed.

Act has played a big part in these extension plans. The need and urgence for better housing and living quality has finally reached the state.

Similarity in social movements

Although the garden city movement is recognised some years after the beautiful city movement, the start of this idea was already in 1898. Due to a relatively late industrial revolution in The Netherlands, the garden city movement was later known in practice. Still, the beautiful city movement and the garden city are very similar. From ideals to the execution of the plans, some projects may not even be categorised in one of the two. Both movements have influenced each other and in a way have developed along side each other.

Example projects

(CANON Volkshuisvesting, 2015)
(Barbieri & Van Duin, 1999)
(Korthals, 2004)

Social housing

Ever since the Dutch industrial revolution the living quality was poor and got worsen quickly. People especially from generations after did not appreciate the often repetitive and identity-less dwellings.

1945 - Housing shortage

After the World War II, there was a lot of war damage in The Netherlands. This created the housing shortage. The Netherlands had to reconstruct as quick as possible, to focus n a new future.

Standardisation & minimum dwelling

In order to act on the housing shortage, minimum (quality) dwelling were made. All standardised and efficiently to be made and built.

Large scale schemes & reconstruction

The standardisation made is possible for the state to plan large scale schemes and to actually physically realise this within a short amount of time.

Immense pressure government

The housing shortage at the time of the reconstruction has put an immense pressure on the government. Not only did they had to control and fix the war damage but they also had to provide people for housing. Under stress, many impulsive descisions were made. This all in order to get result: a lot of housing. It led to a large quantity of (minimum) dwelling, rather than quality. Although the state did try to modernise and sell the plans to the people as something new and fresh. The philosophy of airiness, light and space (*lucht, licht & ruimte*) was sufficent for short as many of the reconstruction buildings were built in such a rapid speed that the living quality began to worsen quickly.

Example project

(Barbieri & Van Duin, 1999)

Problem of reconstruction

As stated before, the living quality of the dwellings were poor and got worsen quickly. People especially from generations after did not appreciate the often repetitive and identity-less dwellings.

1960 - Rise of capital

It took a long time for The Netherlands was up an running again. Around 1960's the rise in wealth started in The Netherlands. This led temporarily led to more capital to invest in large scale projects that proceeds to be built.

1960 - Garden city 2.0

For the large scale master plans, often this would take place around the edges of the city. The rural areas make place for new typologies such as the garden city 2.0, or garden suburbs. These plans were inspired by garden city to integrate nature in the neighbourhood. But strongly differ in execution as the organis suburbs were very high density, compared to garden cities. Also the nature that was integrated often did not have much functions (*kijkgroen*).

1965/1970 - Shift towards process planning

For some time people were content with the projects from the reconstruction. However this did not last for long as the downsides of the rush of the reconstruction quickly surfaced. This caused for a shift in a different planning process. As wealth was rising within local governments, the state was not anymore responsible for large scale housing development plans.

Example project

(Barbieri & Van Duin, 1999)

Privatised projects

As wealth is beginning to grow, society is hitting a new phase: consumerism. The neoliberal capitalism starts to develop. Opposed to the rconstruction this meant that a lot of the housing projects were small scale developed, often for the more privileged.
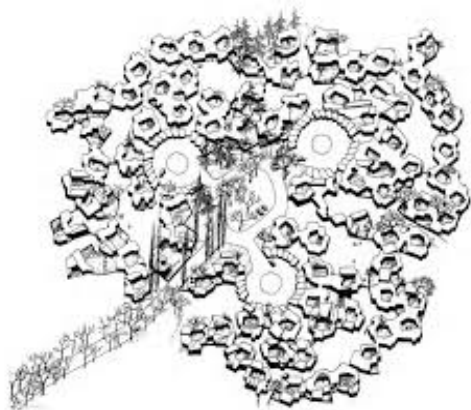
From 1970 - Smaller scale developments

These developments usually include designs for villa's and bungalows. As a reaction to the small and repetitive dwellings during this time architecture became more expressive. It became important to show identity on individual level. One of the most notable developments were the 'cauliflower'-neighbourhoods (*bloemkoolwijken*). These usually were relatively large dwellings, set up in a private and socially controled lay-out. Giving the feeling that it was quite secluded and exclusive from others.

Revitalising cities

The urgence to 'revitalise' the city was great. Projects were more focussed on living experience and in a way also more on consumerism, since many of the dwellings during this period were meant for private sector.

Example project

(Barbieri & Van Duin, 1999)
(CANON Volkshuisvesting, 2015)

Extensive cities: Vinex

A newer type around the 1990's starts to develop. In some case people grow in wealth and try to detach from certain groups. They find each other in new neighbourhoods mostly built in the suburbs for a very homogenous target group.

1996 - Privatisation housing associations

Housing associations got prvatised, this meant that they could build more, and faster. Ideally seen, the business case could create for good housing, e.g. more expensive housing to be built in order to realise social housing projects. But unfortunately in practice it came out differently.

Limit to capital

The consumerism hits a new era of neoliberal capitalism in which societal problems and segregation seem to arise. The disbalance in society shows the limits to capital.

Societal problems

The uneven development only worsens over time as distribution of money only to those of higher layers in society. Another side effect of consumerism is the global warming, yet factories still produce for the sake of consuming.

Example projects

(Barbieri & Van Duin, 1999)

And yet stil, housing shortage

With the development of growth in population and the fact that there are more single person households leads to a housing shortage. The housing shortage seems very new in each era, but it is in fact an everlasting problem. First neighbourhoods had to be built for factory workers, after that the war damage had to be controled. Then as a reaction dwellings became more privatised, taking more space and luxury. And now the development towards individuallism has also put more pressure on the housing market. Causing for a new problem: the affordability.

Early Industrialisation   **Efficiency Movement**   **Pre and Post WW**   **Social Engineering**   **Democratisation**   **Liberalisation**

Beautiful City   Garden City   Organic Suburb   Neighbourhood Concept   Small Scale Urban Development

> Modernist Urban Development

Period	Problems & challenges	Focus and response	Intention
Beautiful city period / Garden city	Unhealthy working and living environment	- Spatial principles of ideal neighbourhood - Additional functions to neighbourhood	How do we build neighbourhoods?
Pre- and post World War	Housing shortage, war damage	- Higher density - Efficiency	How do we efficiently fit all people in the city?
Consumer society & social engineering	Living quality due to 'minimal dwelling' made in post-WW	- Perspective of people - Physical and social connectivity	How do we build for people on smaller scale?
New challenges & responsibilities	Societal problems: climate, social inequalities	- Sustainability - Resiliency	How do we build for future generations?

Figure 4: Conclusion overview timeline 'The ideal neighbourhood', own image

In conclusion to the timeline, mainly four periods are shown to be very distinctive, namely: *Beautiful city period/Garden city, Pre- and Post World War, Consumer society (& social engineering) and New challenges & responsibilities*. See figure 4. Apart from just the differences per era, remarkable is that each time period has its own design focus. The societal problems found in each era often thrives for new solutions. For example, after the World War II a lot of buildings were destroyed which led to an enormous housing shortage. It forced the designs to be made cheap, quick and efficiently. This makes the reconstruction period very valuable to learn how to build and plan efficiently in high quantity and density. But of course each period also has its negative sides. Figure 5 shows the four distinctive periods within the roughly 150 to 200 years development of Dutch architecture and urban planning. An overview is shown in which for each period an exemplary project is shown with its characteristic principles according to the intentions and ideals.

Facing new dilemma's
History shows that design is heavily dependent on the context. Design often forms the spatial solutions to societal problems. This explains the often temporary sufficiency of urban design. In other words, the needs and desires of people might be satisfied contemporarily. But as soon as other societal problems enter the next generation, certain design decisions become outdated. Resulting into people not appreciating the design. Or maybe even worse, resulting into negative societal impact if the quality does not meet future needs and requirements. It shows the importance of creating long-lasting and even to say, timeless design principles that suit for contemporary times but also for many future generations. But with many more new societal challenges to face, it is of course also the first priority to solve the contemporary problems. Although, the question is whether or not the future problems are so much different from the past problems. For example, housing has always been a focus due to a continuous shortage for the population that is still growing. As in principle the idea of the built environment is to provide for people's needs and desires to live, work and survive in. Therefore the focus on timeless design principles is important regardless for what era or societal problem needs to be designed.
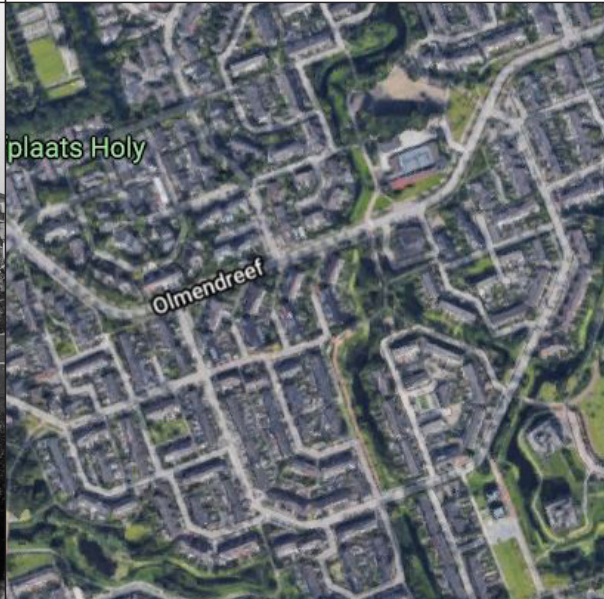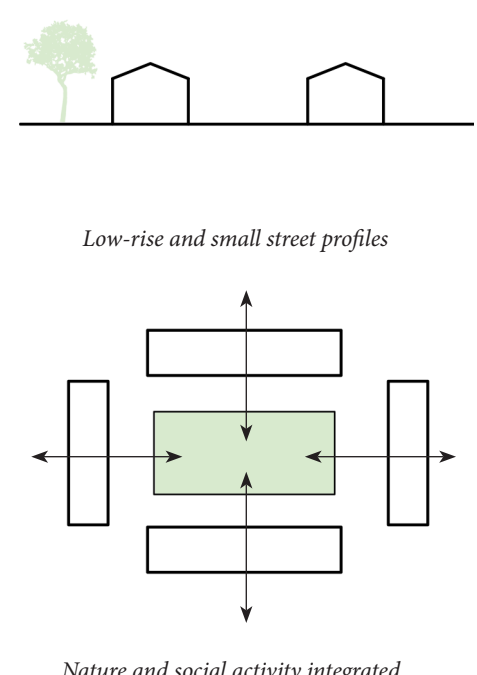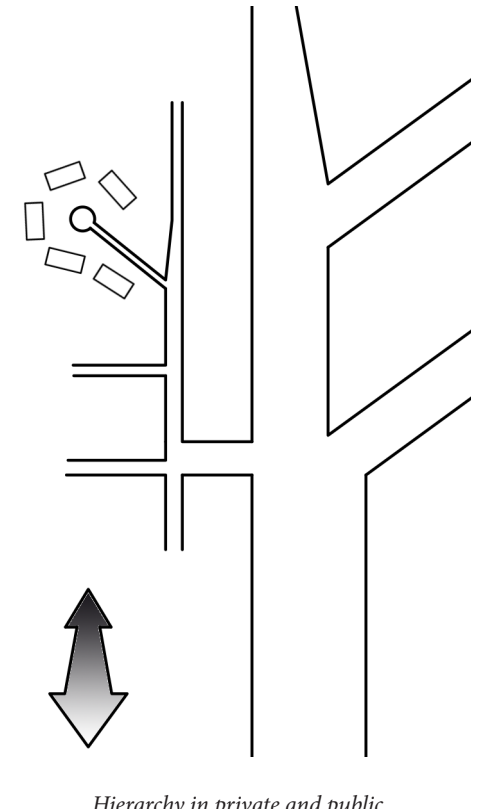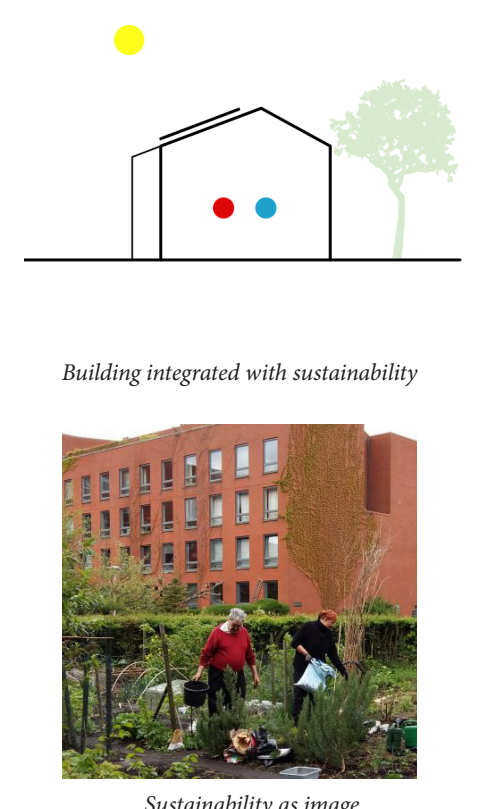
Location and period	**Vreewijk, Rotterdam** *(1913-1942)*	**Kleinpolder, Rotterdam** *(1947)*	**Holy-Noord, Vlaardingen** *(1972)*	**GWL-terrein, Amsterdam** *(1997)*
Project				
Characteristics	- Social initiative by enterpreneurs - Initially set up as village - Nature heavily integrated in plan - Low-rise housing - Dwellings for the less fortunate	- Post World War II → reconstruction - Higher density plan - High-rise dwellings - Pre-fab buildings - Dwellings for industrial workers at Spaanse Polder	- 'Cauliflower' neighbourhood → inspired by garden city, but less structured - Smaller urban development aimed for a small amount → more fortuate people - Strong hierarchy in private and public domains	- Strong focus on sustainability - Mix in target groups - Encouragement for social cohesion - Initially not profitable enough for private parties → developed by corporations
Main principles	 *Low-rise and small street profiles* *Nature and social activity integrated*	 *High-rise and big street profiles* *Prefabricated elements*	 *Hierarchy in private and public*	 *Building integrated with sustainability* *Sustainability as image*

Figure 5: Overview exmemplary design principles per era, own image

The many theories of ideal neighbourhoods

Initial theories about ideal neighbourhood design emerged around the area of the garden city movement. Often this is related to the industrial revolution in which many factory villages started to develop (Korthals, 2004). Theories derived from these areas had very specific sizes, measures and requirements. Often these were elaborated till the level of how many functions a neighbourhood should have and what the best walking distance was between different places. One example of these very elaborated theories is the *neighbourhood unit,* see figure 7.

In general it can be said that the garden city period was a time in which people had to learn how to build neighbourhoods from scratch. The question was how to build an environment that meets the requirements and needs of people: the residents and users of the neighbourhood. The perspective was very much from the scale of people. Often projects were developed organically or in a cooperative way, giving people the opportunity to give feedback.

A highly developed art of urban design is linked to the creation of a critical and attentive audience. If art and audience grow together, then our cities will be a source of daily enjoyment to millions of their inhabitants.

(Lynch, 1959)

But unfortunately this all changed after the World War II. Housing shortage has put pressure on the state to create quantity in housing, rather than quality. It resulted into a phase in which people were very much focused on creating a new life through growing wealth. The efficieny of the new urban neighbourhoods from the reconstruction received a lot of criticism. Jacobs (1961) stated that the lack of human scale in the modernist development and reconstructions was a death to many cities. This, in a milder way, is in more recent studies supported by Gehl (2010). The reconstruction and the growth of capital has disconnected the built environment from the people (Keller, 1968). And for many years this continued, resulting into a critical note from Harvey (1982) about the limits to capital in which the focus on capital growth eventually has negative societal impact.

Life, space, buildings - in that order, please

(Gehl, 2010)

The order of life, space and building is not per se new or innovative. In fact this always had been done from medieval times until modernism. The latter was the time from reconstruction in which the human scale was completely neglected for a period of 60 to 70 years (Gehl, 2010). This caused for a loss in knowledge to design neighbourhoods for people on the actual scale of the human. The insight gained from the timeline is that changes go quicker, due to fast economic and technological developments. This makes it all the more important to design in a sustainable manner in which changes can be incorporated by the urban design. Yet again, not new concept. It is just that valuable knowledge got lost and forgotten. By learning from the past on neighbourhood theories, new and fresh insights can be built from there.
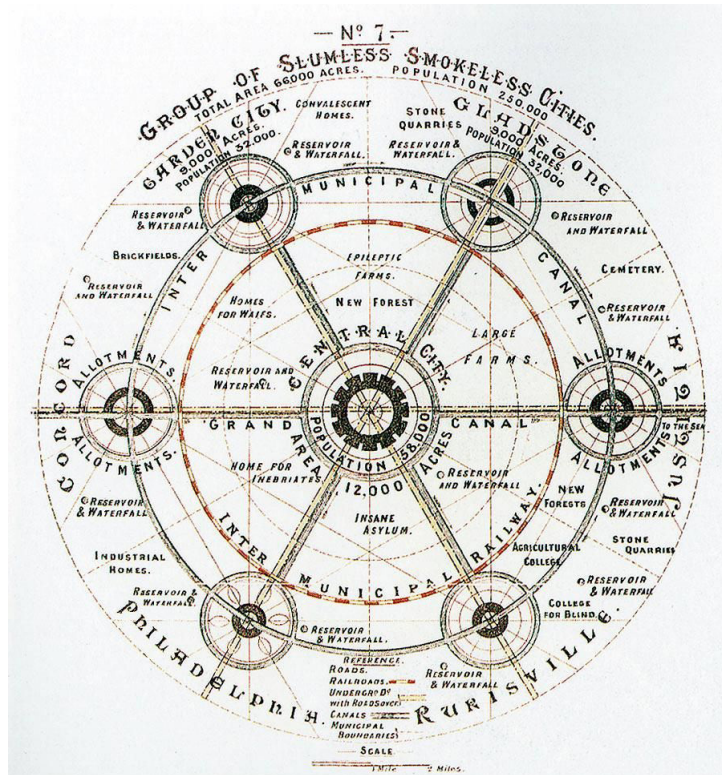
Figure 6: Garden City Model

THE NEIGHBORHOOD UNIT FORMULA

NEIGHBORHOOD UNIT PRINCIPLES
Reproduced from New York Regional Plan, volume 7
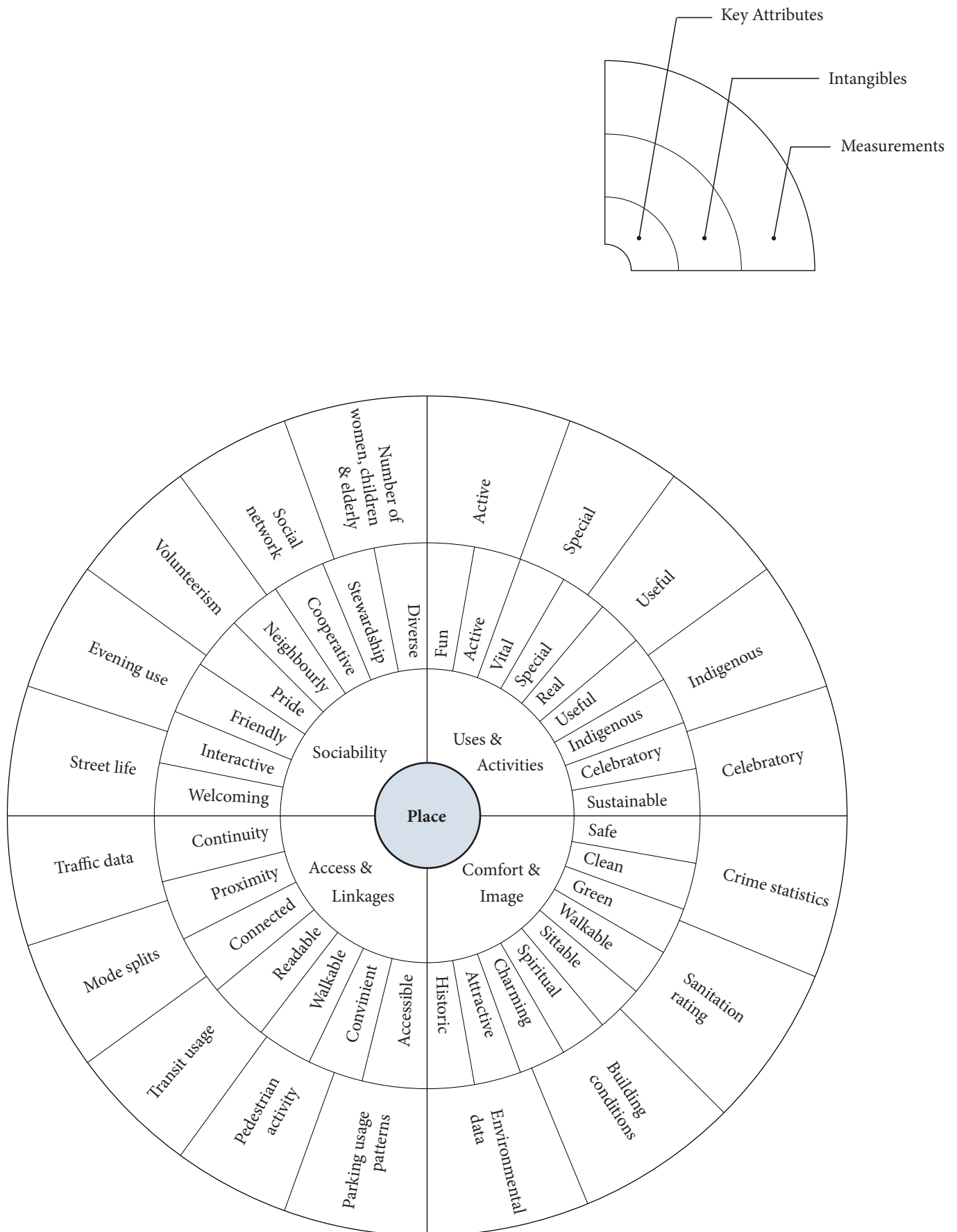
Figure 7: The Neighbourhood Unit

Legend (top right):
- Key Attributes
- Intangibles
- Measurements

Wheel diagram centered on "Place" with four quadrants:

Sociability — Stewardship, Cooperative, Neighbourly, Pride, Friendly, Interactive, Welcoming
Outer: Number of women, children & elderly; Social network; Volunteerism; Evening use; Street life

Uses & Activities — Diverse, Fun, Active, Vital, Special, Real, Useful, Indigenous, Celebratory, Sustainable
Outer: Active, Special, Useful, Indigenous, Celebratory

Access & Linkages — Continuity, Proximity, Connected, Readable, Walkable, Convinient, Accessible
Outer: Traffic data, Mode splits, Transit usage, Pedestrian activity, Parking usage patterns

Comfort & Image — Safe, Clean, Green, Walkable, Sittable, Spiritual, Charming, Attractive, Historic
Outer: Crime statistics, Sanitation rating, Building conditions, Environmental data

Figure 8: Characteristics of a good place, own image (Project for Public Spaces, 2015)
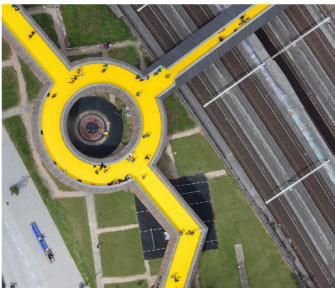
Successful places

In terms of attachment to space, often the term *place* is better to be used. The emphasis on place is less abstract for people and therefore is valued more (Adams & Tiesdell, 2012). What makes a great place according to Project for Public Spaces (2018), is a place in which social, economic and environmental exchanges all happen. This is facilitated by different functions and activities. Based on the believes of Gehl (2012) spaces and places comes next in importance after the needs and perspectives of people. Therefore a structural lay-out is important for a place to function well. In the studies of Project for Public Spaces (2018) they found four qualities: *accessible, activities, comfortable & sociable.* Figure 8 shows the outcome of the studies. Next to qualities, this model shows the intangibles according to the qualities and the factor in which these can be measured.

As clear as the overview of Project for Public Spaces is, the study mostly lacks in directly translatable measures into spatial form as the studies is focussed on the intangibles. It does however show the importance of the bridge between people and space, if the order of people-space-building by Gehl (2012) is followed. Yet, what people perceive spatially are the intangibles that make the (physical) place. And for that, places matter for the experience of people (Adams & Tiesdell, 2012). The studies of Adams & Tiesdell (2012) show similar characteristics of successful places in a more pragmatic way. The following characteristics are essential for a successful place according to Adams & Tiesdell (2012):

▪ *Well-connected and permeable* - permeable for people to reach
▪ *Mixed-use and varied density* - overlapping and interweaving of activities, as a crucial part for the vitality (Jacobs, 1961)
▪ *Distinctive* - unique in experience and appearance, yet facilitating, permitting and rewarding participation. All the while keeping the localness, its authenticity (Florida, 2002).
▪ *Sustainable and resilient* - for long-term use: a test through time for a place to be successful or not
▪ *For the people* - an environment by people, for people

Adams & Tiesdell (2012) also formulates different measures and principles to illustrate the characteristics. In this thesis certain measures are highlighted by an example, see figure 9.

Mixed-use and varied density

Diversity in activties	Enabling of social interaction	Efficient use of space	Additional principles
Grachten, Utrecht	*Piano project, NS*	*Vakwerkhuis, Delft*	- Overlapping of activities - Varied functions in densities or intensities - Greater choice of lifestyles - Added values to social, economical and environmental issues

Well-connected and permeable

Efficient and clear movement framework	Clear boundaries of functions	Well-defined connections	Additional principles
Barcelona	*West Beat, Amsterdam*	*Luchtsingel, Rotterdam*	- Direct routes to functions - Sufficient access to public transport - Variety of (block) sizes - Permeable by variety of buildings and functions

Sustainable and resilient

Participation of users	Local distinction	Inviting users to experience	Additional principles
Communal garden, Rotterdam	*Kerckebosch Zeist*	*Waterplein Rotterdam*	- Efficient in use of resources - Reduce in environmental footprint - More biodiversity - Future visioning: long-term - Maintenance and clear management arrangements - Sturdy - Resilient: adaptable
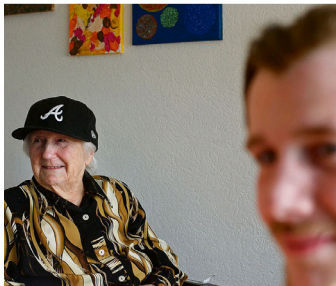
Distinctive			
Enhancing its identity and authenticity	**Local distinction**	**Users as part of the scene**	**Additional principles**
			- Emphasis on important funtions: use of paths, edges, district, nodes, landmark - Integration of urban fabric - Unique and original in experience - Option to create experience for the user
Kroyersplads, Denmark	*Watertoren, GWL-terrein*	*Dakdorpen, Rotterdam*	

For the people			
Presence of other people	**Diversity in socio-economic classes**	**Right human scale**	**Additional principles**
			- Attractive - High quality functions - Diverse activities - Inclusive - Variety of intensity in functions - Clearness - Safety - Comfort
Rotte, Rotterdam	*Humanitas, Deventer*	*Pepergasthuis, Groningen*	

Figure 9: 'The characteristics of a successful place, own image (Adams & Tiesdell, 2012)

The importance of scale

population -   <100   1000   5000   25000   100000

scale - | Street Neighbourhood | Larger Districts |

(Jane Jacobs, 1961)

population -   <100   1000   5000   25000   100000

scale - | Face-block | Residential | Institutional | Community |
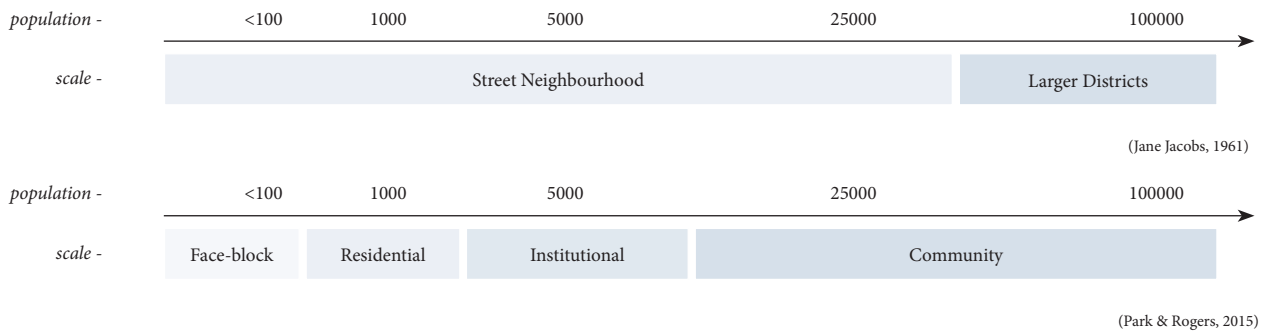
(Park & Rogers, 2015)

Figure 10: Different definitions of scale, own image

The term neighbourhood is rather abstract as many different interpretations are possible. E.g. residential, mixed-use, high density, in a village, in a metropolitan area or a few blocks. But earlier during the Garden City movement, studies have been done about the ideal size for a well-functioning neighbourhood. The *neighbourhood unit* as an example shows very clear guidelines in numbers and requirements for an ideal neighbourhood (Park & Rogers, 2015). It specifically addresses the scale size of an area in relation to the number of residents and functions. Although these studies and theories have been made in early 1900s, different neighbourhood theories after this period have lost their sense of scale and became more abstract, see figure 10. Yet, the scale of a neighbourhood is crucial. By knowing the area size and population, the density becomes clear. Which gives an indication of what characteristics a neighbourhood should have and what functions it should contain. Recent studies by Park & Rogers (2015) show four distinctive scales of neighbourhood. All different scales show very different needs and requirements, see figure 11 and 12.

Scale	Definition	Characteristics	Population	Functions
Face-block	Cluster of several houses (not exceeding 7 blocks)*	Critical informal + personal relationship	<500	Activities that strengthen personal relatonships, mostly informal
Residential neighbourhood	Several face blocks	Homogeneous in physical and socio-economic aspects with similar housing values	500-1500	1 or 2 central activity points, e.g. school or small retail shop
Institutional neighbourhood	Several residential neighbourhoods	Having a range of functions. Usually having an own name, with possible official/ administrative boundary	1500 - 7000**	Range of schools, health centers, recreational + social facilities, shopping center
Community	Cluster of districts, such as townships or suburbs	Large amount of people & functions, it includes both residents and visitors	7000>**	Cultural centers, administration centers

* Based on the studies of The Garden City by Ebenezer Howard in which the assumption is that a diameter of 300 yard (about 275 meter) is an ideal size or boundary for a neighbourhood due to the walkability.

** Yet still a rough estimation of the exact number, as it all depends on the ratio of density and the size of the part of the city. E.g. a lower density would also mean a lower number in population.

Figure 11: Defintions of neighbourhood scales, own image (Park & Rogers, 2015)

	Scale & population	Characteristics	Functions & activities			
Fazantlaan, 'Vogelbuurt', Schiedam	Face-block, <500	Unofficial name for the neighbourhood with main focus on one street in which activities are organized for social cohesion, bringing young and old together	Informal activities such as celebrations and barbecues to bring everyone together. With active volunteers these activities exist.			
GWL-terrein, Amsterdam	Residential neighbourhood, 500-1500	Clear cohesion in architectural expression. Similar values amongst residents: sustainability and social cohesion	Usually communal activities are revolved around one or multiple activity points. Small functions, such as retail is included in this scale.			
Wippolder, Delft	Institutional neighbourhood, 1500-7000	Neighbourhood with official administrative name/boundary. Similar in architectural appearance. Similar income groups.	Range of different functions: schools, supermarket, retail shops, medical facilities. Activities that occur usually are initiated by e.g. schools.			
Voorhof, Delft	Community, 7000 >	The neighbourhood is very mixed in population. At this scale, other than residents more people are inolved like visitors, workers and commuters	It includes multiple large functional centers: shopping, educational, recreational and cultural.			

Figure 12: Practical example of different neighbourhood scales, own image

Principles for long-lasting neighbourhoods
Throughout time different models and theories for an ideal place or neighbourhood develop. According to more recent studies by Adams & Tiesdell (2012), a successful and well-functioning place consists of five elements. In which the five elements are more of a direction or guide line for solutions and not necessarily design principles by itself. The elements or characteristics are: m*ixed-use and varied density, well-connected and permeable, sustainable & resilient, distinctive & for the people.*

The previous paragraph shows different types of neighbourhood interpretations and scales. It shows that varied sizes of neighbourhoods have very different needs and therefore need other measures. Ideally, good neighbourhood ideals work on every neighbourhood scale. And it should be able to scale up in case that later on higher density is required due to growing population.

Based on the five elements by the studies of Adams & Tiesell (2012) all conclusions and principles found in this literature study have been categorised. Furthermore, these conclusions went through two sorts, (1) principles, measures and conclusions that had a direct spatial translation were selected and (2) the selection was further sorted in similarity. Based on the similarities the overall intention and overlap made the themes for the design principles. The principles form a framework, in which each principle decribes a spatial goal, rather than just giving a set measure. It leaves room for interpretation and different solutions but gives the essence and importance behind the required princples for an ideal neighbourhood. For the selection process, see .

Multifunctional	Social interactive	Accessible	Well-defined connections and boundaries	Distinctive image
Varied functions, in density and intensity	*Meeting points, activities or other means for social interation*	*Well linked at both smaller and bigger scale (walking, bike, car, public transport): efficient movement framework*	*Clear overview of the connectivity within the neighbourhood. Good definition of functions and its private or public boundaries.*	*Clear (architectural) identity of the neighbourhood, enhancing its authenticity*
Inclusive	Efficient use of space	Adaptable	Nature-inclusive	Human scale
Containing multiple target groups or social classes from in and out the neighbourhood	*Possibility for higher density, aiming for qualitative use of functions and the lack of unnecessary functions*	*Resilient for the unknown future*	*Improve or maintain biodiversity and having efficient use of resources to build*	*Environment scaled to human physical and sensory abilities: walkability, not too high or low-rise buildings.*

Figure 13: Ten prnciples for an ideal neighbourhood design, conclusion (own image)

Levenswijsheid

Wie wijsheid slechts uit boeken leert,
En zelf niet wijs ook denkt en leeft,
Wordt steeds meer van haar afgekeerd,
Hoe meer hij haar te nad'ren streeft.

Het leven moet de bodem zijn,
Waarin wijsheid wortel schiet:
Plant gij uw zaad op vreemd terrein,
Ge brengt geen boom, die vruchten schiet.

(Jacques van Marken)

4. Learning from realised projects

Agnetapark: the beautiful paradise

'Zij viel voor zijn 'verlichte ideeën' om de wereld leefbaarder en rechtvaardiger te maken. Al snel deelden ze dezelfde ambitie, en ontwikkelden concrete plannen om 'de welvaart en het levensgeluk van arbeiders te vergroten'

(Van der Mast, 2015)

Located in the North-West of Delft, Agnetapark is a neighbourhood originated from 1884. It is developed by an entrepreneur, Jacques van Marken roughly during the peak of the Dutch industrial revolution. Agnetapark is often seen as a factory village, a neighbourhood designed and developed specifically for factory workers. Often these factory villages are found very close to the factory. The development of this neighbourhood went in different phases. This can be seen in the differences between the urban lay-outs per development, see figure 14. The first development shows a more organic character whilst the second development has a more formal design. The different designs give away the time period in which they were realised. Both are very much school book examples of their own time. The first development originating from the 'beautiful city'-period and the second development from the 'garden city'-period.
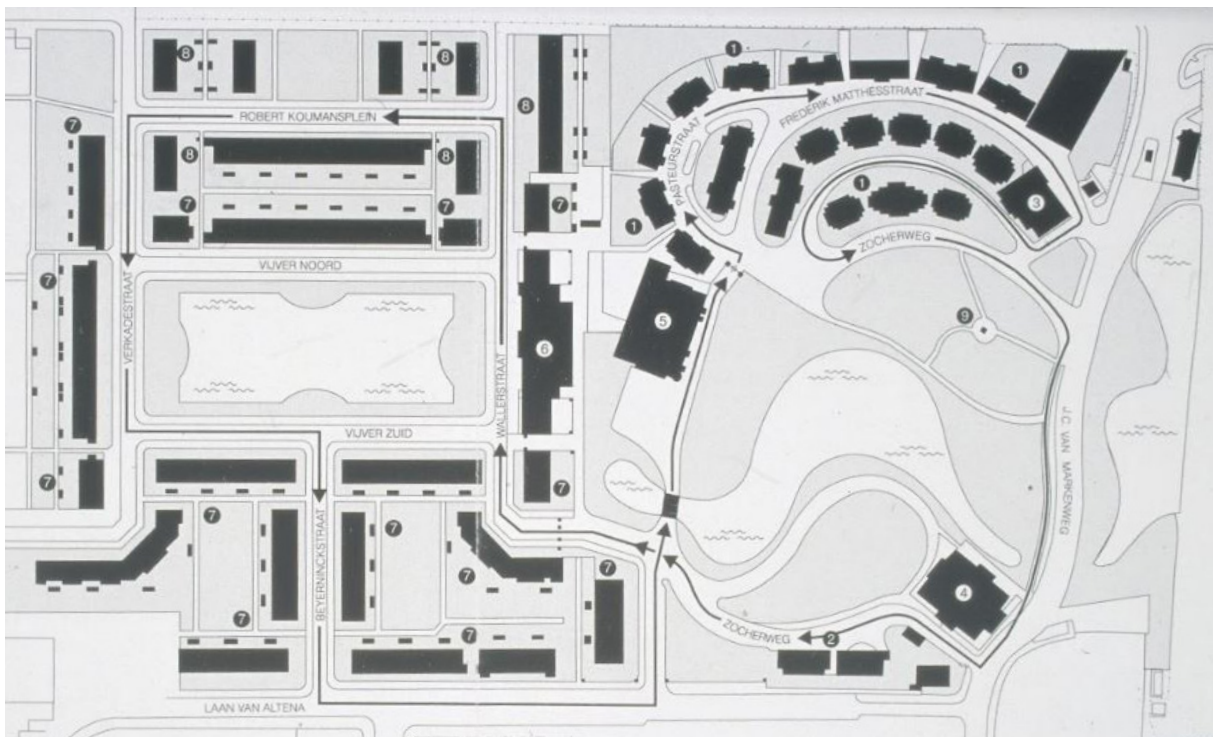

Figure 14: Plan Agnetapark (Kaartenkamer TU Delft)

Agnetapark

The historical context and development

1852

The formation of the first housing assocation for working class out of social act by entrepreneurs.
Main values: purity, morality cleanliness, homeliness.

1854

The low quality within the dwellings is becoming a more acknowledged problem amongst more people. For the first time a report is written about the minimum requirements for a dwelling.

(CANON Volkshuisvesting, 2015)
(Van Hoogstraten, 2013)
(Beekers, 2012)

1878

Van Marken established the first works council in The Netherlands. An internal newspaper *(De Fabrieksbode)* was included as well so that all workers feel included.

1881

Van Marken purchased the land next to his factory with the idea to develop this into a residential neighbourhood. The realisation for him was that in order to include his employees, it was easier to do so if they live closer to the factory.

(CANON Volkshuisvesting, 2015)
(Van der Mast, 2019)

1883

Van Marken's empire grows as his second factory opens. The oil factory is later also known as Calvé and has played a big role for the Art Nouveau movement.

1884

The first residents arrive at Agnetapark to begin their new lives. The involvement and care for the employees grows bigger for both Jacques and Agneta. In that same year Van Marken, as first person in The Netherlands, introduces health insurance and pension to his employees. A special fund was also available for widows who had difficulties to make ends meet for their household.

(CANON Volkshuisvesting, 2015)
(Van der Mast, 2019)
(Van der Mast, 2015)

1901

The establishment of the Dutch Housing Act (Woningwet) in which they promote for social housing what Van Marken already pioneered in.

1906
The death of Van Marken

The overall lead was taken over by Agneta.

1909
The death of Agneta

After the death of Van Marken, Matthes took over most of the overall management of the factories. The driving force behind the development of Agnetapark eventually died in 1909.

(CANON Volkshuisvesting, 2015)
(Van der Mast, 2019)
(Van der Mast, 2015)

1910

The emergence of the Housing Act in combination with the booming industry for production factories has led to a rise in 'factory villages'. Many neighbourhoods were created for the factory workers so that they could live closer to work, have a better living quality and are in a more hygienic environment.

The social engineer: recognition Van Marken

As the rise of factory villages occured almost 50 years later, Van Marken once again was seen as a pioneer and was even called to be a social engineer. Agnetapark becomes a exemplary project for other factor villages.

(Muntendam, 1971)
(Van der Mast, 2019)

1924-1925

An extension is developed with a more rigid structure and process. The extension is famous for its distinctive appearance. Like the first development, the extension also contains many facilities that support the needs of the residents: shops, post office, school, etc.

Fig. T2.5. Extension

1989

Agnetapark becomes a cultural heritage to the state.

2005

The insurance fund sells Agnetapark to a private party. It is no longer in property of the factory.

2011

Agnetapark becomes a protected sight for the city.

2019

150 year anniversary DSM.   (Van der Mast, 2019)

1866

The Blue Death of Delft, an cholera outbreak that causes for 21.000 deaths. The outbreak is due to bad hygiene and poor drinking water quality.

(CANON Volkshuisvesting, 2015)

Fig. T2.1. Jacques van Marken
Portrait of the social entrepreneur

1869

Establishment of the first factory: Gist- en spiritusfabriek (yeast and spirit factory), located in Delft.

Jacques van Marken

Van Marken who studied at the technical university in Delft was the first Dutch social entrepreneur. He was famous for his innovative insights and was a pioneer in many things. Van Marken was an idealist who sought for the best solutions. He did this both for his own business as well as for his employees and factory workers. Often he would find win-win solutions for different problems whom others had deemed as too difficult or impossible.

(Van der Mast, 2015)
(Van der Mast, 2019)

The involvement of Agneta

The couple Van Marken and Matthes did not have children of their own. Instead, Agneta Matthes gets involved with the neighbourhood and is seen as a mother-figure by many. Over time the neighbourhood grew, and Agneta frequently visits the residents to ask for feedback in order to optimize the living quality of Agnetapark. This among other things has resulted into a study of 40 floor-plans that were optimised for the employees. Eventually not only the needs of the employees were taken into account, but of their whole household as well. This has led to developments of daycares, shops, social gatherings, events and other facilities.

Fig. T2.2. Agneta Matthes
A statue in honor of her 100th death anniversary

1892

One of the main buildings within Agnetapark is the communal house. The house was created for the employees to use it for leisure and enjoyment. Cultural events were organised from this house.

*Fig. T2.3. Square in front of the communal house*

Fig. T2.4. Communal house of Agnetapark

Well-being of workers

Agnetapark is seen as a cooperative development in which the neighbourhood is developed organically with input of the residents themselves. The focus was to offer hygienic and high living quality within a green environment for the employees. Room for social engagement was also made, for example the communal house that was multifunctional: from canteen to daycare to venue for different (cultura) events. Whether this all was done for social control or not, in the end, employees got a better living and working environment. The following in which Agnetapark succeeds to pioneer in: offering schooling and day care; health insurance; pension; social housing; works council; profit distribution amongst all employees.

(Van der Mast, 2015)
(Muntendam, 1971)
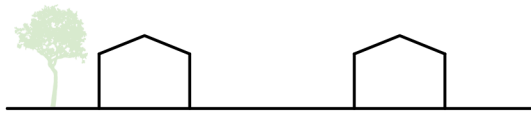
Low-rise buildings
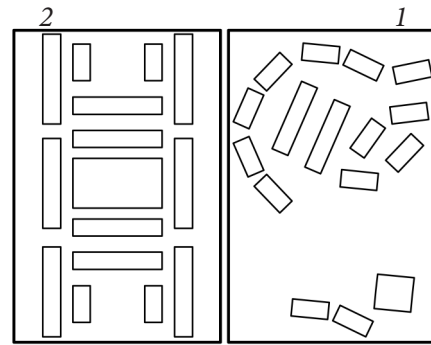
Different phases

Neighbourhood within neighbourhood

Distinctive architecture

Green and leisure

Multifunctional
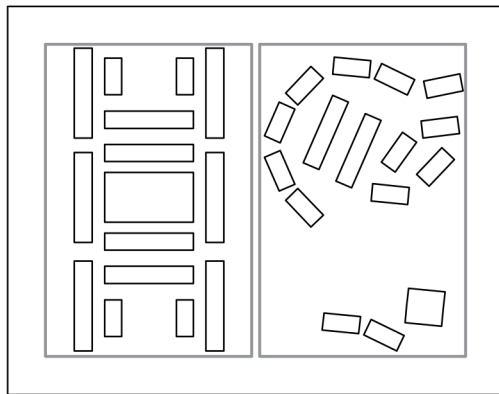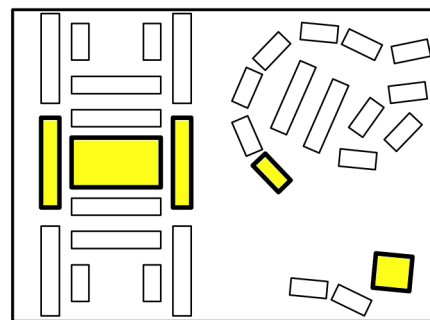
Figure 15 : Plan analysis summary, own image

Figure 16: Factory news paper

Plan analysis

▪ *Low-rise buildings* - This creates a relation to *human scale.* The smaller street profile also contributes to the relatable human scale.

▪ *Built in different phases* - Agnetapark started as cooperative development. After feedback of residents, the best quality housing typologies could be created for the people.

▪ *Neighbourhood within a neighbourhood* - The neighbourhood as a whole was designed to be relatively dense, for many workers. But keeps a small pictoresque scale by having distinctively different appearances per era's of development.

▪ *Distinctive architecture* - The architecture is very distinctive and is kept this way due to set maintenance regulations, already implemented from the beginning for residents to follow.

▪ *Green and leisure* - In both developments, green and nature has been a central theme in the design of Agnetapark. The emphasis on green is enhanced by giving it a communal function, mostly leisure, for people to enjoy and be together: enabling social cohesion.

▪ *Multifunctional* -Agnetapark is not only a residential neighbourhood. Designed to be a villag, the neighbourhood contains many functions, from daycare, to grocery store and even a press for the factory news paper.

Furthermore all the principles named above contributed for the social cohesion in Agnetapark. But mainly what tied the neighbourhood together was the factory, see figure 16. The neighbourhood was supposed to be a utopic village for employees in which they work and live happily together. Therefore different communal buildings were built and several activities were organised for the social cohesion in the neighbourhood. Although in current times not necessarily the factory would be something that is to tie the neighbourhood together. But a search for an unanimity supported with functions that enables this is a great principle that can be learned from Agnetapark.

Multifunctional	Social interactive	Accessible	Well-defined connections and boundaries	Distinctive image
Varied functions, in density and intensity	*Meeting points, activities or other means for social interation*	*Well linked at both smaller and bigger scale (walking, bike, car, public transport): efficient movement framework*	*Clear overview of the connectivity within the neighbourhood. Good definition of functions and its private or public boundaries.*	*Clear (architectural) identity of the neighbourhood, enhancing its authenticity*
Inclusive	Efficient use of space	Adaptable	Nature-inclusive	Human scale
Containing multiple target groups or social classes from in and out the neighbourhood	*Possibility for higher density, aiming for qualitative use of functions and the lack of unnecessary functions*	*Resilient for the unknown future*	*Improve or maintain biodiversity and having efficient use of resources to build*	*Environment scaled to human physical and sensory abilities: walkability, not too high or low-rise buildings.*

Figure 17: Agnetapark tested on the framework, own image

Projected on the framework created from literature study, Agnetapark nearly scores all the principles. Only adaptable is not present, as the buildings are not flexibel from inside or outside. Yet, Agnetapark does compensate this by having very high quality buildings, making it to be sustainable nevertheless.

'With the urban philosophy of 1930, and the technical aspects of 1965, the attempted to make a city for 2000.'

(Hazewinkel, 1965)

After World War II, a lot of pressure has been put on the housing market. During the reconstruction, all focus was on creating many dwellings to combat the housing shortage. Due to the great pressure, almost all decisions in terms of urban planning were made on governmental level (Platform31, 2015). This means that large scale master plans were possible to be realised in order to efficiently provide people for housing. One of which is De Bijlmer, located in Amsterdam, The Netherlands. It was a project many people greatly anticipated on. This grand project was idealistic, innovative and had a futuristic vision of how modern people were supposed to live. It promised a new future for people after World War II. Nassuth, the head designer of De Bijlmer, used his childhood ideals to project this on the neighbourhood design (Dekker, 2017). Nassuth grew up in Bandung, Indonesia. As a young boy scout he would visit the jungle many times, leaving great association with nature and free space. Two principles that he projected heavily on De Bijlmer, with little knowledge of what was about to happen. The experimental project unfortunately backfired.

Figure 18: Bijlmer from aerial view

De Bijlmer

The historical context and development

16th century

Originally a lake, the location was called Bijlmermeer

Fig. T3.1. Bijlmermeer in 1575
A map of Bijlmer prior to the reclamation.

19th century

Reclamation of Bijlmermeer, now newly named Bijlmer

During the 19th century

- Bijlmer having poor quality soil, not fit for farming.
- *From 1850 onwards* - The Dutch Industrial revolution, the start of urbanisation with a rise of people flowing in or near Amsterdam
- Opportunity for failed farmers to rent out their land, farm or housing. Often this is done unfairly: *slumlords/ huisjesmelkers*

1901

The emergence of the Dutch Woningwet (Housing Act)

A social act

- As a reaction to the phenomenon of slumlords, private equities of wealth start building housing for the less fortunate, not being led by the motive for profit. A *social entrepreneurial* act that eventually has led to the enforcement of the Woningwet.
- The Woningwet was the first act about the Dutch *social housing*. Its aim is to provide better and healthier housing for people, in particular the industrial workers.

(CANON Volkshuisvesting, 2015)

1940-1945

The Second World War has damaged a lot of dwellings. The problematic housing shortage continues.

1950

The shortage has put pressure on the city of Amsterdam. The construction of many new dwellings has started.

1953

The initial plan is not enough. Bijlmer is to be included in the next expansion plan.

1959

A new large master plan for the expansion of Amsterdam is announced. The plan seems to be substantially larger.

Fig. T3.3. Damaged housing Amsterdam Sloterdijk during Second World War

Political pressure for PvdA

The pressure to perform and succeed for the municipality was big as the housing shortage was an enormous problem. This led to rushed decisions for extremely idealistic and experimental projects, still derived from the ideas of CIAM 1933.

1980

Inhabitants of Bijlmer are leaving due to the low-quality housing as a result from the rushed construction. The maintenance is too expensive.

1992

The Bijlmer-incident of a airplane crashing into one of the buildings.

Current

Ever since the Bijlmer-incident, many flats were demolished. New low-rise dwellings haven taken their place. Some flats however are spared from demolition and are renovated, among which the Klushuis.

(Mentzel, 1989)

Fig. T3.7. The Bijlmer-incident
The destruction has caused for the demolition of this flat.

Fig. T3.8. Klushuis Amsterdam
One of the renovated flats

Fig. T3.2. SDAP political poster
A poster from 1919 of Sociaal-Democratische Arbeiderspartij / Social Democratic Workers' Party: the predecessor of current PvdA (Labour Party)

(CANON Volkshuisvesting, 2015)

Timeline 3

1906

SDAP (see fig. XX) on the rise with the most political power and say in the municipality of Amsterdam

During SDAP's lead

- The combination of the industrial revolution and urbanisation has led to a sky rocketing of the political party that is specifically aimed at workers.
- With SDAP in power, an enormous increase of housing associations is seen in Amsterdam. The industry has attracted many workers, causing a housing shortage.

Better health of a bigger and wealthier population

Since the industrial revolution, there was an increase in wealth. Along with the innovation coming from the industry, efficient food and medicine production has made vital goods more accessible. This led to a *higher life expectancy* and a vastly large *birth surplus*. Causing the housing shortage and the bigger pressure on the Woningwet.

1920 - 1940

Algemeen Uitbreidings Plan (AUP: general expansion plan), Amsterdam has its focus to expand even more. This time controllably.

City development

- *1928*: A new department in the Amsterdam municipality: city/urban development.
- *1935*: First publication AUP.
- Van Eesteren, as chairman of the 4th *CIAM in 1933*, was one of the main planners of AUP. The plan shows various principles of CIAM for the ideal city, such as the *encouragement of high-rise.*

Amsterdam's ambition

- *1938*: The municipality has the ambition to include roughly one million people by the year 2000.
- During the 1933 CIAM congress the vision of architecture was not to show power, but for it to be functional and accessible. Flats are seen to be the most ideal form of housing. The architects of that time believed in architecture as a social and economical act, rather than just aesthetics.

Fig. T3.4. Cornelis van Eesteren Presenting at CIAM 1933

1960

Despite the people's wish for low-rise buildings, the pressure of the housing shortage has forced the Dutch municipalities to take extreme measures in terms of high-rise dwellings. The government imposes for 40% high-rise and preferably even more.

1962 - 1965

The dream of Nassuth

De Bijlmer is assigned to be the next in line to be developed from an unfruitful farm land to a new cityscape. The leading designer is Nassuth. With the great ambition of creating 40.000 dwellings, Nassuth has chosen for 90% high-rise, as supposedly modern utopia.

(CANON Volkshuisvesting, 2015)
(Barbieri & Van Duin, 1999)
(Dekker, 2017)

Fig. T3.5. Siegfried Nassuth

1966

Start of the construction.

1968

The first inhabitants in De Bijlmer. A very homogeneous group of mostly workers who don't have another alternative for housing.

1970

Almost immediately the low quality of the housing is detected.

1971

The inhabitants are unhappy with their living conditions. The misery of De Bijlmer is surfacing with drug problems, theft, negligent maintenance and many more. The lack of diversity in income groups causes for the area to be less attractive. Yet, to fill the dwellings, a new group of people whom are desperate for housing are being placed in De Bijlmer, worsening the situation.

Fig. T3.6. The Bijlmer with its honeycomb structures (1971)

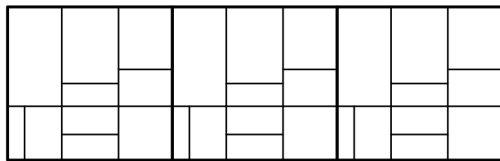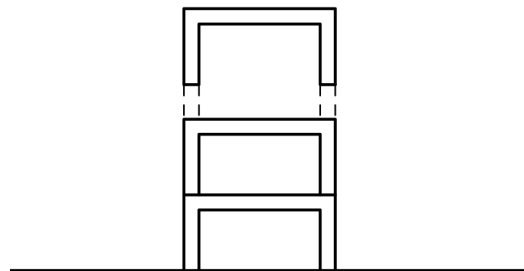*Master plan large scale*

High rise

Nature, free space

Multifunctional building

Repetitive apartments

Repetitive building

Figure 19 : Plan analysis summary, own image

Plan analysis

- *Large scale master plan* - As part of the Amsterdam extension plan, Bijlmer was part of a large master plan. Therefore it was possible to offer a lot of dwellings to the housing shortage.
- *High-rise and dense* - Subsequently to optimise the amount of dwelling, high-rise buildings were designed to reach a high density.
- *Nature and free space* - A lot of green is integrated with major spaces in between. Creating a large street profile. Originally for people to create and fill in their own space, but this idea was too abstract for people that the large free spaces did not get used.
- *Multifunctional buildings* - The buildings contained multiple functions apart from living. Communal functions were integrated in the design as well.
- *Prefabricated* - To reach the amount of housing as soon as possible the buildings had to be designed very efficiently. Building parts were prefabricated in order to finish this as quick as possible at the building site. Speed was the main focus during the process, not necessarily quality.
- *Few typologies* - Due to the prefabrication, less typologies were offered in order to produce quickly and as repetitive as possible. This resulted into a very one-sided target group.

In the results, see figure 20 below, a lot of principles are tested negative. A few of the principles are tested neutral. This indcates that the intention was there but the execution was not understood or did not go well. De Bijlmer was designed for an utopia for people to come together and start a new life: *social interactive*. But due to lacking in most of the principles, even well-meant principles are not able to present themselves in reality. In terms of architecture De Bijlmer does have *distinctive design*, but due to the large scale and repetitive implementation this distinction was nowhere to be found anymore. This creates an environment that is not nice to visit, making it unaccessible for many people. In addition to this, the lack of relation to human scale has been a big problem and can be seen as intimidating. Although the plan was in fact inclusive towards nature, it backfired in terms of control over boundaries. Too much green led to a lack of overview and again a loss of sense for human scale and security.

Multifunctional *Varied functions, in density and intensity*	**Social interactive** *Meeting points, activities or other means for social interation*	**Accessible** *Well linked at both smaller and bigger scale (walking, bike, car, public transport): efficient movement framework*	**Well-defined connections and boundaries** *Clear overview of the connectivity within the neighbourhood. Good definition of functions and its private or public boundaries.*	**Distinctive image** *Clear (architectural) identity of the neighbourhood, enhancing its authenticity*
Inclusive *Containing multiple target groups or social classes from in and out the neighbourhood*	**Efficient use of space** *Possibility for higher density, aiming for qualitative use of functions and the lack of unnecessary functions*	**Adaptable** *Resilient for the unknown future*	**Nature-inclusive** *Improve or maintain biodiversity and having efficient use of resources to build*	**Human scale** *Environment scaled to human physical and sensory abilities: walkability, not too high or low-rise buildings.*

Figure 20: De Bijlmer tested on the framework, own image

Additional principles

There are a lot of differences between the two projects Agnetapark and De Bijlmer. Yet, both projects had their best intention and were innovative in their own way. Both intented for better quality living for the users. But one major difference is that Agnetapark has developed organically and De Bijlmer was a large master plan. Where Agnetapark engaged its users to find the principles behind a good neighbourhood design, De Bijlmer had its own neighbourhood design principles already on blueprint. This leaves for De Bijlmer no room to have feedback and to improve.

A lot can be learned from both projects. Not only in spatial principles but also organisational or strategical. Combining the knowledge of both case study analyses the following principles may be taken into account:

- *Organic development* - Projects to be developed step by step, not fully planned ahead as large scale developments do not get the opportunity to adjust. E.g. not too innovative too soon, in need for different target groups and more.
- *Neighbourhood in neighbourhoods* - If it is the case of a relatively big neighbourhood or area it can be divided into different sub-neighbourhoods. It is recommended to give each of these sub-neighbourhoods its own distinctive identity to prevent the neighbourhood from being monotone.
- *Maintenance regulation* - Either integrating low maintenance in the design or integrating on an organisational level for users to maintain their housing according to set rules and regulations. This in order to protect the overall care and quality.
- *Strong vision for creating unity* - Giving the opportunity to find a common ground for the neighbourhood in which users may find recognition in order to feel pride of being part of the neighbourhood. This pride creates unity which results into better care for the living environment and may help in social cohesion.

Levenslied

Vooruit in kennis
In zachtheid, kracht
Naar meerder liefde
Vooral getracht

Vandaag bij gist'ren
Vooruit gegaan
En morgen hoger
dan heden staan

Breng ieder uur
Een woord, een daad
Die voor de wereld
Iets achterlaat

(Jacques van Marken)

5. Conclusion

Past and present forms of urban design do not differ much from each other. For a sustainable design, the lay-out should meet the needs and requirements of both current and future generations. This awareness has always been there since the existence of urban design. But for a while this awareness and knowledge had been forgotten after World War II in which many projects lost the relation to the human scale.

Therefore valuable lessons for a good neighbourhood have been forgotten. History teaches that urban design is heavily dependent on the societal and economic context. Usually design decisions and principles are focused on resolving certain societal problems at that time. This results into different eras of urban design and architecture in which ideals vary from each other. But it also means that each era has an expertise in its own way for certain design solutions. E.g. the pre- and post-World War period had a societal problem of war damage resulting into a housing shortage. The expertise of this period is the ability of creating large quantities of housing in an efficient way through planning and design.

As new societal problems will come, the challenge is to not only to design for current problems or problems that occur on a relatively short-term. Instead, upcoming societal challengers should be taken as much into account as contemporary problems.

Many different interpretations exist for an ideal neighbourhood design. This all roughly started during the times of industrial revolution and the upcoming movement of the garden city. One of the prominent theories, the neighbourhood unit, shows very detailed requirements and measures. Remarkable is that all of this is based on the use and experience from human scale. This includes from needs for different functions within a neighbourhood to the ideal size of a neighbourhood in relation to the most acceptable walking distance.

Yet, the knowledge of these theories were often overseen or forgotten after the World War II. Leading to modernist designs lacking in relation to human scale. Criticism arose but as the modernist developments went on, on a large scale, for a period of 60-70 years a large part of the built environment is designed without the relation to people or human scale. According to Gehl (2010) the order of perspectives for designing a good neighbourhood or city part is life (people) → space → buildings. This in itself is not new compared to the pre-modernist knowledge. Concluding that by learning from the past on neighbourhood theories, new and fresh insights can be built from there. The latter in order to keep innovating and tackling upcoming problems, but with a side note that some solutions are already existing and universal in time.

More recent studies from Adams & Tiesdell (2012) show that characteristics for a successful place contains the following: Well-connected, mixed-use and varied density, sustainable and resilient, distinctive & for the people. The characteristics are guide lines for solutions and allow for different spatial translations.

Many different types of neighbourhood have developed throughout time. This can differ from rural, to urban, city, metropolitan and so forth. More recent studies of Park & Rogers (2015) show the following scales of neighbourhood: face-block, residential neighbourhood, institutional neighbourhood and community. The division in these types show different needs and requirements. This should be taken into account whilst designing a neighbourhood. At the same time the distinctions between neighbourhood types gives a good tool for communication and eliminates the possibility for misinterpretations.

Taking the studies of Adams & Tiesdell as a base for the framework, all princples and measures found in this literature study were categorised according to the characteristics. The spatial translation amongst were further categorised in similarity. Finally resulting into a framework of ten principles for an ideal neighbourhood. The principles are applicable on all scales and suggests an intention that should be included in a design rather than being a measure itself. This leaves room for interpretation and innovation on solutions withinh each principle. The following principles form the framework:

- Multifunctional
- Social interactive
- Accessible
- Well-defined connections and boundaries
- Distinctive image
- Inclusive
- Efficient use of space
- Adaptable
- Nature-inclusive
- Human scale

The framework was tested on two very idealistic projects: Agnetapark and De Bijlmer. The projects have best intentions but contrasting impact. The framework functioned as a tool to analyse the case studies. It allows for the analysis to be comparable as the case studies were tested on the same framework. Quickly it became clear that Agnetapark scores very well and De Bijlmer lacked in many aspects.

Additional to the framework, other principles were learned from the case studies as well. Not necessarily directly applicable to the framework but valuable to take it into account whilst designing and developing neighbourhoods. The following principles were additionaly learned from the case study analysis:

- Organic development
- Neighbourhood in neighbourhoods
- Maintenance regulation
- Strong vision for creating unity

6. Discussion

The current use of the framework is more of a guide in what principles a good neighbourhood design shoud contain. Meaning that this framework is a helping tool for designing. As for this thesis it has been used as an analysis tool as well. This has the adventage that case studies can be better compared to each other if tested on principles based on a certain theme. In this case, the test whether a project was an ideal neighbourhood according to the ten principles that are developed.

In case the framework should be used in practice it's the question whether it would act as a requirement or still would function as a helping design tool. Of course, after longer and maybe more thorough research the framework may be developed into something that could be a list of requirement. However, this possibly means that the principles will have to take a more concrete form, leading to less room for interpretation of other solutions.

The main question to this thesis was: what design principles create long-term positive societal impact? As of now the framework is a recommendation of what principles a design should contain. But a next step could be to link the ten principles of this framework to a measurable unit. This in order to actually measure if a positive societal impact is made through the use of this framework and how much.

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8. Appendix

Mixed-uses and activities	*Access and linkages*	*Distinctive*
- Diversity in activities - Overlapping of activities - Varied functions in densities or intensities - Efficient use of space - Greater choice of lifestyles - Enabling of social interaction - Added values to social, economical and environmental issues	- Efficiency with a clear movement framework - Direct routes to functions - Sufficient access to public transport - Well-defined connections - Variety of (block) sizes - Permeable by variety of buildings and functions - Clear boundaries of functions - Well connected to larger scale - Permeable from 'outside'	- Highlighting and enhancing identity or authenticity - Local distinctiveness - Emphasis on important funtions: use of paths, edges, district, nodes, landmark - Integration of urban fabric - Unique and original in experience - User as part of the scene - Option to create experience for the user

Sustainable and resilient	*For the people*
- Efficient in use of resources - Reduce in environmental footprint - Biodiversity - Future visioning, having future prospect by taking future into account: long-term thinking - Participation of users - Maintenance and clear management arrangements - Sturdy - Resilient: adaptable	- Presence of other people - Attractive image - High quality functions - Diverse activities - Inclusive - Diversity in social class: different functions and dwellings - Variety of intensity in functions - Clearness - Right human scale - Safety - Comfort

Inventarisation characteristics per element

Mixed-uses and activities	Access and linkages	Distinctive
- Diversity in activities - Overlapping of activities - Varied functions in densities or intensities - Efficient use of space - Greater choice of lifestyles - Enabling of social interaction - Added values to social, economical and environmental issues	- Efficiency with a clear movement framework - Direct routes to functions - Sufficient access to public transport - Well-defined connections - Variety of (block) sizes - Permeable by variety of buildings and functions - Clear boundaries of functions - Well connected to larger scale - Permeable from 'outside'	- Highlighting and enhancing identity or authenticity - Local distinctiveness - Emphasis on important funtions: use of paths, edges, district, nodes, landmark - Integration of urban fabric - Unique and original in experience - User as part of the scene - Option to create experience for the user

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Selection by spatial characteristic / directly translatable into spatial qualities

Mixed-uses and activities	**Access and linkages**	**Distinctive**

Mixed-uses and activities

- Diversity in activities

- Overlapping of activities

- Varied functions in densities or intensities

- Efficient use of space

- Greater choice of lifestyles

- Enabling of social interaction

- Added values to social, economical and environmental issues

Access and linkages

- Efficiency with a clear movement framework

- Direct routes to functions

- Sufficient access to public transport

- Well-defined connections

- Variety of (block) sizes

- Permeable by variety of buildings and functions

- Clear boundaries of functions

- Well connected to larger scale

- Permeable from 'outside'

Distinctive

- Highlighting and enhancing identity or authenticity

- Local distinctiveness

- Emphasis on important funtions: use of paths, edges, district, nodes, landmark

- Integration of urban fabric

- Unique and original in experience

- User as part of the scene

- Option to create experience for the user

Sustainable and resilient

- Efficient in use of resources

- Reduce in environmental footprint

- Biodiversity

- Future visioning, having future prospect by taking future into account: long-term thinking

- Participation of users

- Maintenance and clear management arrangements

- Sturdy

- Resilient: adaptable

For the people

- Presence of other people

- Attractive image

- High quality functions

- Diverse activities

- Inclusive

- Diversity in social class: different functions and dwellings

- Variety of intensity in functions

- Clearness

- Right human scale

- Safety

- Comfort

Grouping of selection

Characteristics grouped	Essence: what does it achieve?
- Diversity in activities - Enabling of social interaction	**Social interactive**
- Inclusive - Diversity in social class: different functions and dwellings	**Inclusive**
- Highlighting and enhancing identity or authenticity - Local distinctiveness - Variety of (block) sizes - Attractive image	**Distinctive**
- Emphasis on important funtions: use of paths, edges, district, nodes, landmark - Well-defined connections - Clear boundaries of functions	**Well-defined connections and boundaries**
- Varied functions in densities or intensities	**Multifunctional**
- Efficiency with a clear movement framework - Direct routes to functions - Well connected to larger scale - Permeable from 'outside'	**Accessible**
- Efficient use of space	**Efficient use of space**
- Right human scale	**Human scale**
- Biodiversity - Efficient in use of resources	**Nature-inclusive**
- Resilient: adaptable	**Adaptable**

Multifunctional	Social interactive	Accessible	Well-defined connections and boundaries	Distinctive image
Varied functions, in density and intensity	Meeting points, activities or other means for social interation	Well linked at both smaller and bigger scale (walking, bike, car, public transport): efficient movement framework	Clear overview of the connectivity within the neighbourhood. Good definition of functions and its private or public boundaries.	Clear (architectural) identity of the neighbourhood, enhancing its authenticity
Inclusive	**Efficient use of space**	**Adaptable**	**Nature-inclusive**	**Human scale**
Containing multiple target groups or social classes from in and out the neighbourhood	Possibility for higher density, aiming for qualitative use of functions and the lack of unnecessary functions	Resilient for the unknown future	Improve or maintain biodiversity and having efficient use of resources to build	Environment scaled to human physical and sensory abilities: walkability, not too high or low-rise buildings.