S REET MART

A Social Learning Perspective on the Restructuring of Oud-Charlois

Before starting the education that would allow me to become an urbanist, I obtained a Master of Science in Psychology from Leiden University, specialized in Social and Organizational Psychology. As a natural extension of my background in Psychology, I have an inherent interest in human behaviour and social phenomena. Being a social scientist has shaped me as an urbanist, making me conscious of the needs of the end-users of our designs and the impact specific aspects of our designs could have on them. As such, I have always tried to create bridges between the social sciences and urbanism, aiming to integrate them to increase their effectiveness.

This graduation project is simply the following step in this personal quest. In front of you lies the final documentation of my graduation project, titled "Street Smart". In this project, I attempt to find ways in which design interventions could facilitate solutions to existing socio-spatial problems. This project specifically focuses on the social learning experiences of children and adolescents in problem neighbourhoods and how these can be reshaped from their current negative influences to more positive one through the way in which we design the urban environment. In doing so, it addresses the current day problems that trouble our society as well as creates a more pronounced bridge between the social sciences and urbanism.

This project has been conducted over the course of 10 months, and would not be what it is today without the invaluable input of my mentors, Egbert Stolk and Maurice Harteveld. Furthermore, the OSG Hugo de Groot has been a valued participants in the project by providing the opportunity to anchor my project in a practical case. Lastly, this documentation would look very different without the honest and enthousiastic input of my co-designer; the two groups of children from the OSG Hugo de Groot and the Triangel and their teachers.

PREFACE

C ONTENT

SUMMARY

Recent negative evaluations of previous interventions in problem neighbourhoods (SCP, 2011; SCP, 2013) have given rise to the general consensus that social problems require social solutions and physical problems require physical solutions (Ouwehand, Kleinhans, van der Laan Bouma-Doof & van der Land, 2006; van den Brink, 2008; Ouwehand, 2012). Advocated is the separation of problems in problem neighbourhoods into those related to its physical context - livability - and those related to its social context - deprivation - (van Gent, Musterd & Ostendorf, 2007). However, there are some researchers who argue that it is impossible to separate social problems from their physical context (van Dorst, 2005; López, van Nes, de Bonth & Verhagen, 2013). Moreover, both the theoretical as well as the observational research on the subject seems to indicate that spatial configurations do in fact influence social patterns (Gehl, 2010; Hillier & Hanson, 1984; Hillier, 2007). This relationship lends support to the hypothesis that it is impossible to separate prevalent social problems from the spatial context in which they occur. It also suggests that it may in fact be possible to target social problems within problem neighbourhoods through physical transformation.

There is a vast body of literature that describes the negative effects of living in a problem neighbourhood, which has been reported to affect health, transition rates between a welfare income and employment, social and occupational mobility, as well as educational achievement, deviant behaviour and social exclusion (van Ham, Manley, Bailey & Simpson, 2012). Galster (2010) made a first attempt at reporting the different mechanism underlying these neighbourhood effects based upon the original framework by Jencks and Mayer (1990). He identified 15 different mechanism underlying these neighbourhood effects, belonging to one of four broader categories; social-interactive, environmental, geographical and institutional mechanisms. Despite his use of these four categories, social-interactive mechanisms are not only the most numerous but also the most relevant in relation to the social problems that occur within problem neighbourhoods and appear to be the most important mediator of neighbourhood effects (Wilson, 1987; Jencks & Mayer, 1990; Bucks, 2001; Galster, 2010). Therefore, this project focuses on researching the possibility of targeting these social-interactive mechanisms within problem neighbourhoods from a socio-spatial point of view.

The framework in which this is researched, is derived from literature on neighbourhood effects. Research into the nature of these social-interactive mechanisms has found support for social learning as common element in all of these mechanisms (Sampson & Wilson, 1995; Friedrichs & Blasius, 2003; Oberwittler, 2007). Social learning has also been states to be "the perspective on individual behaviour that is most compatible with sociological theories and most able to explicate the process by which structural correlates of deviance do or do not have an effect on deviant behaviour" (Akers, 2009, p.329) and as such plays a pivotal role in problem neighbourhoods.

However, research concluded that the context effects of social learning within problem neighbourhoods are largely dependent upon an individual's network size (Friedrichs & Blasius, 2003; Oberwittler, 2007). This indicates that social learning effects appear to apply more to those individuals that spend the most time and have the most connections within their neighbourhood. It is therefore unsurprising that researchers consider the neighbourhood of particular relevance to children and adolescents (collectively referred to as young people). After all, the neighbourhood is where they spend a large amount of their time – living, playing, socializing, participating and attending local schools (Sykes, 2011).

It is therefore that this project focuses on the social learning experiences of children and adolescents in problem neighbourhoods. Research looking into neighbourhood effects on children and adolescents shows us how, within problem neighbourhoods, these social learning experiences negatively impact young people (Leventhal and Brooks-Gunn,2000; Sykes, 2011). The socio-spatial dynamics that are prevalent in these neighbourhoods appear to facilitate negative social learning processes, which in turn perpetuates the existing social problems. We can thus hypothesize that changes to these socio-spatial dynamics could potentially reverse these effects, creating positive social learning experiences akin to those observed in non-problem neighbourhoods.

When we look at the contexts in which young people find themselves, we can however observe that this is not just their neighbourhood. Outside of their home and neighbourhood environments, another context in which young people spend a large amount of their time is the school environment. Research looking into the neighbourhood effects on young people and the contributions to these effects by the neighbourhood and the school contexts, indicates that these are two separate environments that simultaneously contribute to neighbourhood effects (Oberwittler, 2007; Sykes, 2011). However, these two context are related in the sense that there is a strong relationship between the quality of a neighbourhood and the quality of the schools within this neighbourhood (Sykes, 2011).

While, in general, the quality of a neighbourhood correlates with the quality of the schools within this neighbourhood, there are exceptions. One of the most remarkable exceptions is the OSG Hugo de Groot, a "super school" located in one of the largest problem areas of the Netherlands: Oud-Charlois in Rotterdam-Zuid. This school is an initiative of Eric van 't Zelfde, whose intend was to break the pattern of poor educational facilities for young people in problem neighbourhoods. With his school, he attempts to create outstanding education and a safe and positive learning environment that provides the young people in Rotterdam-Zuid with the chances they would otherwise lack (van 't Zelfde, 2013).

It is this bottom-up initiative that has become the focus location of the current research. Connecting to the current wish of the OSG Hugo de Groot to rebuild their

"superschool" as neighbourhood facility, the location that will serve as a case study to illustrate the approach of this project is the neighbourhood of Oud-Charlois, with the OSG Hugo de Groot as a location of interest.

The aim of this project wat to research ways in which the social learning experiences of children and adolescents in Oud-Charlois can be facilitated through physical design interventions. Here, the focus lies on designing environments that facilitate social learning experiences (i.e. (public) spaces for young people at "eye level"). Furthermore, this project aimed to address how these social learning environments (those within the neighbourhood as well as those within the context of the OSG Hugo de Groot), can provide the basis for a structural improvement of the neighbourhood of Oud-Charlois (design interventions at the larger, neighbourhood scale). In doing so, it could put a halt to the socio-spatial dynamics underlying the perpetuation of social problems within this neighbourhood. Futhermore, it does so while providing the opportunity for children and adolescents (the target group) to be co-designers in the project. Instead of merely relying on theoretical research, this project provided the opportunity for two groups of children of two different ages to be an active participant in the project and main actor influencing the final design through a series of workshop.

This projects starts with an extensive theoretical framework, derived from theoretical research, that explains the relationship between social learning and the field of urbanism. Furthermore, it addresses the neighbourhood effects prevalent in problem neighbourhoods and social learning processes as its underlying mechanism. In this research, specific social learning processes are identified, as well as the spatial characteristics that influence their occurance. It is from these spatial characteristics that interventions are derived, aimed at transforming the negative social learning processes that occur in problem neighbourhood into positive social learning processes. Lastly, the theoretical research also documents the way in which children and adolescents experience and use their environment. This research is also translated into design directives that can help designers create a design that adequately addresses children and adolescents as target groups. It must be said however that this, from theory derived direction, is supplement with more practical information. Through a series of workshops, more direct contact with children and adolescents was created, and the results of the workshop were directly translated into additional design themes to be addressed in the design.

In order to come to a physical design for the neighbourhood of Oud-Charlois, it was important to determine how this design would be established. While the theoretical research described above creates insight into the socio-spatial characteristics of several social learning processes, as well as the requirements for children's environments, this knowledge exist in an abstract form. To translate this abstract knowledge to design guidelines, it was necessary to order this information more concretely, focusing on the practical application. To do so, this project was inspired

by a group of system thinkers, who developed what is now referred to as a pattern language.

This format was developed by Alexander in his classic "A Pattern Language" (1977). In the book that describes the basis of this pattern language, Alexander (1979) described how cities and buildings will never come alive unless they are shaped and created by all the people in a society. Furthermore, he proclaimed that such a process would be impossible unless all these people shared a common pattern language, allowing them to both shape and design these cities and buildings as well as communicate with each other. In "A Pattern Language" (1977) Alexander elaborated this idea by documenting a first pattern language. These patterns all have the same layout; they describe a problem that occurs repeatedly in our society and the core of the solution to this problem. This is described in such a way that, to quote Alexander himself "you can use this solutions a million times over, without ever doing it the same way twice" (Alexander, 1977, p.x). Moreover, Alexander created his pattern language to evolve and grow over time, as more people verified the validity of certain patterns through theoretical research or expanded upon his first work with additional patterns.

The nature of patterns, their structure and their relevance in relation to the theoretical model of this project were deciding factors in choosing patterns as a means of translating the theoretical research findings of this project into a more concrete and design-oriented format. In doing so, the theoretical conclusions were transformed from abstract socio-spatial constructs into specific spatially oriented patterns that we could be used to create design interventions. This culminted in the design of two separate sets of patterns; one detailing social learning environments and the other detailing children's environments.

These pattern libraries and the conducted analysis of the neighbourhood of Oud-Charlois, as well as the input of the co-designers (i.e. the children and adolescents) were the starting point in creating spatial design interventions aimed at facilitating the (positive) social learning experiences of children and adolescents in Oud-Charlois. This design aims to support the social restructuring of Oud-Charlois by attempting to target the spatial characteristics underlying the prevalent neighbourhood effects. Furthermore, the spatial design interventions simultaneously aim to support the physical restructuring of Oud-Charlois, in which the social learning environments are created in such a way that they address additional, prevalent, social and spatial problems, qualities and opportunities. Important to note is that the final design is not *the* design for the future, but rather *a* design. It is primarily a way of illustrating what a possible future situation could look like when the created pattern libraries are employed as design methodology. This illustration occurs on two scale levels; a larger scale vision and a smaller scale design. It is in the smaller design that children and adolescents have acted as co-designers, and for a large part determined the specific physical realization and interpretation of each pattern.

F RAMEWORK

01

P ROBLEM FIELD

SOCIAL PROBLEMS & THE FIELD OF URBANISM

It is no secret that the nature of social problems is a complex one. Social problems are not merely objective and identifiable societal conditions with harmful effects. Rather, social problems are defined and conceived by a society's view of what is considered normal (Blumer, 1971; Spector & Kitsuse, 1973, 1977). Social problems are collective sentiments that evolve within a system of public environments where, through cultural and political competition, collective definition occurs (Hilgartner & Bosk, 1988). Social problems that exist in the Netherlands today have thus been established through a cultural and political assessment of what is considered the norm. Because social problems are deviations of the socially accepted "normal" and as such cause impositions to the majority, there is an urgent call for immediate solutions. However, despite this urgent need for solutions, there is a tendency to avoid responsibility when it comes to social problems (Shepherd & Kay, 2012). Because of the complexity of social problems, people are more likely to defer the matter to the government as ultimate authority.

In the past decennia, the Dutch government has risen up to this responsibility by attempting to diminish social problems, in part, through the transformation of target areas or neighbourhoods. This approach followed the conclusion that social problems tend to concentrate in specific areas (Musterd, 2009). In these areas, social problems are oftentimes the result of a complex interplay between issues related to the social, economic and physical situation of the area (Hulsbergen, 2012). Everyone is familiar with the modern terminology of deprived or

attention neighbourhood, also referred to as problem neighbourhood or even empowerment neighbourhood within the Dutch context. All of these are different ways of describing the same phenomenon: neighbourhoods with prevalent social problems related to its social, economic and physical context.
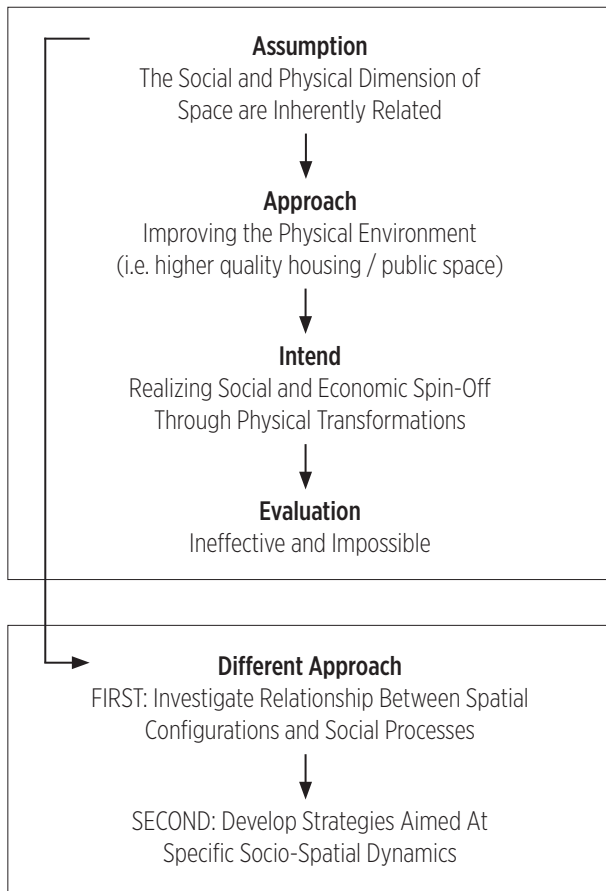
The attention that these problem neighbourhoods have received in recent years has been overwhelming. In 2007, former minister Ella Vogelaar published a list of the 40 most critical problem neighbourhoods in the Netherlands. These neighbourhoods, now referred to as Vogelaarwijken, were promised 2.5 billion euros of additional funding over a period of ten years. The aim of this investment was to diminish the social problems in these neighbourhoods through the improvement of their social, economic and physical conditions (SCP, 2011). The focus of this approach was to realize physical transformations that would produce social and economic spin-off. In part, this approach was also reinforced by the necessity to find ways of coping with these neighbourhoods separate from demolition and new developments, no longer a valid alternative due to financial constraints. As such, these problem neighbourhoods have been a dominant assignment within the field of urbanism.

Fast forward to the situation of today and we find ourselves amidst a pile of research that questions this approach to combating social problems. Evaluations of the investments made in the Vogelaarwijken conclude that the approach only yielded marginal improvements

(SCP, 2011, 2013). Furthermore, these improvements are comparable to the improvement in other problem neighbourhoods not included in the 40 Vogelaarwijken (SCP, 2013). Researchers question whether the creation of problem neighbourhoods and the associated policies were an adequate solution to the social problems at hand (Musterd & Ostendorf, 2009). Moreover, there is an increasing amount of public support for the statement that it is simply impossible to influence social problems through physical transformations (Ouwehand, Kleinhans, van der Laan Bouma-Doof & van der Land, 2006 ; van den Brink, 2008; Ouwehand, 2012). Next to being proven ineffective, researchers claim that this approach is also indirect and oftentimes leads to a displacement of the problems (Slob, Bolt & Kempen, 2008).

However, the question that follows is whether the issue is in fact this black and white. The fact that previous physical transformations haven't yielded any significant improvements in prevalent social problems does not necessarily mean that there is no relationship between the social and physical dimension. The important distinction to note here is that there is a difference between the underlying assumption and the actual approach based on this assumption. In the case of the Vogelaarwijken, the assumption was that social and economic spin-off could be realized through physical transformations. However, the approach based on this assumption was confined to merely improving the physical environment. This approach suggests that a better living environment will result in a better social and economic climate. It is this approach that has been disproven in its recent evaluations, not the original assumption that there is a relationship between the social and physical dimensions are.

Figure 1: Diagram showing the difference between an adopted approach and the underlying assumption; the assumption can still be valid if the approach was wrong.

Assumption
The Social and Physical Dimension of
Space are Inherently Related

↓

Approach
Improving the Physical Environment
(i.e. higher quality housing / public space)

↓

Intend
Realizing Social and Economic Spin-Off
Through Physical Transformations

↓

Evaluation
Ineffective and Impossible

Different Approach
FIRST: Investigate Relationship Between Spatial
Configurations and Social Processes

↓

SECOND: Develop Strategies Aimed At
Specific Socio-Spatial Dynamics

PHYSICAL SPACE - SOCIAL SPACE : THE DEBATE

When we look at the breadth of literature that focuses on the urban environments of our modern-day society, it quickly becomes apparent that a large portion of this research explores the relationship between the physical and the social dimensions of spaces. One of the frontrunners of this field of research was Gans (1962). His study explored the social life of second-generation Italian Americans in Boston, where he observed social and community vitality in what was then regarded as a disorganized slum in need of clearance and redevelopment. With this research, he showed the importance of the physical context for the salience of cultures and community networks. Gans' pioneer study gave rise to the field of research now referred to as urban sociology.

The research that followed within this field - see Lin & Mele (2005) for an overview - makes a clear distinction between the two dimension of space that exist simultaneously; natural space (its physical dimension) and social space (its social dimension). Researchers note that there is a reciprocal relationship between both natural and social space and the individuals and collectivities that use them (Gans, 2002). Individuals and collectivities shape the natural and social spaces they occupy, which in turn also affects them. However, within this relationship, they are sceptical about the social effects of natural space, claiming that it is social life, "emplaced" within natural space that deserves the most attention (Gieryn, 2000). This can be illustrated by Gans' view on architects:

"Back in the 1960s, I was once asked to speak to a meeting of young architects about planning for societal betterment, only to discover that my audience was solely interested in how they could reform America through architecture and design. I should not have been surprised. Being in the space business, they were spatial determinists who believed that by redesigning space, they could change society." (Gans, 2002, p.329)

It were Hillier and Hanson (1984) who were the first to address the relationship between the social and physical dimensions of space from the perspective of architecture and urbanism. In their study, they hypothesized that space has an inherent social dimension and society has an inherent spatial dimension. They showed that, because people do not float around in space but are tied down by gravity, they move across the earth's surface in relatively predictable patterns. Hillier and Hanson (1984) thus considered societies to be spatial phenomena, allowing them to be regarded as spatial systems (Figure 2). In recent years, their research has gained support within the field of urbanism, giving rise to the new field of space syntax. Drawing upon the principles of Hillier and Hanson (1984), space syntax looks at the social effects of spatial configurations through the use of new research methods (Bafna, 2003). While space syntax received most of its recognition as a new technique to study the relationship between spatial configuration and social effects, it simultaneously refers to Hanson and Hillier's concept

of "The Social Logic of Space" (1984) that describes this relationship.
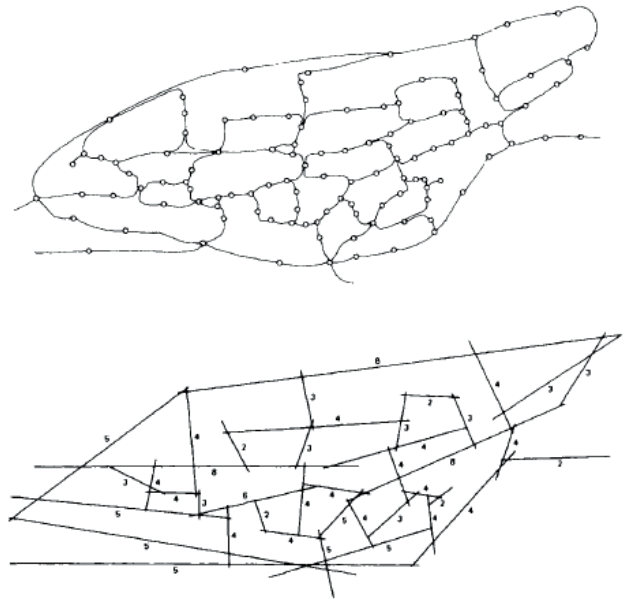
Figure 2: Analysis of Settlement Layout (Hiller and Hanson, 1984, pp.100-107). A typical representation of their research into society as a spatial system.

Much of the research that has been conducted in the field of space syntax has shown that there is in fact a relationships between spatial configurations and social structures. However, this relationship appears to be non-causal in nature; spatial design does not result in but instead facilitates social structures (Hillier, 2007). To put it in Hillier's own words:

> "These effects are powerful not because space is a strong determinant of society but because space and its effects on the virtual community are pervasive and insistent. In their very nature they are never absent. They come to be built into the very detailed patterns of everyday life so that although they are rarely obtrusive, they are never absent." (Hillier, 2007, p.169)

The field of space syntax has thus explored the relationship between natural and social space that urban sociology terms "emplacement". Whereas they see the emplacement of social life in natural space as a simple condition of space (Gieryn, 2000), space syntax research has found support for the importance of natural space as a precursor to social space and its subsequent social effects.

This conclusion, drawn by the collective field of space syntax, is furthermore supported by real-life observations. Most of this observational research has been conducted by Gehl (2010) at "eye-level". Through numerous case studies over a period of 50 years, his observational

research lends evidence to the hypothesis that the way in which spaces are organized and designed influences the social interactions and behaviours that occur within these spaces. His most famous example applies to the city centre of Copenhagen, which has seen a vast increase in slow traffic (i.e. pedestrians and bicyclists), following a rigorous inner city redesign to facilitate slow traffic over motor traffic.

An example of one such facilitatory process is the concept of affordances. The concept of affordances was first development by Gibson (1977, 1979), a perceptual psychologist. Gibson considered affordances as the actionable properties between the world and an actor. The concept of affordances describes how individuals perceive the inherent meanings and values of constructs in their environment and how these meanings and values can be linked to the possible actions that the environment offers. He thus considered affordances to be relationships that are a part of nature, which do not have to be visible, known, or even desirable. In recent years, affordance has become a well-used term within all fields of design, applying the concept far beyond its initial meaning (Norman, 2004).

Thus, while previous attempts at socio-spatial transformation have failed, proposed here is that we should not abandon this approach entirely. Instead, there should first and foremost be a focus on conducting socio-spatial research as a means to develop new strategies aimed at dealing with these socio-spatial dynamics.

PROBLEM STATEMENT

SOCIO-SPATIAL ISSUES: WHAT TO DO?

When we take a step back we can conclude that the recent evaluations of previous interventions in problem neighbourhoods have given rise to the general consensus that social problems require social solutions and physical problems require physical solutions. Reinforced by a missing sense of responsibility, it appears as though more and more experts are asking for predominantly social and institutional reformations to combat social problems, ignoring the way in which spatial transformation could contribute to these issues. Advocated is the separation of problems in problem neighbourhoods into those related to its physical context - livability - and those related to its social context - deprivation - (van Gent, Musterd & Ostendorf, 2007).

However, there are still researchers who argue that it is impossible to separate social problems from their physical context (van Dorst, 2005; López, van Nes, de Bonth & Verhagen, 2013). Moreover, both the theoretical as well as the observational research on the subject seems to indicate that spatial configurations do in fact influence social patterns. This relationship lends support to the hypothesis that it is impossible to separate prevalent social problems from the spatial context in which they occur. It also suggests that it may in fact be possible to target social problems within problem neighbourhoods through physical transformation, though merely improving the physical environment has proven ineffective. While the intend behind these controversial transformations appears to have been valid, the complexity of the relationship between physical space and social processes

presents the field of urbanism with challenges that can not be overcome by traditional strategies.

The current position on how to deal with socio-spatial issues leads to the problem that natural space as a precursor to social space threatens to fall into oblivion. This in spite of both theoretical and observational research findings indicating that a more thorough understanding of the relationship between spatial configurations and social patterns could potentially prove a valuable asset in dealing with social problems. As such, attention for the development of new strategies aimed at addressing the complex interplay of social problems and their physical context could provide the field of urbanism with a better way of targeting these socio-spatial problems.

PROJECT AIM

NEIGHBOURHOOD EFFECTS

There is a vast body of literature that describes the negative effects of living in a problem neighbourhood, otherwise known as neighbourhood effects, which has been reported to affect health, transition rates between a welfare income and employment, social and occupational mobility, as well as educational achievement, deviant behaviour and social exclusion (van Ham, Manley, Bailey & Simpson, 2012). While these negative effects are often regarded in relation to personal characteristics such as gender, ethnicity and social class, research into neighbourhood effects have shown them to be present above and beyond these individual characteristics. Friedrichs (1998) addressed this in his quite aptly named paper "Do poor neighbourhoods make their residents poorer?", the answer to which is yes. Moreover, recent research looking into the relationship between the built environment and individuals' mental health has concluded that a better living environment results in reduced depression, anxiety and fear of crime, as well as improved self-esteem and a greater perceived "friendliness" (Halpern, 1995).

The problem with this research on neighbourhood effects is the broad variety of perspective adopted to study the relationship between neighbourhood conditions and individual or community outcomes. Studies from multiple disciplines have each used both different neighbourhood conditions, as well as different outcome parameters to research their specific interest, making it hard to identify the causes of these effects. Galster (2010) made a first attempt at reporting the different mechanism underlying

neighbourhood effects based upon the original framework by Jencks and Mayer (1990). He concluded that, in spite of the differences in methodologies and approaches, similar potential neighbourhood effects that mediate the relationship between the neighbourhood and individual or community outcomes can been discovered. Galster identified 15 different mechanism underlying these neighbourhood effects, belonging to one of four broader categories; social-interactive mechanisms, environmental mechanisms, geographical mechanisms and institutional mechanisms (Figure 3). Despite his use of these four categories, social-interactive mechanisms are not only the most numerous but also the most relevant in relation to the social problems that occur within problem neighbourhoods.

Figure 3: The four categories to which the 15 mechanisms underlying neighbourhood effects belong, as identified by Galster (2010).

Social-Interactive Mechanisms

Social processes produced and maintained by the neighbourhoods in which they occur.

Environmental Mechanisms

Attributes and characteristics of a neighbourhood that directly influence the mental and physical health of the residents without affecting behaviour.

Geographical Mechanisms

Social processes produced and maintained by the neighbourhoods in which they occur.

Institutional Mechanisms

The available resources within a neighbourhood, as well as the relations between residents and these available resources and services.

A SOCIAL DESIGN ASSIGNMENT

Interesting is that both environmental and geographical mechanism of neighbourhood effects are already an integral part of the urban design assignment. Similarly, while institutional mechanisms primarily refer to economic and political aspects of a neighbourhood, they are almost always present within the context of urban design assignments. The last category, defining social-interactive mechanisms, is the only category that is a topic of much controversy within the field of urbanism (as discussed earlier). However, there is increasing support for these social-interactive mechanism as most important mediator of neighbourhood effects (Wilson, 1987; Jencks & Mayer, 1990; Bucks, 2001; Galster, 2010).

Therefore, the focus of this project is to research the possibility of targeting these social-interactive mechanisms within problem neighbourhoods from a socio-spatial point of view. This expands on recent research in the field of space syntax which has shown spatial transformations to positively influence social safety (López et al., 2013). López et al.'s study primarily looked at the physical characteristics and variables underlying social safety (Galster's environmental and geographical mechanisms), and how social safety could be improved through transformation of these characteristics. In this study, the aim is to not only look at the physical characteristics and variables underlying social problems but also at the social characteristics and variables (Galster's social-interactice mechanism). Thus, this project aims to study how solutions to social problems can be facilitated through the way in which we design

the physical environment. As such, it will contribute to the development of new strategies that could potentially overcome the challenges of socio-spatial problems. Through both research and design, this projects aims to discover "socio-spatial transformations" that could address the issues prevalent in problem neighbourhoods. All the while considering the context of today's society with its need for multi-dimensional and flexible small-scale interventions.

S OCIETAL RELEVANCE

As reviewed earlier, social problems that exist in the Netherlands today have been established through a cultural and political assessment of what is considered the norm. Social problems are deviations of the socially accepted "normal", which causes impositions to the majority and as such results in an urgent call for immediate solutions. This is evident both from the body of literature on the subject, as well as the preoccupation with social problems in problem neighbourhoods in (inter)national media. As of yet, we still have to find a workable solution to solving these problems and this project will provide us with additional insight.

However, perhaps even more important is the implications that such a solution could have for the betterment of society. Living in a problem neighbourhood negatively affects the physical and mental health, as well as the life chances of residents within this neighbourhood. Therefore, apart from being an urgent assignment, these social problems within problem neighbourhoods are an extremely relevant assignment. While the effects of living in such neighbourhoods, which appear to be independent residential and social environment effects, have been called "academically intriguing" (van Ham et al., 2012), they are first and foremost of immediate societal concern. After all, the implications for our welfare and health systems were these effects to be decreased could potentially be very important, especially considering the current economic climate.

Figure 4: Compilated newspaper articles (http://politiek.blog.nl)

S CIENTIFIC
RELEVANCE

At its core, this project aims to create bridges between the social sciences and the field of urbanism. Social sciences are disciplines that concern themselves with society and the relationships among the individuals that belong to this society, such as anthropology, economics, political science, psychology and sociology. The general consensus at this point in time is that, while the social sciences are undoubtedly relevant to the field of urbanism, they aren't connected in a way that enables us to effectively create an integral approach to prevalent socio-spatial issues.

The aim of this project is to research the possibility of supporting and facilitating a solution to these problems through socio-spatial transformations. Of particular interest to this project is the continuation of existing research that looks at relationships between people and their environment (both physical and social). As described by van Dorst (2005), there are several perspectives on the human-environment relationships, namely those of environmental psychology, environmental sociology and ecology. This project will consider a new perspective within this field of human-environment research, focusing on the physical context of social processes. In doing so, it adds to the existing body of knowledge on the subject by taking a unique perspective on social problems in their spatial context while connecting this perspective to existing scientific research.

A - Environmental Psychology

B - Environmental Sociology

C - Ecology

D - Field of Research for this Project

This project looks at the social processes that occur in problem neighbourhoods and their physical contexts / spatial determinants.
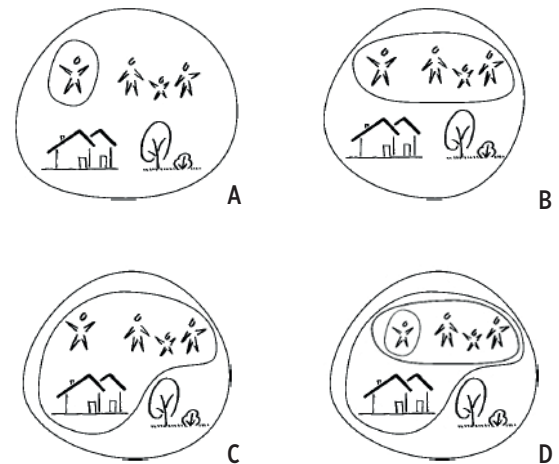
Figure 5: Position of the field of research for this project in relation to the other perspectives on human-environment relationships, as described by van Dorst (2005).

PROJECT DEFINITION

SOCIAL LEARNING: A THEORETICAL FRAMEWORK

In defining the relevant scope of this project, it is important to take another look at the project aim. To summarize, the aim of this research is to study how solutions to social problems can be facilitated through the way in which we design the physical environment. By looking at the relationship between social characteristics and the context in which they occur, this project aims to create a social solution to social problems, facilitated through spatial solutions to socio-spatial problems. In other words, through both research and design, it aims to discover "socio-spatial transformations" that could address the issues prevalent in problem neighbourhoods. It must be said however that this aim is still rather broad and could therefore result in a number of research proposal. To come to one researchable hypothesis, the aim of the project has to be defined within a specific framework.

The basis for a relevant framework can be found throughout the literature on neighbourhood effects. As described earlier, while the mechanisms underlying neighbourhood effects can be divided into four different categories, there is increasing support for the social-interactive mechanisms as most important mediator of neighbourhood effects (Wilson, 1987; Jencks & Mayer, 1990; Bucks, 2001; Galster, 2010). Furthermore, research into these underlying social-interactive mechanisms has found support for social learning as common element in all of these mechanisms (Sampson & Wilson, 1995; Friedrichs & Blasius, 2003; Oberwittler, 2007). Social learning has also been states to be "the perspective

on individual behaviour that is most compatible with sociological theories and most able to explicate the process by which structural correlates of deviance do or do not have an effect on deviant behaviour" (Akers, 2009, p.329) and as such plays a pivotal role in problem neighbourhoods.

Social learning was first described by Bandura's (1971) Social Learning Theory and later by his updated Social Cognitive Theory (1986). Social Cognitive Theory regards learning as a cognitive process that takes place within a social context, allowing for spontaneous and informal transfer of knowledge and values. The concept of social learning describes the continuous interaction between the cognitive, behavioural and contextual factors of people's lives. In contrast to behavioural theories of learning, which all describe learning to be a product of direct (positive or negative) reinforcement, social learning places emphasis on learning as an internal process that is influenced by all that we see around us. Learning can therefore occur through observation, direct instruction, or even vicarious reinforcement (i.e. through observing behaviours conducted by others and the subsequent consequences of these behaviours). It is therefore unsurprising that social learning has been reported to explain the social-interactive mechanisms underlying neighbourhood effects. After all, social learning is an informal process that can occur in any social context, at any place and at any time. This makes it not only a relevant framework from a theoretical perspective but also from the perspective of urbanism, since social learning occurs in settings that we could potentially influence or even design.

The culprit with social learning is that it does not appear to influence every person in the same way. Research concluded that the context effects of social learning within problem neighbourhoods (i.e. the aforementioned social-interactive mechanisms) are largely dependent upon an individual's network size (Friedrichs & Blasius, 2003; Oberwittler, 2007). This supports the hypothesis that social learning, as well as its subsequent neighbourhood effects, do not apply equally to everyone in a neighbourhood. Rather, results indicate that social learning effects appear to apply more to those individuals that spend the most time and have the most connections within their neighbourhood. It is therefore unsurprising that researchers consider the neighbourhood of particular relevance to children and adolescents (collectively referred to as young people). After all, the neighbourhood is where they spend a large amount of their time – living, playing, socializing, participating and attending local schools (Sykes, 2011). In parallel to the amount of time young people spend in their immediate environment, the neighbourhood and the social learning experiences these young people have there also actively shape their understanding and perceptions of the world (Massey, 1994). Here we find the threefold importance of social learning experiences for young people; (1) they have a a large number of these experiences since they spend a lot of time in their own neighbourhood, (2) they are more prone to these experiences because they are still developing, and (3) these experiences actively shape

them as individuals and thus influence their look on the world and their chances in life. The proverb "the hand that rocks the cradle rules the world" is an apt description of the vital importance of creating positive social learning experiences for young people. Young people are not yet fully set in their ways, have endless possibilities to learn and, after all, make up tomorrow's future.

It is therefore that this project will focus on the social learning experiences of children and adolescents in problem neighbourhoods. Research looking into neighbourhood effects on children and adolescents shows us how, within problem neighbourhoods, these social learning experiences negatively impact young people (Leventhal and Brooks-Gunn,2000; Sykes, 2011). The socio-spatial dynamics that are prevalent in these neighbourhoods appear to facilitate negative social learning processes, which in turn perpetuates the existing social problems. We can thus hypothesize that changes to these socio-spatial dynamics could potentially reverse these effects, creating positive social learning experiences akin to those observed in non-problem neighbourhoods.

Following the earlier described research on the interconnected nature of the social and physical dimensions of spaces, this project will aim to identify ways in which social learning experiences can be facilitated through spatial characteristics. It is this knowledge that will first and foremost be necessary to come to socio-spatial transformations that can target the core determinants of the negative social learning processes that occur in

problem neighbourhoods. In order to do so however, we must first define the location to which the current framework will be applied. Considering the context-specific nature of socio-spatial issues, it is necessary to study the proposed approach within a specific case study, allowing for this approach to be researched, tested and illustrated.

Figure 6: The key concepts of this project's framework, each relating to a different concept within the existing body of research.
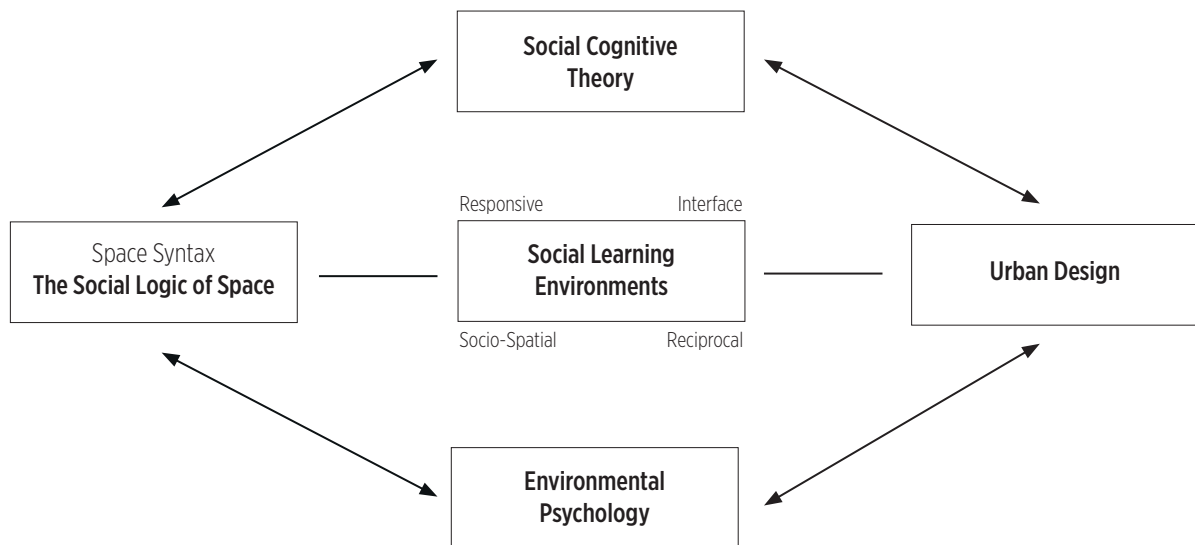
OSG HUGO DE GROOT: A NEW PERSPECTIVE

However, choosing a location is not as straight-forward as it sounds. When we look at the contexts in which young people find themselves, we can conclude that this is not just their neighbourhood. Outside of their home and neighbourhood environments, another context in which young people spend a large amount of their time (and are subject to social learning experiences) is the school environment. Research looking into the neighbourhood effects on young people and the contributions to these effects by the neighbourhood and the school contexts, indicates that these are two separate environments that simultaneously contribute to neighbourhood effects (Oberwittler, 2007; Sykes, 2011). However, these two context are related in the sense that there is a strong relationship between the quality of a neighbourhood and the quality of the schools within this neighbourhood (Sykes, 2011). As such, the school environment appears to transmit the influence of the neighbourhood (Sykes and Musterd, 2011). This raises a problem within the social learning framework of this project, namely, that targeting the socio-spatial dynamics within problem neighbourhood only targets a part of the problem. The other part, social learning experiences within the school environment, falls outside the scope of urbanism, belonging to educational institutions.

While, in general, the quality of a neighbourhood correlates with the quality of the schools within this neighbourhood, there are exceptions. One of the most remarkable exceptions is the OSG Hugo de Groot, a "super school" located in one of the largest problem areas

of the Netherlands: Oud-Charlois in Rotterdam-Zuid. This school is an initiative of Eric van 't Zelfde, whose intend was to break the pattern of poor educational facilities for young people in problem neighbourhoods. With his school, he attempts to create outstanding education and a safe and positive learning environment that provides the young people in Rotterdam-Zuid with the chances they would otherwise lack (van 't Zelfde, 2013). Furthermore, Eric van 't Zelfde recognized the important influence of children's environment on their development by expanding his initial secondary school with an adjoining primary school. In this so called "super school", children enter around the age of five and leave after their high school graduation. To combat the negative influences of the neighbourhood, one of the first things Eric van 't Zelfde did was construct tall fencing around the school ground. In an interview, he states that this allows him to create safe and positive learning environment within the problematic neighbourhood context (van 't Zelfde, 2013).

While Eric van 't Zelfde fenced his school in, effectively keeping the neighbourhood outside, the school is starting to realize that it could not only be a positive influence to its students but also to the entire neighbourhood (W. Koopmans, personal communication, June, 2014). This wish complements the current project, aiming to research potential socio-spatial transformations that can target the core of negative social learning processes prevalent in problem neighbourhoods. Because both the neighbourhood and the school contexts contribute to the neighbourhood effects observed in young people,

the ideal scenario would see both of these contexts addressed. Since the field of urbanism can not adress the school environment directly, it follows that we aim to support bottom-up initiatives attempting to achieve the same goal. Therefore, the location that will serve as a case study to illustrate the approach of this project is the neighbourhood of Oud-Charlois, with the OSG Hugo de Groot as a location of interest.

Following the above argumentation, flowing from problem field to project definition, we can now define a clear, concise and specific project statement. This project statement narrows the scope of this research down by addresses a single problem within a clearly defined area of research. It is this problem that the current project will attempt to address through theoretical, practical and design research, which will then be combined and applied to the case study with a design proposal. The project statements thus addresses both the research, as well as the design assignment for the current project.

The aim of this project is to research ways in which the social learning experiences of children and adolescents in Oud-Charlois can be facilitated through physical design interventions. Here, the focus lies on creating environments that facilitate social learning experiences. With these environment, the goal is to reverse the current negative neighbourhood effects young people in problem neighbourhood are subject to. Furthermore, this project aims to address how these social learning environments (those within the neighbourhood as well as those within the context of the OSG Hugo de Groot), can provide the basis for a structural improvement of the neighbourhood of Oud-Charlois. In doing so, it can put a halt to the socio-spatial dynamics underlying the perpetuation of social problems within this neighbourhood. This project thus addresses one of the mechanisms that causes the social problems we see in problem neighbourhoods and attempts

PROJECT STATEMENT

to pave the way for new strategies, aimed at combating these socio-spatial issues by bridging the gap between social and spatial fields of research.

What this project will not study:
This project will not directly address the fields of research that provide input for this project. It will not study, or in any way add to, existing knowledge pertaining to the individuals fields of space syntax, social learning theory or environmental psychology.

What this project will study:
The focus of this project is creating a theoretical link between existing research findings describing the relationship between neighbourhood effects prevalent in problem neighbourhoods, negative social learning processes and their spatial determinants. This will be followed by a practical link between these spatial determinants and design conditions, describing ways in which designers can address these spatial determinants in order to improve them, and take away their contribution to the social learning processes that underly prevalent neighbourhood effects in problem neighbourhoods. As such, it will create a new link between existing (theoretical) social knowledge and (practical) design recommendations.

The main research question this project will adress and aim to answer is:

"How can spatial design interventions aimed at facilitating the social learning experiences of children and adolescents support the restructuring of Oud-Charlois?"

The three main sub-questions that follow from this research are tied to the three main focuses of the above research question.

Spatial Dimension - Social Dimension
"How can spatial characteristics facilitate the social learning processes?"

Designing for Children and Adolescents
"How do children and adolescents experience and use their environment?"

Restructuring Oud-Charlois
"What are the social and spatial characteristics of Oud-Charlois and how do its residents use their neighbourhood?"

RESEARCH QUESTION

Each of these sub-questions targets one of the main aspects of the research. The first sub-question aims to create a theoretical framework focused on social learning processes within their spatial context. This framework will results in a conceptual model that offers a new perspective on dealing with socio-spatial issues. Moreover, it will generate a list of analysis, design and assessment criteria that will be used throughout the rest of the project. The second sub-questions focuses on the way in which children and adolescents experience their environment, aiming to provide insight into the specific requirements the environment must meet to support children and adolescents. This will result in a second list of analysis, design and assessment criteria. Together with the framework and the list of criteria derived from the first sub-questions, these will serve as the basis upon which a new strategy in dealing with socio-spatial issues will be developed.

This strategy will then be applied to the specific case of Oud-Charlois. Considering the context-specific nature of urbanism, a greater understanding of this area must first be established. This is the focus of the final sub-question, which will detail the present day issues and opportunities that are present in Oud-Charlois. In the design that will be created for this neighbourhood through a research-by-design approach, the main research question will be answered and the developed strategy illustrated. Finally, using the aforementioned assessment criteria, the final design will be suspect to a critical reflection. Following this reflection, conclusions will be drawn about the validity of both the conceptual model as well as the proposed strategy.

The structure of this research will follow three distinct, though overlapping phases of research: (1) literature studies, (2) location-specific research, (3) design research. While these three phases overlap at the edges, this structure functions as a way to come from the broad and more abstract theoretical research to the narrow and more specific practical research and design. A fitting analogy for the structure of this research is the Russian Matryoshka doll, where upon opening each doll a smaller doll appears. The structure of this research can be described as such a Matryoshka doll, where each subsequent phase of the project fits within the previous phase, its focus becoming increasingly specific. This structure is necessary to address the complexity of socio-spatial issues, which have - until now - primarily been researched statistically.

"How can spatial design interventions aimed at facilitating the social learning experiences of children and adolescents support the restructuring of Oud-Charlois?"

This project will start by conducting theoretical research, investigating the broader scope of the research question. As such, it will address problem neighbourhoods, neighbourhood effects, social learning processes, their spatial characteristics and the relevance of this research for the field of urbanism. This theoretical research is necessary to explain the complex social mechanisms at play within problem neighbourhoods. Without this knowledge, it would be impossible to create suitable solutions to these socio-spatial problems. Following this, more practical location-specific research of Oud-Charlois will be conducted to address the context specific nature of both urban design and socio-spatial issues. Drawing upon both the theoretical and practical research, a new strategy will be developed that focuses on socio-spatial transformations throughout multiple scales. This strategy will then be illustrated with a design for Oud-Charlois. This design will follow a research-by-design approach, in which critical reflections of research-driven and design-driven components take the centre. By doing so, this project aims to make a clear distinction between the theoretical research and creative design contributions.

09

M ETHODOLOGY

Methods
The main research question will be answered following the conclusion of the sub-questions. These conclusions will then provide the basis for a research-by-design methodology in which drawings, visualizations and models will be used.

Products
In addressing the main research question, this project will come to three seperate products. First, a conceptual model that offers a new perspective of dealing with socio-spatial issues. Secondly, a strategy to address these issues, bridging the gap between the more theoretical research and the everyday practical field of urbanism. Lastly, it will provide a design to both illustrate and test the aforementioned conceptual model and strategy. This design adressed the two scales relevant to this project: the neighbourhood scale and the city as experienced at "eye-level".

Reflection
At the end of this project, a reflection will be conducted to review the entire process and the presented end products. Important in this reflection will be the distinction between the research-driven and design-driven components of the project. The current project is estimated to be research-driven at its core, the final design being built upon the conclusions of the three sub questions. However, it is impossible to shape the intended design interventions without contributions made from a designer's point of view. In this reflection, it will be interesting to differentiate between input by the researcher and input by the designer. In doing so, it will become clear what the designer contributed to the design in terms of creative input.

Figure 7: Graphical outline of the methodology.

Main Research Question

How can spatial design interventions aimed at facilitating the social learning experiences of children and adolescents support the restructuring of Oud-Charlois?

Spatial Dimension - Social Dimension	**Designing for Children and Adolescents**	**Restructuring Oud-Charlois**
How can spatial characteristics facilitate the social learning processes?	How do children and adolescents experience and use their environment?	What are the social and spatial characteristics of Oud-Charlois and how do its residents use their neighbourhood?

Literature Studies: On Social Learning, Neighbourhood Effects & Spatial Determinants	**Literature Study:** Children's Experiences **Observational Research:** OSG Hugo de Groot	**Location Analysis:** Spatial & Social Situation **On-Site Research:** Observations & Interviews
Results: List of mechanisms underlaying social learning and their spatial determinants	**Result:** List of criteria the environment of children from different ages must meet	**Result:** Diagnosis of the spatial and social situation of Oud-Charlois and its developments
Development of "Socio Learning Environments" patterns based on the list of mechanics and spatial determinants. These elements apply to the neighbourhood scale and will be used to create spatial interventions for Oud-Charlois (can be regarded as masterplan).	Development of "Children's Environments" patterns based on the previous list of spatial criteria. These elements apply to the smaller scale of public spaces and will be used to create design interventions for places within the masterplan (can be regarded as urban plan).	The developed Social Learning Environments, as well as the Children's Environments patterns will be applied to the case of Oud-Charlois to adress its current socio-spatial problems. Different options will generated and evaluated on the two different scale levels.

Answering of Main Research Question	**Evaluation & Reflection**	**Design Proposal**

SPATIAL DIMENSION - SOCIAL DIMENSION

*"How can spatial characteristics facilitate
the social learning processes?"*

This question will focus on social learning processes within their spatial context. First, it is relevant to review the concept of social learning in more detail, as well as its particular relevance for the field of urbanism. Secondly, a broader insight must be created into the nature of these social learning processes within problem neighbourhoods and the resulting neighbourhood effects. Following this, the social learning processes can be reviewed that underlie these neighbourhood effects. Lastly, these processes will be reviewed in greater detail to determine whether or not we can identify specific spatial determinants that facilitate these processes.

Methods
Literature Studies
This question will be answered using multiple literature studies. With these literature studies, the aim is to create a theoretical link between social learning processes and ways in which these are affected by spatial characteristics. In order to do this, separate literature studies will be conducted to document the social learning theory and its relevance to urbanism, as well as neighbourhood effects and their underlying social learning mechanisms. Following these two studies, a third literature study will follow addressing the spatial characteristics that underlie

social learning experiences.

Products
Following this research, conclusions can be drawn about the different types of social learning mechanisms that play a role in problem neighbourhoods and their spatial determinants. From these, a list can be made of specific spatial characteristics that facilitate different social learning processes. This list will then be used to develop "Social Learning Environments" patterns, which will be applied to create spatial interventions for Oud-Charlois. These elements will primarily refer to the larger "neighbourhood" scale.

DESIGNING FOR CHILDREN & ADOLESCENTS

*"How do children and adolescents
experience and their environment?"*

This question focuses on providing insight into the
ways in which children and adolescents experience their
environment. This understanding is necessary before we
can attempt to design something for these young people.

Methods
Literature Studies
To start with, a literature study will be conducted to review
the existing body of literature describing young people's
development and the way in which this development
shapes the way in which they use, see and experience
their environment.

Interviews
Similar to designing spaces for adults, it is important
to take the opinions of children and adolescents into
account. Therefore, several interviews will be conducted
to provide insight into how the young people living in
Oud-Charlois see their environment.

Workshops
Following participation of the OSG Hugo de Groot,
additional interaction with these young people will be
set up in the form of workshops. With these workshop,
additional measures can be used to provide insight into

the way these young people use their environment (i.e. through photography and drawings). Moreover, it will also be possible to let the children participate in the design process by letting them provide input about what they would like to see in their neighbourhood.

Products
The literature study will conclude with a list of "Children's Environments" patterns, refering to the "eye-leve" scale of the project and, as such, will be aplied to design the proposed spatial interventions (following sub-question 1) for Oud-Charlois. Furthermore, additional insight will be created into how young people in Oud-Charlois see their environment and what they like, don't like and miss.

RESTRUCTURING OUD-CHARLOIS

"What are the social and spatial characteristics of Oud-Charlois and how do its residents use their neighbourhood?"

This questions focuses on the case study of Oud-Charlois. To answer this question, a location analysis will be conducted to provide insight into the urban and social structures of Oud-Charlois.

Methods
Spatial Analysis
The spatial analysis will be conducted following a network perspective (Dupuy, 2008). In this perspective it is not the neighbourhood of Oud-Charlois as described by the municipality that will be studied but rather the network in which Oud-Charlois is positioned, with the OSG Hugo de Groot as specific point of interest. This analysis will provide insight into how the children and adolescents attending the school use their environment; where the facilities are, where the public spaces are, how the infrastructure works and how this network connects to the surrounding areas. While the OSG Hugo de Groot is a location of particular interest, it is important to note here that this analysis will not be confined to the location of the school but look at all the areas within the defined network.

Social Analysis
The social analysis will follow a more traditional format,

taking into account the way in which this data is made available. This analysis will consider the social structure of Rotterdam-Zuid, Oud-Charlois and the adjoining neighbourhoods.

Observational Research & Interviews
Observational research will be conducted at the location and interviews will be conducted with residents, experts (e.g. neighbourhood officer) and the children and adolescents in the neighbourhood and those attending the OSG Hugo de Groot.

Products
An overview of the current socio-spatial situation within Oud-Charlois and the network in which it, as well as the OSG Hugo the Groot, is located.

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RESEARCH

S OCIAL LEARNING & URBANISM

MORE INTERTWINED THAN THEY SEEM

Traditional behavioural theories describe learning as a product of direct reinforcement. The most well-known traditional theory of learning non-reflex behaviours is Skinner's (1938) operant conditioning. Using his own designed Skinner box, he showed how rats learn the relationship between a stimulus and its response through direct positive or negative reinforcement. Following these findings, Skinner concluded that behaviour is more or less likely to reoccur in the future, depending on the respective positive or negative reinforcement it receives. This same behaviour was first observed by Thorndike (1898), upon whose work Skinner continued. In his experiment, he exposed animals to a puzzlebox; a barred cage which they could open from the inside by pulling on a cord. Thorndike observed that, through repeated exposure to the puzzlebox, the animals were able to open the box more quickly. In humans, this type of learning is often referred to as " trial-and-error".

The first critique on these stimulus-response theories came from Chomsky (1967). In his criticism of Skinner's book Verbal Behavior (1957), he argued that these theories could not account for the process of language acquisition. It was this criticism on traditional behavioural theories that introduced the cognitive revolution within the field of psychology. It was within this context that Bandura (1961) first studied learning processes that could not be explained by operant conditioning. In his famous Bobo-doll experiments, Bandura exposed children to a child-sized inflatable doll. The children in his experiment either saw an adult acting aggressively towards the doll,

or playing peacefully with it. The results of this study showed that the children who had seen the adult's aggressive behaviour towards the doll were more likely to behave aggressively towards it themselves. Bandura concluded that children are able to learn through a process of observation and imitation, without the need for direct positive or negative reinforcement. In a subsequent experiment, Bandura (1965) showed that children who saw the adult that displayed aggressive behaviour towards the doll being punished for it, were less likely to behave aggressively towards the doll themselves than those who did not witness this punishment.

These experiments were the groundwork for Bandura's (1971) Social Learning Theory. In contrast to traditional behavioural theories, his theory puts emphasis on learning as an internal process that is influenced by all that an individual observes. It states that learning does not just occur through direct reinforcement but also through vicarious reinforcement. In other words, through observing behaviours conducted by others and the subsequent consequences of these behaviours. From these observed behaviours, individuals extract information which is then used to make decisions about the performance of those behaviours. This is what Bandura calls observational learning, or modelling, and explains how learning can occur without seeing a direct change in behaviour. In this process, both direct and vicarious reinforcement does play a role but is not a requirement, as shown in the Bobo-doll experiments.

In a later publication, Bandura (1971) expands upon his theory of social learning by identifying three different types of modelling stimuli, that is, stimuli through which someone can learn through observing a behaviour. Live modelling, where someone is demonstrating a behaviour physically. Verbal modelling, where someone describes a behaviour and gives instructions on how to engage in the behaviour. And symbolic modelling, where a behaviour is being modelled through media such as films, the internet, books and television. In symbolic modelling stimuli, it doesn't matter if the person demonstrating the behaviour is real or fictional. The information that an individual subtracts from these different type of modelling stimuli is influenced by the type of model (e.g. is it a relative, a stranger or someone famous), as well as a series of internal (cognitive and behavioural) processes. These processes are, in order, attention, retention, reproduction and motivation.

Bandura (1971) described the need for attention to be present as the basic premise of social learning, simply meaning that the observer must pay attention to the modelled behaviour. Whether or not the observer will pay attention to a certain behaviour is influenced by both the characteristics of the observer (e.g. perceptual abilities, arousal), as well as the characteristics of the behaviour (e.g. relevance, novelty, value). After attending to a certain modelled behaviour, the observer must then retain (i.e. remember) specific characteristics of the behaviour. After all, logic dictates that when an observers does not remember what they have seen, they can not reproduce the modelled behaviour. Again, whether or not an observer will retain characteristics of the modelled behaviour is influenced by characteristics of the observer (e.g. cognitive capabilities) as well as characteristics of the behaviour (e.g. complexity). To be able to reproduce the modelled behaviour, an observer must organize responses in accordance with the model. This means that the observed and retained characteristics of the behaviour must be linked to the responses that will reproduce them (e.g. to reach the top of the playhouse, the other children climbed up the wooden blocks). Only characteristics of the observer influence the reproduction of modelled behaviour (e.g. physical and cognitive capacity and previous performance). Lastly, after an

Figure 1: The definition, types of modelling stimuli and preconditions of Social Learning, as described by Bandura (1971).

Social Learning:

Describes the way in which people can learn through observation, without direct positive or negative reinforcement.

Types of Modelling Stimuli:

Live Modelling: The behaviour is physically being demonstrated.

Verbal Modelling: The behaviour is ex-plained through verbal communication.

Symbolic Modelling: The behaviour is being modelled in the media.

Preconditions for Social Learning:

Attention: In order to learn, an individual must pay attention to the modelled behaviour.

Retention: The modelled behaviour and its characteristics must be remembered.

Reproduction: After retaining a certain behaviour, an individual must understand how the behaviour can be replicated.

Motivation: Anticipated consequences determine if behaviours will be reproduced.

observer has observed a modelled behaviour, retained information pertaining to this behaviour and deduced how to reproduce it, whether or not the observer will in fact reproduce the modelled behaviour depends on their motivation. This motivation is influenced by the expectations of the observer about the effect their reproduction of the modelled behaviour will have. This effects are both anticipated consequences (positive or negative feedback) as well as their own internal standards.

As described earlier, starting in the 1960s, the field of psychology underwent a rapid cognitive evolution. Following his publications on the social learning theory, Bandura continued to study observational learning through an increasingly cognitive perspective, adopting the rapidly expanding knowledge on cognitive systems that was being discovered within the field of psychology. Drawing ideas from information processing models describing the cognitive processes that mediate learning, Bandura's social learning theory kept evolving. In 1986, he renamed his theory Social Cognitive Theory in an effort to be more inclusive of the motivational and cognitive processes underlying observational learning (Bandura, 1986). Social Cognitive Theory considers learning to be a cognitive process that takes place in a social context where cognition, environment and behaviour mutually influence each other, a concept known as reciprocal determinism (Figure 2). This concept describes the continuous interaction between the cognitive, behavioural and contextual factors of people's lives. Underlying the concept of reciprocal determinism is the idea that people

have an agency to influence their own behaviour and the environment in a goal-direction manner. Bandura described this as self-efficacy; "[...] an important set of proximal determinants of human motivation, affect, and action." (Bandura, 1989, p.1175). Self-efficacy thus describes how the environment does not just influence people but people also shape their environment and that, following their degree of self-efficacy, people are more or less likely to do so. A second idea underlying the concept of reciprocal determinism is that learning and the demonstration of what has been learnt are separate processes. This describes that observational learning is not merely confined to reproducing the observed behaviour. Rather, through their cognitive capacities, people can also acquire knowledge, cognitive skills, concepts, abstract rules, values and other cognitive constructs from the behaviours they observe. They can thus learn through modelled behaviour and act upon what they have learnt without ever reproducing the modelled behaviour directly.
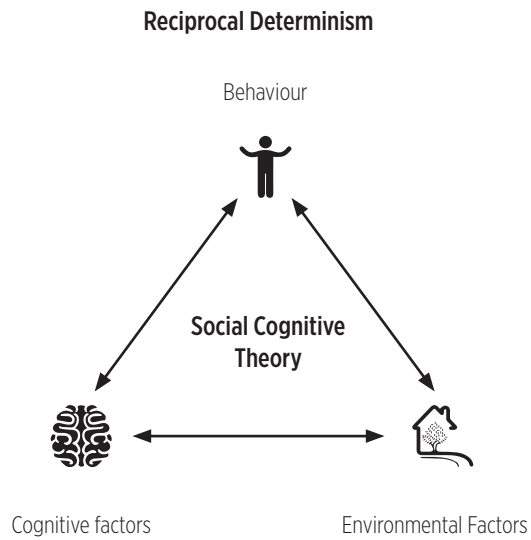
Figure 2: A graphical representation of the concept of reciprocal determinism, describing the idea that people have an agency (self-efficacy) to influence their own behaviour, as well as their environment. This relationship is reciprocal in the sense that the environment also influences people's behaviours and self-efficacy.

While the original Social Learning Theory can be described as a primarily social-behavioural concept, the later Social Cognitive Theory adopts a more social-cognitive approach. This was, as described, in large part due to the cognitive revolution within the field of psychology. However, while these cognitive theories generally turned their attention inwards, towards the processes underlying behaviour, Bandura's Social Cognitive Theory kept focusing on the relationship between these inner processes and the behavioural actions within the external environment. While not the dominant direction, a portion of cognitive research has been focused on this same relationship, hypothesizing that the external environment may be an important factor to cognitive processes (Bartlett, 1932; Vygotsky, 1978; Alexander, 1979; Gibson, 1979; Rumelhart, Smolensky, McClelland & Hinton, 1986; Edelman, 1987; Lakoff, 1987; Donald, 1991 – as described by Portugali, 1996). The most recent theory to emerge from this body of research is the concept of SIRN (i.e. Synergetic Inter-Representation Network) and this theory bears a striking resemblance to Bandura's (1986) Social Cognitive Theory.

SIRN proposes that "[...] many cognitive processes, cognitive mapping included, are the product of a synergistic self-organizing network composed of interacting internal and external representations." (Portugali, 2002, p.428). SIRN is an approach that combines two notions, namely IRN (Inter-Representation Network) and synergetics. Of these two, IRN is the most interesting in relation to Bandura's social cognitive approach. IRN proposes that
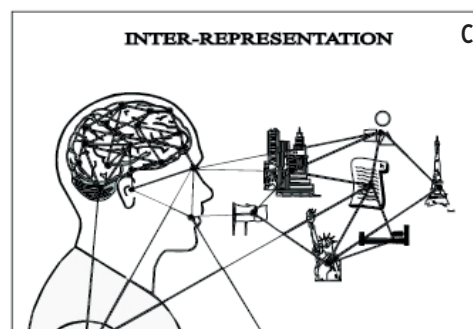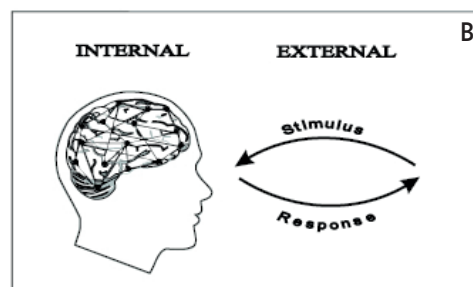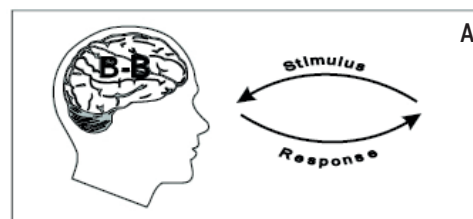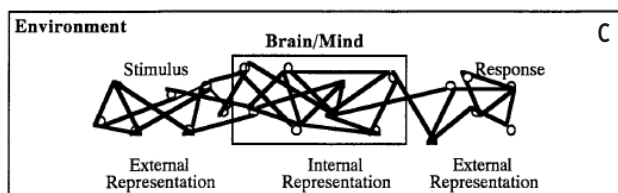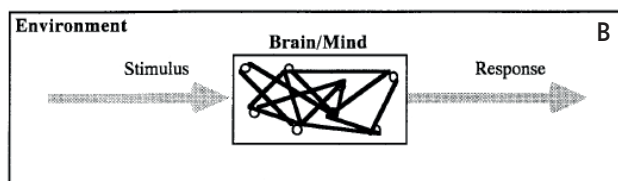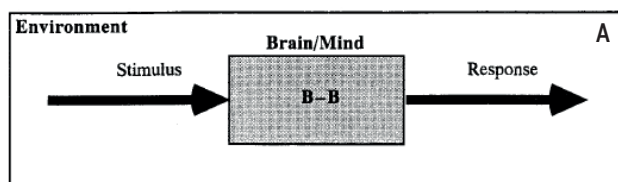
Figure 3: Representation of the three approaches to cognition and cognitive maps as potrayed by Portugali (1992, p.12; 2002, p.436). (A) portrays the traditional theories of behaviorism, (B) the classic view on cognition and (C) Portugali's IRN approach.

the cognitive system extends beyond the mind and brain of an individual into the external environment (Portugali, 1996). It is an elaboration upon both traditional theories of behaviour, as well as classic cognitive theories of behaviour. Traditional behavioural theories primarily looked at the relationship between a stimulus and its response (S-R), considering what happened inside the mind and brain to be inconsequential (otherwise known as the "black box"). Classic cognitive theories turned away from simply looking at the relationship between a stimulus and its response, instead focusing on what happened inside the mind and brain. These cognitive theories attempt to unravel the internal processes underlying the relationship between stimulus and response, in other words, on the way in which the mind and brain encodes, stores and decodes environmental information (Portugali, 1996). Both of these theories regard the mind/brain and the environment to be two independent, causally related entities (Portugali, 1996).

IRN extends upon these theories by proposing that the mind/brain and the environment are not independent entities but rather exist within the same network (Portugali, 1996, 2000; Figure 3). A large part of this network still exists within the mind and brain, similar to classic cognitive theories, referred to as internal representations or internal cognitive processes. However, IRN proposes that a part of this network also exists outside the mind and brain, referred to as external representations. Internal representations are the products of neural activities in the brain, while external representations are products of

bodily activities or artifacts in the environment. IRN states that, while the internal part of the network corresponds to the encoding, storing and decoding of external elements, the external part of the network corresponds to the encoding, storing and decoding of the "internal environment" in the "external environment". SIRN further elaborates upon the notions of IRN by proposing that these internal and external representations do not exist at atomic entities but that they emerge out of a dynamic process (Portugali, 2002). Here we see the second notion of SIRN, synergetics, which describes that cognition (and thus the relationship between internal and external representations) is a dynamic, self-organizing system. Moreover, SIRN extends this relationship by adding that the cognitive system is composed of individual, as well as collective cognitive representations (Portugali, 2002). This idea suggest that it is not only intrapersonal processes, but also interpersonal processes that interplay between internal and external representations. This suggests that there is something akin to a collective memory between individuals, which exists of internal representations (i.e. biological memories) and of external memories (i.e. externalized non-biological memories, termed a common reservoir). Furthermore, SIRN also emphasis the difference between the division of external representations into *bodily* and *external* representations (Protugali, 2002). While bodily representations are made by the body and never extend beyond it, artifacts are *produced* as stand-alone objects that remain in the environment. It is therefore unsurprising that in recent years, SIRN has been linked to the field of (urban) design through its importance in understanding issues that are central to the field of design thinking (Portugali & Stolk, 2014). While the notion of both IRN and SIRN are not uncontested, its underlying proposition that the external environment may be integral to the process of cognition finds support throughout cognitive science (Portugali, 1996).

When we consider the basic propositions of both Bandura's (1986) Social Cognitive Theory as well as Portugali's (2002) SIRN, we can see that both talk about the same relationship between an individual and their (social) environment within a learning context. While the notion of SIRN never mentions social or observational learning, implicitly this is exactly what it talks about. As described, SIRN regards the cognitive system as a network that extends from the mind and brain into the environment. This network attempts to explain how individual's encode, store and decode (or retrieve) information in the mind and brain. At its core, this is similar to what Bandura describes social learning to be when he talks about attention (encoding), retention (storing) and reproducing (retrieving). Social Cognitive Theory primarily adopts a social behavioural approach while incorporating cognitive elements. SIRN on the other hand primarily adopts a cognitive approach while incorporating social and environmental elements. Regardless, the similarities between the two theories are striking.

When we look at Bandura's triangle of reciprocal determinism, we can substitute each of the three main elements that influence learning for one of the main elements in SIRN's network (Figure 4). From both a social as well as cognitive point of view, this "double triangle" described how an individual's cognition and behaviour interacts with each other and with the immediate environment (both social and physical). Of particular relevance to the field of urbanism is how both theories describe the way in which people interact with their social and physical environment. They are not mere actors within a certain context, rather, these theories explain how they actively create and *shape* their environment, which in turn shapes them. This lends theoretical support for the main assumption of this research, namely, that it is impossible to seperate the way in which people act and behave from the physical (and social) environments in which they exhibit these behaviours. Moreover, it provides us with insight to think of creative ways in which people's interaction with their environment could transfer knowledge and values, as well as contribute to the development of what Bandura (1986) called self-efficacy. However, it must be said that these processes are not innately positive or negative, they simply are. This means that the same theoretical model that explains how people learn shared cultural values, also explains how people learn deviant norms. In order to create socio-spatial transformation in problem neighbourhoods, it is therefore important to understand which relationship have a negative, or a positive, influence.

Social & Cognitive
Reciprocal Determinism

Behaviour
External (Bodily) Representations

Social Cognitive
Theory

SIRN

Cognitive Factors
Internal Reps

Environmental Factors
External (Artificial) Reps
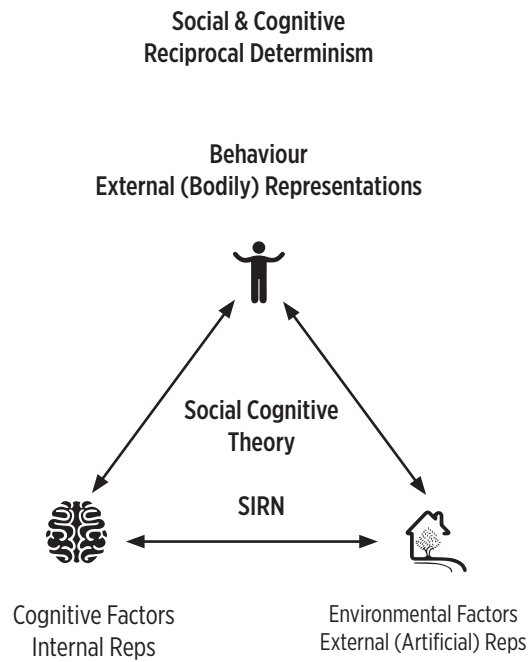
Figure 4: The "double triangle" of reciprocal determinism; one from a social point of view, the other from a cognitive point of view.

PROBLEM NEIGHBOURHOODS

NEIGHBOURHOOD EFFECTS & SOCIAL LEARNING

The study into how people are shaped by their environment has always been present among the social sciences, for instance in the study of delinquency in urban areas (Shaw & McKay, 1942). Interest into the relationship between neighbourhood conditions and individual or community outcomes did not starts to see the interest it has today until Wilson's (1987) The Truly Disadvantaged. When Wilson published his study in the late 1980s, there was a renewed recognition to the clustering of poverty in the United States and the apparent increase of social problems within these clusters. From a large amount of data, Wilson concluded that deprived neighbourhoods within Chicago saw more deviance from social norms, as well as more deviant behaviour such as crime, teen pregnancy and school drop-outs. Wilson hypothesized that these effects were not only the result of the poverty within these neighbourhoods (spatial inequalities resulting in social inequalities), but in part resulted from living in a neighbourhood with many disadvantaged people. He argued that the norms of mainstream society degrade within these areas, where deviant neighbourhood norms become dominant norms due to limited opportunities, resulting in an increased social isolation. It was this research that first prompted the term "neighbourhood effect", a mediating link between the neighbourhood and the residents within this neighbourhood. This effect is controlled for individual characteristics such as gender, ethnicity and social class to target the core questions of whether or not poor neighbourhoods make their residents even poorer (Friedrichs, 1998).

Since Wilson's study, neighbourhood effects have been the focus of extensive research by multiple disciplines such as sociology, criminology, geography, health studies, economics, family and child studies and psychology (Sykes, 2011). All these studies combined have resulted in a substantial base of evidence that gives insight into the effects of the neighbourhood people live in on various aspects of their life. These studies describe the negative effects of living in a deprived neighbourhood to affect health, transition rates between a welfare income and employment, social and occupational mobility, as well as educational achievement, deviant behaviour and social exclusion (van Ham, Manley, Bailey & Simpson, 2012). Moreover, these neighbourhood effects have also been studied in relation to children's and adolescent's development in particular. In their review of existing research on developmental neighbourhood effects, Leventhal and Brooks-Gunn (2000) concluded that the presence of low-income or low-SES (i.e. social economic class) neighbours negatively impacts children's mental health. In contrast, the presence of high-income of affluent neighbours has a positive effect on children's ability, IQ scores and school achievements. They also concluded that, for adolescent's, residence in a low-income or low-SES neighbourhood negatively affects their mental health and increases the likelihood of being associated with criminal and delinquent behaviour as well as unfavourable sexual and fertility outcomes. In contrast, residence in a high-income or affluent neighbourhood had a positive effect on their school and educational achievements.

A combination of both quantitative and qualitative research has since concluded that these neighbourhood effects are, for a large part, mediated through social processes (Wilson, 1987; Jencks & Mayer, 1990; Buck, 2001; Galster, 2010). Research into these underlying social processes has found support for social learning as common element in these social processes, mediating the relationship between neighbourhood conditions and individual or community outcomes (Sampson & Wilson, 1995; Friedrichs & Blasius, 2003; Oberwittler, 2007). Social learning theory describes learning as a cognitive process that takes place within a social context, allowing for spontaneous and informal transfer of knowledge and values (Bandura, 1971). Moreover, social learning theory has been states to be "the perspective on individual behaviour that is most compatible with sociological theories and most able to explicate the process by which structural correlates of deviance do or do not have an effect on deviant behaviour" (Akers, 1998, p.329) and as such plays a pivotal role in deprived neighbourhoods.

The context effects of social learning processes can be specified by different mechanism, most importantly the socialization model, which states the importance of present role models and supervision; and the contagion model, which states that negative behaviour patterns within a neighbourhood influences its residents (Leventhal & Brooks-Gunn, 2000; Friedrichs & Blasius, 2003). However, it was concluded that these context effects are largely dependent upon an individual's network size (Friedrichs & Blasius, 2003; Oberwittler, 2007). This followed the observation that people with a large networks of peers and relatives within their neighbourhood share more neighbourhood effects than people with more peers and relatives outside their neighbourhood. This finding lends support to the hypothesis that neighbourhood effects do not apply equally to everyone in a neighbourhood, a notion that first arose to explain the inconsistent results

Figure 5: Representation of Bronferbrenner's (1989) model of ecological systems theory. In this model individuals are considered to be a part of multiple networks, ranging in size and distance, but all interconnected.

between neighbourhood effect studies (Lupton, 2003). Rather, results showed that neighbourhood effects appear to apply more to those individuals that spend the most time and have the most connections within their neighbourhood. It is therefore unsurprising that a large portion of research into neighbourhood effects has focused on children and adolescents (collectively referred to as young people) and their parents, who have stronger connections to the neighbourhood then adults without children (Henning & Lieberg, 1996).

Following Bronfenbrenner's (1989) theory of development in context, the effects of extrafamiliar contexts such as the neighbourhood and school on children's development first received specific attention. In his ecological systems theory, Bronfenbrenner described the individual as a member of different and overlapping contexts, ranging from the most immediate contexts (i.e. proximal family) to the most distant (i.e. the national context). Unlike research before him, Bronfenbrenner stressed the developmental importance of individual and family characteristics as much as he did the wider neighbourhood and community contexts (Figure 5). Today, researchers consider the neighbourhood of particular relevance to young people since it is where they spend a large amount of their time – living, playing, socializing, participating and attending local schools (Sykes, 2011). Children and adolescents simply have less mobility and a smaller network size than adults, resulting in more time spent in their immediate environment and thus more social learning experiences. In parallel, the neighbourhood also shapes young

Ecology of Human Development

Macro-System
Soceity / Cultures

Exo-System
School / Community

Meso-System
Multiple Micro-Systems

Micro-System
Family / Friends

Individual
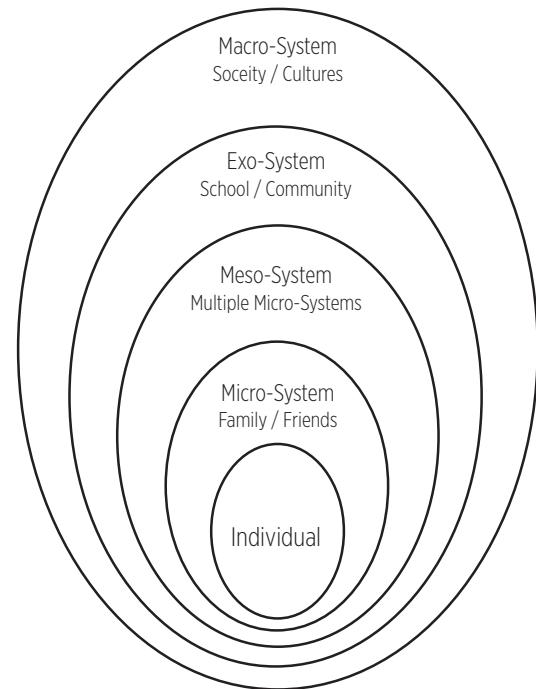
people's understanding and perceptions of the world (Massey, 1994), lends them identification and social belonging (Wridt, 2004) and remains a solid memory even after they move away (Karsten, 2011). Here we found the double-edged knife of neighbourhood effects on young people. Not only are they more prone to social learning experiences within the neighbourhood because it is where they partake in numerous daily activities and interactions. But these social learning experiences also actively shape them as individuals, influencing their development and thus their look on the world and their chances in life.

Figure 6: Young people are a part of the neighbourhood context, as well as the school context. However, these contexts share a common influence, mediated through the relationship between the neighbourhood and the schools that are available within this neighbourhood.

The Neighbourhood

The School

The Neighbourhood's School

The neighbourhood is not the only context in which young people find themselves. Another context in which they spend a large amount of their time is the school environment. Within the body of literature studying neighbourhood effects, there is a large portion that focuses on this school context and how it relates to both the neighbourhood context, as well as the neighbourhood effects observed in young people. A core question within this research is whether or not the neighbourhood and the school environment are two separate contexts contributing to these neighbourhood effects, or if one mediates the other. While this research is relative recent and becoming increasingly accurate and sophisticated following new statistical methods, preliminary results indicate that the school environment and the neighbourhood are two separate contexts that simultaneously contribute to neighbourhood effects (Oberwittler, 2007; Sykes, 2011). However, it should come as no surprise that these contexts are interrelated. After all, there is a strong relationship between the quality of a neighbourhood and the quality of the schools within this neighbourhood (Sykes, 2011). As such, the school environment appears to transmit the influence of the neighbourhood (Sykes and Musterd, 2011). This also accounts for the observation that adolescents living in problem neighbourhood that attending a secondary school outside their neighbourhood are less prone to be influenced by the neighbourhood effects than adolescents who attend a secondary school inside their neighbourhood (Oberwittler, 2007).

In a comprehensive overview of literature on neighbourhood effects Galster (2010) attempted to create a list of potential causal pathways between an individual's behavioural and health outcomes and their neighbourhood context. In his study, he tries to overcome the segregated nature of research on neighbourhood effects by looking at studies conducted by both social scientists (with their focus on behavioural outcomes), as well as epidemiologists (with their focus on health outcomes). Drawing for a large part on the original framework describing causal pathways of neighbourhood effects by Jencks and Mayer (1990), Galster identifies 15 different mechanism underlaying neighbourhood effects, belonging to one of four broader categories; social-interactive mechanisms, environmental mechanisms, geographical mechanisms and institutional mechanism. Social-interactive mechanisms refer to the social processes that are produced and maintain by the neighbourhoods in which they occur. Environmental mechanisms refer to attributes and characteristics of a space that could directly influence the mental and physical health of the residents without affecting their behaviour. Geographical mechanisms refers to those attributes and characteristics of a space that do not arise within the neighbourhood but instead are a product of a neighbourhood's larger context (spatial, political and economic) and directly affect residents' lives. Lastly, institutional mechanisms refer to the available resources within a neighbourhood, as well as the relation between residents and these available resources.

Despite the use of these four categories, the conclusions that were drawn from the previous study lend support for the notion that social-interactive mechanisms are not only the most numerous but also the most relevant to social problems in problem neighbourhoods. Moreover, it are these mechanisms that are, as of yet, not an integral part of the urban design assignment. This is not the case for the other three mechanisms, which are either a direct assign within urban design (i.e. environmental and geographical mechanisms), or present in the context of an assignment (institutional mechanisms). Using Galster's (2010) categorization of these mechanisms, an overview can be made of the six social-interactive mechanisms underlying neighbourhood effects. All of these mechanisms share common elements with theories and models that describe social learning (Sampson & Wilson, 1995; Leventhal & Brooks-Gunn, 2000; Friedrichs & Blasius, 2003; Oberwittler, 2007; Akers, 2009). As such, instead of social-interactive mechanisms, we could also call them social learning processes.

Social Contagion refers to the way in which contact with peers or neighbourhoods can change an individual's behaviours, attitudes and aspirations. These changes can take on a "contagion dynamic", that is, spread amongst residents in a neighbourhood much like a viral epidemic would. *Collective Socialization* refers to the way in which an individual can be encouraged to adopt local social norms. These norms are usually conveyed through neighbourhood role models and other social pressure (e.g. peer pressure). *Social Networks* refers to the way

in which interpersonal communication of information, as well as of resources, is relayed throughout residents in a neighbourhood. Important to note here is that not all networks between residents are of equal strength, there is a difference between strong ties (e.g. family and close friends) and weak ties (e.g. neighbours, classmates). *Social Cohesion and Control* refers to the way in which the disorder within a neighbourhood and the subsequent collective efficacy influences both the behaviours as well as the psychological reactions of residents. Collective efficacy refers to the willingness to interfere on behalf of the common good, or in other words, on people's willingness to act against transgressions (Sampson, Morenoff & Earls, 1999). *Competition* refers to the way in which the unequal distribution of resource within a neighbourhood can cause conflict between the residents. For instance, if there are few spaces for adolescents to use, they will start to claim other types of public spaces, which in turn may cause conflict with the other uses of this space. Moreover, because the outcome of such competition scenarios can be described as zero sum games (i.e. a game in which the loss of one party means the gain of the other and vice versa), the probabilities of "winning" this competition can influence the behaviour of the disadvantaged parties. *Relative Deprivation* is closely linked to competition and refers to the way in which an individual's behaviour, attitude and aspirations can change as a result of continuous confrontation with their own disadvantaged positions. Neighbours that are, in comparison, "well off" may be a source of perceived inferiority and dissatisfaction. The final mechanism,

Parental Mediation, refers to the way in which parents' physical, mental and emotional health as well as their behaviours is affected by all of the mechanisms described above. In turn, this can affect the environment in which children and adolescents are raised, which in turn affects their own physical, mental and emotional health and behaviours. While these six social learning processes appear to mediate neighbourhood effects, they are still described as social phenomena. The interesting question for this research is whether or not these social processes have spatial determinants.

Figure 7: The six mechanisms within the category describing social learning processes that mediate neighbourhood effects.

Social Contagion

The influential effects of negative behaviour patterns within a neighbourhood.

Collective Socialization

The importance of present role models and peers in adopting deviant norms.

Social Cohesion and Control

Ties between residents and their collective efficacy, that is, the wilingness to interfere on behalf of the common good.

Social Networks

The influential effects of interpersonal com-munication of information and resources.

Competition & Relative Deprivation

Resitricted access to local resources due to scarcity (1) and the negative effects of continuous confrontation to one's own disadvantaged position (2).

Parental Mediation

Negative neighbourhood effects on parents that affect the home context of young people.

03

S OCIO-SPATIAL
MECHANISMS

SPATIAL DETERMINANTS OF SOCIAL LEARNING

Most of the research looking into the different social learning processes occurring within problem neighbourhoods and underlying its neighbourhood effects have focused on adolescents and children, though not all of them. This research, which forms the evidence for the categorization Galster (2010) identified, has found support not only for these social processes underlying neighbourhood effects but also concluded that several of these processes have spatial determinants. This means that these social processes are spatially embedded and that changes in these spatial configurations and dynamics could potentially influence the embedded social processes. It are these spatial determinants that are of interest to our research since they offer a starting point for socio-spatial transformations. Following Galster's (2010) categorizations, the aforementioned studies can be reviewed to determine which spatial determinants underlay the different social learning processes. In this review, competition and relative deprivation are combined because, as Galster himself points out, '"[...] to my knowledge, there is little extant statistical research that can distinguish between them." (Galster, 2010, p.6). Moreover, parental mediation is disregarded since it is not a seperate social learning process but rather the description of how the other social learning processes affect both young people and adults alike, causing a perpetuation of the problems we see in problem neighbourhoods across generations.

In a recent study, Oberwittler (2007) conducted a multi-level analysis of the effects of neighbourhood poverty on adolescent problem behaviour, differentiated for both gender and ethnicity. The results of his study suggest that first, these neighbourhood effects exist and second, that they are largely dependent on the spatial orientation of routine activities. In his study, he looked at several deprived neighbourhoods and found that adolescents with a peer network largely based within this neighbourhood were much more likely to be affected by the neighbourhood effects than adolescents whose network was largely based outside their own neighbourhood. This is further supported by research looking into the relationship between mixed neighbourhoods and their neighbourhood effects (Crane, 1991; Galster, 2002). Indicated in this research is the notion that there is a certain threshold of poverty necessary to cause the neighbourhood effects we see in deprived neighbourhoods. These findings lend support for a spatial determinant of the social contagion mechanism, namely, that is matters where people conduct their daily activities (e.g. inside or outside their neighbourhood) and whom they meet there (neighbours or residents of other neighbourhoods).

Similar studies have also found support for a spatial determinant of the closely related mechanism of collective socialization. Friedrichs & Blasius (2003) studied deviant behaviour and social norms in several deprived neighbourhoods. The results of their study concluded that, in these neighbourhoods, deviant social norms were often adopted as dominant local norms.

Moreover, this effect became stronger as the social isolation of a neighbourhood increased. The same study also showed that annoyance serves as a proxy for hopelessness. Adolescents are therefore more likely to act out once these deviant norms are reinforced within their neighbourhood, since it implicitly puts a stamp on the disadvantaged position of the residents. Other research looking into the importance of role models and peer effects in deprived and isolated neighbourhoods has also shown them to be a strong determinant of deviant social norms and negative behaviours (Sinclair, Petit, Harrist, Dodge & Bates, 1994; Oberwittler, 2004; Ginther, Haveman & Wolfe, 2000). Moreover, studies focusing on the education of young people showed that having affluent neighbours had a strong, positive, influence on the educational achievement of these young people (Kauppinen, 2004). This research suggest that, similar to the mechanism of social contagion, the spatial configuration of a neighbourhood is an important spatial determinant of collective socialization. Depending on the degree of connectivity, neighbourhoods can become isolated, resulting in too many negative role models and not enough positive ones.

Social cohesion and control has primarily been studied by the same group of researchers (Sampson and Groves, 1989; Sampson, 1992). In one of their recent studies, they researched the spatial dynamic of collective efficacy for children (Sampson, Morenoff & Earls, 1999). In this study, they looked at the amount and type of adult-child interactions within a neighbourhood and the willingness

of adult residents to act on behalf of the children. The results of their study showed that residential stability, (low) population density and concentrated affluence predict the amount and types of reciprocal exchange between adults and children. Furthermore, neighbourhoods that had a close proximity to areas high in closure, exchange and social control (i.e. supervision) saw more collective efficacy among their own residents than neighbourhoods that did not have a proximity to such areas. This research suggest that several spatial determinants are at play in establishing social cohesion and control within a neighbourhood. First, the proximity and connections between a deprived neighbourhood and other, more middle-class neighbourhoods. This is very similar to the aforementioned spatial determinant underlying the social contagion mechanism. Moreover, areas high in closure, exchange and control appear have a positive influence on the collective efficacy of adult residents, as well as on the children. While different studies into the nature of social cohesion and control, as well as collective efficacy, have been conducted, none of them adopted a spatial perspective similar to that of Sampson et. al. (1999).

The social learning mechanism of social networks is the only mechanisms in the list that appears to have a weak spatial determinant. For the most part, social networks within problem neighbourhoods depend on its social structure. Research observed that the volume, depth and breadth of social relationships within problem neighbourhoods are attenuated compared to social relationship in normal neighbourhood (Fernandez & Harris, 1992). This, in

turn, affects the amount of opportunities residents of problem neighbourhoods receive, especially in terms of employment (Tigges, Brown & Greene, 1998). However, there is support for a slight spatial determinant to these social networks. In their research, Bayer, Ross and Topa (2004) observed that people exchange information about possible job opportunities very locally. Moreover, Farwick (2004) observed that people from the Turkish community living in Germany were less likely to interact with native Germans when the percentage of Turkish residents in the immediate area went up. These findings support a weak spatial determinant for the social network mechanisms, namely, that the social composition of people's immediate environment is relevant for the richness of their social network. In spite of these finding however, it does appear as if there is a limit to this social mixing. Different research on the topic concluded that people are more likely to interact with people who speak the same language (Bertrand, Luttmer & Mullainathan, 2000), have a similar education (Bayer et. al., 2004) and are not too distant in terms of socio-economic class (Andersson, Musterd, Galster & Kauppinen, 2010).

While the researched described above, particularly concerning the social contagion and collective socialization, support the hypothesis that affluent residents positively influences the less affluent residents of the neighbourhood, some studies report the opposite. Sampon and Groves (1989), concluded that an increase in ethnic heterogeneity within a neighbourhood corresponded to less supervision of children and adolescents and a lack of participation. Similarly, Oberwittler (2007) observed that adolescents living in less affluent households scored higher on an index of relative disadvantage when the neighbourhood they lived in was more affluent. These finds can be attributed to the mechanisms of competition and relative deprivation and its underlying spatial determinants. As mentioned, having affluent neighbours generally has a positive influence on the less affluent residents within a neighbourhood. However, when the differences between the two groups becomes too large or too obvious, the effect turns from positive to negative. This suggests that, within a mixed neighbourhood, extreme mixing of social classes will work adversely. Moreover, it also suggests that it would be necessary to have different types of public spaces that different groups can claim as their own.

All of the research that has been reviewed here was all conducted recently and still is in its infancy. However, this research does appear to support the notion that there are spatial determinants that facilitate different types of social leaning processes. These spatial characteristics appear to influence the social learning processes primarily through the ways in which they are (inter)connected and oriented, offer facilities and public spaces for daily use and their socio-spatial distribution of different types of people, houses and spaces. While most of these spatial determinants are described from a predominantly sociological point of view, we can "translate" them into concepts that relate better to the field of urbanisms (Figure 1).

These six categories provide a basis that allow us to start looking at those issues within problem neighbourhood that have both a spatial and a social dimension. An important limitation to be aware of however is that the field of urbanism and its urban design assignment are context-specific. This means that, depending on a specific neighbourhood, some of these socio-spatial issues may or may not exist. Moreover, as is the nature of socio-spatial dynamics, it could very well be that certain spatial characteristics are present but not the social ones and vice versa. It is therefore wise to exhibit caution and refrain from blindly applying these socio-spatial characteristics. Rather, a context-specific analysis will first have to conducted to assess the extend to which each of these socio-spatial dynamics are present in a certain neighbourhood.

Figure 8: On the left is a summary of the reviewed researched findings concerning the spatial determinants of the six social learning processes. On the right, these findings have been "translated" from a sociological perspective to concepts relating to the field of urbanism.

Social Contagion

People with a network outside the neighbour-hood are less prone to neighbourhood effects; spatial layout of routine activites.

Collective Socialization

Isolated neighbourhoods adopt deviant social norms as dominant, increasingly the occurance of deviant behaviour.

Social Cohesion & Control

Neighbourhoods close to areas with more affluence and high in close, exchange and control have more collective efficacy.

Social Networks

If enough people from the same background live close by, they stop socializing with others.

Competition

A neighbourhood that is too heterogenous lacks interaction and social binding.

Relative Deprivation

Continuous confrontation with one's own disadvantage causes negative effects.

Neighbourhood (Inter)Connections

Position of neighbourhoods in larger network.
Position of networks inside neighbourhoods.
Available services in these networks.

Neighbourhood Orientation

Configuration of the neighbourhood.
Inward / outward orientation of spaces.
Isolated versus connected spaces.

Conditions of Public Spaces

Type of public spaces in neighbourhood.
How are these spaces used and by whom.
Opportunities for social interactions.

Social & Typological Distributions

Distributions of neighbourhood demography.
Distribution of housing typologies.

Available Facilities & Resources

Fit between population & available facilities.
(Im)Proper use of public spaces.

Extend of Social Mixing

Similar to Social Networks:
Distributions housing & demographics.

04

T HROUGH CHILDREN'S EYES

YOUNG PEOPLE: EXPERIENCING PUBLIC SPACE

While public spaces are an important part of young people's everyday lives, the way in which they are used and experienced changes as children become older. While young children primarily use public space to play and explore, older children start to use it for leisure, restoration, school and other daily activities (Matthews, 1992; Korpela, Kytta & Hartig, 2002). When we consider young people's experience and use of spaces, we thus have to consider the large difference in development between children of different ages. In his theory of cognitive development, Piaget (1950) described four different stages of development that are universal. Piaget's model has been expanded upon in recent years and some of his assumptions have been proven, disproven, further elaborated upon or are still under debate. However, in spite of all this, his theory still gives an accurate, clear and simplified overview of children's development adequate for this paper (for a more detailed review on children's development see Siegler & Alibali, 2005).

The first stage of development, the *sensorimotor stage,* starts at birth and ends roughly around age two. In this stage, children predominantly experience the world through their own senses and movements. Piaget (1950) described this stage as egocentric, since children can not perceive the world from any other viewpoint but their own. The second *preoperational stage* starts when children begin to develop linguistic abilities and lasts up to the age of seven. In this stage, children start to develop symbolic thought, memory and imagination. Their thinking however is still mostly intuitive, without

a clear understanding of logical concepts. The third *concrete operational stage* starts around the age of seven and ends around the age of eleven. In this stage, children start to develop logical thought. They become more aware of external stimuli and start to develop the concept of perception, allowing them to look at things from another perspective and realize the difference between imagination and reality. Moreover, they start to develop operational thinking; the ability to perform mental actions that can be reversed. However, they are still dependent on physical manipulation to solve problems and can not deal with a large amount of variables. The final stage of cognitive development, the f*ormal operational stage,* start around the age of eleven and continues all the way through puberty and adulthood. In this stage, children start to develop abstract thought. Their operational thinking develops more fully, allowing them to easily conserve and think logically inside their mind. This also enables them to systematically think about multiple variables, formulate hypotheses and consider possibilities. As adolescents (and adults) continue to develop their cognitive abilities, they are increasingly able to consider abstract concepts and reflect on their own cognitive abilities. However, Piaget (1950) also noted that the extend to which this stage develops differs per individual and not everyone obtains full formal operational cognitive abilities.

While Piaget's theory is not without critique and the field of development psychology has greatly evolved in the last decades, Piaget's theory still remains one of the most influential theories on cognitive development to this date.

Sensorimotor Stage

0-2: Children experience the world primarily tthrough their senses and movements.

Preoperational Stage

2-7: Development of symbolic thought, me-mory and imagination; intuitive thinking.

Concrete Operational Stage

7-11: Awareness of external stimuli, develop-ment of perception; logical thought.

Formal Operational Stage

11+: Logical thinking inside the mind, deve-lopment of abstract concepts; self-reflection.

Figure 9: The four stages of cognitive development, as described by Piaget (1950).

Interesting within the field of urbanism is that, following his theory of cognitive development, Piaget developed what can be considered the first works on children's experience of space (Piaget & Inhelder, 1967). In this book, Piaget and his colleague describe how children's conceptualization of space evolves in three stages, namely, synthetic incapacity, intellectual realism and visual realism. According to them, this conceptualization starts with *topological concepts*. These concepts are the most general notions of mathematical space, describing how collections of objects belong to the same group and how the objects within this group and the group itself relate to each other, providing meaning or significance. This allows for the definition of spatial concepts such as continuity and discontinuity, connectedness and separation and convergence and divergence. Following these topological concepts, Piaget and Inhelder (1967) state that children then create *projective concepts* of space. These concepts are primarily constructed following children's understanding of perspective. This allows them to development concepts such as distance and relative position. However, they are not yet able to integrate different viewpoints into a single representation. The last spatial concepts to develop are the *euclidian concepts* (Piaget & Inhelder, 1967). This concept refers to the multi-dimensional nature of space, where children not only start to conceptualize the relations between the three different dimensions of space (x, y, z axes) but also start to develop the concept of temporal space. In this stage, they develop the ability to integrate different perspectives into a single whole.

1: Synthetic Incapacity

Topological concepts of space.

2: Intellectual Realism

Projective concepts of space.

3: Visual Realism

Euclidean concepts of space.
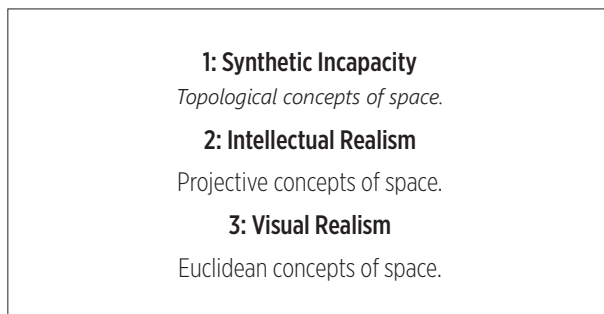
Figure 10: The three different stages in which children start to form conceptualization of space, as described by Piaget & Inhelder (1967).

While revolutionary for its day, this research on children's experience of space was very limited in the sense that it mainly focused on the first stages of cognitive development. It was Norberg-Schulz who continued along the lines of this research and expanded upon it. In his well-known "Existence, Space and Architecture" (1971), he defined different ways in which people organize and use spatial knowledge. His theory consisted of five separate categorizations of space that people are able to perceive; the first three follow Piaget and Inhelder's (1967) stages of spatial conceptualization, the last two he added himself, both of which refer to the later stages of cognitive development. Norberg-Schulz (1971) first category of *pragmatic space* refers to the space of physical action, in which people make sensory and motoric responses. Following this is *perceptual space*, the space of immediate orientation based on the experience of sensory imagery. In other words, it is in this perceptual space that people view themselves as entities separate from the environment but still a part of it by being there. His third category describes *existential space*; the space that forms a person's impressions of the environment. Norberg-Schulz (1971) describes these impressions as mental images or imitations of the world around us which involve social constructs of reality within a, larger, cultural context. These three categories of space relate to the aforementioned stages of spatial conceptualization. Expanding upon these, Norberg-Schulz (1971) added two additional categories of space, in line with the two later stages of cognitive development. The first, *cognitive space*, refers to the physical world and its representations,

relating to relationships within this space . The second, *abstract space* describes pure relationships, separate from any perceptual or sensory motoric skill. Norberg-Schulz (1971) theorized individuals to be able to conceptualize other concepts of, and objects in, space when perceiving this abstract space.

These five categories of space people are able to perceive determine how we organize and use spatial knowledge (Norberg-Schulz, 1971). Because these categories are based upon Piaget's (1965) work, we can thus conclude that these different types of spatial information are not available from birth. When we put the theories of cognitive development and spatial conceptualization next to each other we can see a clear link between them, describing the sequential nature of cognitive development and thus of spatial conceptualization. The types of spaces that children are able to perceive change as they become older, starting from a first sensory-motor perception, to increasingly cognitive perceptions such as perceptual knowledge, cultural knowledge and, ultimately, abstract knowledge. These different levels of cognition, determining the differences in the perception of space, greatly impact the type of environments required to meet the needs of children in these different stages of cognitive development. This can be aptly explained with the use of Maslow's (1971) hierarchy of needs.

First published in 1943 in his "A Theory of Human Motivation", Maslow proposed a hierarchy of five different needs (i.e. physiological, safety and security, love and

Figure 11: Here we see the four stages of cognitive development (where the formal operational stage is seperate into an early (pubescent) and a later (post-pubescent) stage in relation to the different types of spatial information that is perceived in each stage.

Primitive Space	Perceptual Space	Existential Space	Cognitive Space	Abstract Space
Sensorimotor	Preoperational	Concrete Operational	Formal Operational (e)	Formal Operational (l)

belonging, esteem, and self-actualization). While this hierarchy is often represented as a pyramid, this was not how Maslow originally proposed his ideas. Maslow's original hierarchy of needs describes how people have different needs, and how these needs have different priorities. He proposed that lower needs have a higher priority and that these needs must be met before an individual will move to a higher need, with a lower priority. As such, Maslow (1943) considered human needs to be 'wanting', that is, to always seek and desire something above what they already have. Furthermore, he separated his hierarchy into deficiency needs and growth needs. He considered these deficiency needs, or D-Needs, to be needs that will cause physiological or mental stress or anxiety if they are not met. These needs would have to be fulfilled before an individual starts to seek out growth needs, which drive personal development. While this five-layered hierarchy of needs is undoubtedly the most well-known hierarchy of needs, Maslow continued to develop his hierarchy of needs and revised it a number of times. In his last revision, published posthumously, Maslow (1971) describes a hierarchy of needs with eight different needs (i.e. physiological, safety and security, love and belonging, esteem, cognitive, aesthetic, self-actualization, and transcendence), all of which belong to one of three categories (deficiency, growth, being). It is this latest hierarchy of needs that we can put next to earlier described stages of cognitive development and spatial conceptualization. When we do so, it becomes apparent that children of different ages not only perceive the world around them differently, but that they also have different

Original Hierarchy of Needs

Revised Hierarchy of Needs
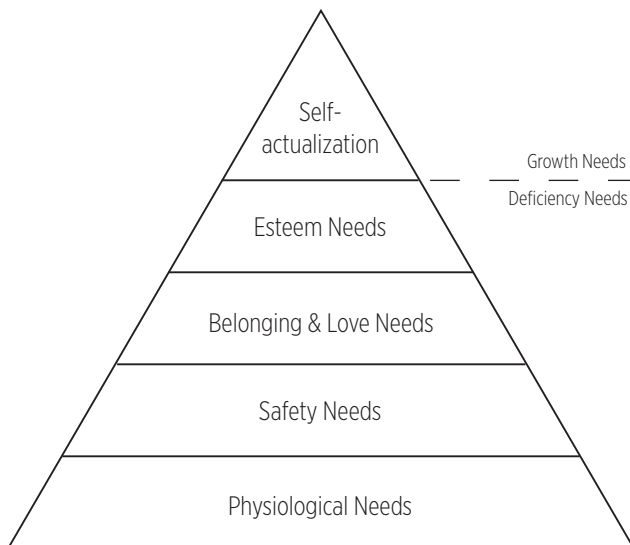
Figure 12: The orginal hierarchy of needs as described by Maslow (1943), portrayed in its best known form as a pyramid.
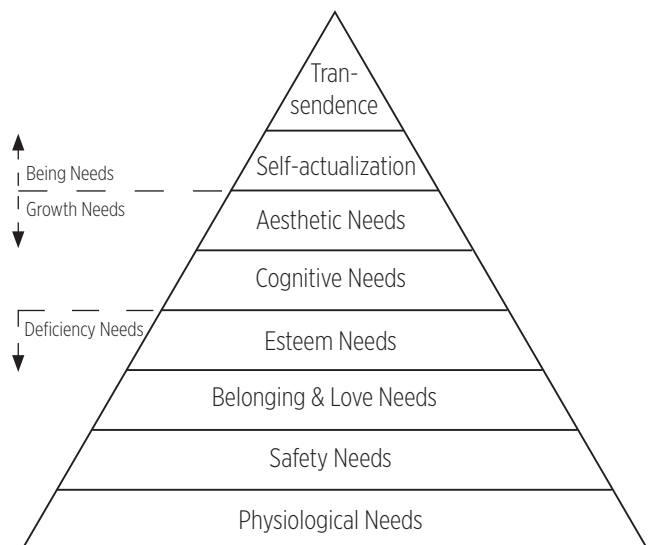
Figure 13: The revised hierarchy of needs as described by Maslow (1971), portrayed in its best known form as a pyramid.

needs (since these are limited to the stage of cognitive development children are in). Furthermore, when we consider this in a spatial context, we can conclude that both these different stages of cognitive development, as well as the different needs corresponding to these stages, result in different spatial requirements.

The difficulty in coming to concrete spatial requirements when designing public spaces for young people is that it has not yet been the topic of much research. Most of the research that does focus on physical environments for children primarily considers a day-care or school context (Kritchevsky, 1969; Moore, 2002). This research does come to some interesting requirements of public spaces for children, underlining several important dimensions. It is only in the last few years however that attention to young people's use and experience of public spaces has become increasingly important. Much of this research appears to draw a similar conclusions; that we have a very limited understanding of this "children's point of view" since we are structurally excluded them from decision making (Moss & Petrie, 2002; Karsten, 2003). Instead designing spaces for children according to the way in which adults think they should be designed, rather than just asking them (Salingaros, 2007). Moreover, public spaces have primarily become places for adults instead of places for children, who are more often playing inside their own

Figure 14: Visual representation of the sequential nature of cognitive development, spatial conceptualization and the different needs the environment must meet.

Abstract Space

Cognitive Space

Existential Space

Perceptual Space

Primitive Space

Tran-sendence

Self-Actualization
Realizing potential, creativity

Aesthetic Needs
Scale, beauty, composition

Cognitive Needs
Need to know, understand & explore

Esteem Needs
Prestige, feeling of accomplishment

Belonging & Love Needs
Relationships, friends, feeling at home/comfortable

Safety Needs
Security, safety, protection

Physiological Needs
Basic needs; food, drink, water, warmth

home environment, a development which is decreasing children's own agency (Karsten, 2005). This is furthermore reinforced by the fact that young people's use of public space is greatly regulated by parental and other adult control. Factors such as traffic safety, exposure to violence and danger of strangers may cause parents to deny their children the use of public spaces (O'Brien, Joanes, Sloan & Rustin, 2000). While children gain more independence and autonomy from parents and other adult supervisors as they grow older, adults' mental faculties are an additional factor that has to be considered when designing public spaces for young people.

While in no way complete, this first insight into young people's experience and use of public space allows us to draw up a preliminary list of spatial characteristics that we must pay attention to when designing public spaces for children of different ages. While this research has predominantly been conducted from a sociological point of view (similar to the research looking into socio-spatial research), we can again "translate" this into more spatially oriented concepts that relate to the field of urbanism. The most important conclusion we have to draw here, however, remains the necessity to induce children in the design process to be able to create a better understanding of their requirements for these public spaces.

Figure 15: On the left is a summary of young people's spatial conceptualizations in each stage of cognitive development. On the right, these findings have been combined with Maslow's (1971) described hierarchy of needs "translated" into spatial characteristics.

Primitive Space

Perceived by children in the first sensorimotor stage of development, it is the space of physical action and sensory experience.

Perceptual Space

Perceived by children in the second pre-operational stage of development, it is the space of sensory imagery and imagination.

Existential Space

Perceived by children in the third, concrete operational stage of development, it is the space of impressions and context.

Cognitive Space

Perceived by children early in the formal operational stage of development, it is the space of perspectives and representation.

Abstract Space

Perceived by children and adults in the later formal operational stage of development, it is the space of abstract concepts and relations.

0-2: "Sensory" Space

Children in these ages require spaces to meet basic needs (physiological and safety), allowing them to see and feel the world.

2-7: "Discovery" Space

Children in these ages require space to meet all deficiency needs, so they can start to discover the world safely and comfortably.

7-11: "Explorative" Space

Children in these ages require space to meet "growth" needs, allowing them to search for new knowledge and perceptions.

11-16: "Self-Actualizing" Space

Children in these ages require space to meet "being" needs, allowing them to express themselves and discover who they are.

16+: "Mini-Adult" Space

Children after the age of 16 can be considered "mini-adults", they require the same type of spaces they do to continue to develop.

P ATTERNS

FROM RESEARCH TO DESIGN

In order to come to a physical design for the neighbourhood of Oud-Charlois, it is important to determine how this design will be established. As detailed in the first part of this document (the framework), the aim of this project is to develop a strategy that enables us to find effective ways to think about socio-spatial problems and their possible solutions. While the theoretical research documented in this chapter has given us valuable insight into the socio-spatial characteristics of several social learning processes, as well as the requirements for children's environments, this knowledge is still very abstract. To translate this abstract knowledge to design guidelines, it will be necessary to order this information more concretely, focusing on the practical application.

One of the most well-known methods to organize both theoretical and design-oriented information is in a "pattern". This format was developed by Alexander in his classic "A Pattern Language" (1977). In the book that describes the basis of this pattern language, Alexander (1979) described how cities and buildings will never come alive unless they are shaped and created by all the people in a society. Furthermore, he proclaimed that such a process would be impossible unless all these people shared a common pattern language, allowing them to both shape and design these cities and buildings as well as communicate with each other. In "A Pattern Language" (1977) Alexander elaborated this idea by documenting a first pattern language. These patterns all have the same layout; they describe a problem that occurs repeatedly in our society and the core of the solution to this problem.

4 AGRICULTURAL VALLEYS*

26

. . . this pattern helps maintain the INDEPENDENT REGIONS (1) by making regions more self-sufficient agriculturally; and it will create CITY COUNTRY FINGERS (3) almost automatically by preserving agricultural land in urban areas. But just exactly which land ought to be preserved, and which land built upon?

✧ ✧ ✧

The land which is best for agriculture happens to be best for building too. But it is limited—and once destroyed, it cannot be regained for centuries.

In the last few years, suburban growth has been spreading over all land, agricultural or not. It eats up this limited resource and, worse still, destroys the possibility of farming close to cities once and for all. But we know, from the arguments of CITY COUNTRY FINGERS (3), that it is important to have open farmland near the places where people live. Since the arable land which can be used for farming lies mainly in the valleys, it is essential that the valley floors within our urban regions be left untouched and kept for farming.

The most complete study of this problem that we know, comes from Ian McHarg (*Design With Nature*, New York: Natural History Press, 1969). In his "Plan for the Valleys" (Wallace-McHarg Associates, Philadelphia, 1963), he shows how town development can be diverted to the hillsides and plateaus, leaving the valleys clear. The pattern is supported, also, by the fact that there are several possible practical approaches to the task of implementation (McHarg, pp. 79–93).

Therefore:

Preserve all agricultural valleys as farmland and protect this land from any development which would destroy or lock up the unique fertility of the soil. Even when valleys

27

Figure 16: Three pages out of Alexander's "A Pattern Language" (1977, pp. 26-28) describing his 4th pattern: Agricultural Valleys.

are not cultivated now, protect them: keep them for farms and parks and wilds.

hills for building

valleys for crops

✧ ✧ ✧
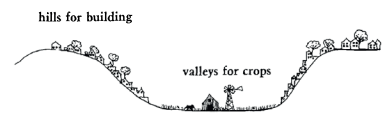
Keep town and city development along the hilltops and hillsides—CITY COUNTRY FINGERS (3). And in the valleys, treat the ownership of the land as a form of stewardship, embracing basic ecological responsibilities—THE COUNTRYSIDE (7). . . .

This is described in such a way that, to quote Alexander himself "you can use this solutions a million times over, without ever doing it the same way twice" (Alexander, 1977, p.x). Moreover, Alexander created his pattern language to evolve and grow over time, as more people verified the validity of certain patterns through theoretical research or expanded upon his first work with additional patterns.

The most important feature of these patterns is the way in which they are able to structure theoretical research findings so it gives practical design guidelines and recommendations. This feature is derived, in large part, from the way in which these patterns are described. Alexander's original patterns were formatted with (1) a picture, (2) introduction of the pattern's context, (3) core statement describing the pattern, (4) empirical background of the problem targeted through the pattern, (5) core statement describing the solutions to the problem, (6) a diagram of this solution and (7) relation of this pattern with other patterns (Figure 16). An important aspect of all of Alexander's pattern were that the problems were recurring, the solutions instructional, and the entire pattern was as archetypical as possible.

While adequate at meeting its goal, this original pattern format can become rather long winded and lacks the clear, concise and compact format most suited for a design tool. Furthermore, critique has been voiced on a number of premises underlying Alexander's pattern language and the way in which he described his patterns (van Dorst,

2005). Following this critique, van Dorst (2005) proposed a modified and updated format in which patterns can be described according to (1) a title, (2) a positively framed presumption or postulation, (3) a (theoretically supported) clarification (4) an application, (5) a picture and (6) references to other patterns (Figure 17).

Another important addition to Alexander's (1977) original patterns is the elaboration of pattern networks by Salingaros (2000). In his "The Structure of Pattern Lagnuages", he names the connectivity of patterns as one of the key features of pattern languages, which he notes is largely overlooked by Alexander's (1977) original patterns. Salingaros (2000) states that all patterns connect to each other, and that this connection can have different values (Figure 3). For instance, two patterns can be linked because one generalizes the other on a larger scale, or because they both solve the same problem in alternative, yet equally valid ways. It are these connections between the different patterns that give the language its structure, and create the system with which we can tackle complex problems. Salingaros (2000) furthermore argues that patterns "provide the necessary foundation for any design solution to connect with human beings", because it is within patterns that links can be made between social patterns and spatial patterns (Figure 18).   (theoretical) research and the (practical) design.

Patroon: 'Boom-Struik-Kruid-Moslaag'
(C. van der Graaf, 2002).

Figuur 8.4   Een bosplantsoen in de buurt
Gilles, Delft.

Stelling
Variatie in vegetatielagen, zoals de aanwezig-
heid van boom-, struik-, kruid- en moslaag,
is geschikt voor de realisatie van een grote
diversiteit aan foerageer-, schuil-, nestel-, paar-
en verblijfplekken voor dieren.

Toelichting
Om het dierlijk en plantaardig leven van stad en
omgeving met elkaar te verweven zijn er in de
stad verblijf- en leefplekken nodig. Ook wijken
binnen een stad zijn geschikt als leefomgeving
voor verschillende planten- en diersoorten.
Hoeveel verschillende soorten er kunnen ver-
blijven is afhankelijk van de inrichting. Zo is de
opbouw van de begroeiing van belang. Zorg
voor een opbouw in een mos-, kruid-, struik- en
boomlaag. Dit zorgt voor een gevarieerde inrichting met voldoende schuilplekken. De aanleg van
een goede boom-, struik-, kruid- en moslaag vergt een ruime breedte van 15 tot 25 meter. In de stad
zijn in het bijzonder bosplantsoenen geschikt om een goede opbouw van de vegetatie te realiseren.

Aanbeveling
• Realiseer naast solitaire bomen in een grasveld ook bomen met ondergroei van struiken en
  kruiden.
• Realiseer een voldoende dichte begroeiing ter plekke van de aansluiting op de ecologische
  hoofdstructuur.
• Een belangrijke voorwaarde voor de gelaagdheid is dat zowel van boven als van opzij
  voldoende licht wordt doorgelaten.
• Scherm recreatie- of speelgroen af van de bebouwing en het verkeer door een boom-, struik-
  en kruidlaag. De afscherming kan gelijk als geluidsbuffer dienen.
• Maak ruimtelijk onderscheid in geplante en spontane begroeiing: creëer een gedeelte met
  geplante inheemse soorten voor een direct resultaat en mooi aanzicht en een gedeelte waarin de
  abiotische randvoorwaarden gecreëerd zijn en inheemse soorten zich spontaan zullen vestigen.

Verwijzing
• Verblijfsgebied (verbindingen voor dier en plant)
• Gradiënten (inrichting voor dier en plant)

Literatuur
• Koster, A. & M. Claringbould (1991). Natuurlijker groenbeheer in Nederlandse gemeenten.
  VNG, Den Haag.
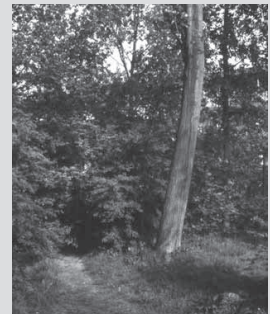
*Figure 17: Example of van Dorst's (2005, p. 267) modified
structure to document patterns.*
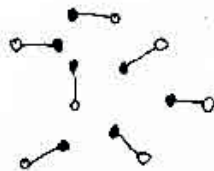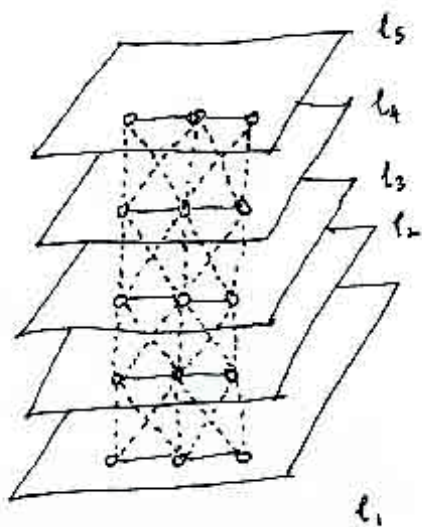
Figure 18: Example of a pattern network (top) and patterns as connectors of social and spatial information (Salingaros, 2000).

In addition to its general theoretical background, patterns also have a very specific importance to the theoretical model presented earlier (Figure 19). This double triangle of reciprocal determinism describes the way in which people interact with their social and physical environment. People are not mere actors within a certain context, rather, they actively create and *shape* their environment, which in turn shapes them. This supports the hypothesis that it is impossible to seperate the way in which people act and behave from the physical (and social) environments in which they exhibit these behaviours. Moreover, it provides us with insight to think of creative ways in which people's interaction with their environment could transfer knowledge and values.

This combination of behaviour and environment, combining the social and physical dimension, described by the double triangle can also be described using patterns. After all, by nature, patterns are entities that describe a certain phenomena. We can thus regard each social learning process is a (social) pattern, and each spatial determinant related to this social learning process as another (physical) pattern. The combination between these patterns, as described by the double triangle, becomes a new pattern that stands on its own. It is this pattern that describes people's interaction with their social and physical environment (environmental factors / external (artificial) representations), how they shape this environment (behaviour / external (bodily) representations), and how it in turn shapes them (cognitive factors / internal representations). These patterns can be

seen as "super-patterns", because they combine different types of patterns that exist in different locations (internal or external, described by SIRN; Portugali, 1996) into a single whole by focusing on their inherent relationship.

The nature of patterns, their structure and their relevance in relation to the theoretical model of this project are therefore a good method to translate the theoretical research findings of this project into a more concrete and design-oriented format. In doing so, the theoretical conclusions are transformed from abstract socio-spatial constructs into specific spatially oriented patterns that we can use to create design interventions. As such, these patterns bridge the gap between the (theoretical) research and the (practical) design. The theoretical conclusions presented in the earlier research section have been the input for two separate sets of patterns; one detailing social learning environments and the other detailing children's environments. These pattern sets have been collected in two pattern libraries of the same name and are in two seperate documents.

Social & Cognitive
Reciprocal Determinism

Behaviour
External (Bodily) Representations

Social Cognitive
Theory

SIRN

Cognitive Factors
Internal Reps

Environmental Factors
External (Artificial) Reps
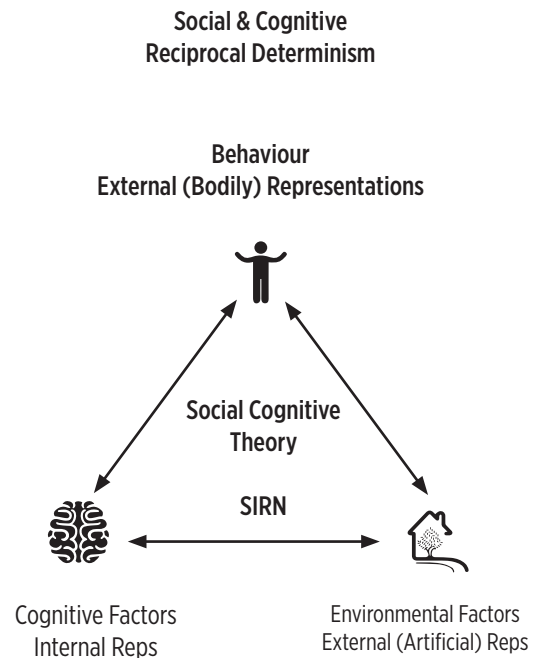
Figure 19: The "double triangle" of reciprocal determinism; one from a social point of view, the other from a cognitive point of view.

Disadvantaged neighbourhoods will benefit from connections to surrounding, non-disadvantaged, areas.

ZUS © An example of a possible connection between two areas.

01

N EIGHBOURHOOD CONNECTIONS

More diversity throughout a neighbourhood will benefit disadvantaged neighbourhoods by drawing in a wider public, which in turn increases the likelihood residents will meet different types of people.
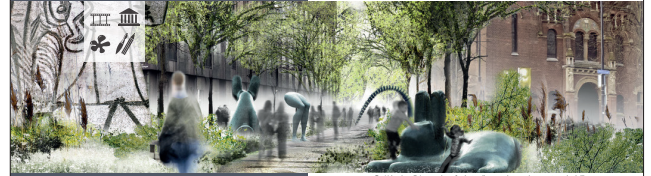
De Urbanism © Impression of what a diverse urban environment can look like.

11

D IVERSE ENVIRONMENTS

By creating a single urban system across disadvantaged neighbourhoods and the adjacent, non-disadvantaged, areas, the disadvantaged neighbourhood benefits through access to and participation in a larger, more affluent, environment.

Kraaijvanger © Example of a public facility node in a shared urban system.

05

D AILY URBAN SYSTEM

By designing communal spaces that different groups of people can claim as their own, disadvantaged neighbourhoods will benefit through the stimulation of communities and by no longer having to compete for the available spaces.

EXCEPT © Example of a communal space connected to residential appartments.

14

C OMMUNAL SPACES

Figure 20: Example of the patterns in the Children's Environments Pattern Library in their summarized layout.

Adolescents require spaces separate from adults that allow them to express themselves and their own creativity in order to realize their own potential.

Flickr; Lorenc Vercauteren © Young teens need places to cultivate their interests.

04

C ULTIVATING
(11-16 YEARS)

It is important for children and adolescents to have access to natural environments since they increase their physical and psychological well-being while offering a diverse range of both physical and cognitive activities.

Flickr; Travis Swan © Natural environments promote health and offer varied uses.

15

N ATURAL
ENVIRONMENTS

Materialization is an important factor in designing children's environment through its different properties; colour, texture, hardness, diversity, complexity and richness.

Flickr; AJ Brustein © Varied materialization offers diversity in design and use.

07

M ATERIALS

It is important to take the differences in activities girls and boys choose to participate in into account when designing environments for children.

Flickr; Slavik Tereboc © Boys and girls often choose different outdoor activities.

19

G ENDER
DESIGN

R EFERENCES

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LOCATION

C ONTEXT

Figure 2: Location of Rotterdam in the Netherland.

ROTTERDAM

618.109 inhabitants
317.855 households

16,5%

102.271 children up to 15 years
 92.347 households with children

29,1%

CHARLOIS

64.488 inhabitants
33.812 households

11.576   children up to 15 years
 9.843   households with children

18,0%

29,1%
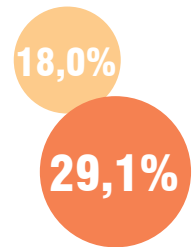
The city of Rotterdam is located on the west coast of the Netherlands, marking the southern edge of the Randstad; the densely populated urbanized region located in the mid-west part of the Netherlands. Rotterdam is one of the country's larger cities, internationally recognized for its large industrial harbour. During WW2, a large part of the city was bombed and had to be rebuilt. Because of this, the city has a large amount of freedom when it comes to its urban design and architecture. This is mostly visible in the centre and around the harbours, where the city foregoes traditional Dutch architecture for large highrises. Rotterdam is divided in a north and a south bank, divided by the river the Maas. Charlois is one of the primary areas in the southern part of Rotterdam, which includes Oud-Charlois in the north-west corner.

Figure 3: Location of Oud-Charlois in Charlois.

Figure 4: Map of Oud-Charlois.

OUD-CHARLOIS

13.094   inhabitants
6.701   households

18,2%

2.378   children up to 15 years
2.011   households with children

30,0%
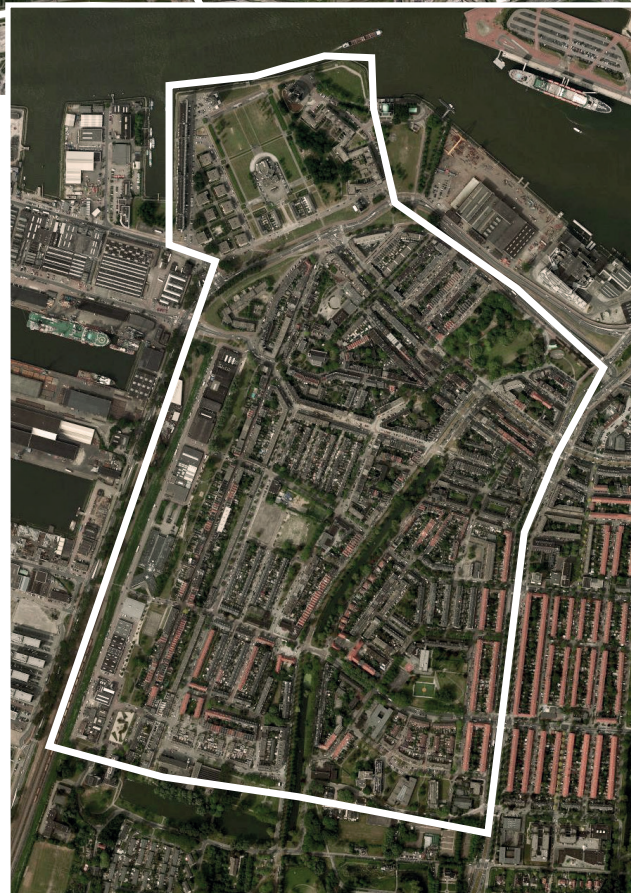
N ETWORK
ANALYSIS

As described, this location analysis consists of a number of seperate analyses, which all look into the different aspects of Oud Charlois. The first analysis is the network analysis. This analysis looks at the network in which Oud-Charlois is positioned, instead of merely the neighbourhood of Oud-Charlois as defined by the municipality. This network is defined by combining the physical characteristics of Oud-Charlois and its surroundings,with interviews with residents, adults and young people alike. In doing so, this network anlysis provides an integral view of how the residents of Oud-Charlois use their environments, as well as the physical characteristics of this environment.

The Network Perspective
According to Dupuy's (2008) book on urban networks, there are three different scales (or operators) of importance within every network, which he described as a level-three network structure. The largest scale, the level-one operator, consists of the road networks, public transport networks and communication networks. This network thus consists of the larger networks that links all the smaller networks together. This is true within a city, but also between cities and even internationally. The middle scale, the level-two operator, consists of the production, consumptions and domestic networks. Here, Dupuy (2008) describes the production network to be a networks of supplies, subcontractors and customers; in other words, he described the network in which people work and earn a living (i.e. the labour market). The consumption network is, according to Dupuy (2008), the network that links different types of facilities together that

people use on a regular basis (e.g. shopping and leisure). The last network, the domestic network, is described by Dupuy (2008) as the network that links all the crucial points in a person's life together such as family, friends, schools, work, etc. The smaller scale, the level- three operator, consists of networks and territory's of the urban household. The size of this scale is thus dependent on the network size of each individual. However, it can be said that for most people this network will consist of their homes, their gardens, and all the local places they visit and make use of.

The Interviews
The most common way of performing a network analysis if by observing the physical characteristics of a certain location and then, through careful analysis, distill the different network operators from these characteristics. While such an analysis undoubtedly provides valueable insight into the networks as they exist on paper, it does not tell you whether the residents of the area actually use the network in that way. By combining a traditional network analysis with interview data detailing resident's use of their environment, the network analysis provides a more accurate picture of the networks as they are used by the residents. For the purpose of this analysis, the interviews were conducted with adults, adolescents and children. The interviews were conducted in four seperate locations in the neighbourhood (Figure 5).

All the residents that were interviewed were asked the same five questions, which three possible follow-up

questions depending on their answer:

1. What is your age?
2. Do you live in the neighbourhood?
3: Do you come to this place often? And if so, what is the reason for your visits to this location.
4: Are there other places that you frequent often? And if so, which locations are they.)
5: Are there places where you don't like coming? And if so, which locations are they.)

The combination of these questions were designed to create insight into people's use of their environment. This use was combined with the physical characteristics of Oud-Charlois and its surroundings to create network maps of all three network operator for adults and children, seperated into maps that show facilities (destinations, directly derived from interview data) and pathing (movement, descerned based on the present physical characteristics).

Figure 5: The four locations in which the interviews were conducted.

When we put the level one operators for adults and children on top of each other we can clearly see that they are very similar. The places adults and children visit in this network is very similar, though adults use the network for both utility and recreation, whereas children only use it for recreation. For travel across the network, children are mainly dependent on adults in terms of cr or public transportation use. However, for those facilities that are in walking or bicycling distance, older children can move independently from adults. In reaching these destinations by bike or by foot, children and adults use the same routes, which are comprised of the dominant roads in the area.

Figure 6: Level 1 Operator (Large Scale) Adult & Children Networks

Rotterdam Centre

Station Rotterdam Zuid

Feijenoord Stadion
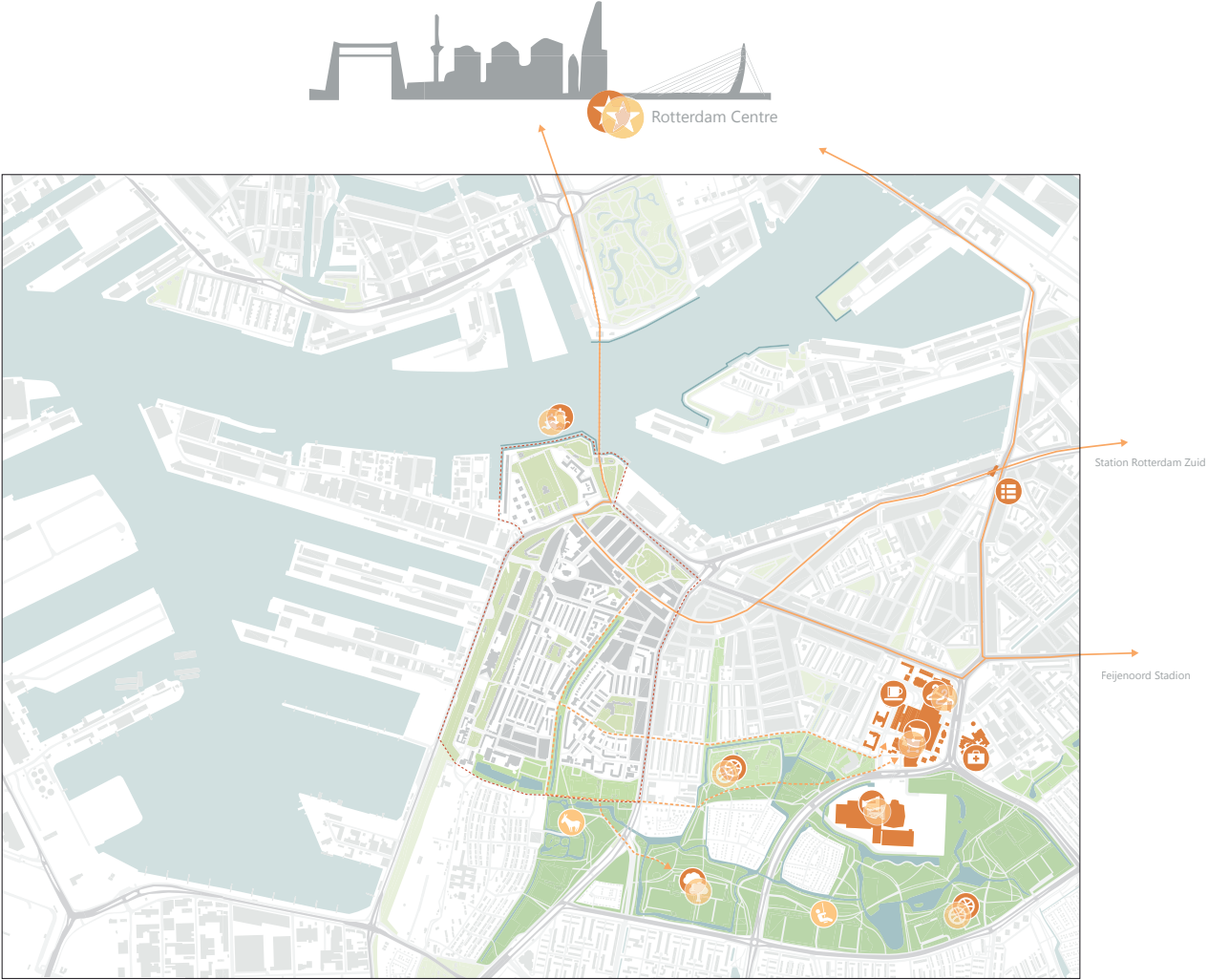
While the level one operator network for children and adults were very similar, their level two operator network is very different. Adults' mainly use the northern area of the network, travelling across the main west to east connection with its shops and other public facilities. Children, on the other hand, only use the a small part of this northern location, namely, the area directly around the Wolfaertsbocht shopping centre. For the most part, however, they move across the areas to the south of the network, which has a wide range of schools, playgrounds and sports and recreation facilities. The strongest common dominator in this network is the Zuidplein area with its diverse public facilities.

Legend:

⚓	⚓	Waterfront
🪑	🪑	Park
🛒	🛒	Grocery Facilities
📖	📖	Library
⚽	⚽	Sports Facilities
🛍️	🛍️	Shopping Mall
☕		Café / Bar
🏥		Hospital
🌳		Zuiderpark
	🎠	Playground
	🧒	School
	🐑	Pet Farm

Figure 7: Level 2 Operator (Large Scale) Adult & Children Networks

Rotterdam Centre

Erasmus Bridge

Feijenoord Stadion

Zuiderpark
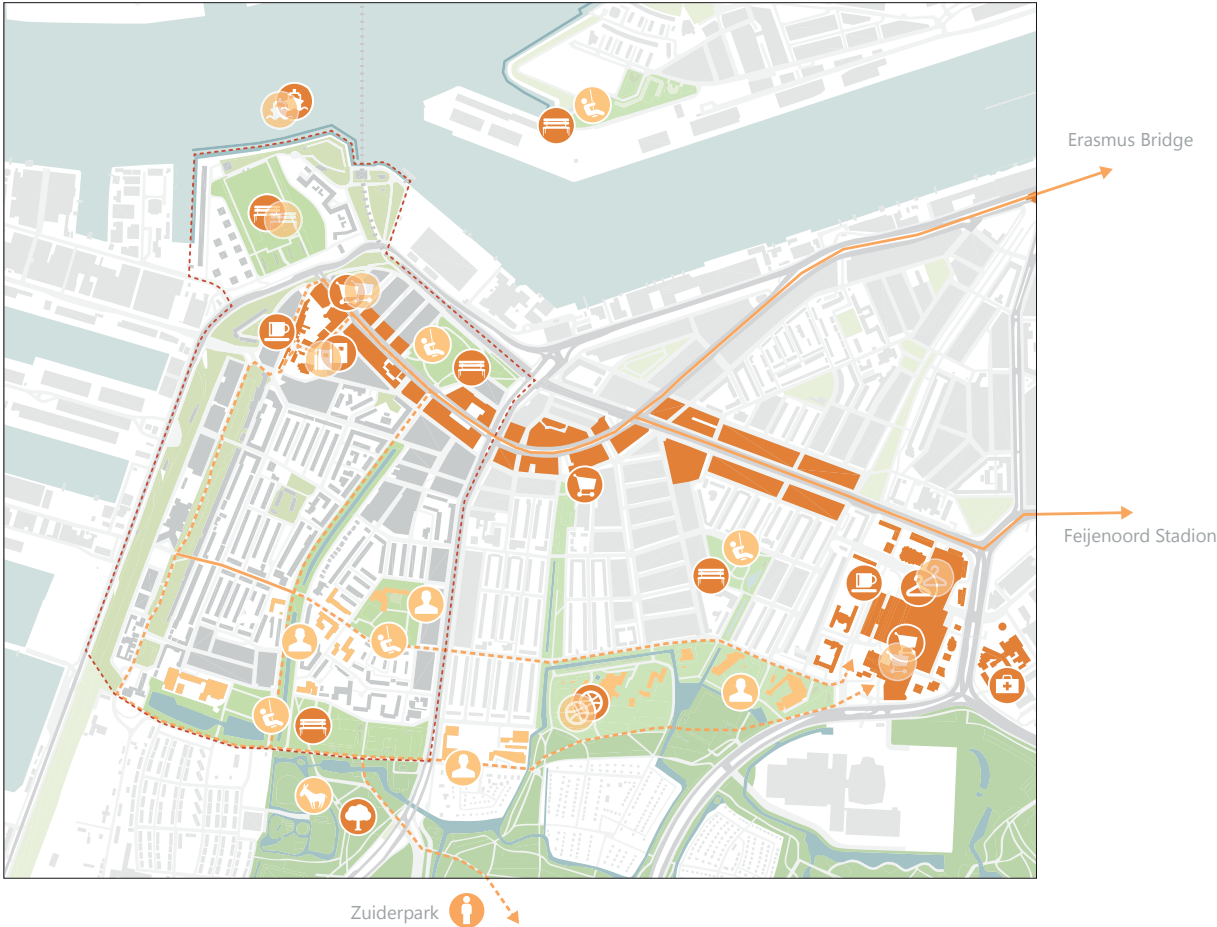
When we put the level three operator network of both children and adults next to each other, we can clearly see that they are even more differentiated than the previous level one and two operator networks. Adults have a very small and compact level three operator network, which if located around the shops and facilities in the Wolfaertsbocht. Children, on the other hand, have a very large and diverse level three operator. While they do use some of the facilities in the Wolfaertsbocht shopping mall, they primarily make use of all the different parks, playgrounds, school yards and schools in the area, which are spread all throughout the neighbourhood.

Legend:

🛟	🛟	Waterfront
🛋	🛋	Park
🛒	🛒	Grocery Facilities
📖	📖	Library
⚽	⚽	Sports Facilities
☕		Café / Bar
🚶		Pedestrian Route
🌳		Zuiderpark
	🛝	Playground
	🏫	School
	🐑	Pet Farm

Figure 8: Level 3 Operator (Large Scale) Adult & Children Networks

Feijenoord Stadion
Zuidplein

Zuidplein
Zuiderpark

Zuiderpark

The network analysis provides us with insight into the places that residents use and visit in combination with the physical characteristics that support both these destinations, as well as the movement to and from these destination. This analysis has to be combined with a more specific spatial analysis, that looks into the physical and social characteristics of Oud-Charlois. This second spatial analysis will further develop our understanding of Oud-Charlois with more specific knowledge about the spatial characterictics of the neighbourhood and its social climate.

S PATIAL
ANALYSIS

Figure 9: Impressions of Oud-Charlois.

Figure 10: Impressions of Oud-Charlois.

Oud-Charlois is a medium-density neighbour-
hood. The neighbourhood contains large
areas dominated by ribbons with residential
buildings. However, there is also a lot of public
space, mostly around the north, west and south
edges of the neighbourhood and in pockets
within the neighbourhood. Almost all of the
public space in Oud-Charlois is owned by the
municipality. Only the area around the church
in the historic centre and the empty field in the
centre of Oud-Charlois is owned by seperate
corporations. For a residential neighbourhood
in a large city, Oud-Charlois is a very green
neighbourhood. All around the north, west and
south edges, the neighbourhood is enveloped
by unpaved, green, public space. Furthermore,
almost all of the neighbourhood pockets are
unpaved, green areas. The remainder of the
public space if paved, which mainly consists of
the neighbourhood's infrastructure and a few
small, paved, squares.

Legend:

☐ Private Space

■ Public Space

▨ Corporations

Figure 11: Public Space Ownership

Legend:

▨ Unpaved Public Space

■ Paved Public Space

Figure 12: Public Space

While we can characterize Oud-Charlois is a green neighbourhood, most of this is non-quality green used to fill up empty spaces or as a buffer between the neighbourhood and the industial harbour. When we substract these green spaces, we can see that very few quality areas remaind. The areas that do remains however are nicely spread out across the neighbourhood, with two parks to the north, two lineair spaces that connect north and sotuh together and two neighbourhood pockets.

Legend:

Grass

Bushes

Artificial Grass

Figure 13: Unpaved Public Space

Figure 14: Publicly Used Space

Most of the paved public space in Oud-Charlois consist of infrastructure. This paved public space network is dominated by car roads. The network of pedestrian sidewalks in the area is very narrow, allowing little space for comfortable walking. Most of the paved public spaces that are not a part of the infrastructure network consist of paved school yards and basketball courts, with only two paved squares. Furthermore, when we further define the infrastructure network in Oud-Charlois, we can see the reason behind the narrow sidewalks. When mapped, it becomes clearly visible that parking spaces take up most of the street profiles in almost all the streets. Moreover, when visiting the location, it became evident that even in streets that do not have assigned parking spaces, people find a way to park their cars in the streets.

Legend:

Paved Public Spaces

Pedestrian Sidewalks

Car Roads

Figure 15: Paved Public Space

Legend:

Assigned Parking

Car Roads

Figure 16: Parking Spaces

The neighbourhood of Oud-Charlois primarily consists of ribbons running from north to south. Most of these ribbons are made up of residential buildings, with a few public facilities, primarily schools, inbetween. In the north part of the neighbourhood, around the Wolfaertsbocht, the ribbons run east to west. These ribbons are made up of commercial buildings or mixed functions. The only exception to the ribbons can be found around the historic centre of Oud-Charlois in the north-west. Here, older buildings that predate the war remain which are oriented in a circle, with the church at its centre. These buildings see a mix of residential buildings and buildings with a mixed function. At the west edge of Oud-Charlois, there is a strip of industrial buildings, marking the border with the harbour.

Legend:

- Commercial
- Residential
- Mixed Functions
- Schools
- Industrial
- Churches

Figure 17: Functions

Oud-Charlois is a neighbourhood with a lot of privately owned residences. Roughly two thirds of the housing stock is privately owned, versus one third that is owned by corporations. Of the privately owned residences, a little more than half are owned by the residents, the rest is privately owned but rented out. Most of the housing stock that is owned by corporations is located in the north part of Oud-Charlois around the commercial and mixed functions area and in a pocket to the south-west. Most of the buildings in Oud-Charlois predate WW2. The southern part of Rotterdam did not see as much damage from the bombing as the north, leaving most of the buildings intact. Because of their age, these buildings are starting to dilapidate. Some efforts have been made to update them through renovation efforts or targetted demolishing and new development. Most of the other buildings are post-war expansion areas with row houses and a few modern appartment buildings around the southern edge with the Zuiderpark.

Legend:

Municipal / Corporation

Private Rental

Owner - Resident

Public / Industrial

Figure 18: Ownerships

Legend:

up to 1959

1960 - 1969

1970 - 1979

1980 - 1999

2000 - 2014
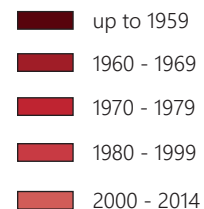
Figure 19: Building Period

Appartments

Multiple Family Residences

Single Family Residences

Combination or other

Figure 20: Typology

€ 180.000 - 320.000

€ 145.000 - 180.000

€ 130.000 - 145.000

€ 110.000 - 130.000

€ 90.000 - 110.000

€ up to 90.000

Figure 21: Average WOZ Values

Oud-Charlois has a lot of multiple family residences without elevators. This skewed housing stock is a direct result of the large number of pre-WW2 buildings in the area. The newer, post war or renovated, buildings are either appartment buildings with elevators or single family residences. Another remnant of the pre-WW2 buildings is the low value of the housing stock. Most of the multi family residences without elevators have a very low value, and so do a lot of the post-war expansion areas. The only high value residences are located in the north, around the renovated Wolfaerstsbocht and in the side, around the newly developed Zuiderpark edge.

OBSERVATIONAL ANALYSIS

For the purpose of this analysis, it is important to not only analyse which location in their neighbourhood adults, adolescents and children use and what the spatial and social characteristics of that neighbourhood are. Rather, it is also important to create insight into how adults, adolescents and children use these locations in their neighbourhood. The key element is to discern what the connect is between the public spaces that they use, and the public life that occurs within these spaces. In other words, to look at the relationship between the social and physical aspects of spaces. One of the ways in which to do this is through observational research.

While performing observational research is not in any way difficult or expensive, it is important to have a set system in place that helps the observer structure his or her observations (Gehl & Svarre, 2013). Without such a system, it is impossible to obtain consistent results, and without consistent result, one can not hope to draw meaningful conclusions. There are many different ways in which to study public life, developed over a period of several decades by many different researchers (Harteveld, 2014). For the purpose of this research, a method was chosen that records six different types of information pertaining to both the physical, social, and culture aspects of the observed setting (Figure 47). This method was design by Zeisel in his classic "Inquiry by Design" (1984). To be able to come to an impression of residents' use of public spaces in Oud-Charlois, the choice was made to observe four of the main public spaces in Oud-Charlois from 8 in the morning to 8 in the evening, both

on a workday and on a weekend (or holiday). By doing so, we create as complete and thorough an impression as possible within the scope of this graduation project.

The second challenge in conducted observational research is not just the research itself, but also the documentation of the research. In order to document observational research, we have to find a way in which to accurately yet understandably document social-spatial information. For the documentation of the observational analysis conducted in this project, inspiration was drawn from the way in which Bosselman (2008) documented his observational research. By creating a simple representation of the location and assigning symbols and colours to different actors, the frequency and location of their use of the public space can be documented. The problem with this type of documentation is that it is incomplete. Therefore, in this project, these maps are supplemented with additiona information of the location itself in the form of a mapo and sections, as well as its position in Oud-Charlois. Furthermore, each location comes with a list of usergroups that are characteristic for that public space, and a series of photos that portray not only its physical appearance, but also which elements of the space are most used by which usergroup.

1. Who is
Actor

2. Doing what
Act

3. With Whom
Significant other

4. In What Relationship
Aural, Vidual, Tactile, Olfactory, Symbolic

5. In What Context
Situation and/or Culture

6. And Where
Physical Setting; Props and Spatial Relationships

Figure 22: Important information to record while doing observational research, as described by Zeisel (1984).

As a conclusion to the observational analysis, we can state that while all areas (apart from the Wolfaertsbocht) seemed similar in nature in advance, they have a very varied use and functionality. Natural, the Wolfaertsbocht is the primary centre of Oud-Charlois with a lot of activity in terms of daily shopping, but very little other activity. This activity, instead, seems to occur in the Karel de Stoute park, which is used by adults, parents with children, and children by themselves alike and sees a high turn-over rate of people using the area. The OSG Hugo de Groot park, on the other hand, is more isolated inside the neighbourhood. Because of its large size and facilities (i.e. the school itself, the basketball court and the football field), it is mainly used by children and adolecents who meet up to either play sports or just hang out together. This use is again different from the entry to the Zuiderpark. While this entry is used as such, the intensity of this use is rather low. Instead, the area is primarily used as smal playground by the children who live nearby. In all of the spaces however, both adults and children seem to gravitate towards spatial elements such as benches, play objects and art sculptures, which provides interest. Furthermore, people often group together, near elements such as trees or walls that provide protections from the sun, wind or raid. All these findings that there are conditions that increase the quality of social life within public spaces, as first documented by Whyte (2008).

Legend:

🛋 Park

🛒 Grocery Facilities

📘 Library

♿ Playground

👤 School

Figure 23: Conclusions from the observational research.

C HILDREN'S ANALYSIS

One of the conclusions from the research conducted in this project was that, to understand how children and adolescents perceive and use their environment, it is important to actually ask them this question. Furthermore, in designing spaces for them, it is important to again ask them what their wishes are for their neighbourhood. A lot of the environments that are created for children and adolescents are created by adults' opinion of what children spaces should look like. In order to create more insight into how the children and adolescents in Oud-Charlois perceive their neighbourhood, a series of workshops were conducted with school children ages 8 and 9 and ages 13 and 14, both classes from the "superschool" OSG Hugo de Groot. The appendix contains the full documentation of the didactic clarification behind the workshop setup.

This series of workshops started with an analysis workshop. In this workshop, children were handed a throw-away camera in pairs of two. The assignment was to make 16 pictures of things they liked and 16 pictures of things they didn't like (i.e. postive and negative aspects of their environment). Furthermore, they were asked to sketch the most noticable positive and negative aspects of their environment in a small booklet.

Figure 24: Impression of the workshops, right the elementary school and left the highschool.
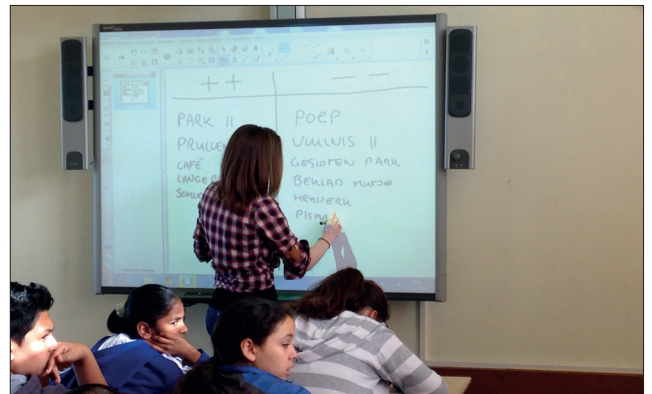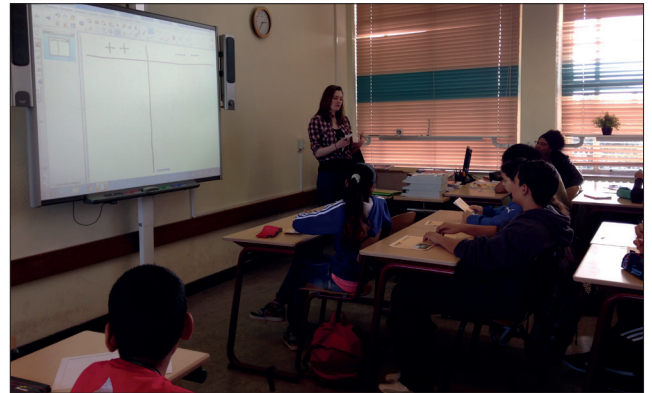
A GES 7 & 8
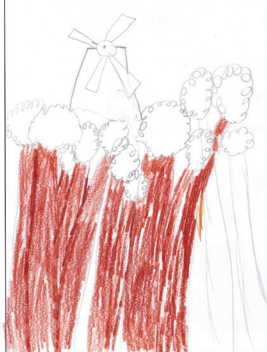
Visible from the pictures of these elementary school children is that they have a very direct relationship with their environment. They see what is immediately in front of them without filter, wether that is dog poop or litter on the street or something funny in someone's front yard or behind their windows. Their attention is automatically drawn towards objects they can play with; benches, play objects, sports fields or shcool yards. However, even outside these play areas they seek playfulness in their environment by searching for colours or funny objects, may they be art sculptures, abandoned plushe animals or mushrooms. It also seems that children are able to perceive beauty and actively search for it. They often photograph parks, green areas, flowers, water elements or old buildings. Simultaneously, they also recognize uglyness in the form of dilapidated, ugly and empty facades, construct works and trashcans.

Figure 26: Conclusions from the analysis of children ages 7 & 8, sorted by theme.

Category	Count	Percentage
DYKE		
TREE	14	4%
NICE WEATHER	2	1%
SINGEL / WATER	28	8%
ANIMALS	2	1%
STREET ELEMENTS	11	3%
SPORTFIELD	11	3%
PLACES TO SIT OR RELAX	5	1%
PLAYGROUND / PLAY ELEMENTS	27	7%
DILAPIDATED BUILDINGS	9	2%
CROSSINGS	4	1%
BEAUTIFUL BUILDINGS	15	4%
FRONT GARDEN	9	2%
TRASHCAN	10	3%
SPECIAL, EYE-CATCHING ELEMENTS	27	7%
PUBLIC TRASNPORT	9	2%
CONSTRUCTION WORKS	22	6%
LITTER	19	5%
GRAFFITI	5	1%
FACILITIES	4	1%
BICYCLES	4	1%
POOP	8	2%
PARK / GREEN	29	8%
CARS	5	1%
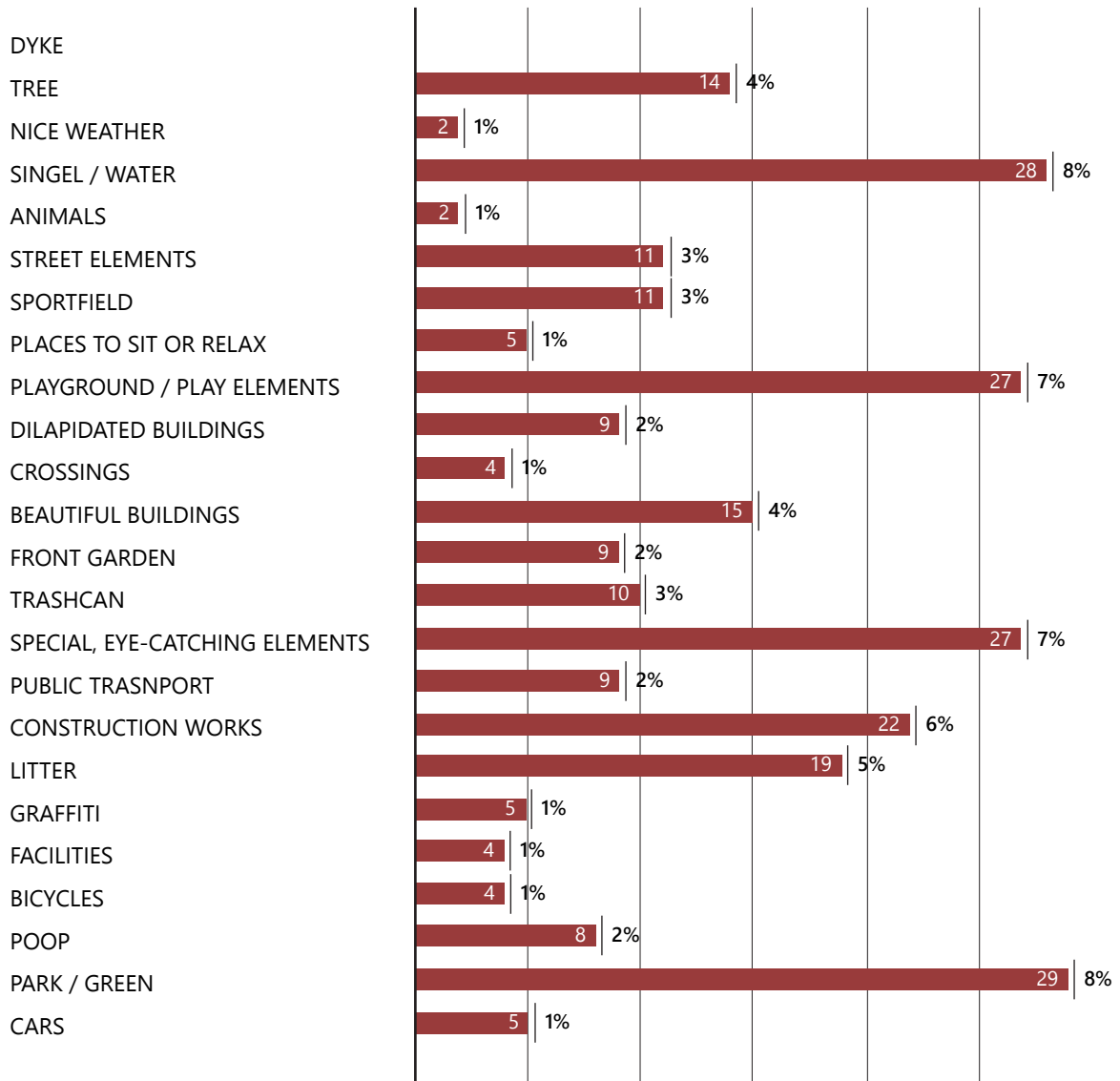
A GES 13 & 14
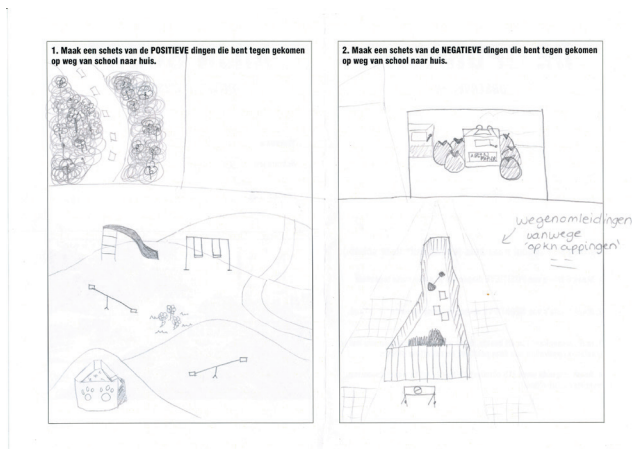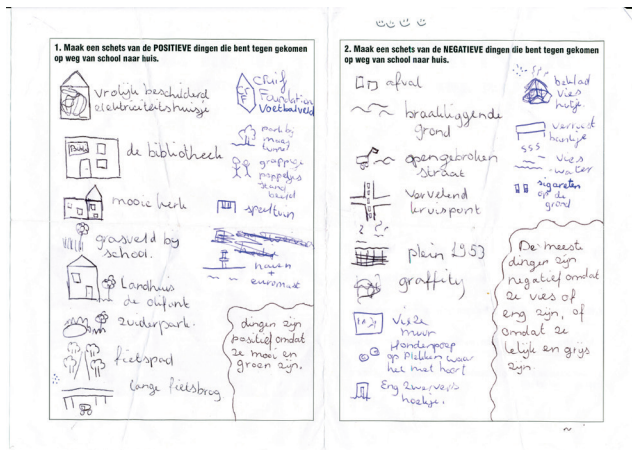
In contrast to the younger children, these highschool children observe their environment more censored. They do still recognize dog poop, litter, graffiti, unkempt property and dilapidated buildings as negative aspect of their environment. However, in searching for positive aspects, they realize that plushes and mushrooms are merely objects in the environment. Instead, they often photograph parks, art sculptures, wall murals, water elements and other green or well maintained environments as positive elements. Furthermore, while young children actively try to keep into front yards and inside windows, these older children look ath objects from further away. Instead of funny elements in yards or behind windows, they photograph beautiful yards or nice buildings as one entity.

Figure 28: Conclusions from the analysis of children ages 13 & 14, sorted by theme.

DYKE	2	1%
TREE		
NICE WEATHER		
SINGEL / WATER	13	5%
ANIMALS	2	1%
STREET ELEMENTS	3	1%
SPORTFIELD	18	7%
PLACES TO SIT OR RELAX	12	4%
PLAYGROUND / PLAY ELEMENTS	10	4%
DILAPIDATED BUILDINGS	4	1%
CROSSINGS	4	1%
BEAUTIFUL BUILDINGS	13	5%
FRONT GARDEN	2	1%
TRASHCAN	3	1%
SPECIAL, EYE-CATCHING ELEMENTS	25	9%
PUBLIC TRASNPORT	2	1%
CONSTRUCTION WORKS	27	10%
LITTER	10	4%
GRAFFITI	4	1%
FACILITIES	6	2%
BICYCLES	6	2%
POOP	2	1%
PARK / GREEN	21	8%
CARS	8	3%
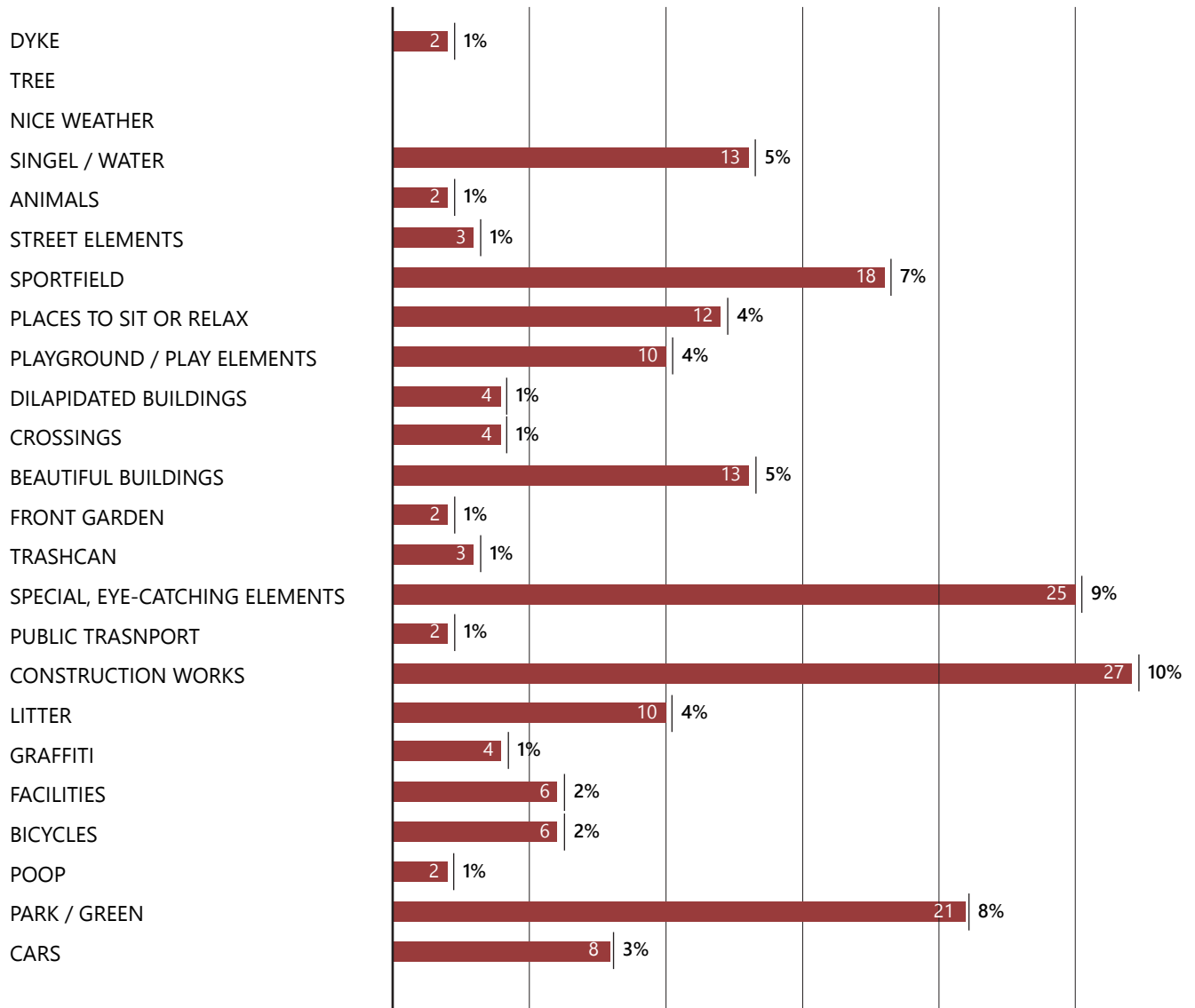
For the future, Rotterdam-Zuid has a vision called national program Rotterdam-Zuid. This program aims to improve Rotterdam-Zuid while focusing on three main, namely, education, employment and housing. Each neighbourhood in Rotterdam-Zuid has its own action perspectives, derived from this national program. For Oud-Charlois, the aim is to support the large amount of schools and transform it into a neighbourhood for children. The municipality aims to do this by focusing onh improving the housing stock, maintain the parks and playground and transforming the industrial ribbon in the west into a zone for industrial education. While some parts of the harbour will be transformed in the coming years, the areas in which this will happen are limited and are mostly those that are already abandoned or close to the neighbourhoods. The other large project planning in Oud-Charlois is the redevelopment of the Zuidplein and Ahoy area into the "Hart van Zuid", or, in other words, the heart of Rotterdam-Zuid by bringing more facilities out of the neighbourhoods into the Zuidplein area and redeveloping the adjacent public spaces.

F UTURE
PLANS

Figure 29: Conclusions from the analysis of children ages 13 & 14, sorted by theme.

Gemeente Rotterdam © Action perspectives.

"Oud Charlois historische kern"

Legenda

Potentie	Bestaande groene kwaliteit / verblijfskwaliteit
Potentie / pandsgewijze aanpak	Te verbeteren groene kwaliteit / verblijfsruimte
Brancherings aanpak bedrijfspanden	Nieuwe groen kwaliteit / verblijfsruimte "ruimte maken"
Krachtig woonmilieu / aanjager	Balans in gebruik openbare ruimte verbeteren
Potentie: inbreiding nieuwbouw	Wijk naar de randen toe beter profileren
Doortrekken kwaliteit	Drijvend bouwen
Knelpunt	Verbeteren oversteekbaarheid / tussen wijken
Concreet knelpunt / opgave	Te verbeteren verbinding met park
Beheer	Stadsstraat
Beheer / pandsgewijze aanpak	OV over water
Beheer / inzetten combinatie instrumenten ter verbetering particuliere voorraad	Nieuwe brug
Beheer / transformatie op termijn	Nieuwe stadsbrug
Transformatie op termijn / geleidelijke transformatie	Opwaarderen tot stedelijke ontsluiting

The location analysis documented in this booklet described several different analysis that looked at different aspects of the social and spatial situation in Oud-Charlois. While each analysis consisted of its own conclusions, it will be necessary to combine all these conclusions into a single direction that can provide the basis for the design. To do so, the network analysis, spatial analysis, observational analysis, children's analysis and future context have been combined into a series of three conclusion maps. These conclusion maps are a spatial representations of the different problems, qualities and opportunties that can be identified in the neighbourhood of Oud-Charlois. It are these spatial drawings that can, afterwards, be used as the basis with which to create the design intervention.

C ONCLUSIONS

Oud-Charlois has a number of different problems, pertaining to both the internal and external situation and structure of the neighbourhood and its surroundings. In the north of Oud-Charlois, its connection to Rotterdam-Noord creates a number of different problems. First, the connection itself is rather old and no longer support the today's intense commute, causing a bottleneck to reach Rotterdam-Zuid. Furthermore, the car overload causes the adjacent public spaces to lose their qualities and creates a sharp divide between Oud-Charlois and the harbour, Maashaven, making the waterfront inaccessible. The same thing happens in the west part of the Oud-Charlois, where the industrial buildings, the train rails and the car road blocks access to the Waalhaven. Similarly, both the singel and the road seperating Oud-Charlois from Carnisse act as a barrier between the different parts of Oud-Charlois and the surrounding neighbourhoods. The one public space that is designed to support a connection with the rest of Rotterdam-Zuid, the Wolfaertsbocht, is so overloaded with car traffic that it decreases the quality of what could be a high-quality public environment. Furthermore, there are a number of public spaces that are hardly used (if at all) because they are made inaccessible. Lastly, the street profiles of Oud-Charlois are dominated by poorly maintained housing, excessive car parking and extremely narrow sidewalks, with three fields where the situation is so bad they are an immediate assignment.

Figure 30: Conclusion map of the analysis; Oud-Charlois problems.

Next to problems, the neighbourhood of Oud-Charlois also has a lot of qualities. Ironically, a lot of areas that are currently problematic have qualities that could potentially be used to transform them into high quality public environments. This is most notably the case for the singel, which acts as a barrier between east and west Oud-Charlois but has a lot of quality as green-blue connection. This connection does not only have to run north to south, but could also extend into the neighbourhood towards the east and west. Similarly, the Wolfaertsbocht has a lot of recently renovated or newly developed buildings that supports very diverse public facilities in its plinth. While currently a car dominated access road, its wide profile has the potential to support more slow, pedestrian-oriented traffic. Futhermore, Oud-Charlois has a lot of qualities as connection between north and sotuh. While the north part of Oud-Charlois is currently dominated with the traffic going through the Maastunnel, there are a lot of qualities to be had there. Both on the, currently underdeveloped, Dokpark in the northern most part of Oud-Charlois, as well as a little more to the east, where Oud-Charlois could have a direct connecton to the Maashaven and Katendrecht and, with that, Rotterdam-Noord. In the south, Oud-Charlois directly borders the Zuiderpark, which can create a flow of slow traffic through Oud-Charlois. Lastly, the neighbourhood has a lot of different green pockets, all of which can be designed as high quality public spaces.

Figure 31: Conclusion map of the analysis; Oud-Charlois qualities.

In combining Oud-Charlois' problems with its qualities and the possibilities of the future context, we can create a map that shows the neighbourhood's opportunities. Again, a lot of these opportunities are about connecting the neighbourhood of Oud-Charlois to its surrounding and, by designing these connections as high quality space, creating slow, pedestrian, traffic through the neighbourhood. These connections run both north to south, in which the singel could support a high quality green-blue connections that simultaneously provides a high quality public space for the residents of Oud-Charlois. Another north-south connection opportunity is the possibility of a third bridge between Rotterdam-Noord and Rotterdam-Zuid. While there are multiple locations in which this bridge could be constructed, it is often drawn as reaching Rotterdam-Zuid directly west of Oud-Charlois. As such, it could connect Rotterdam-Noord to Oud-Charlois and, after that, to the rest of Rotterdam-Zuid. The last connection runs east-west, making use of the Wolfaertsbochts which could connect the Dokpark at the head of Oud-Charlois to the Zuiderplein area to the east by means of an attractive, diverse public environment aimed at slow, pedestrian traffic. The other opportunities of Oud-Charlois are more localized in nature, with both the green pockets and dilapidated areas in the middle that could be redeveloped. And, lastly, the most important opportunity for this project remains the OSG Hugo de Groot area as location to be redeveloped.

Figure 32: Conclusion map of the analysis; Oud-Charlois opportunities
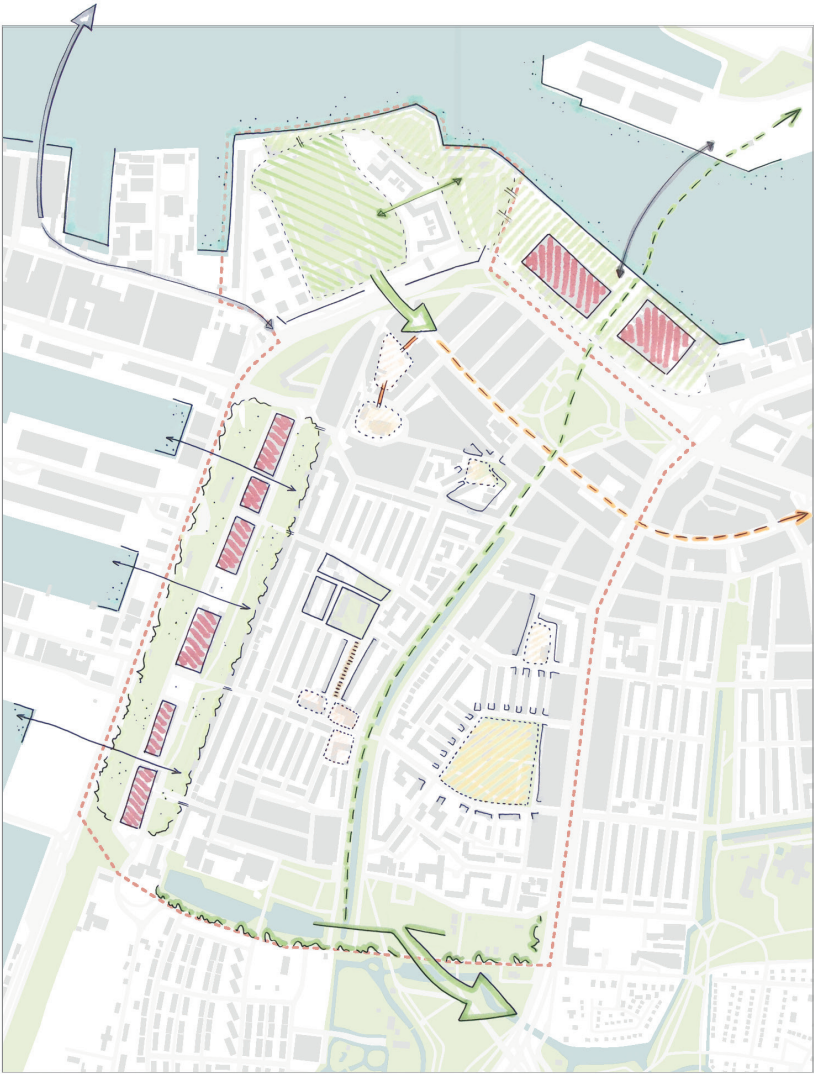
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DESIGN

C HILDREN AS CO-DESIGNERS

The design of this project starts with the second part of the workshops with the children from the Triangel and the OSG Hugo de Groot. It is the children, after all, that are the co-designers in this project. This second workshop focused on having them generate design ideas. As concluded in the research of this project, in order to design for children it is important to ask them what they want. The purpose of this workshop was exactly that, having the children generate ideas for their neighbourhood without filter. To help them structure their ideas, all children were asked to think back to the workshop of the previous week and the photographs they took / drawings they made. They photographed both positive and negative elements of their environment and the question that was asked of them in this design workshop was how they could turn the negative elements into something positive. While few children actually transformed negative urban elements into positive ones, the question did help them structure their thoughts and many children created a wide variety of design ideas. After they generated their ideas, they were asked to make a drawing of one (or multiple) of their ideas. From all these design suggestions, as well as their drawings, we can distill several different themes that were either mentioned or drawn by several children. Interesting to note is that these themes are remarkably similar between the younger and the older children, though the design that the older children came up with were oftentimes more realistic in nature and less over-the-top. These themes provide us with ideas for the actual design of the neighbourhood of Oud-Charlois.

Colourful designs
Children want to brighten up the city.

Eye-catching, fun, elements
Children want to see unexpected things.

Places where it is possible to create something
Anything from huts to paintings to dresses.

Green areas for adventurous play
More ambiguous, nature design facilitate fantasy.

Places to hang out with friends
Preferably somewhere nice, near a park.

Interesting routing
Through parks or across playable streets.

Figure 1: Themes discerned from children's design ideas.

AGES 7 & 8

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

BLOEMHOF   ROMY PANDT

TUTUT

west PIE er man st..t

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

nieuwe bank

REGNBoog STRAAT

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

YAMY

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

2. Maak een tekening van hoe jouw buurt eruit zou zien als je alle NIET LEUKE dingen LEUK kon maken. Gebruik je opgeschreven ideeën!

vuilnis bak.
stenen lantaren palen.

AGES 13 & 14

2. Maak een ontwerp voor jouw buurt wanneer je alle NEGATIEVE aspecten kon vervangen voor POSITIEVE aspecten. Gebruik je beschreven ideeën!

maashaven
Metro
plaatwei
kraagveer
busbaan
Parkeren
gemeente
winkelbus
Lidl
Avenue
park
hondenzone
park
weg
hondenzone
bus
parking
kraagveer
tram
hondenzone

2. Maak een ontwerp voor jouw buurt wanneer je alle NEGATIEVE aspecten kon vervangen voor POSITIEVE aspecten. Gebruik je beschreven ideeën!

PaRK
Schommel
wip wap
klimrek
Chick plek
glijbaan
zitbank
Sloot
buurt huis
Para kooi 2x
Chick plek
park

2. Maak een ontwerp voor jouw buurt wanneer je alle NEGATIEVE aspecten kon vervangen voor POSITIEVE aspecten. Gebruik je beschreven ideeën!

schone straat
groene straat
veilige straat
speel plaats
speel plaats

2. Maak een ontwerp voor jouw buurt wanneer je alle NEGATIEVE aspecten kon vervangen voor POSITIEVE aspecten. Gebruik je beschreven ideeën!

politie man
boefie-man
fietspaadje
water filter
Kvaaly
root huisje
spike signalisation
weg
gras
stoep
elektrische huisje
glijmat
auto
dit mag dus wel
be-grafeti-e-d worden

2. Maak een ontwerp voor jouw buurt wanneer je alle NEGATIEVE aspecten kon vervangen voor POSITIEVE aspecten. Gebruik je beschreven ideeën!

sportpark

vlsvíver

park

thuis

School

route door het park voetgangers

route voor mensen die snel thuis willen zijn

een route voor snelle thuiskomers op de fiets

een Loop/overig pad

voor een groene omgeving

WIFI op Straat

Rolijke lichtjes op straat ('s avonds)

Hup de Groot

D ESIGNING WITH PATTERNS

While the design ideas generated by the children provide valueable design ideas, the main design methodology are the patterns (as described earlier). In order to come to design, we must ask ourselves how these patterns will be used. As Salingaros (2000) mentioned, the strenght of pattern languages lies in their relationships and their position within a larger pattern network. This means that simply picking one pattern to work with will not yield a design that has as much depth as a design that incorporates multiple different patterns. However, each pattern is a mini-design in and of itself that gives the design a specific direction. Therefore, there also is a risk in using too many patterns at the same time, because every individual pattern in a set increases the set's complexity. Moreover, when too many pattern are attempted to be used simultaneously, they may in fact give too much direction to the design and restrict the freedom of the designer. For the purpose of this project, a balance was sought between using enough patterns to generate a design that benefits from the pattern's network without using so many patterns that the design becomes overly complicated or restrictive. Each design that was generated consists of three seperate patterns which, combined, create one design in which all the patterns are integrated.

Described and documented in seperate booklets are two different pattern libraries; a library of Social Learning Environments and a library of Children's Environments. The combination of patterns from both libraries will lead to the creation of social learning environments for children and adolescents; the main aim behind the

research question. However, we can not mix the patterns from both libraries into a single design because they each detail a different scale level. When reviewed, it becomes clear that the Social Learning Environment patterns are more abstract in nature, operating on a larger scale level that not only looks at a given location, but also at the adjacent areas. The Children's Environments pattern, on the other hand, operate on a much smaller scale. These patterns detail small scale design choices that are mainly experienced at eye level. Because of this, it is necessary to design in two distinct steps.

First, the social learning patterns have to be applied to the larger scale, which will create social learning environments for the neighbourhood of Oud-Charlois. This will lead to the generation of a vision, because it stays relatively abstract. This is rather counter-intuitive, since the patterns as they are described in the pattern library hand designers concrete design recommendations. Here, we can see the difference and close connection between scale levels. While the social learning environment pattern operate on a larger, more abstract scale level, their physical appearance can only be designed once we zoom into a smaller scale. Therefore, after designing the vision for Oud-Charlois, we zoom into a specific area within this vision. It is at that scale level that the patterns are designed in their physical form.

However, on this scale level, we also have to apply the second set of children's environments patterns. These patterns will then ensure that the social learning environments are specifically designed to accomodate children and adolescents. It is thus on this smaller scale that both pattern libraries come together, with patterns from each library influecing each other, which will lead to the integral design of social learning environments for children and adolescents.

P ATTERN SET 1

Incorporated Patterns:

Transit Network
02

Diverse Environments
11

Streetscapes
15

*Figure 6: Vision for the Level 1 & 2
Operators, using the SLE patterns.*

Rotterdam Centre

The combination of the patterns in the first set give the design a direction that focuses on transportation through the area for all modes of transportation, the physical design of the streets through which this network runs, and the intent to create multiple different environment within this network. This pattern set uses the existing qualities and opportunities of Oud-Charlois to come to a design that incorporates different types of transportation in different areas of the neighbourhood. These different areas determine which types of transportation are supported. Furthermore, it also gives direction to the diversification of the street profiles that support this network.

This results in the design of a third bridge between Rotterdam-Noord and Rotterdam-Zuid that supports cars, trams, bicyclists and pedestrians. This connections run through the south of Oud-Charlois and as such incorporates a children-oriented streetscapes due to the schools present in those areas. Next to this multi-modal connections that runs all the way to the Zuidplein, two more conenctions are created, One runs north to south across the singel, focusing on creating an atractive blue-green slow traffic route that connects Rotterdam-Noord to the zuiderpark. The last connections is another multi-modal transit network that runs east to west, connecting Oud-Charlois to the Zuidplein area along the Wolfaertsbocht, focusing on creating an attractive conenction that supports the existing facilities.

Incorporated Patterns:

Transit Network
02

Diverse Environments
11

Streetscapes
15

Figure 7: Vision for the Level 3 Operator, using the SLE patterns.

PATTERN SET 2

Figure 8: Vision for the Level 1 & 2 Operators, using the SLE patterns.

Rotterdam Centre

The combination of the patterns in the second set give the design a direction that focuses on creating a network of high quality open spaces with a similar characteristic. Furthermore, alongside this open space network, this pattern set focuses on creating new developments that create a more mixed neighbourhood in terms of housing stock and public facilities. The negative effects of too much mixing in a neighbourhood are attempted to be negated by creating different communal spaces for the different types of people that will make use of these new development, both in terms of neighbourhood residents and people that travel into the neighbourhood from outside. This pattern set also uses the existing qualities and opportunities of Oud-Charlois by choosing the lcoation of the open space network in such a fashion that it consist of potentially high quality environments that will attract people to use the network. Furthermore, it also determines the location of both the new developments, as well as they accompanying communal spaces. This results in a design connects the east-west Wolfaertsbocht connection that runs to the Zuidplein area, to the north-south Singel that created an open space network between the Zuiderpark and Rotterdam-Noord, and then again to the east-west road that runs through the school environment and connects to the southern part of the Zuidplein area. Both the new development as well as the communal spaces are connected to different parts of this network, located in the west and north harbour areas and in the urgent assignment area.

Incorporated Patterns:

Open Space Network
07

Mixed Neighbourhood
10

Communal Spaces
14
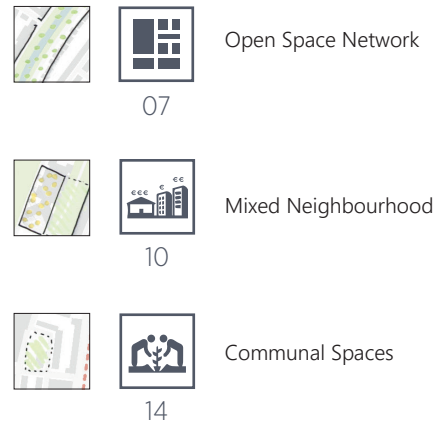
Figure 9: Vision for the Level 3 Operator, using the SLE patterns.

P ATTERN SET 3

Incorporated Patterns:

Open Neighbourhood

04

Centralities

03

Public Facilities

06

Figure 10: Vision for the Level 1 & 2 Operators, using the SLE patterns.

Rotterdam Centre
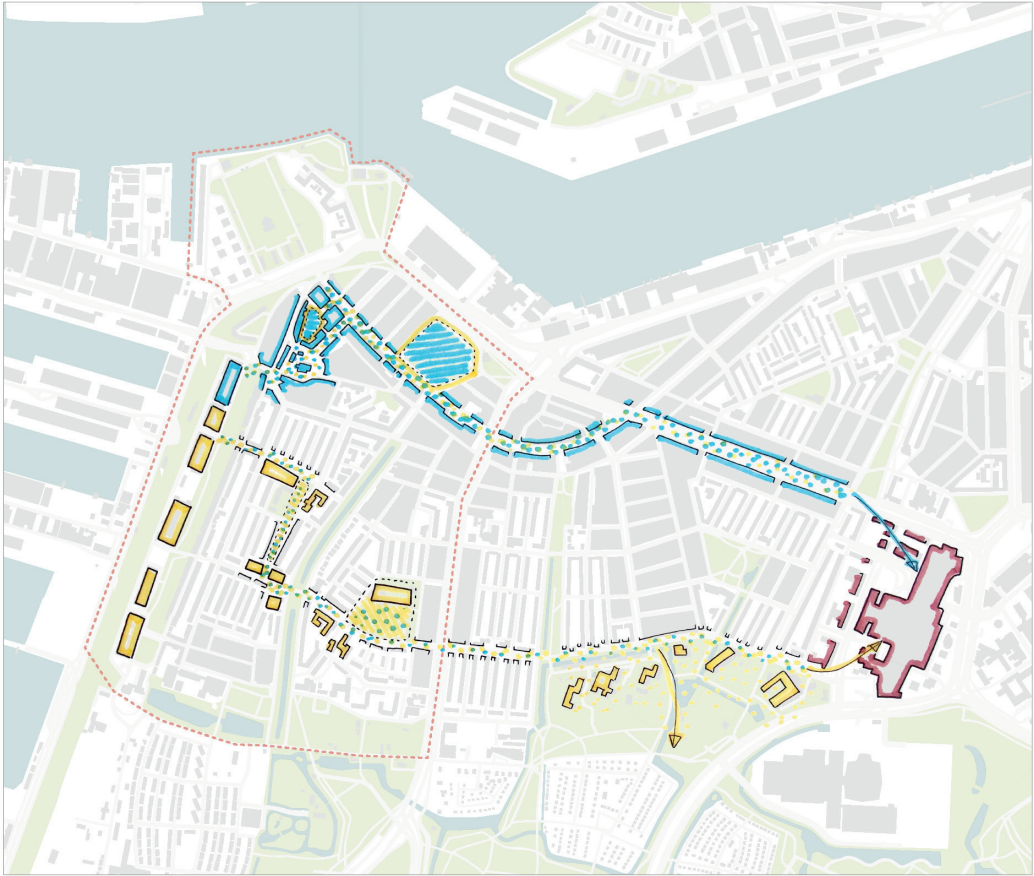
The combination of the patterns in the third and last pattern set give the design a direction that focuses on creating centralities within the neighbourhood of Oud-Charlois that can be supported by its existing program. Furthermore, these centralities are designed in such a way that they connect to the morphology of the surrounding neighbourhood, creating an open neighbourhood with physical connections to the surrounding area by designing them as a single entity. Lastly, by supporting these centralities with new public facilities, these physical connections are supported with a programmatic connection. Important here is to establish public facilities that fit within the centralities, but are diverse and unique enough to attract people from outside the neighbourhood. For this design, existing qualities and opportunities of Oud-Charlois provided the basis, which focuses on establishing an adult network (blue) around the commercial connection between the Wolfaertsbocht and the Zuidplein area, and a children's network (yellow) around the school environments, which runs all the way from the west of Oud-Charlois to the sourther entrance of the Zuidplein area and connects to the Zuiderpark through a series of sports field. The existing program within these centralities will be supported by introducing new program where possible that strenghtens the position of the centrality. For the adult network, that includes a more diverse and leisure oriented commercial program. For the children's network, that includes new facilities such as sport halls, a theater and band rehearsal areas

Incorporated Patterns:

Open Neighbourhood

04

Centralities

03

Public Facilities

06

Figure 11: Vision for the Level 3 Operator, using the SLE patterns.

V ISION

02   07   04

11   10   03

15   14   06

Figure 12: Vision for the Level 1 & 2 Operators, using the SLE patterns.

Rotterdam Centre

While each pattern set created a design of it's own, it still only consisted of three patterns from the library. While working with three patterns keeps the design from becoming too complicated and restrictive, it can hardly be called "complete" in terms of adressing all the different causes of social problems that these patterns aim to adress. Therefore, to create a more complete design, the designs that were made by these three different pattern sets were combined into a single vision. This vision includes nine different patterns from the library, which means it will provide a design that is more complex, complete, and simply better at adressing all facets of the socio-spatial issues at play in Oud-Charlois.

With one integral vision established, the first part of the design is done, which was to create social learning environments. Now, these social learning environments must be designed on a smaller scale, which will determine its physical appearance. It is on this scale that these social learning patterns will be combined with the children's environments patterns to come to a design that creates social learning environments for children and adolescents.

Incorporated Patterns:

02	07	04
11	10	03
15	14	06
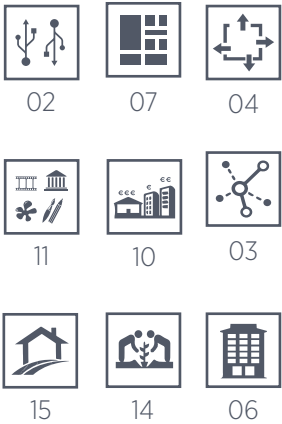
Figure 13: Vision for the Level 3 Operator, using the SLE patterns.

The part of the vision that was chosen to design in more detail was the area incorporating both the children's network, as well as the location of the OSG Hugo de Groot. The network can best be described as a colourful beaded chain, where the coloured beads are a symbolism for the different types of spaces along the network and the chain, of course, symbolizes the network itself. Each of the spaces alongside the network was designed by incorporating the social learning environment patterns that occur on that location with a children's environment pattern set (again, each set consists of three seperate patterns). The network itself is also designed to be recognizable. While the network traverses across a lot of different street profiles, it is designed to be easily recognizable by eye-catching details such as small sculptures or colourful artwork, a small indentation in the middle of the sidewalks that children can follow during the day, and fluorescent paint that children are able to follow at night.

M ASTERPLAN

Flickr; ArtsySFMarije © (Small) sculptures and art marks the network.

Flickr; Michael Mendonca © Small indentation in road creates a physical "trail"

www.seramic.nl © Subtle colours at night from glow-in-the-dark road paint

Figure 14a: Masterplan for Oud-Charlois' children's network

0   100m
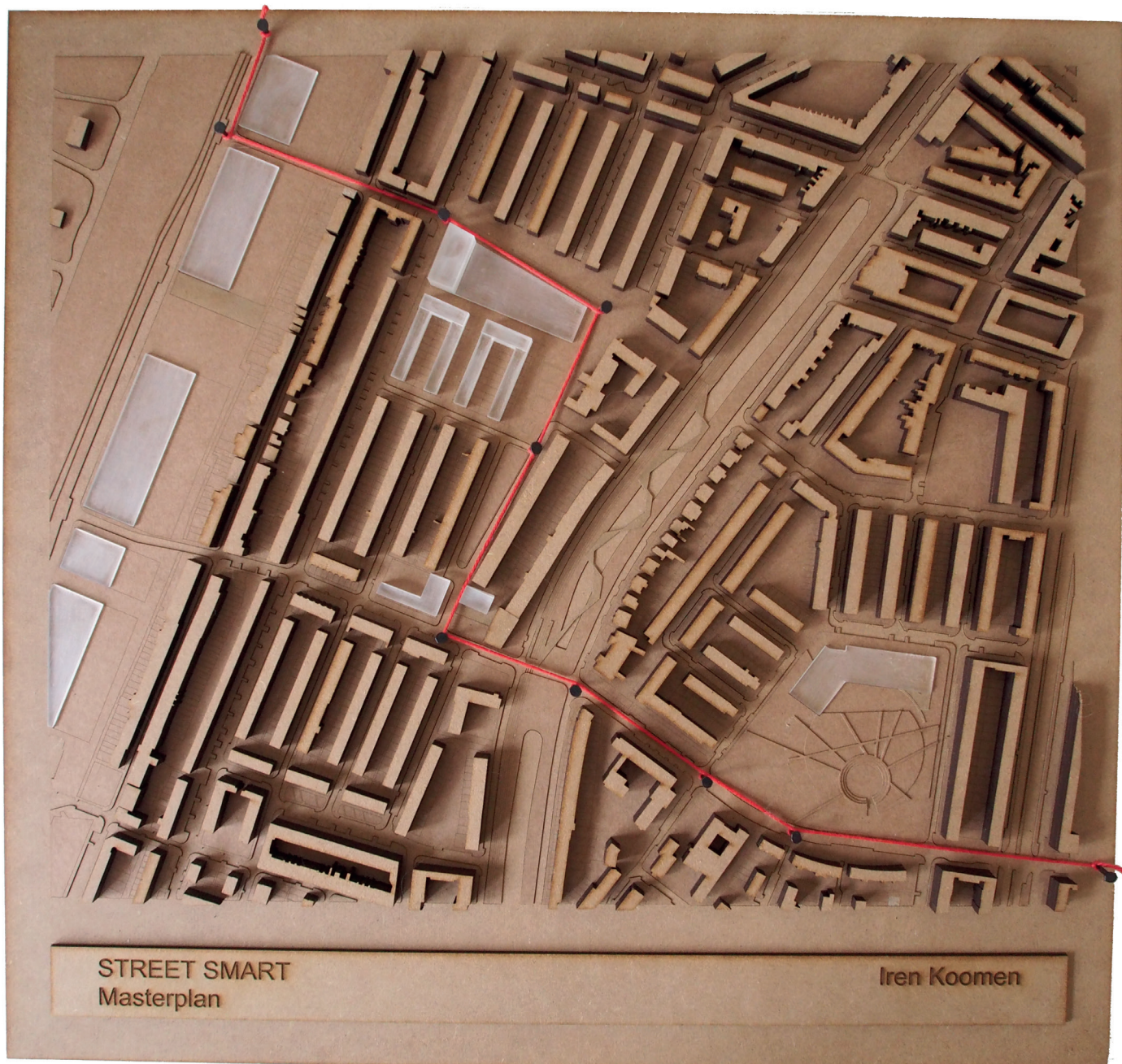
STREET SMART
Masterplan

Iren Koomen

These four drawings provide an analytical overview of the masterplan, showing the assigned private and public spaces (Figure 15), the added buildings, building envelops or repurposed buildings (Figure 16), the new functions that will be incorporated in these buildings (Figure 17), and finally the different grades of design freedom subsequent designers (e.g. architects and landscape architects) have in the different areas of the plan (Figure 18).

Legend:

☐ Private

■ Public

▨ Private; With Public Use

Figure 15: Private / Public Space

Legend:

■ Existing Buildings

☐ New Building Envelops

▨ New Buildings

▨ Repurposed Buildings

Figure 16: New Additions

Legend:

▨ Residential

▨ Teen - Oriented

▨ Child - Oriented

▨ Schools / Daycare

▨ C & T - Oriented

■ Existing Buildings

Figure 17: New Functions

Legend:

■ Buildings

▨ Low

▨ Medium

▨ High

Figure 18: Design Freedom
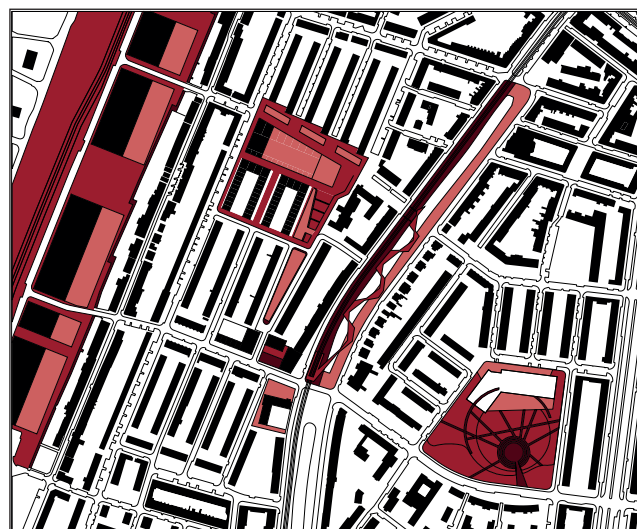
The eastern most location in the network is the area around the OSG Hugo de Groot. As detailed in the framework, the OSG Hugo de Groot is currently a regular highschool with a special program. In the future, it will transform into a "superschool" for children ages 5 to 18 with public facilities to support the neighbourhood.

OSG HUGO DE GROOT
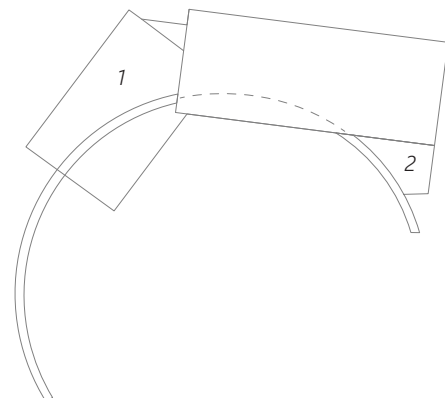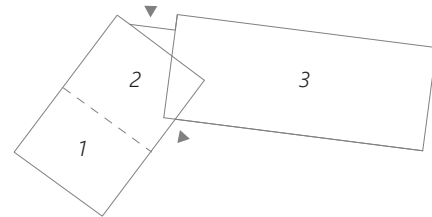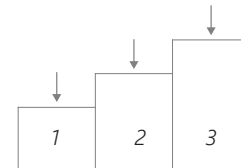
Figure 19: Urban Plan for the location at the OSG Hugo de Groot

0   50m
N

02   04   11

03   07   15

Incorporated CE Patterns:

Object Ambiguity

13

Gender Design

19

Outdoor Education

20

Figure 20 lists all the social learning environment patterns that come together in this relationship, following the vision. Furthermore, it lists the three children environment's patterns that were used to create a design for this area. Because we are now designing on a scale where the two different pattern libraries meet, the pattern libraries start to interact. This means that the social learning patterns from the top-down vision, place restrictions and requirements on the bottom up children's environment patterns. However, simultaneously, this interaction also creates new opportunities. Together with the physical aspects of the location itself this, this interaction start to give direction to the design. This is portrayed in the structure sketches (Figure 20, right page), which we can regard as the concept behind the design.

Figure 20: Structure sketches portraying the main design concept.
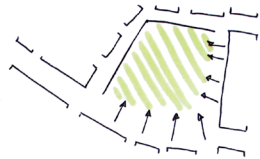
Open, park, environment
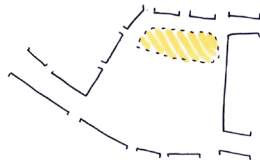
School area
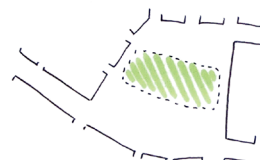
Communal area
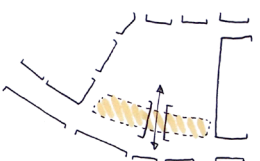
Public area
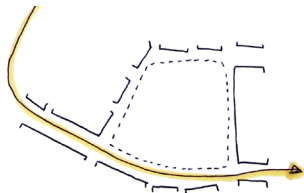
Children's network
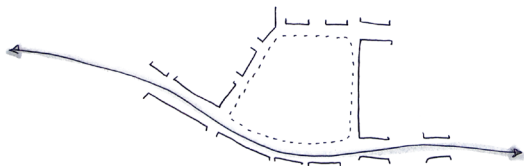
Multi-modal transit connection

The structural sketches provide the concept for the design, but the design itself is further detailed by incorporating the patterns that make up the design. The building field where the new school will be constructed is shaped by two differently oriented rectangles, which follow the direction of the surrounding environment. Because of the large differences in ages in the superschool, the fields are seperated into three different parts (Figure 19, p. 200), which are each connected to a seperate volume and a seperate height, symbolizing children's growth throughout the school as they become older. This movement is furthermore supported by a round, wooden walkway that connects the different spaces and different buildings together. Because the school is an integral part of the public area, two of the buildings are designated as having program on their roofs. This will not only connect the school environment to the park environment, but provide children the opportunity to be educated outdoors with, for instance, a small biology garden and a terrace where lessons can be given when the weather is good. The park is separate from the school environment, yet integrated in its design because it is the centre of the walkway. Here, a sunken area is featured that serves adults and children, depending on the time and day it is. Furthermore, it provides the neighbourhood with an informal outdoor event area. The inner core surrounding this circle is designed for gender use, the outer core support more open use, as does the public front, with its ambiguous street furniture.

18 13

Flickr; Craig K Gowens © Skate park with green appearance for the boys.

18

Flickr; I.cool © Grass area with flowers for girls

11

Flickr; Rob Schouten © Sunken amphitheater for daily gathering or events

Figure 21: Image showing which patterns were used in what areas.

03

04

07

02

11

15

13

18

20

0   50m

N
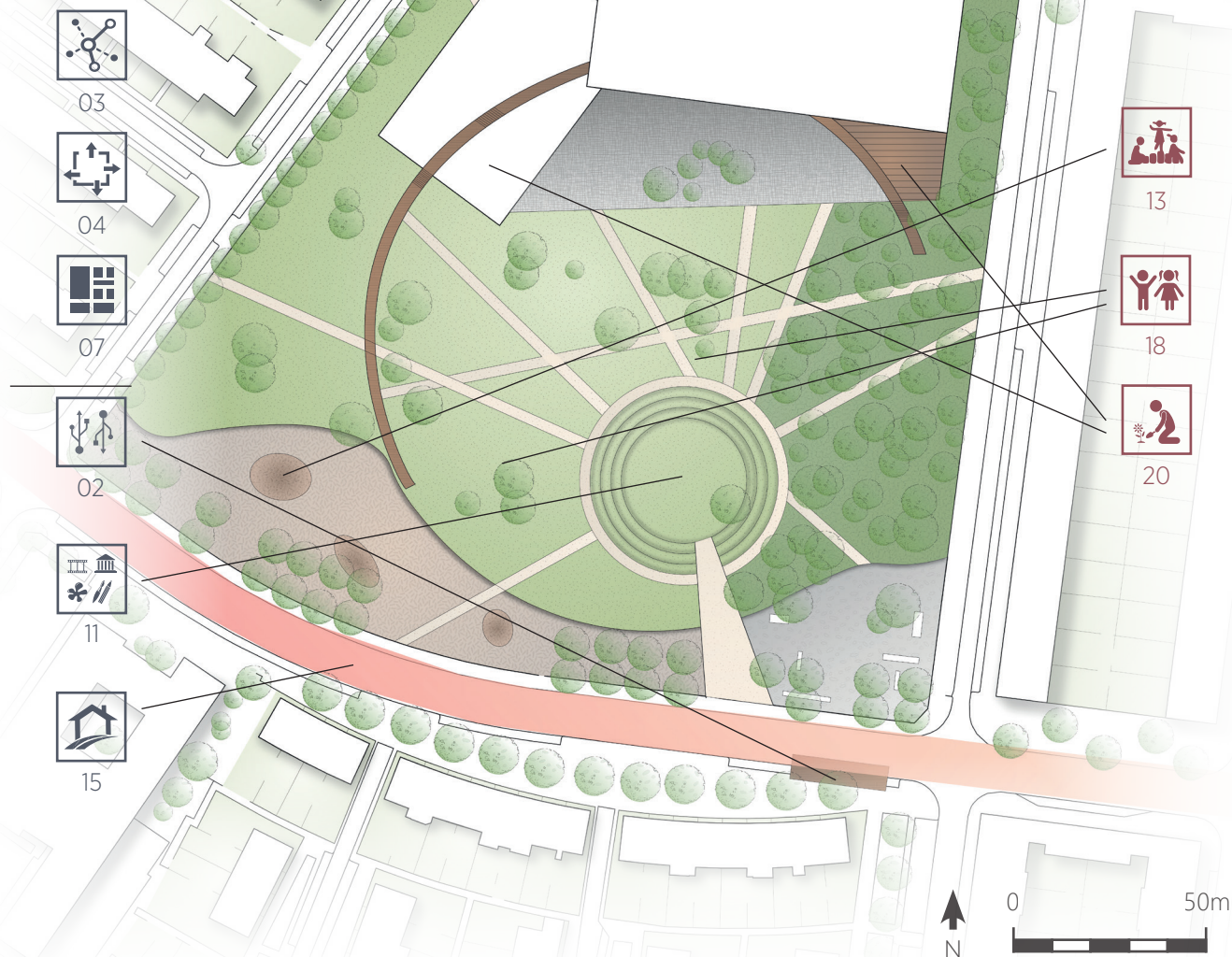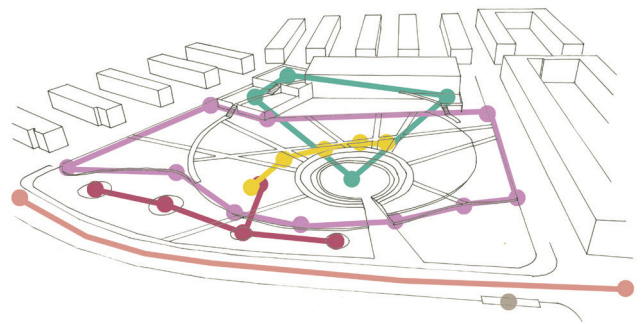
The above illustration shows the abstract linkage between the different patterns. The core of the design consists of the children's network and its STREET SCAPE and the park as DIVERSE ENVIRONMENT. This framework is then supplemented with additional patterns that support a TRANSIT NETWORK, AMBIGUOUS OBJECTS, GENDER USE, and OUTDOOR EDUCATION. All of these patterns are arranged in such a way that they connect with each other and create a flow between the front (public), middle (park), and back (school) areas of the location.

Figure 22: Image showing which patterns were used in what areas.
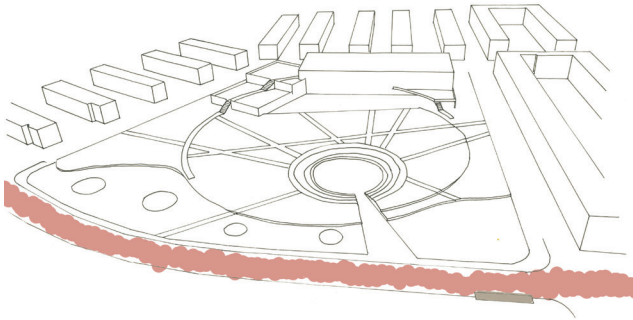
The location of the OSG Hugo the Groot is a central public area in the children"s network It connects to the network along it's southern border, which has a recognizeable and quality STREET SCAPE. Furthermore, this network is complemented by a TRANSIT NETWORK, consisting of pedestrian sidewalks, a road for motirzed traffic (car, bus) and bicyclists, as well as a tramline. The tramline has a stop across from the area, making sure there is as little hindrance as possible from this tramline for users of the space.
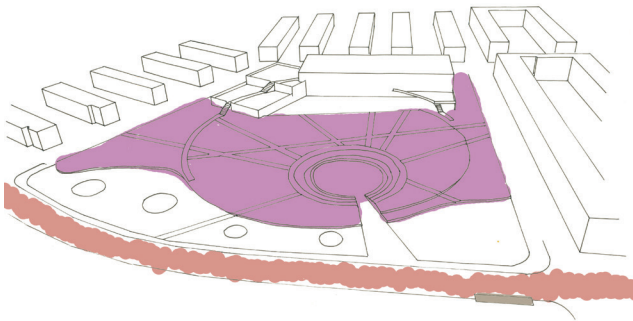
The back of the area is designated as an area for the school (shown structure is merely an illustration, not the actual volume) and its supporting program such as school playgrounds and bicycle structures. The front of the area is designated as a public area, supporting travel across the network separate from the heavily used tramline on the sotuh side of the road. The area inbetween will be designed as a DIVERSE ENVIRONMENT, offering facilities that are different from the other public spaces in the area.
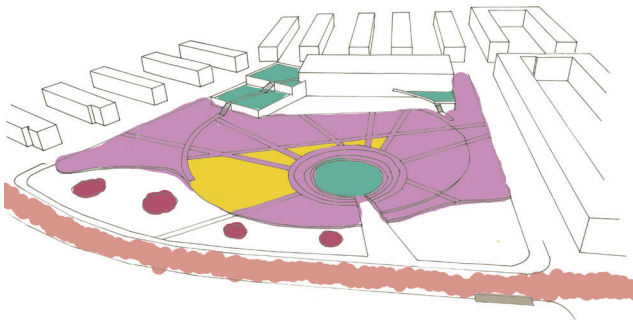
Each of the areas is designed with several distinctive features. The rooftops and terraces of the school will be designed for OUTDOOR EDUCATION, which furthermore creates a visual links with the public park. Specific areas of the park itself are designed for GENDER USE, support boy- and girl-activities through football fields, skate areas, and quiet areas for sitting and gathering. The public front is imbued with AMBIGUOUS OBJECTS, allowing for a varied use of the space for users of all ages while simultaneously offering an interesting STREET SCAPE.

13
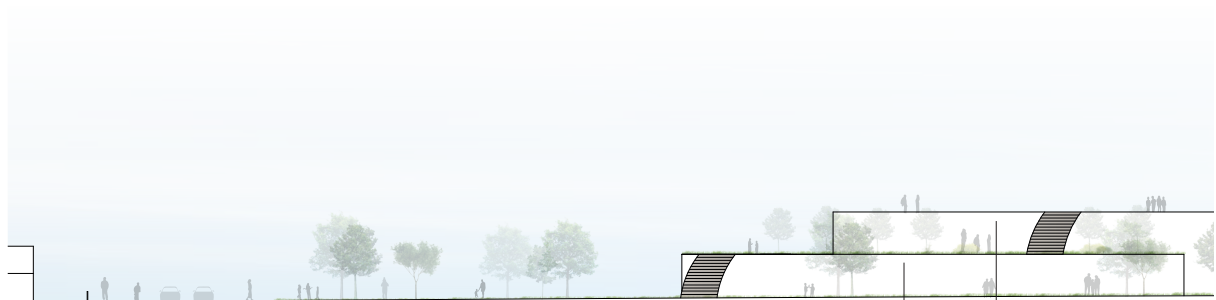
20   20

02   03   04   07   15   18   13

11

20
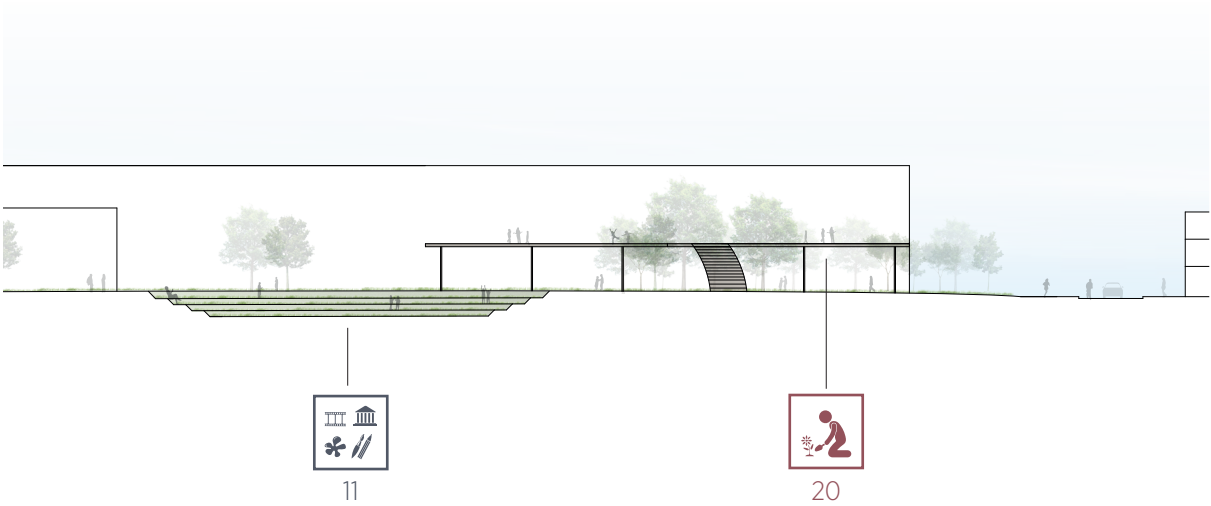
Figure 23: Profile of the OSG Hugo de Groot location

0   25m

02 15 13

11 18
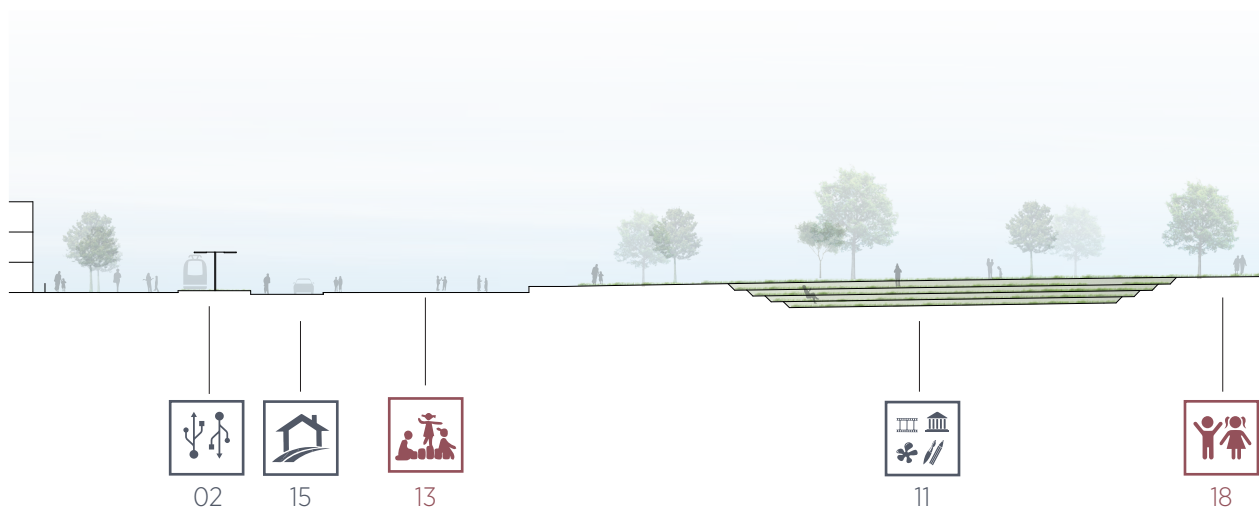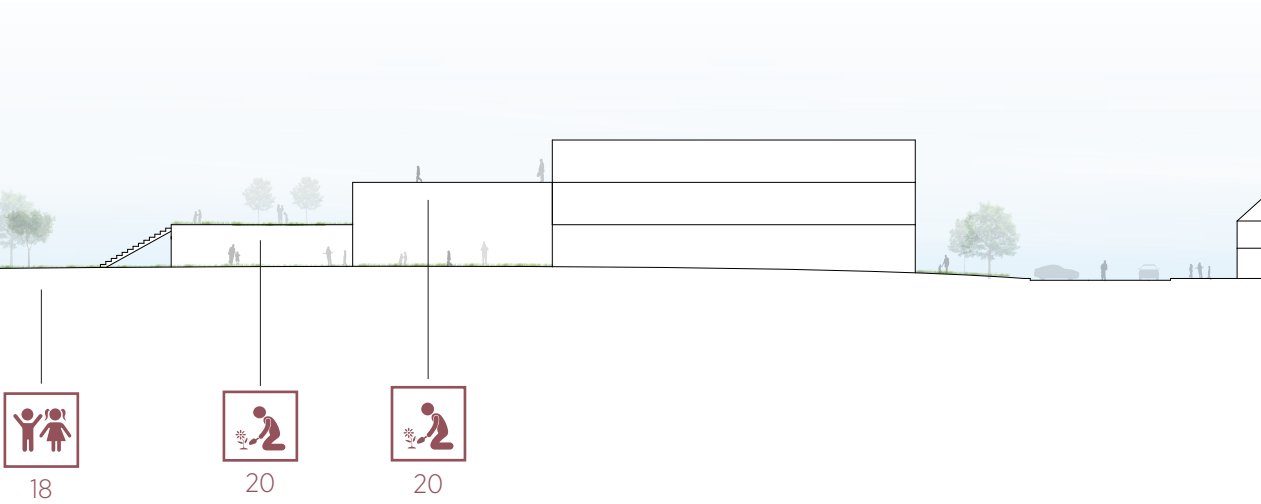
03 04 07

Figure 24: Profile of the OSG Hugo de Groot location

18

20

20

0   25m
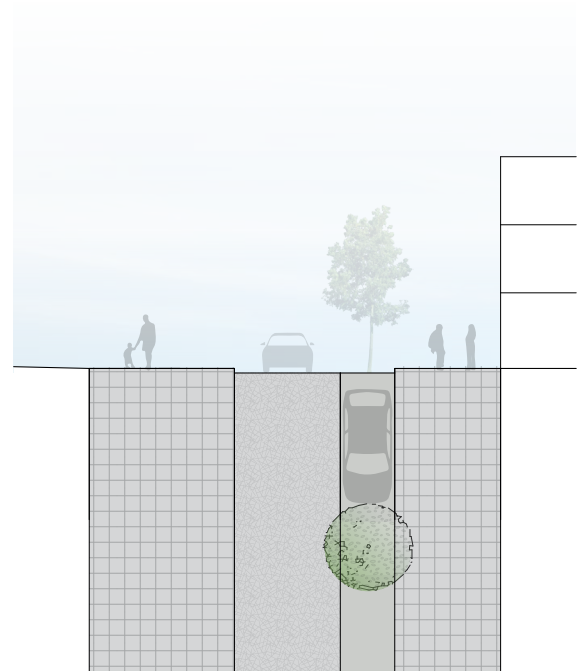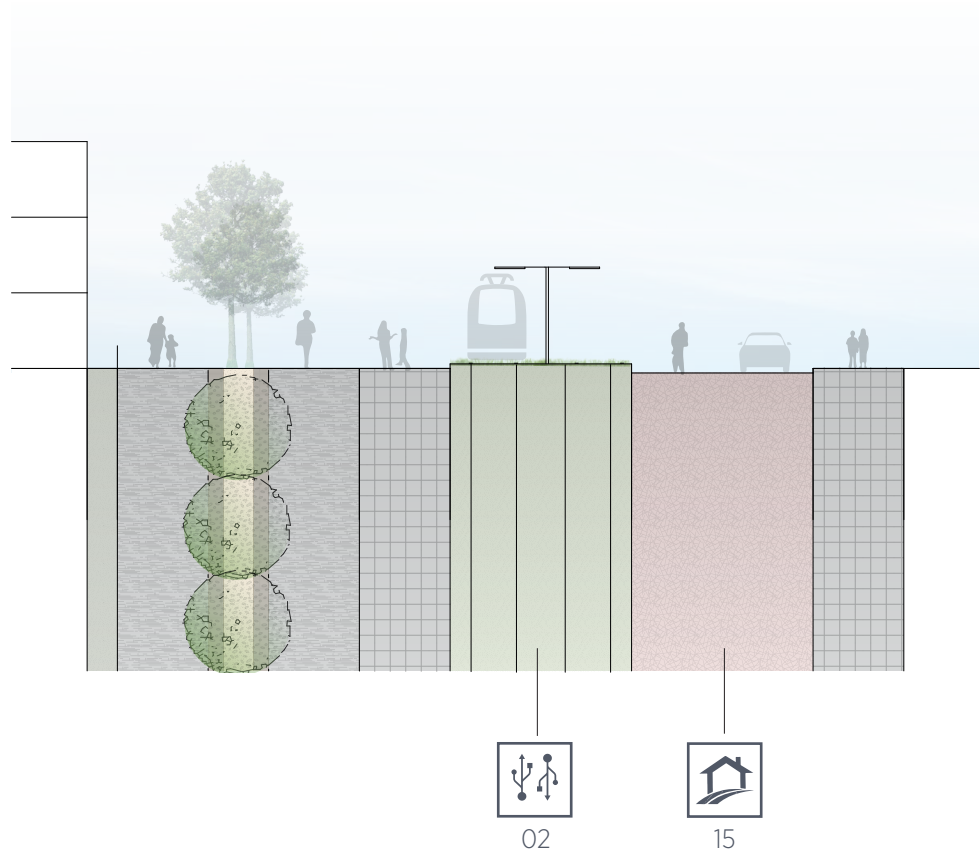
Figure 25: Street Profiles of the roads adjacent to the OSG location

02

15

0   7,5m

The next location in the masterplan is the Boergoensevliet. Unlike all the other areas, the Boergoensevliet does not run alongside the children's network, but rather, is crossed by it roughly around its north to south midpoint. The Boergoensevliet is the only singel in Oud Charlois and will be transformed into a more attractive blue-green connection and leisure area.

B OERGOENSEVLIET

Figure 26: Urban Plan for the Boergoensevliet

N

0   50m

Figure 27 lists all the social learning environment patterns that come together in this relationship, following the vision. Furthermore, it lists the three children environment's patterns that were used to create a design for this area. Because we are now designing on a scale where the two different pattern libraries meet, the pattern libraries start to interact. This means that the social learning patterns from the top-down vision, place restrictions and requirements on the bottom up children's environment patterns. However, simultaneously, this interaction also creates new opportunities. Together with the physical aspects of the location itself this, this interaction start to give direction to the design. This is portrayed in the structure sketches (Figure 27, right page), which we can regard as the concept behind the design.

Incorporated SLE Patterns:

02 11

07 15

Incorporated CE Patterns:

03 Exploring

08 Nature

11 Elements of Risk

Figure 27: Structure sketches portraying the main design concept.
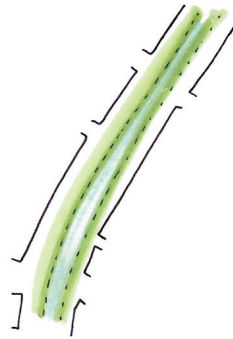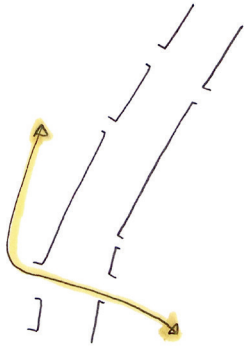
Children's Network

Increases biodiversity (soft banks)
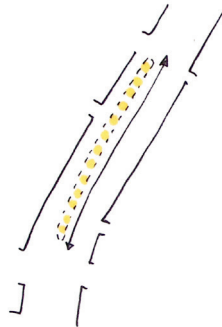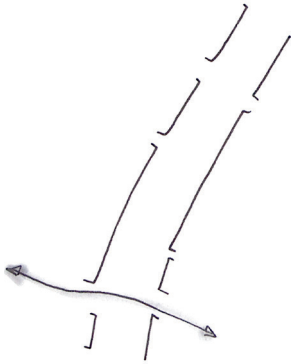
Multi-modal transit connection

Enclosed path for children
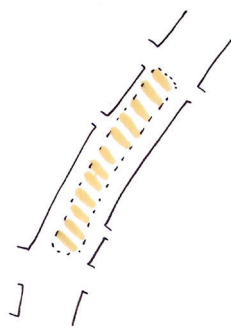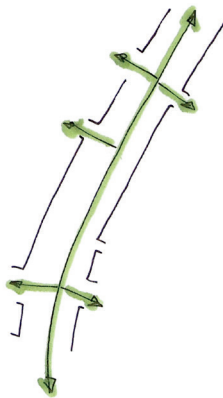
Quality blue-green connection

Leisure Area

The structural sketches provide the concept for the design, but the design itself is further detailed by incorporating the patterns that make up the design. The entire Boergoensevliet will de reveloped into a quality blue-green connections. This connection is a part of the larger network that connects Rotterdam-Noord to the Zuiderpark, via all the redeveloped harbour areas (such as the Wilhelminapier and Katendrecht) and across this singel. The entire length of the Boergoensevliet will see an increase in quality by adding additional biodiversity, creating softer and more natural banks. While the predominant north-south connection will run along the pedestrian path to the east of the singel, the west side of the singel will supports the existing tram connection. This connection will be more sharply seperated from the singel with a larger structure, clad with plants. This will allow the area inbetween the tramline and the singel to be redesigned as an enclosed path for children to explore, seperate from parents who walk along "the other side" of the water. The area detailed in the masterplan is the area that directly connects to the children's network. Here, a leisure area will be created with a large wooden walkway across the water. The walkway can be used for walking, but is at points wide enough to accomodate leisure activities such as fishing, sitting and sun bathing. Furthermore, in this area, rope bridges will be created from one bank to the other for children to use. These bridges will be designed so that they offer elements of risk, which means that they won't suit very young children.

Flickr; Lark Creek Groove © Enclosed path for children to explore.

Flickr; Gareth Wray © Biodiversity to transform singel into a natural bank.

Flickr; Mark © Wooden walkway with subtle edge.

Figure 28: Image showing which patterns were used in what areas.
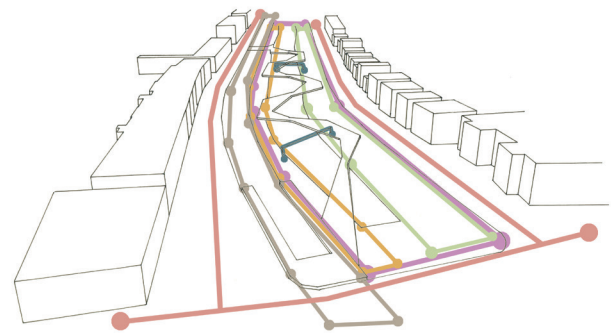
The above illustration shows the abstract linkage between the different patterns. Similar to the OSG Hugo de Groot location, the framework of the Boergoensevliet consists of the children's network, the TRANSIT NETWORK and its adjoining STREET SCAPES. This framework has a gap in the middle (the singel), which is designed as a DIVERSE ENVIRONMENT by incorporating NATURE, EXPLORING possibilities for children as well as several ELEMENTS OF RISK to make it more interesting and exciting for them.

Figure 29: Image showing which patterns were used in what areas.
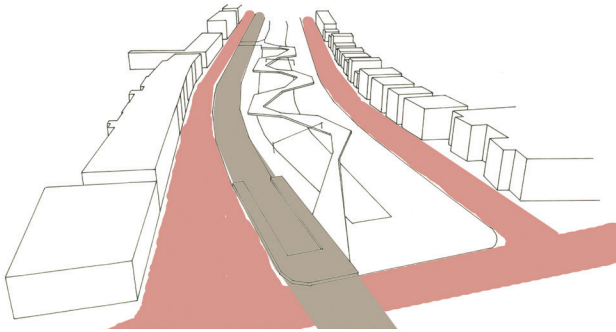
The Boergoensevliet is defined by the children's network crossing from east to west, and the TRANSIT NETWORK running adjacent to it on the west and east banks. Both of these networks have identifiable and recognizable quality STREET SCAPES (children's network vs. blue-green connection. Furthermore, this leisure area of the Boergoense vliet is not only marked by the children's network, but also by the tramstop of the transit network.
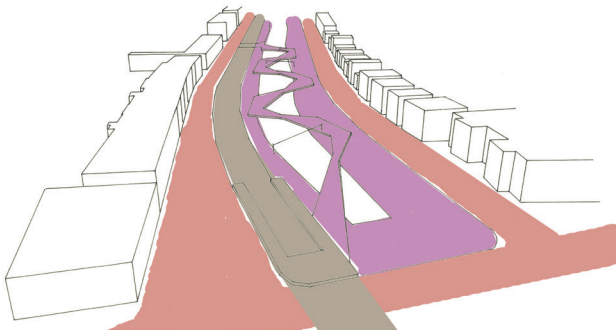
The area of the Boergoensevliet that is framed by both networks is designed to be one of the DIVERSE ENVIRONMENTS of Oud-Charlois. This includes both banks, as well as the wooden walkway across the singel.
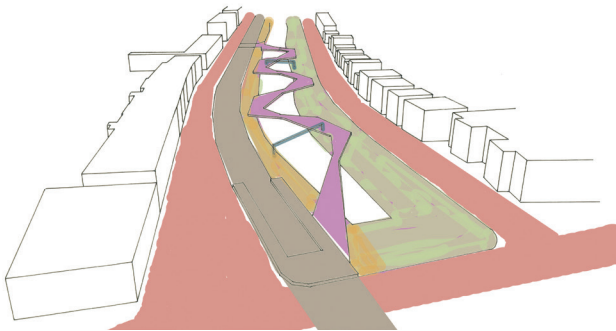
The Boergoensevliet seperates itself from the other diverse environments by focusing on its green-blue nature. This entails incorporating more NATURE along its banks, creating soft and natural embankments. Furthermore, the west bank will be reserved for EXPLORING by creating an enclosed path specifically designed for children. Furthermore, ELEMENTS OF RISK are added by creating rope bridges across the water that children can use to cross from the east side of the singel to the west.

03

11

08

15

02

03   08

07

08

11

02

15
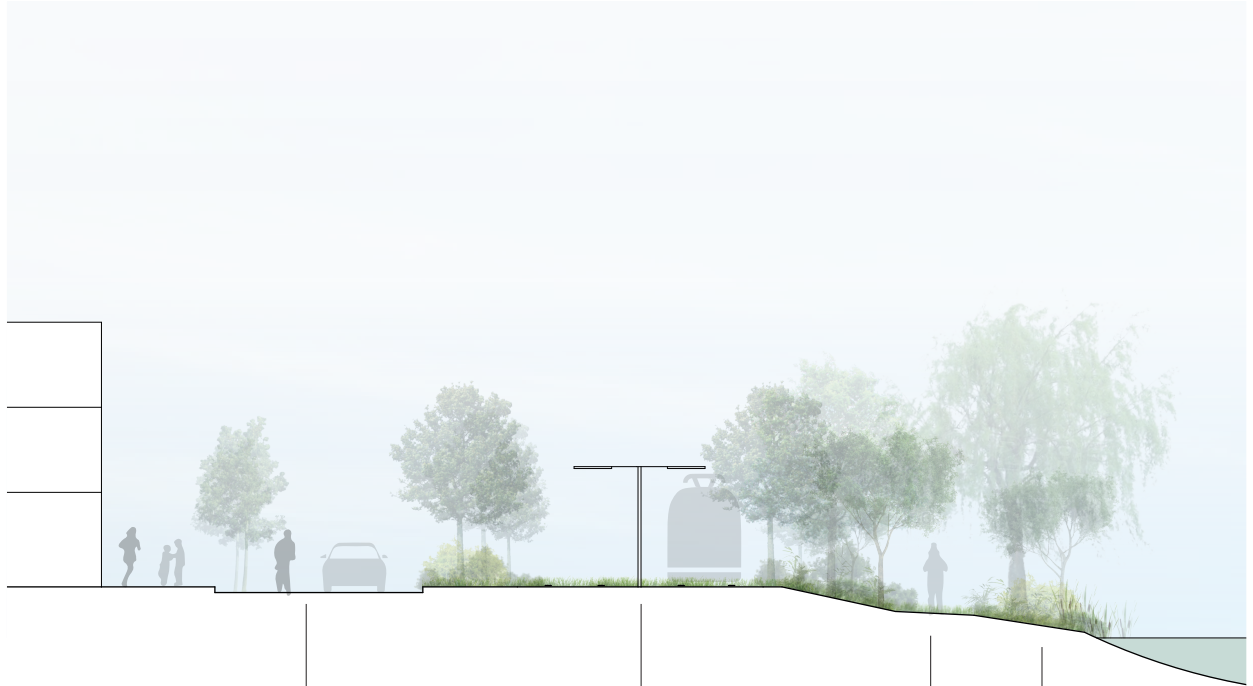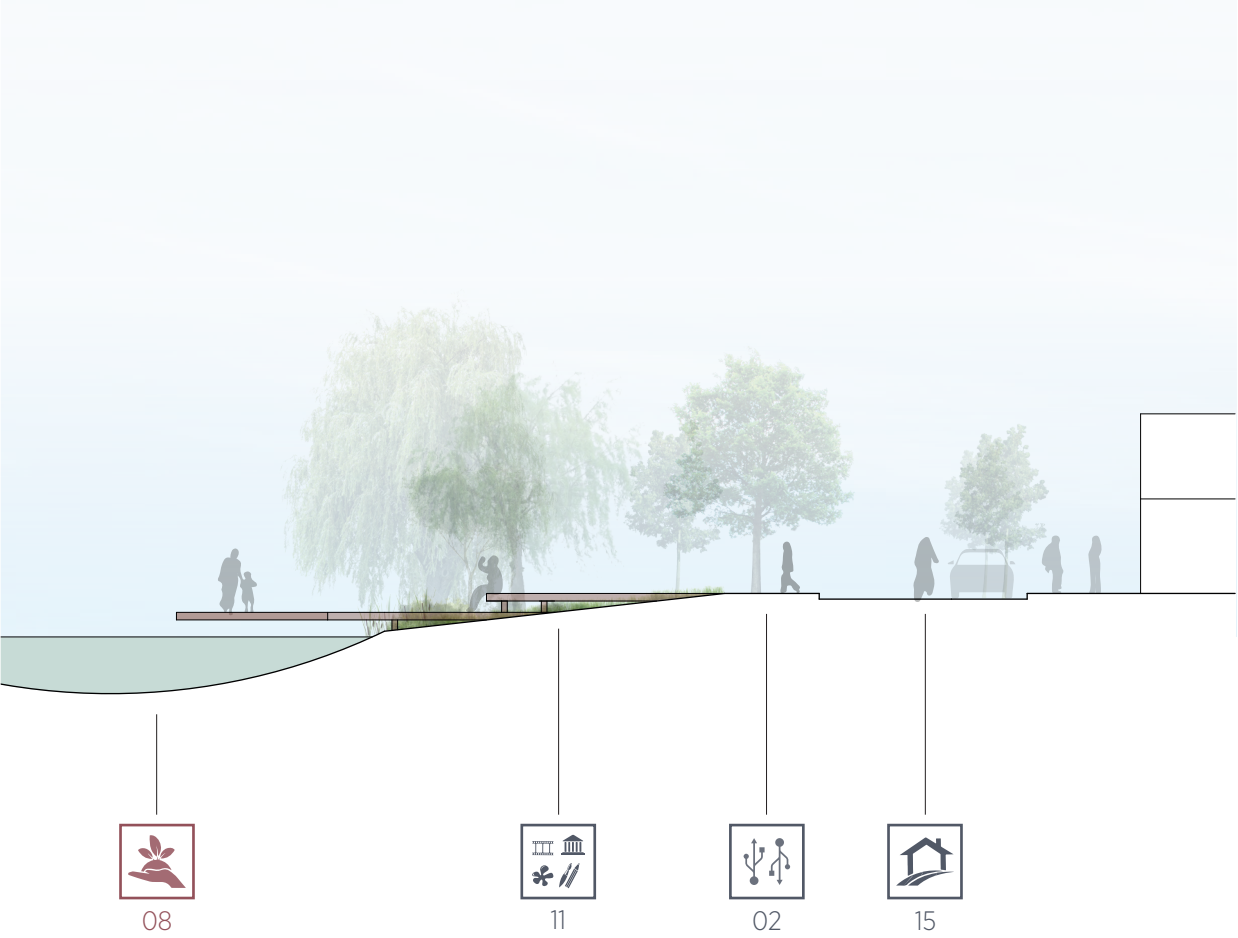
Figure 30: Profile for the Boergoensevliet

0   5m

15

02

03

11

07 11

08   11   08   02   15
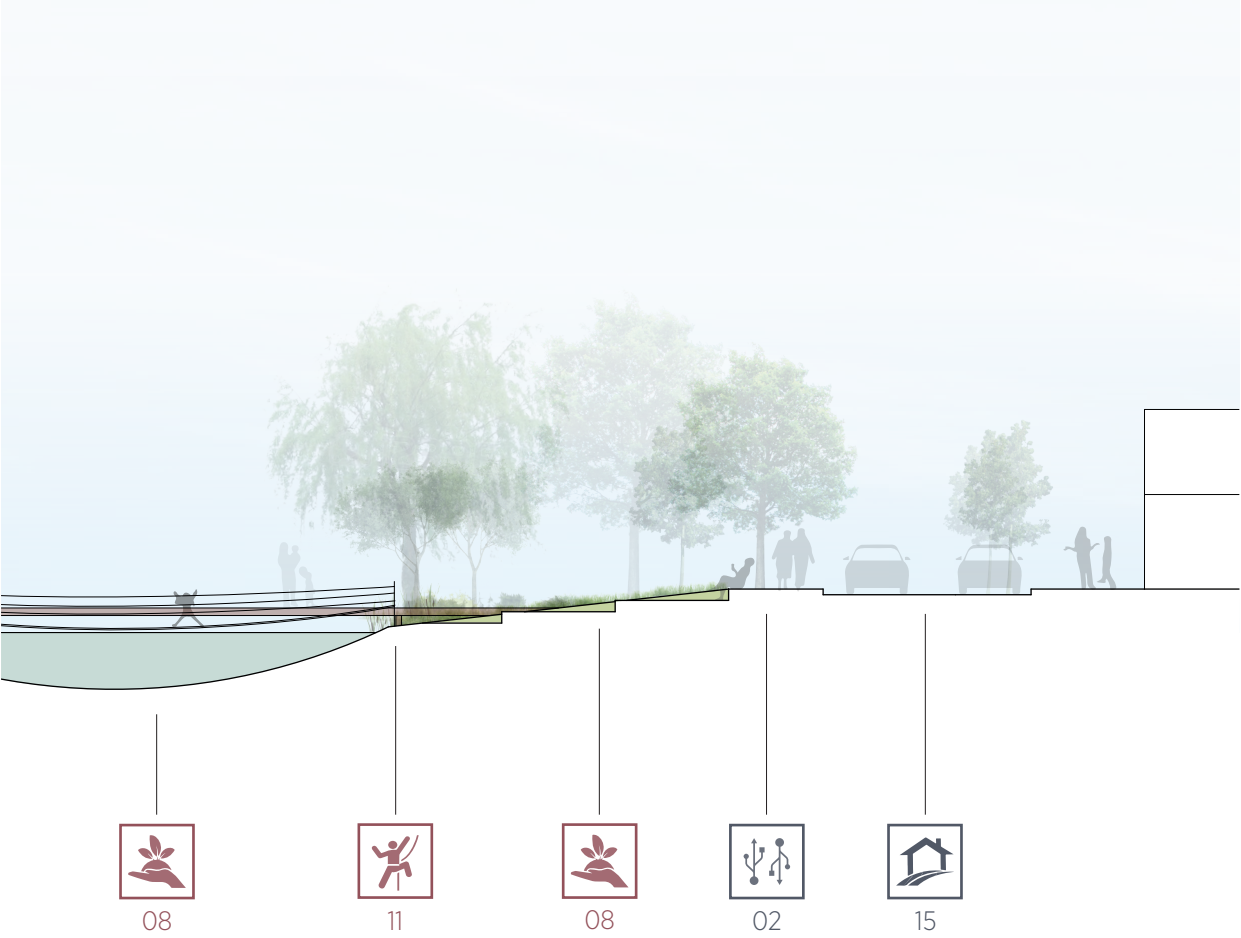
Figure 31: Profile for the Boergoensevliet

0   5m

18   02   08

08   02   02

01   07   11

0   7,5m

The Bloomsteynweg directly connects to the Boergoensevliet. It is framed by the children's network on two different sides, because it bends towards to north. Currently, this location houses the primary school the Triangel in three different buildings. In this future, this school will move to the OSG Hugo de Groot area, freeing up this location for redevelopment.

B LOOMSTEYNWEG

Figure 33: Urban Plan for the Bloomsteynweg

0   50m

N

02

07

11

03

06

14

04

10

15

Incorporated CE Patterns:

02   Discovering

07   Materials

09   Parental Supervision

Figure 34: Structure sketches portraying the main design concept.

Figure 34 lists all the social learning environment patterns that come together in this relationship, following the vision. Furthermore, it lists the three children environment's patterns that were used to create a design for this area. Because we are now designing on a scale where the two different pattern libraries meet, the pattern libraries start to interact. This means that the social learning patterns from the top-down vision, place restrictions and requirements on the bottom up children's environment patterns. However, simultaneously, this interaction also creates new opportunities. Together with the physical aspects of the location itself this, this interaction start to give direction to the design. This is portrayed in the structure sketches (Figure 34, right page), which we can regard as the concept behind the design.

Repurposed developments

New developments
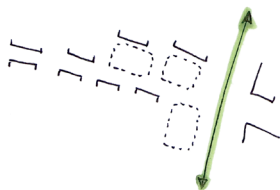
Quality blue-green connection
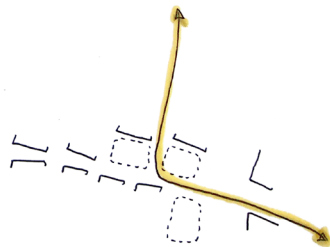
Children's Network
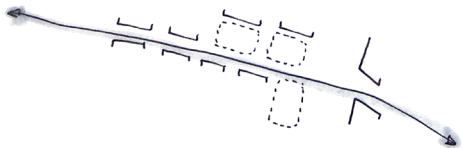
Multi-modal transit connection

The structural sketches provide the concept for the design, but the design itself is further detailed by incorporating the patterns that make up the design. The area of the Bloomsteynweg is rather small and concentrated, with limited public space, making it well suited for program targetting younger children. In this area, the focus lies on allowing younger children to safely discover their environment. This means that there are different types of spaces (north and south of the Bloomsteynweg), each offering different experiences. The area north of the Bloomsteynweg will support several new buildings, housing a mix of public functions aimed at young children (such as a consultation centre or an indoor playground), as well as several new residential buildings. It includes a square filled with flower beds, which children can actively use. Furthermore, adjacent to that, a wooden terrace has been designed that will be a sculpture in and of itself. The idea behind this sculpted terrace is that it will allow parents a place to supervise their children, while simultaneously allowing structures for children to play up, on, around, or under. The south side of the Bloomsteynweg will be repurposed as a daycare centre. In front this will be playground-like public area with safe yet attractive and colourful materialization where children can play, as well as an area for parents to supervise their children. Lastly, as the children's network travels towards the north of the Bloomsteynweg, it will run adjacent to a new communal space for the surrounding houses with areas to sit, bbq and get together.

02

Flickr; Paula © Plant beds with flowers for children to discover nature

07

Flickr; Stephanie © Safe yet attractive materialization for young kids

09

Flickr; Konstantin © Opportunities for parents to sit close to their child

Figure 35: Image showing which patterns were used in what areas.

03

04

07

02

06

10

11

14

15

02

07

09

0   50m

N
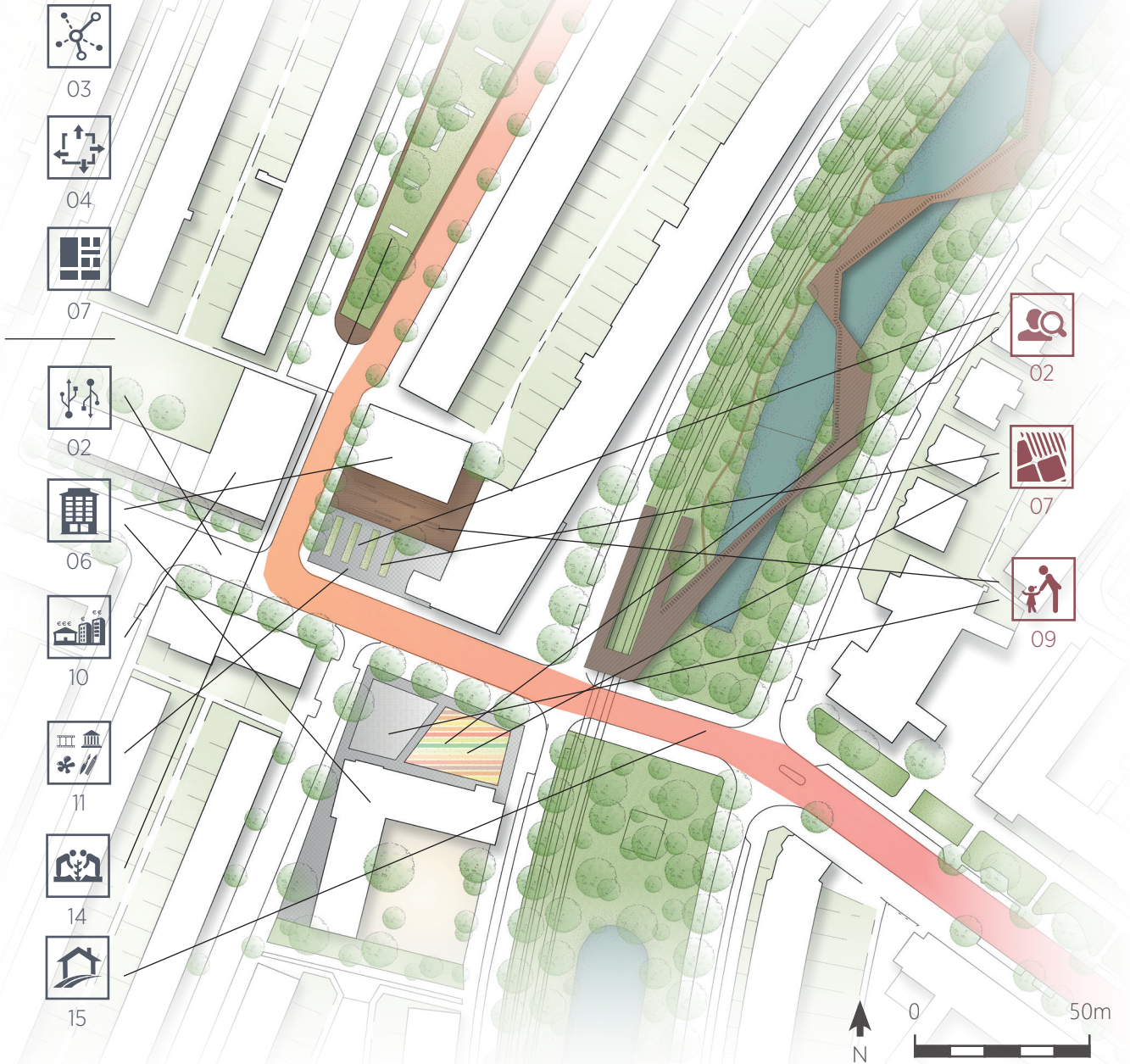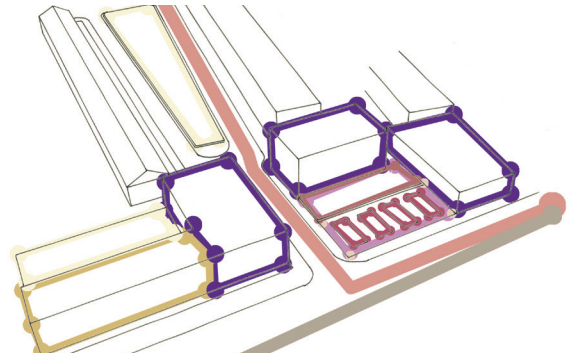
The above illustration shows the abstract linkage between the different patterns. In contrast to the two location described earlier, the location's framework not only consists of the children network, TRANSIT NETWORK, and their recognizable STREET SCAPES. But rather, its framework also includes MIXED-USE ENVIRONMENT with residential buildings, PUBLIC FACILITIES. This framework is then further defined by COMMUNAL SPACES, MATERIALIZATION, COLOUR, PARENTAL SUPERVISION and the possibility for younger children to DISCOVER their surroundings.

Figure 36: Image showing which patterns were used in what areas.
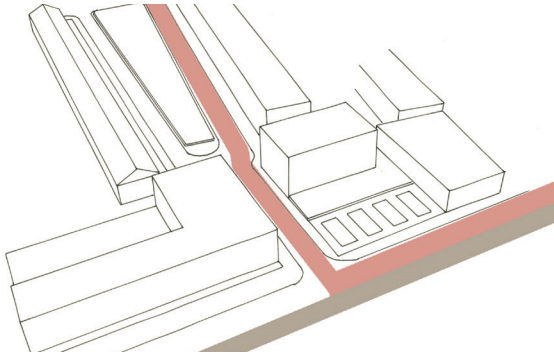
Similar to the two locations described earlier, the Bloomsteynweg is first and foremost defined by its position in the children's network and its recognizable STREET SCAPE. Furthermore, this location also connects to the TRANSIT NETWORK running east to west.
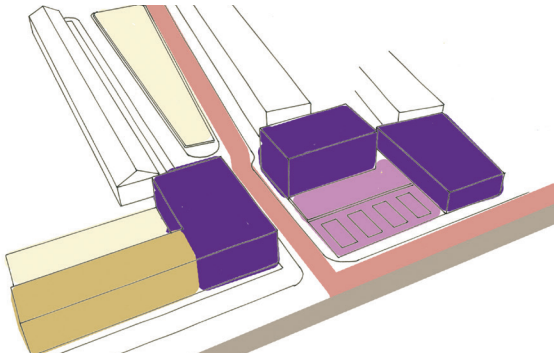
The Bloomsteynweg is, in contrast to the two earlier locations, not merely designed as one diverse environment. Rather, only parts a small part of it (and the area to the sotuh, not visible on the image) are designed as DIVERSE ENVIRONMENTS. The adjoining areas are designed as MIXED-USE ENVIRONMENTS that include residential buildings and PUBLIC FACILITIES. The residential areas are supplemented by COMMUNAL SPACES.
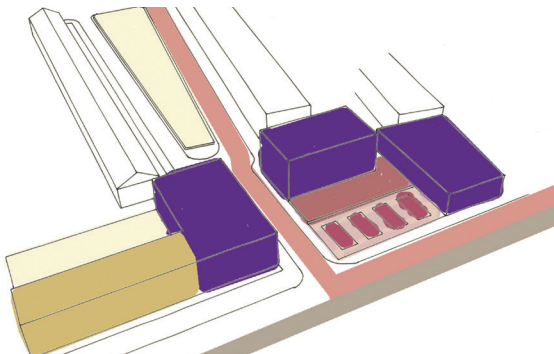
The Bloomsteynweg as a diverse environment is recognizable by its design for younger children, focusing on ways in which they can DISCOVER aspects of their environment. This is partly achieved through MATERIALIZATION, as well as COLOUR. Furthermore, extra focus is places on designing areas that will allow for comfortable PARENTAL SUPERVISION.

09

07

02
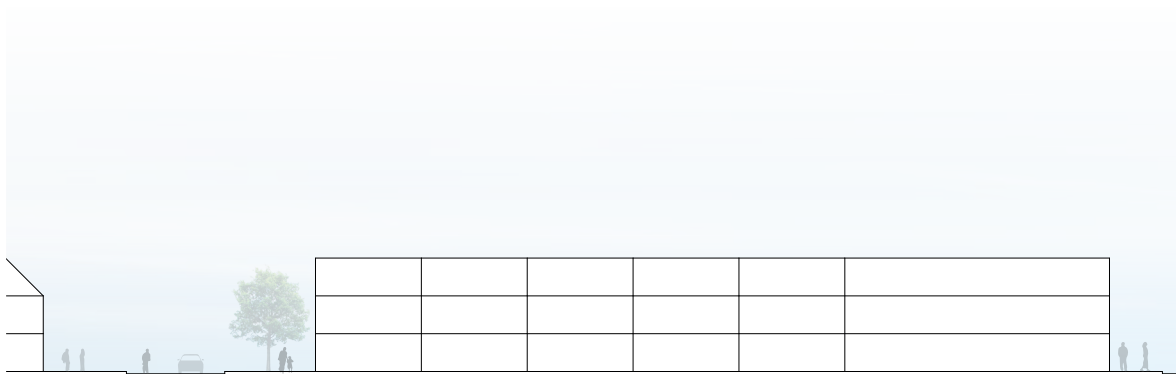
10

06

02   03   04   07   14   15

11   02   07   09   06
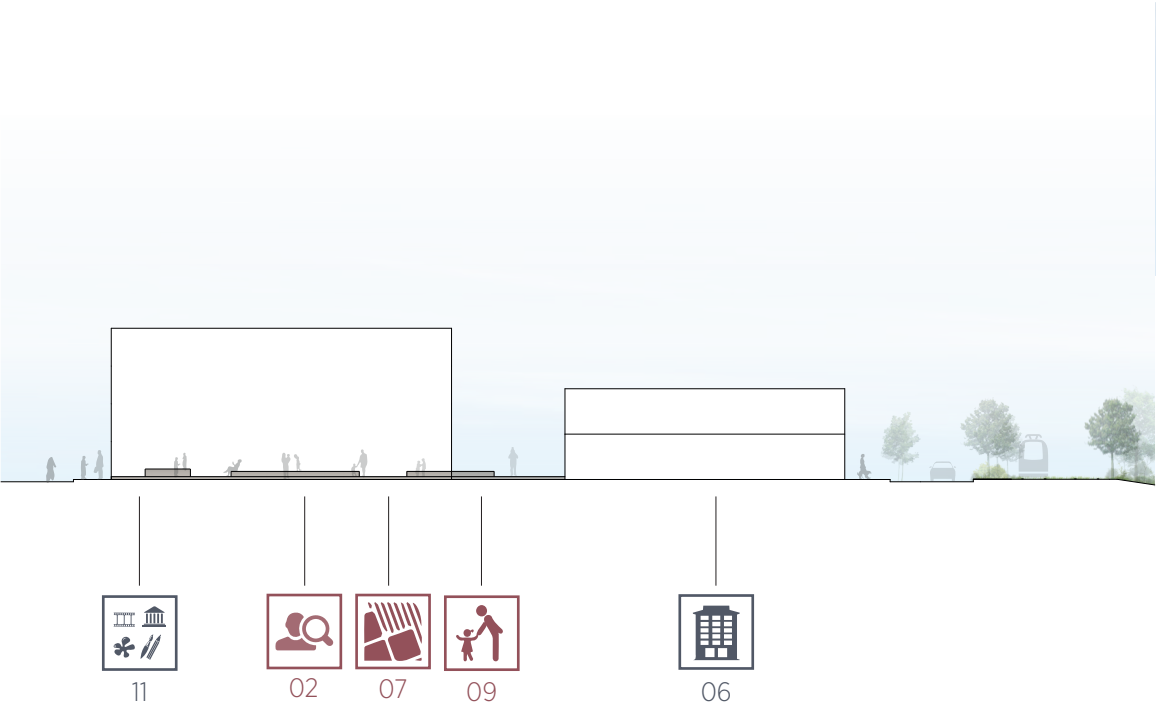
Figure 37: Profile for the Bloomsteynweg

0   15m

02

15

02 07

11

03 04 07 14

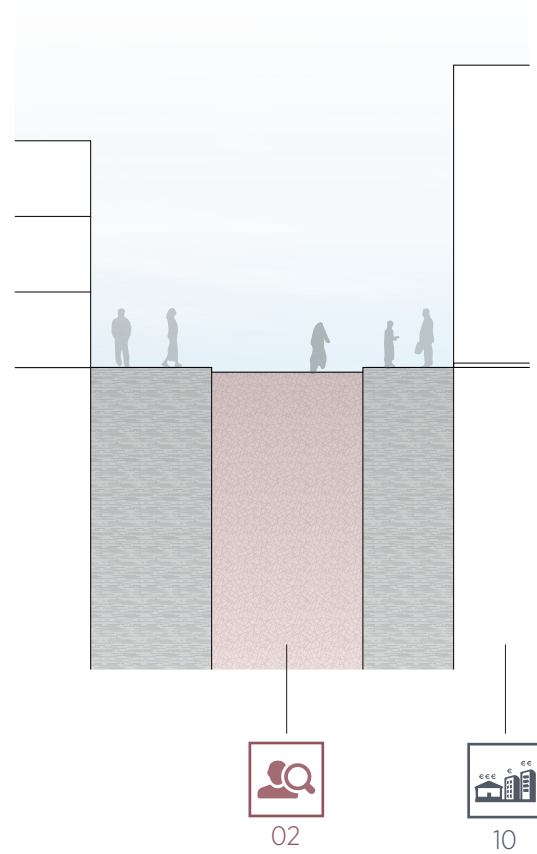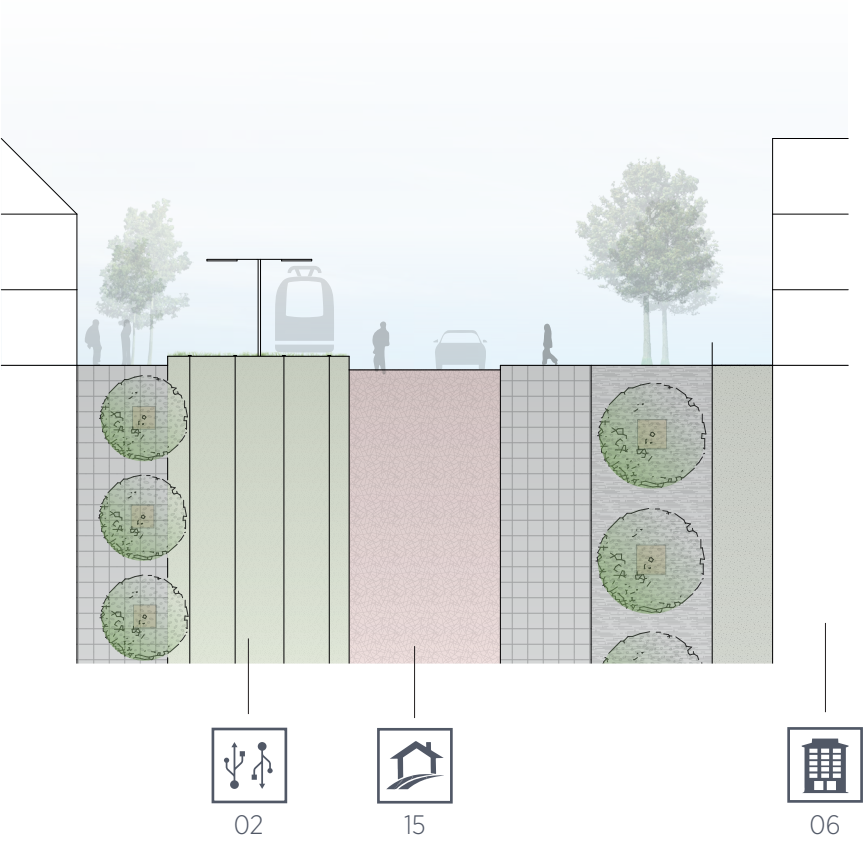02   09   06
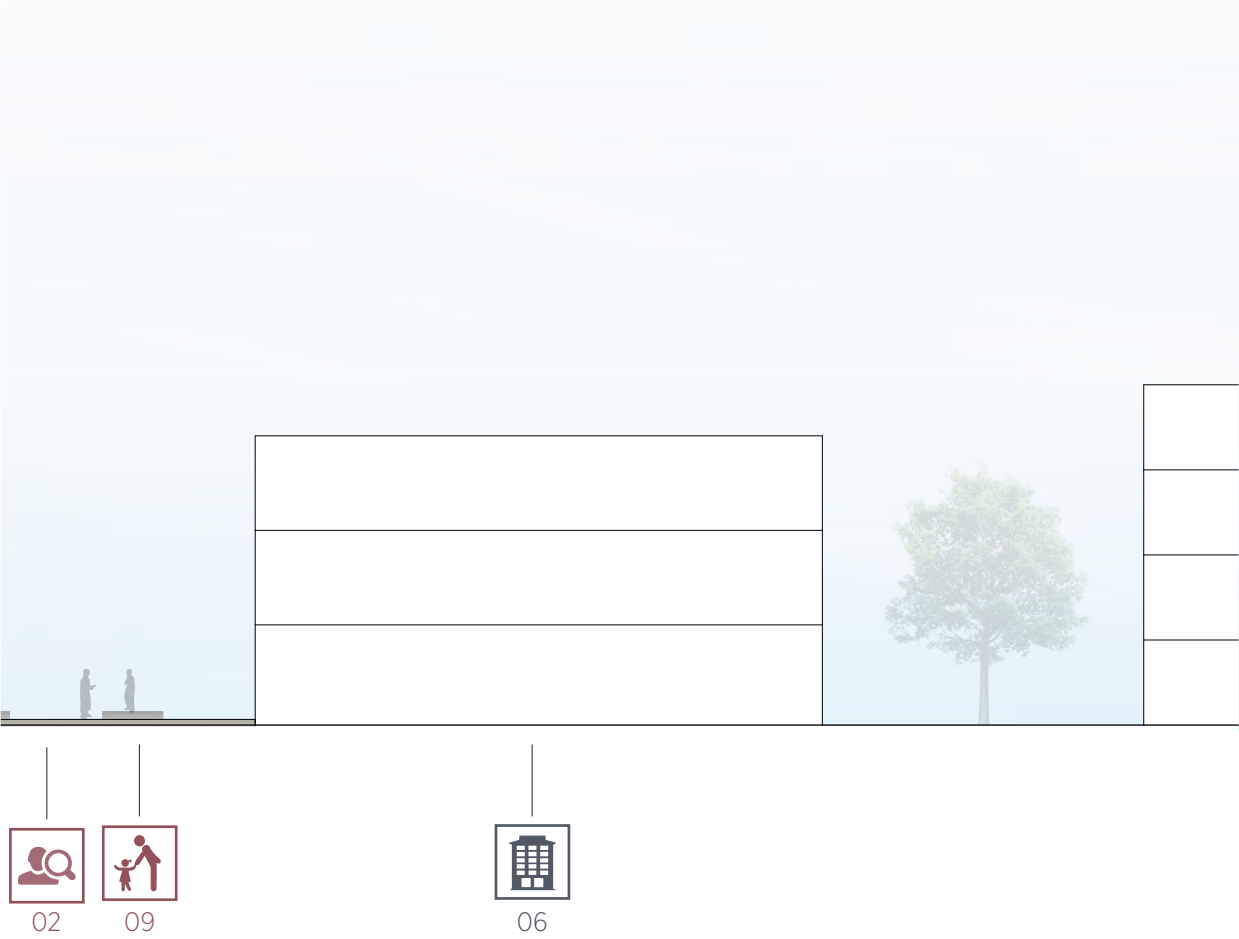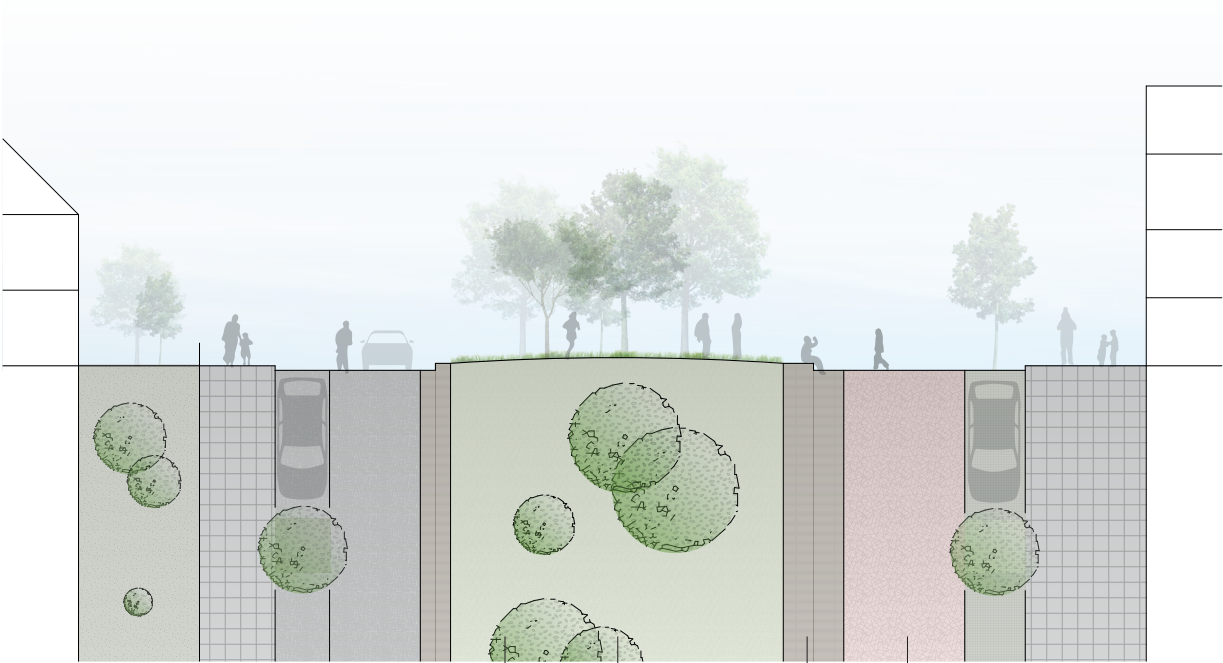
Figure 38: Profile for the Bloomsteynweg

0   15m

Figure 39: Street Profile for the roads adjacent to the Bloomsteynweg

02

10

02

15

06

03

04

11

0   7,5m

Figure 40: Street Profiles for the area behind the Bloomsteynweg

14   07   09   02

06   10

0   7,5m

The Voornsevliet is an area that will be completely demolished and, as such, as an immediate assignment. The area is framed by the children's network of both sides, as it changes its direction back towards the west. The surrounding buildings are mainly residential, with one school building (the Wilhelmina school) towards the east.

V OORNSEVLIET
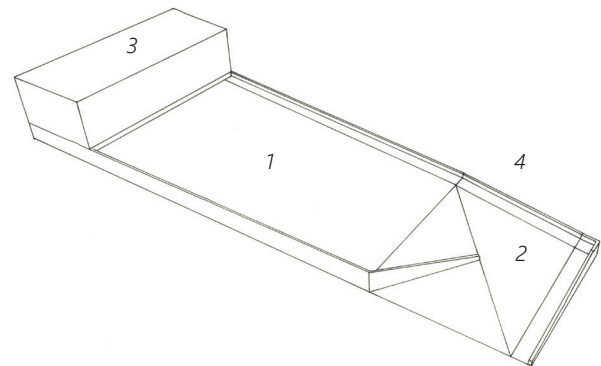
Figure 41: Urban Plan for the Voornsevliet.

Figure 42 lists all the social learning environment patterns that come together in this relationship, following the vision. Furthermore, it lists the three children environment's patterns that were used to create a design for this area. Because we are now designing on a scale where the two different pattern libraries meet, the pattern libraries start to interact. This means that the social learning patterns from the top-down vision, place restrictions and requirements on the bottom up children's environment patterns. However, simultaneously, this interaction also creates new opportunities. Together with the physical aspects of the location itself this, this interaction start to give direction to the design. This is portrayed in the structure sketches (Figure 42, right page), which we can regard as the concept behind the design.

Incorporated SLE Patterns:

03

06

04

14

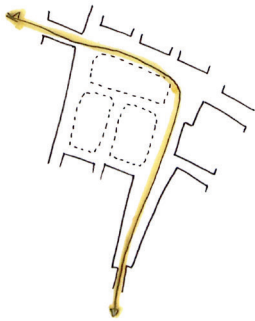
10

15

Incorporated CE Patterns:
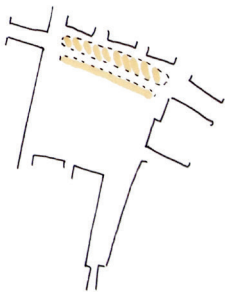

Cultivating

04

Artificial Environment
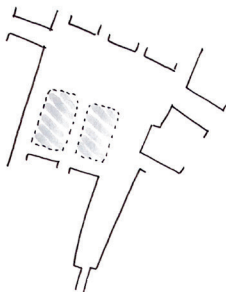
14

Adult-Child Spaces

21

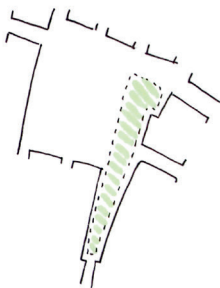*Figure 42: Structure sketches portraying the main design concept.*
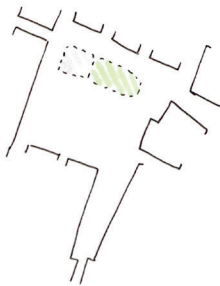
Children's Network

Public area

New developments

Communal area

Combined new developments and communal area

The structural sketches provide the concept for the design, but the design itself is further detailed by incorporating the patterns that make up the design. The Voornseplein is an area that will be completely redeveloped in the future. In accordance to the overall vision, it will be split into an area with new residential developments (south) and a public building with apartments on top (north). The residential developments consist of row houses with their own front- and backyard. Where the residential structure faces the public building, the plinth will consist of public program with apartments on the remaining levels. The public building will be a sculpted structure that also houses public program in the plinth, consisting of small studios and workshop. These spaces will be available for teenagers and young adults in the area, and allow them to pursue their own interests. Behind the studios, in the inner structure of the ground floor, will be parking spaces (roughly 90 with 25m^2 per spot), accomodating the apartments in the tower on the west end of the building. The surroundings of the building are assigned as public spaces. On top of the building, a community garden will be created where residents can produce some of their own fruits and vegetables. The spaces to the north of the building are reserved for co-design, and are a direct extension of the adjacent studios into the outdoor public environment. The space to the east of the building, in front of the Wilhelminaschool, will be a multi-purpose area; both school playground, water square and possible ice square (season dependent).

04

Flickr; Marco Braun © Graffiti wall for adolescents to paint on blind wall

21

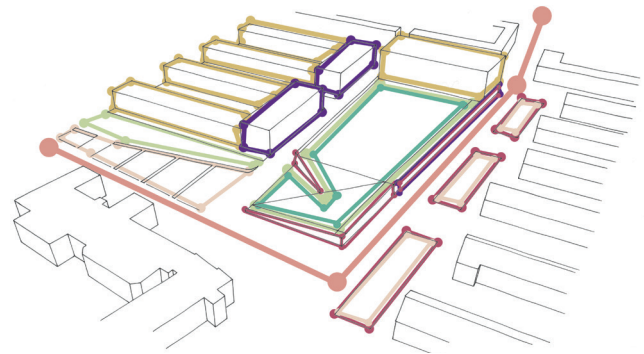Flickr; Allison Achauer © Community garden as space for parent and child

14

Flickr; Patrick Bayens © Water element in schoolyard for summer water play

Figure 43: Image showing which patterns were used in what areas.

03

04

10

06

14

15

04

14

21

0   50m

N

The above illustration shows the abstract linkage between the different patterns. The design for the Voornsevliet has no one framework, rather, is primarily defined by its location in the children's network and its recognizable STREET SCAPE. This location is then divided by several residential buildings and buildings with PUBLIC FACILITIES, creating a MIXED-USE ENVIRONMENT. Furthermore, the Voornsevloet targets older children and teenagers by allowing them to CULTIVATE their interest in ARTIFICIAL ENVIRONMENTS and allround ADULT-CHILD SPACES.
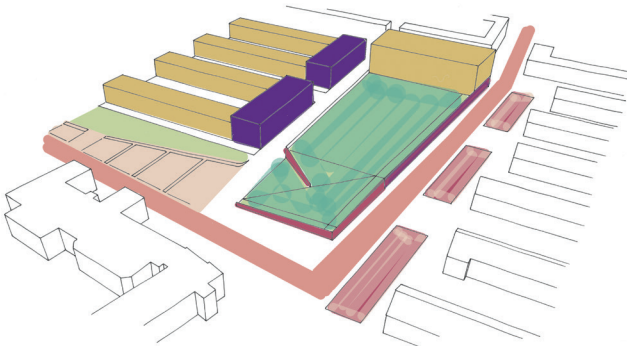
Figure 44: Image showing which patterns were used in what areas.
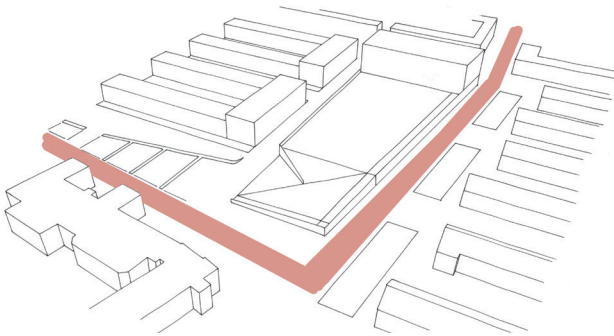
The Voornsevliet is first and foremost defined by its location in the "arm" of the children's network with its recognizable STREET SCAPE.
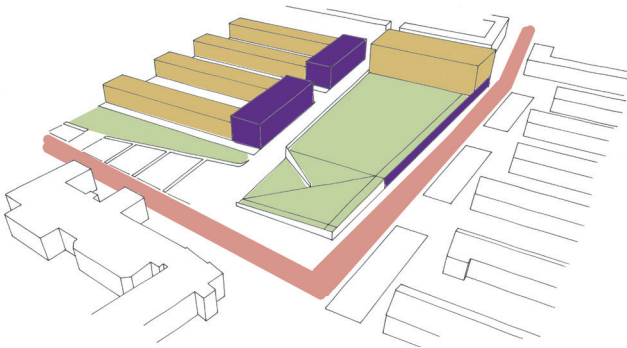
It is designed as a MIXED-USE ENVIRONMENT, with residential functions supported by COMMUNAL SPACES, as well as PUBLIC FACILITIES.

This mixed-use environment is further defined by including ARTIFICIAL ENVIRONMENTS, allowing children to CULTIVATE their own interest in studios, on outdoor squares and by allowing them to use their environment (i.e. the blind walls of the building). Furthermore, the communal spaces offer a diverse use, with spaces that are designed without a specific functions, and an ADULT-CHILD SPACE on top of the public building in the form of a community garden.

14

10

04   06

21   14

03   04

Figure 45: Profile for the Voornse-vliet

04   06   15   04   14

0   7,5m

10

10

14

03   04
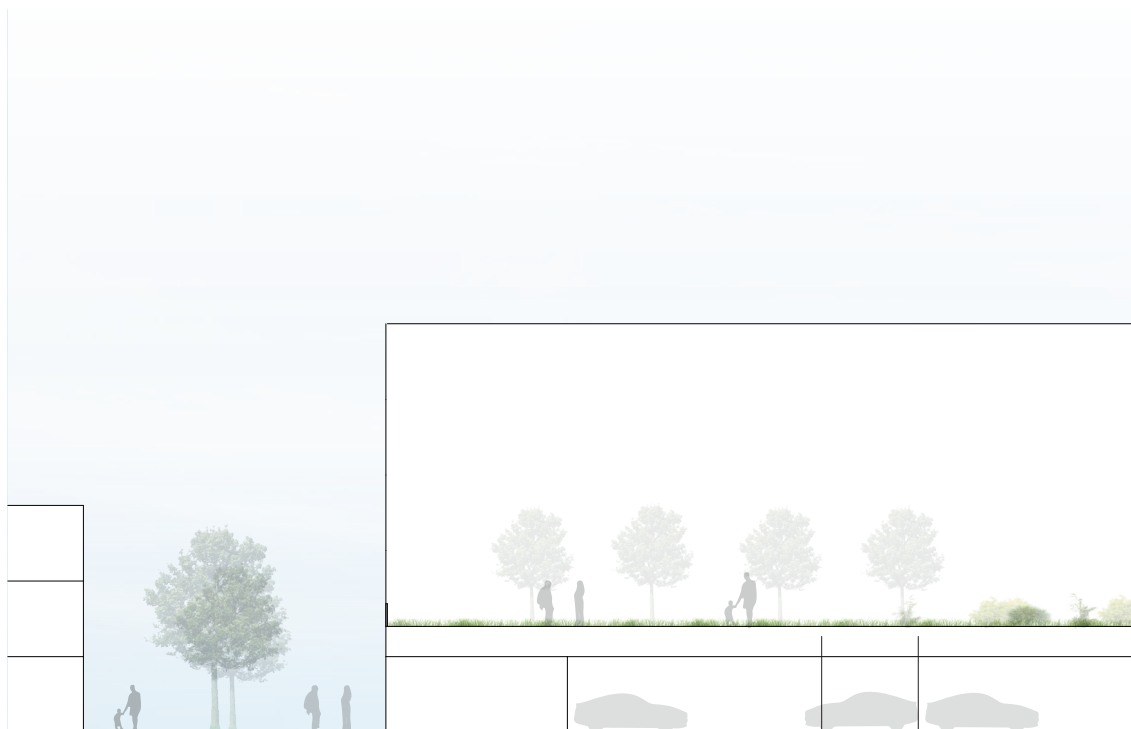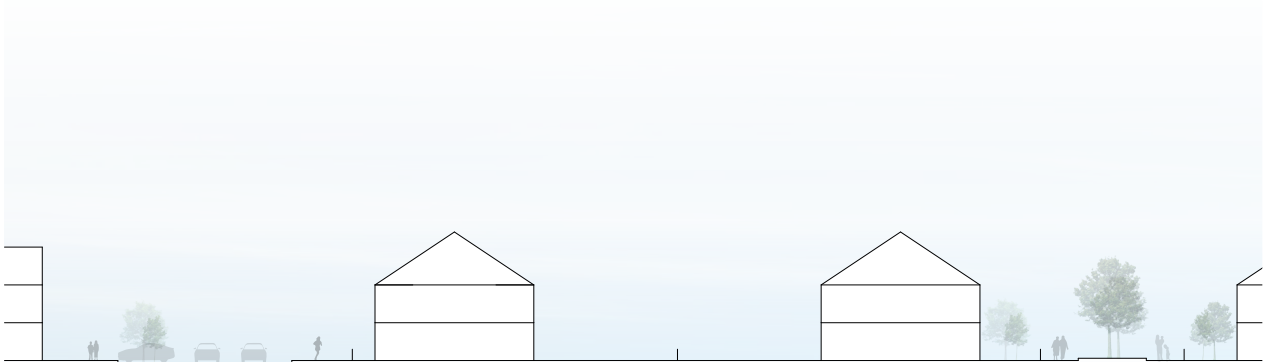
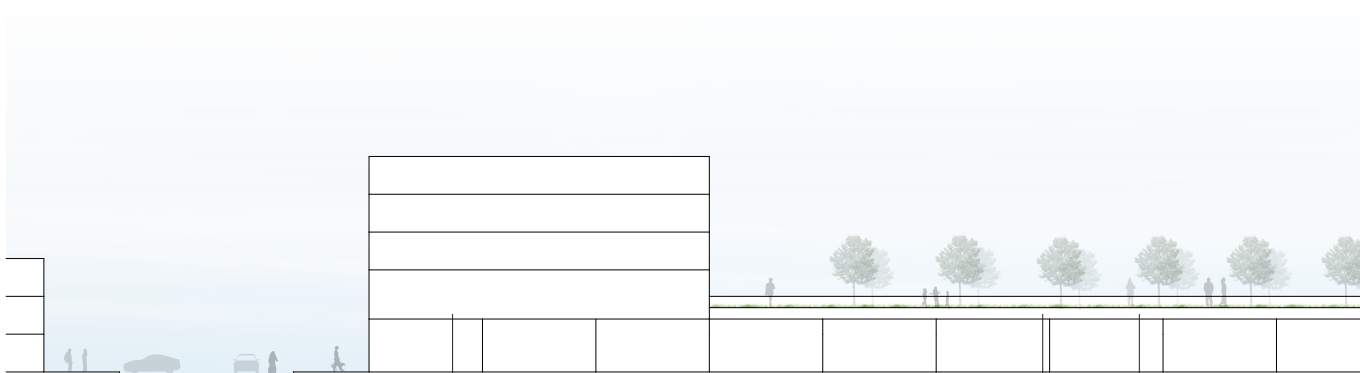10   10   14   14

Figure 46: Profile for the Voornse-vliet

0   15m

10

21   14

03   04

04   06

14   14
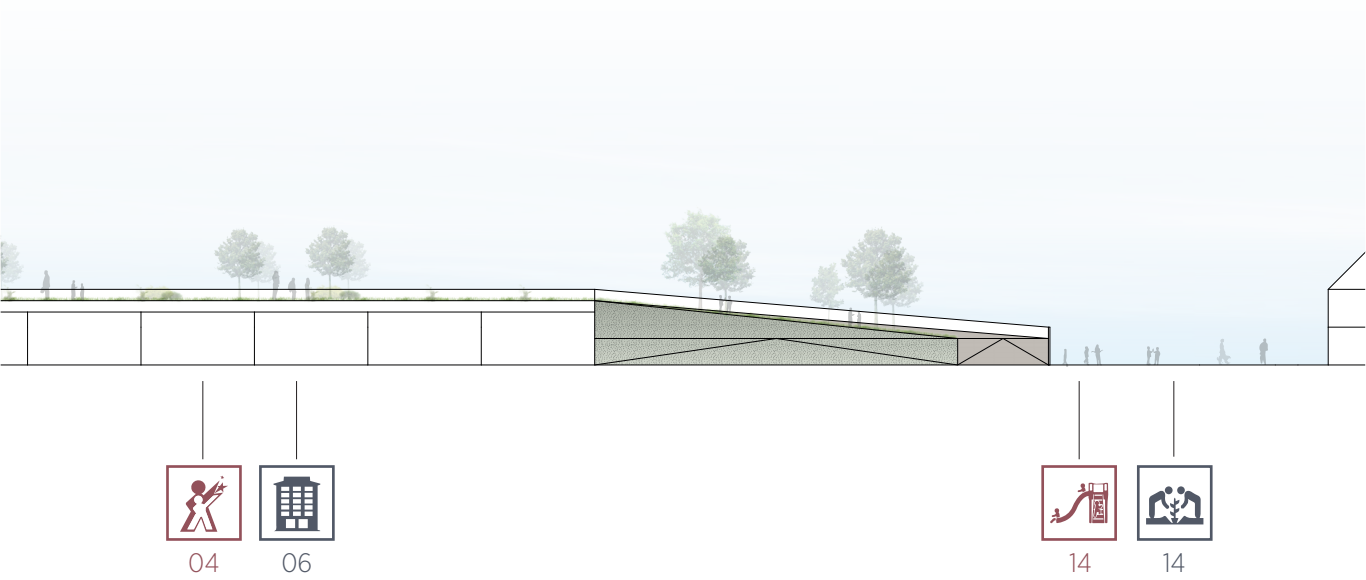
Figure 47: Profile for the Voornse-vliet

0   15m

04   06

10   14   10

03   04

0   7,5m

04   06   15   04   14

03   04

0   7,5m
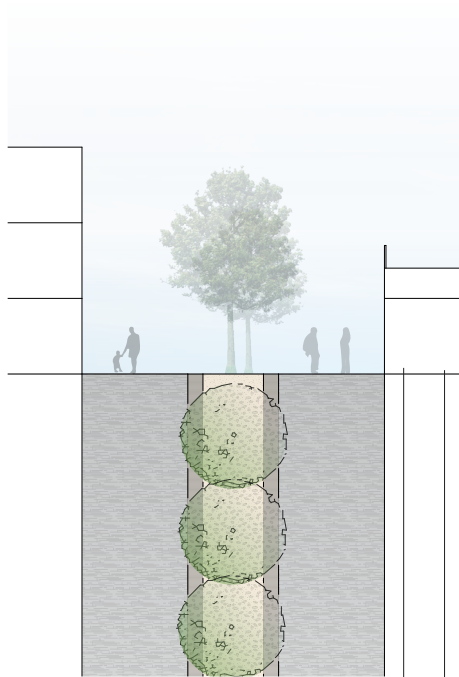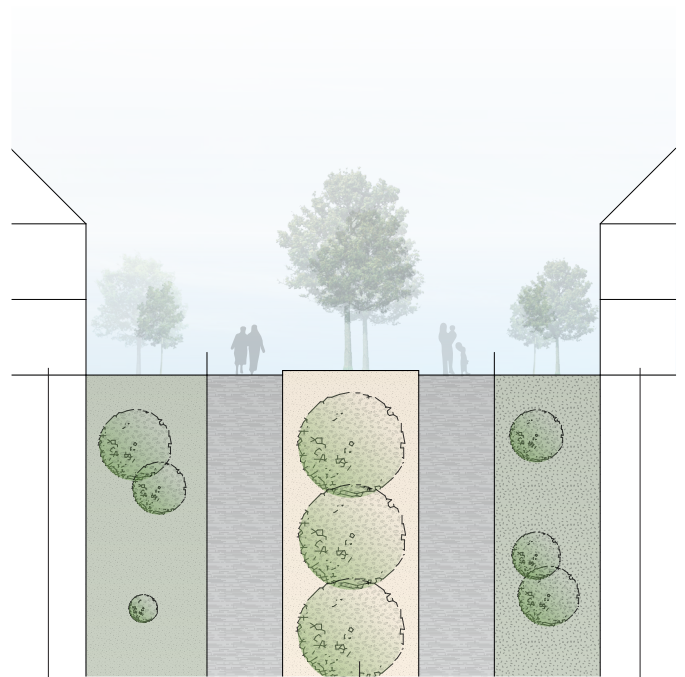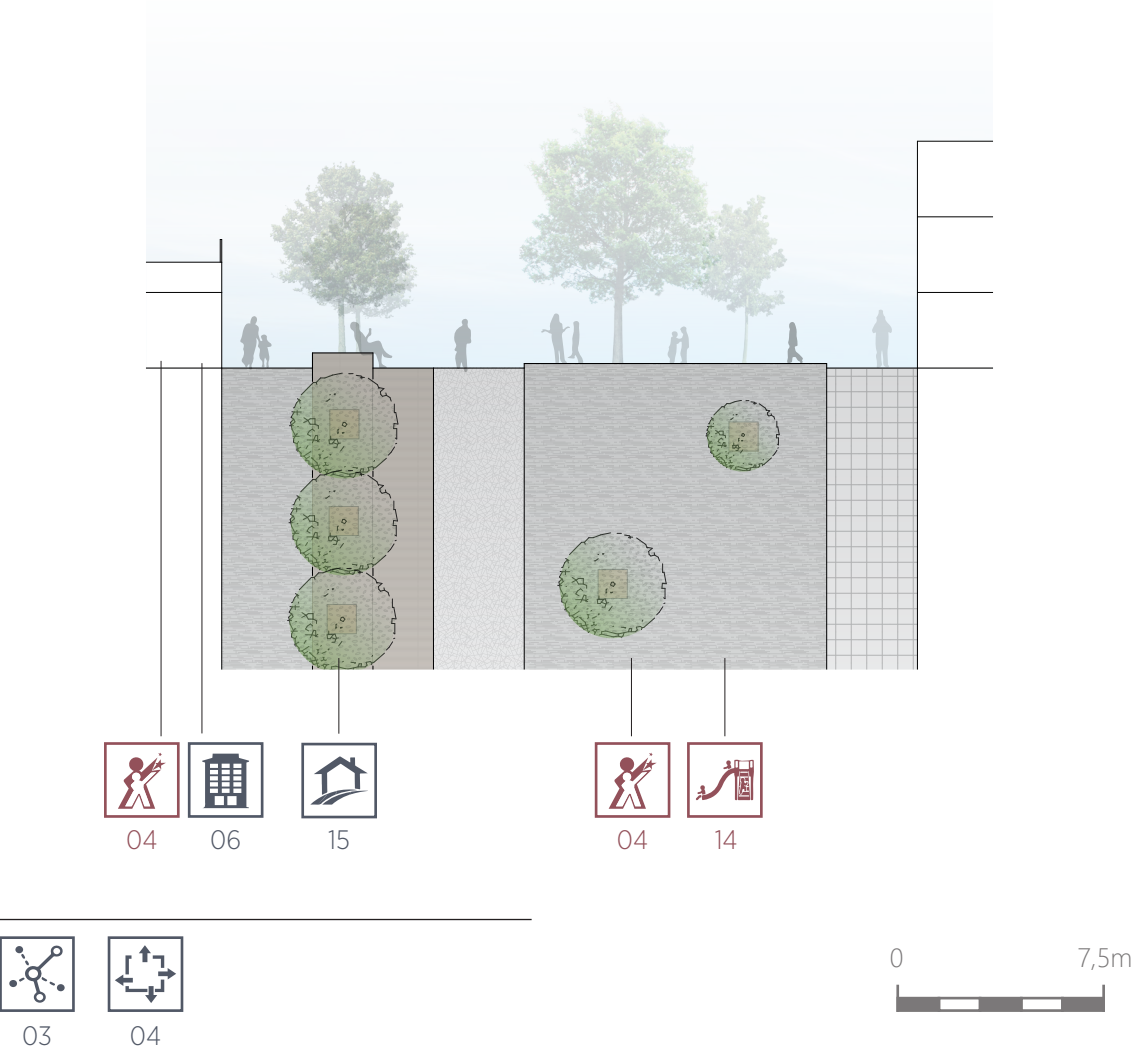
The western most location in the network is the vast industrial area running in a strip from the north to the south, thereby seperating the harbour from Oud-Charlois. In the future, this area will be repurposed and redevelopment as part of the neighbourhood of Oud-Charlois. However, the nearby harbour activity will remain and, as such, this area will stay the transition zone between harbour and neighbourhood.

P LOMPERTSTRAAT

Figure 50: Urban Plan for the Plompertstraat

N

0   50m

Figure 51 lists all the social learning environment patterns that come together in this relationship, following the vision. Furthermore, it lists the three children environment's patterns that were used to create a design for this area. Because we are now designing on a scale where the two different pattern libraries meet, the pattern libraries start to interact. This means that the social learning patterns from the top-down vision, place restrictions and requirements on the bottom up children's environment patterns. However, simultaneously, this interaction also creates new opportunities. Together with the physical aspects of the location itself this, this interaction start to give direction to the design. This is portrayed in the structure sketches (Figure 51, right page), which we can regard as the concept behind the design.

Incorporated SLE Patterns:

02

06

11

03

07

14

04

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15

Incorporated CE Patterns:

12

Individual Adventures

17

Cognitive Activities

18

Mobility level

Figure 51: Structure sketches portraying the main design concept.
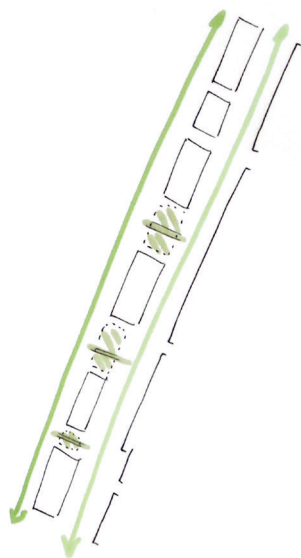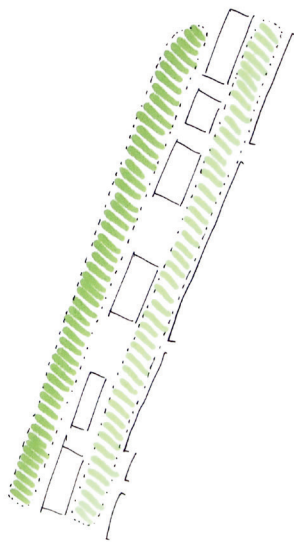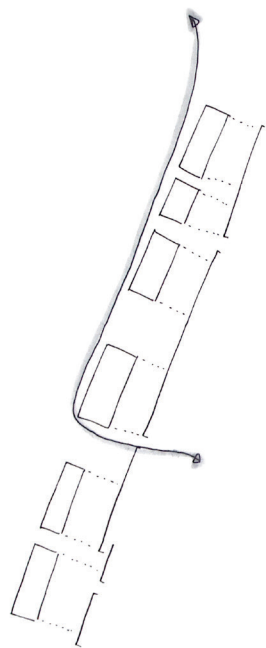
Multi-modal transit connection

Public vs. communal spaces

Public areas as connecting elements
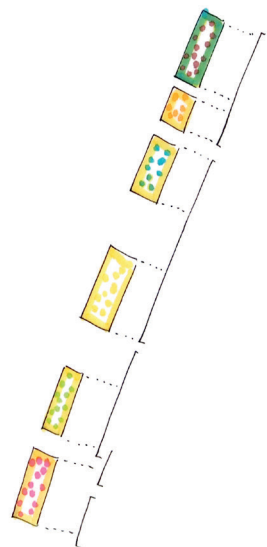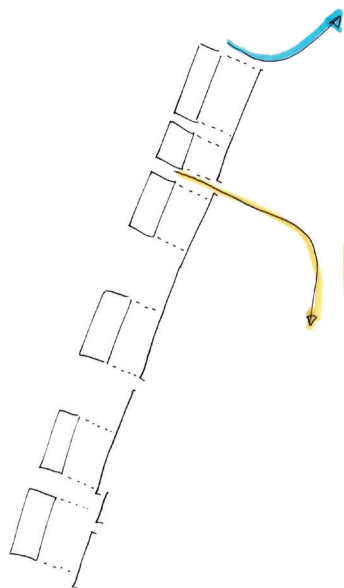
Children's network and adult network

Diverse, child-oriented program

The structural sketches provide the concept for the design, but the design itself is further detailed by incorporating the patterns that make up the design. It is in the Plompertstraat that the children network ends, and connects to the adult network (in the north). Because of the size and openness of the area, as well as its designation as a widely diverse area, many of the design decision have been left to subsequent designers. Large building sites have been designated, which can be designed in a multitude of different ways as long as they support children-oriented program (e.g. large workshops, educational facilities or a theater). There are several pre-conditions however, which include the need to maintain the (industrial) harbour appearance of the area. Moreover, each building site connects to a large communal space. These spaces have to be designed as integral parts of the buildings, extending into the outdoor environment. All these spaces have to be designed following the diverse program of the building themselves, and be designed as communal spaces (see SLE pattern library for input). The spaces inbetween these areas are designed with a more public character. The area detailed in the masterplan includes a large outdoor workshop area for children to create everything from huts to street furniture. Adjacent to the area is a large wooden terrace, which is a low-mobility area that can be used by children and parens alike, as well as by facilities such as a restaurant or cafe. Lastly, the strip has a public side (west), with rope bridges for children and a more communal side (east), with a simple multi-purpose trail.

Flickr; Hannak Swihtinbank © Rope bridges in the trees for children

Flickr; Echodyne © Large outdoor workshop area for children to built things

Flickr; Bob_2006 © Maintaining industrial harbour character

Figure 52: Image showing which patterns were used in what areas.

03

04

07

02

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14

15

12

17

18

N

0   50m
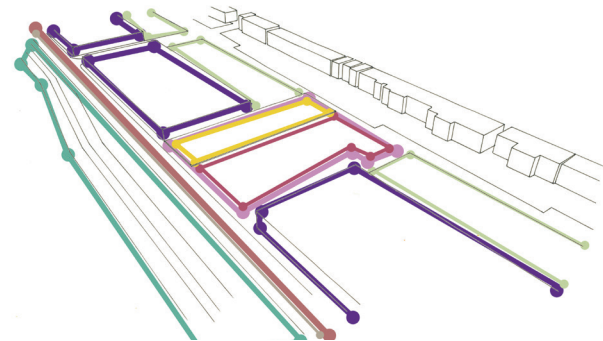
The above illustration shows the abstract linkage between the different patterns. The area does not appear to have a single framework, rather is consists of linear network combing the STREET SCAPE of the children's network with a space for additional INDIVIDUAL ADVENTURES to the west and a strip of PUBLIC FACILITIES with adjoining COMMUNAL SPACES to the east. The rest of the space are all DIVERSE ENVIRONMENTS, the one in the masterplan defined by spaces for COGNITIVE ACTIVITIES and LOW MOBILITY areas.

Figure 53: Image showing which patterns were used in what areas.
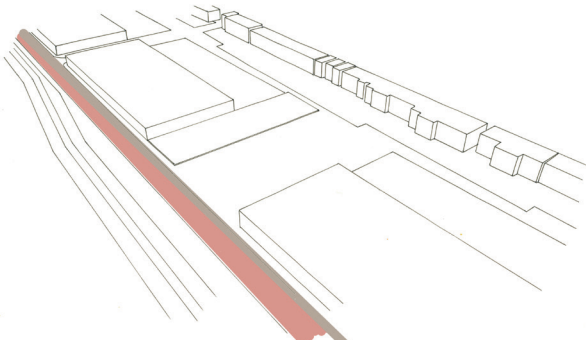
The Plompertstraat is, like all of the locations in the masterplan, primarily defined by its location in relation to the children's network with its identifiable STREET SCAPES.
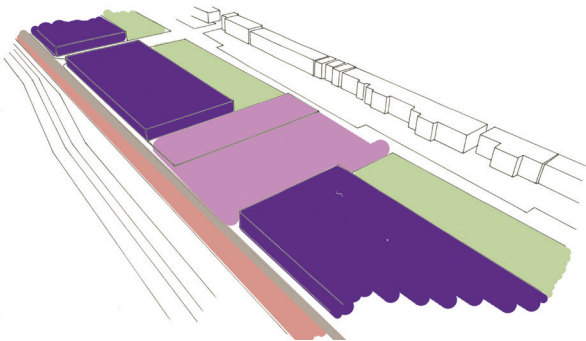
The long and narrow north-south strip is designed to be a hub of PUBLIC FACILITIES with adjacent COMMUNAL SPACES. The areas inbetween are designated DIVERSE ENVIRONMENTS. The entire strip is designed to be a multi-purpose environments focused on a diverse range of child-oriented program.
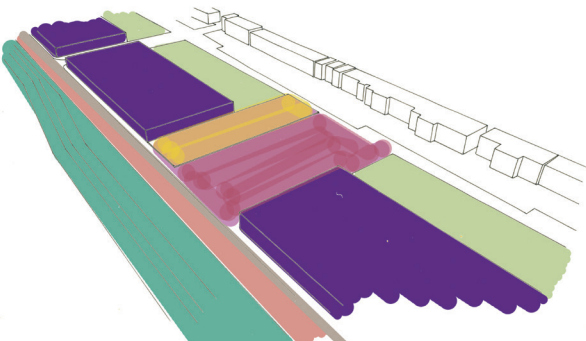
Next to the recognizable design of the children's network, the public side of the Plompertstraat is designed as a STREET SCAPE that incorporates INDIVIDUAL ADVENTURES for children in the form of rope bridges high up in the trees. These network extends into all the adjacent public areas. The area inside the masterplan is designed to be a large outoor workshop focusing on COGNITVIE ACTIVITIES such as building huts or creating street furniture. Adjacent to this is a large wooden terrace to support LOW MOBILITY activities such as sitting, getting together and simultaneously provides outdoot space for a possible café or restaurant.

17

15 02

10 06

03 04 07 14

06   10   18   17   11   18

Figure 54: Profile for the Plompert-
straat.

0   12,5m

18   12   15   02   10   06

03   04   07

06 10

14 11 18 18
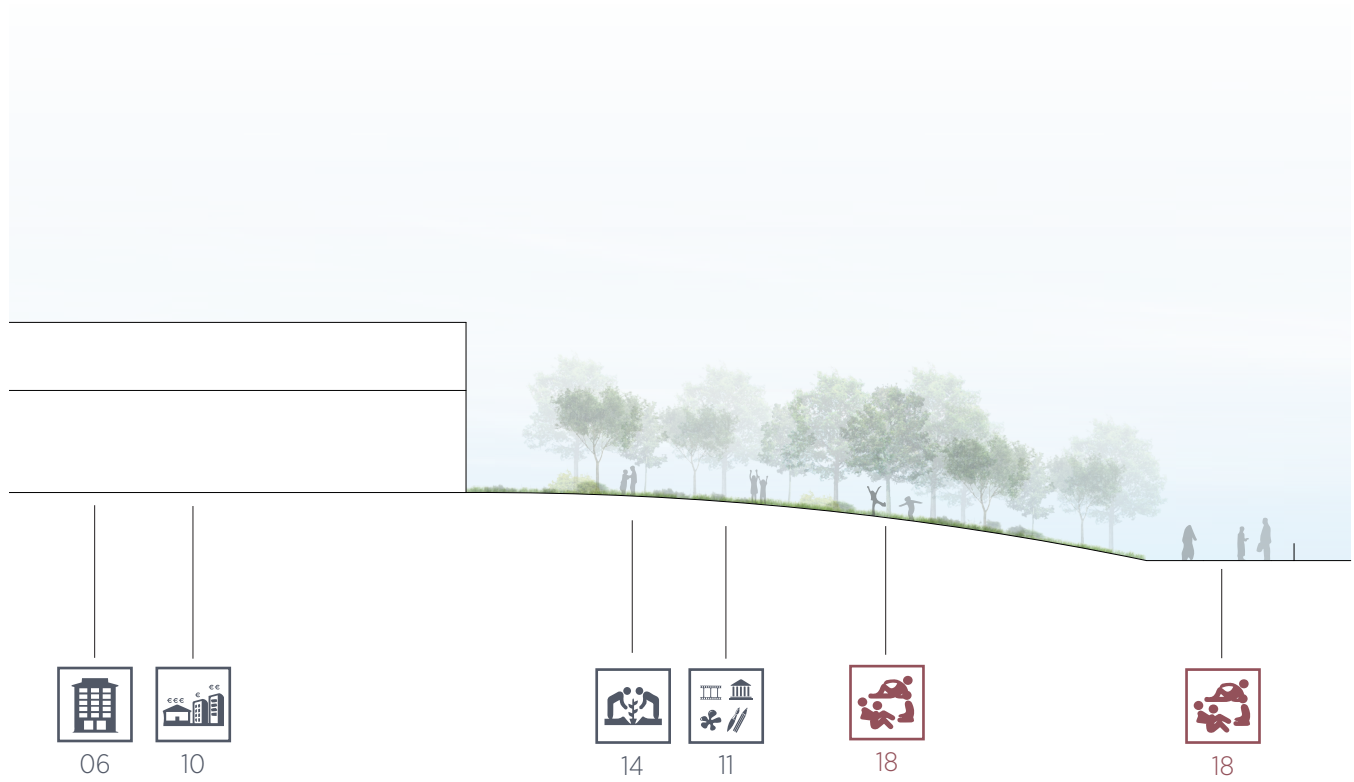
Figure 55: Profile for the Plompert-straat.

0   12,5m

15

02

10

06
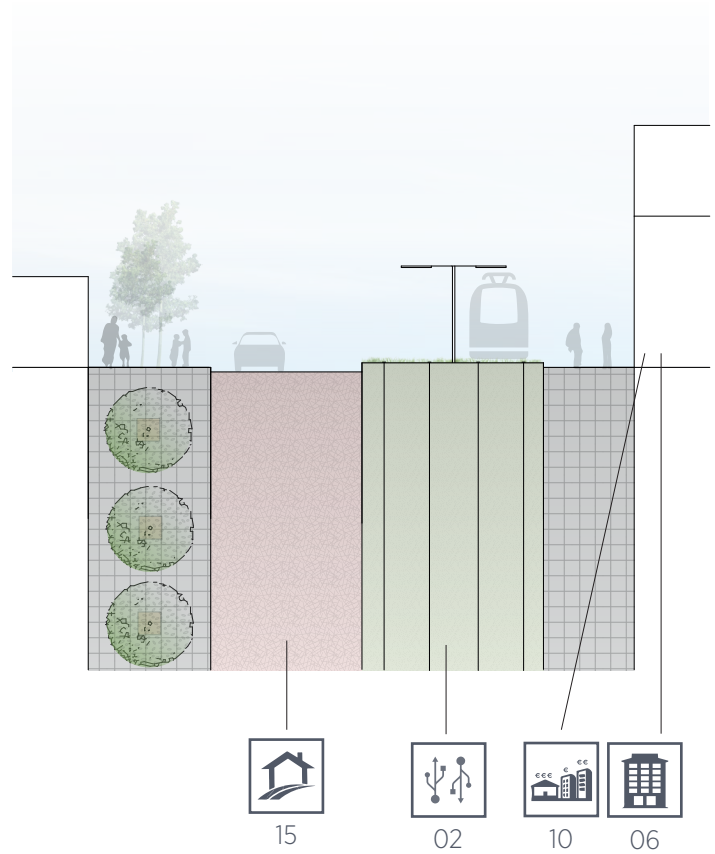
Figure 56: Street Profiles for the roads adjacent to Plompertstraat.

18   12   14   15   02   10 06

03   04   07   11

0   7,5m
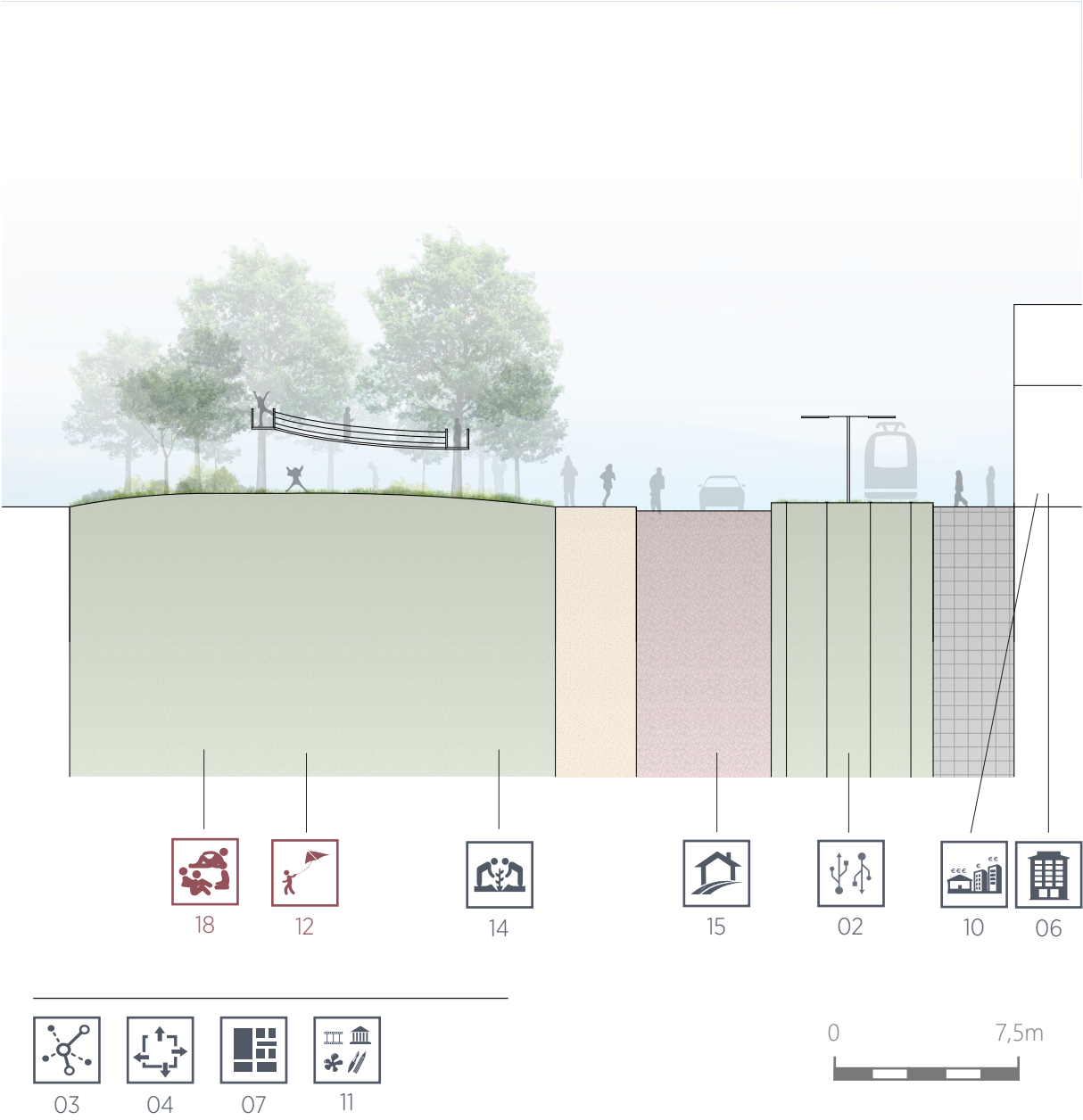
C ONCLUSION & REFLECTION

C ONCLUSION

ANSWERING THE RESEARCH QUESTIONS

To answer the main research question this project aimed to address, we first have to answer the three main sub-questions.

Spatial Dimension - Social Dimension (Sub-Question 1)
"How can spatial characteristics facilitate the social learning processes?"
The research segment of this booklet documents the theoretical research conducted into the nature of social learning. In this research, social learning is shown to be a process that occurs as a result of the interplay between people, their behaviours and their social and physical environment. The interplay between people and environment is directly related to the field of urbanism, which is illustrated through SIRN. This culminates in the formation of a conceptual model (the "double triangle"; Figure. 4, pg. 63) that offers a new perspective on dealing with socio-spatial issue by adressing the relationship between people, their behaviours, and their (social and physical) environment.

Further research looks into the relationships detailed in this model by investigating the social learning processes underlying neighbourhood effects. In this research, it becomes evident that these neighbourhood effects exist, in part, because the underlying social learning processes are facilitated through spatial characteristics. This finding can be explained by the aforementioned "double triangle", while simultaneously supporting its assumptions. We can thus conclude that spatial characteristics facilitate

social learning because social learning, as a process, is influenced not only by people and their behaviours, but also by their physical and social environment. In order to address neighbourhood effects, it is important to transform the negative social learning processes into positive ones. This can be facilitated through the transformation of their underlying spatial characteristics. The Social Learning Environments pattern library that was designed in this projects answers this sub-question with a set a patterns that describe design interventions aimed at creating spatial characteristics that facilitate positive social learning processes.

Designing for Children and Adolescents (Sub-Question 2)
"How do children and adolescents experience and use their environment?"
The research segment of this booklet also documents the theoretical research conducted into the way in which young people experience public space. In this research, it becomes evident that young people's experience of public space is directly tied to their cognitive development. As children become older and their cognitive development expands, they are increasingly able to perceive more aspects of their environment, while simultaneously demanding more from it in terms of requirements. We can thus conclude that there is not one way in which children and adolescents experience and use their environment, but rather, several different ways resulting from the stages of cognitive development that overlap around the edges (i.e. when children gradually transit from an earlier into a later stage of cognitive development, see Figure.

14, pg. 89).

In conjunction to this theoretical research, more practical research was conducted into young people's experience and use of their environment through a series of workshops (conclusions on pg. 142-151, full documentation in the additional research compendium). This workshop supports the theoretical research in the sense that it shows that children of different ages experience their environment differently (mostly observed in degrees of objectivity). However, it also shows that there are a lot of similarities as well between the children of different ages (mostly observed in the similar themes of positive and negative aspects of their environment. Furthermore, this workshop provided additional insight into young people's experience and use of their environment that could not have been deduced from the theoretical research. For instance, young people appear to experience their environment in a very direct and conscious way. This suggests that, while theoretical research can provide us with a basic understanding of the ways in which children and adolescents use their environment, it will never provide a complete picture. In order to really understand how young people interact with their environment, it is best to simply ask them. The Children's Environments pattern library that was designed in this projects answers this sub-question with a set a patterns that describe the most important aspects that have to be considered while designing spaces for children of different age in such a way that it is positively experienced and used, but also positively influences young people's development.

Restructuring Oud-Charlois (Sub-Question 3)
"What are the social and spatial characteristics of Oud-Charlois and how do its residents use their neighbourhood?"
The location segment of this booklet documents the most important spatial and social characteristics of Oud-Charlois. Furthermore, the research compendium that accompanies this documentation provides a complete overview of the social and spatial characteristics of Oud-Charlois, and the ways in which its residents use the neighbourhood. The primary conclusions from this analysis that directly answer this sub-question have been combined into three seperate drawings, detailing the problems, qualities and opportunities present in Oud-Charlois (Figure. 30-32, pg. 157-161).

To summarize, we can conclude that Oud-Charlois is a classic problem neighbourhood that has already seen some improvements to its position in the recent years. Most of its problems relate to its isolated position, dilapidated environments and almost exclusive lower-class housing. However, the neighbourhood also has some redeeming qualities, such as its relatively green environment, proximity to the Zuiderpark and the Zuidplein area and its opportunities to capitalize on the nearby harbour or inner-qualities such as the singel.

Following the three main sub-questions, we can now address the main research question.

Street Smart (Main Research Question)
"How can spatial design interventions aimed at facilitating the social learning experiences of children and adolescents support the restructuring of Oud-Charlois?"

It should be evident by now that all sub-questions were answered throughout this project, and the main research question is no different. This project showed that the often detrimental neighbourhood effects prevalent in problem neighbourhoods have an underlying mechanic, namely, social learning processes. We concluded that spatial characteristics facilitate social learning because social learning, as a process, is influenced not only by people and their behaviours, but also by their physical and social environment. This mechanism is not inherently positive or negative, it simply is. Spatial characteristics prevalent in problem neighbourhoods, however, facilitate a lot of negative social learning processes. It are these spatial characteristics that, in the end, explain why there is such a thing as *neighbourhood* effects in the first place.

By transforming the social and physical environment of problem neighbourhoods, new spatial characteristics can be established which, in constrast, facilitate positive social learning processes. It are these positive social learning processes that have the potential to address and reduce the prevalent neighbourhood effects. This

is particularly true for children, whom are influenced the most by social learning experiences because (1) they have a a large number of these experiences since they spend a lot of time in their own neighbourhood, (2) they are more prone to these experiences because they are still developing, and (3) these experiences actively shape them as individuals and thus influence their look on the world and their chances in life.

In creating spatial design interventions aimed at facilitating the (positive) social learning experiences of children and adolescents, we can thus support the social restructuring of Oud-Charlois by attempting to target the spatial characteristics underlying the prevalent neighbourhood effects. Furthermore, the spatial design interventions simultaneously support the physical restructuring of Oud-Charlois, in which the social learning environments are created in such a way that they address additional, prevalent, social and spatial problems, qualities and opportunities. To create these spatial design interventions, it was necessary to create a strategy that was able to incorporate both the social and the spatial dimensions of social learning environments. Furthermore, it was necessary for this strategy to be able to bridge the gap between the more theoretical research findings, and the everyday practical field of urbanism. The strategy that was created to do so is the adaptation of an already existing strategy, namely, pattern languages. This strategy was then illustrated and tested in the subsequent design, showing its application and what such a design could look like.

R EFLECTION

REFLECTING ON THE METHODOLOGY

After answering the research questions, the methodologies that were used in this project can now be reviewed. In this project, a lot of traditional methodologies were employed such as literature studies, location analyses, observational research and workshop. Most of these methodologies are long established, and each was used in specific parts of the project to advance the research. Therefore, all of these traditional methodlogies have let to research findings that have a clear relation to the eventual design. The only exception to this appears to be the observational research. While originally considered a very important part of the research, the findings of this research have only yielded a few conclusions that were used to advance the research.

Initially, the observational research was supposed to create extensive insight into the experience, use and behaviours of the residents of Oud-Charlois. Instead, the findings proved to be a little underwhelming in relation to the rest of the research. As such, only several conclusions of these observations were used in the remainder of the project. Looking at the employed methodology with a critical eye, we can conclude that the data that was recorded is rather basic, and only applicable on that one location. If the research question would have been how to transform one of the four observed location, such research would have undoubtedly yielded far more useful conclusions than it did now. The scope of the project was simply too large for the basic information gathered from the observations to be useful. However, collecting more extensive observational data would have been

very difficult, if not impossible,m within the scope of this graduation project.

Furthermore, the need for observational research was established at the start of the project, before it became clear that workshops with children were a possibility. In retrospect, these workshops have yielded the in-depth, broadely applicable, information that has advanced the project instead of the observational research. The question that follows is whether or not the observational research could have been forgone. This question, however, is very hard to answer since it did provide a very complete image of the daily life in Oud-Charlois. While not directly visible in the design, such impressions are always present in the back of a designer's mind during a project.

Next to the more traditional methodologies, several different methodologies were employed, most notably the workshops with children and the use of a pattern language.

At the end of this project, it becomes clear that the workshops with the children of two different age groups have been a central and vital part of this project. In stark contrast to the abundance of theoretical research that is present throughout this research, the workshops with the children provided a more practical and user-oriented look into designing for - and with - children. While it is hard to reflect on the validity of the workshops within the scope of this project, there can be no doubt about its importance to and influence in the final design. Furthermore, feedback from the children themselves, as well as their teachers, showed a great appreciation for the way in which the workshop were setup in a small didactic arc with predominantly interactive components. And, perhaps most important of all, is the fact that the children enjoyed participating in the workshops and were enthousiastic about the end-result.

Lastly, it is necessary to take a critical look at the methodology that has been most central to both the research and the design; the patterns. While its importance and effectiveness in coming to a design is abundantly clear, a more interesting reflection considers their value outside the scope of the current project. After all, one of the key aspects of pattern languages is the way in which they are documented. Specific enough to give

designers specific handholds, without defining what the design should looke like. This allows pattern languages to be used in different projects, in order to achieve similar results. However, similar results will only be achieved if other designers use the patterns in the pattern language "properly"; i.e., in the way they are meant to be used. To reflect on this aspect of the methodology, it is thus necessary to evaluate how other designers work with the pattern libraries created for this project. To that end, a workshop was setup with 10 students from the Architecture (2), Urbanism (7), and Civil Engineering (1) TU Delft Master programs.

The pattern workshops consisted of two segment; the first part of the workshop was dedicated to using the SLE patterns, the second part to using the CE patterns. The participants were given an introduction to and maps of the location, and instructed to create "quick, dirty and intuitive" design concepts. They had 10 minutes to make a design with each pattern set, and 5 minutes break between each set. Important to note is that participants received a summarized version of each pattern, which consisted only of its title and statement. Important to note is that these students were not very familiar with the location, which (derived from their own feedback) limited the ways in which they could implement each pattern, since some of them require a more thorough understanding of the location in order to apply them properly.

Figure 1: Impression of the workshop

de wijk in dmv getijdeparken.

connectie met water.

neighbourhood connections
public spaces
interaction environments.

CONNECTING CENTRALITIES.

CENTRALITIES

Cultuur

RICH

CREATIVE

FOOD

SHOPPING

UITGAAN.

transit networks

open neighbourhoods

TOP WIJK

TOP WIJK
ZICHT RELATIE

ZICHT LIJNEN.

CONNECTIE
PLEIN.

STRAAT MET ZICHT KATENDRECHT

ZOWEL
NAAR
BINNEN
ALS ZICHT
NAAR
BUITEN.

Figure 5: Some examples of the designs made with the CE patterns.

green lane
leading to Public focal point

1 meetings
wijk connecties in over Public gebouw + Park
meer uitwisseling
tussen de wijken

2 structuur van
open Ruimte
bevorderd het sociaal
contact

3 central road
Public point
Park met
gebouw als
focus point

central Point voor sociaal
community

green structure
leading to
central point

Public
Park
+
Neighbourhood
function

Sports
library
community centre

RUN IN AND.

CULTIVATING
ENVIRONMENTS.

PLAYABLE ROOF

BRIDGE.

CE | Pattern set 3

Wetlands
high grasses,
- birch +such
cleaning with water

Frogs/
birds

Wetlands
with ramp bridges

Footing

Filter

Art work
with bridges

All designs were analyzed on a 6 point scale, with higher scores for a better use of each pattern, no score when a pattern was omitted, and a score penalty for the wrongful use of a pattern. These scores were then combined across all participants to create a single score per pattern. These scores fall in either 1 of 4 categories. Cat. 1 and 2 signifiy patterns that were well understood. Important to underline here is that few patterns were improperly used by all participants. These combined scores merely create insight into the *average* understanding of each pattern.

An interesting observation is that few patterns are poorly understood. Most of the patterns that do fall in Cat. 4 however, tend to be the more abstract patterns or patterns in a later set (towards the end of the afternoon some participants did not complete their designs, inflating the numbers downwards). While all the other patterns were properly used, the more abstract patterns tend to fall in a lower category than the more concrete patterns. This means that, to improve the patterns, attention must be paid to making them more concrete. This was also the general feedback given by the participants at the end of the workshop. Many of them felt some patterns were too abstract, or too undetailed. However, this can also be attributed to the fact that participants were working with snippets of information, rather than with the complete descriptions. We can thus conclude that these patterns must be improved by (1) focusing on making the abstract patterns more concrete and (2) creating a better way of summarizing each pattern so that designer gain a more detailed and complete understanding of each pattern.

SLE Pattern Set 1
1 - Neighbourhood Connections   23 | **Cat. 3**
8 - Public Space   49 | **Cat. 1**
12 - Interaction Environments   9 | **Cat. 4**

SLE Pattern Set 2
2 - Transit Networks   42 | **Cat. 1**
4 - Open Neighbourhoods   25 | **Cat. 2**
14 - Street Scapes   22 | **Cat. 2**

SLE Pattern Set 3
3 - Centralities   10 | **Cat. 4**
7 - Open Space Networks   18 | **Cat. 3**
11 - Diverse Environments   15 | **Cat. 3**

SLE Pattern Set 4
6 - Public Facilities   31 | **Cat. 2**
10 - Mixed Neighbourhoods   10 | **Cat. 4**
14 - Communal Space   25 | **Cat. 2**

Cat. 1 | Proper use of pattern; creating value
Cat. 2 | Proper use of pattern; detailed
Cat. 3 | Proper use of pattern; undetailed
Cat. 4 | Improper use of pattern; poorly understood

Figure 2: Conclusions from the SLE Pattern Sets about participant's use and understanding of the patterns.

CE Pattern Set 1
2 - Discovering   12 | **Cat. 4**
9 - Parental Supervision   32 | **Cat. 2**
10 - Playable Streets   38 | **Cat. 1**

CE Pattern Set 2
3 - Exploring   36 | **Cat. 1**
6 - Colours   24 | **Cat. 3**
15 - Natural Environments   44 | **Cat. 1**

CE Pattern Set 3
4 - Cultivating   41 | **Cat. 1**
8 - Elements of Risk   23 | **Cat. 3**
20 - Outdoor Education   5 | **Cat. 4**

CE Pattern Set 4
5 - Participating   9 | **Cat. 4**
7 - Materials   11 | **Cat. 4**
21 - Adult-Child Spaces   18 | **Cat. 3**

Cat. 1 | Proper use of pattern; creating value
Cat. 2 | Proper use of pattern; detailed
Cat. 3 | Proper use of pattern; undetailed
Cat. 4 | Improper use of pattern; poorly understood

Figure 3: Conclusions from the SLE Pattern Sets about participant's use and understanding of the patterns.

REFLECTING ON THE PRODUCT

There are multiple ways in which the end product can be evaluated, but few that are relevant within the scope of the current project. The design that has been created in this project is, after all, not *the* design but rather *a* design, and as such merely a test and illustration of the created patterns. The only evaluation that adds to the project and is both relevant and interesting, is the opinion of the co-designers and end-users of such a design, namely, the children. To that end, a final workshop was conducted with the children of both age groups which served as a reflection. In this workshop, the general design process was explained to the children, as were the five designs created in this project. Afterwards, children could "cast their vote" on the designs (portrayed by the plan map, reference images and 3D impression) by means of coloured stickers. Each child received two stickers; one for the design they liked the most, or thought was the most beautiful, the other sticker for the design that they thought had the best activities. Figure 6 and 7 show the results of the workshop. Interesting to note is that most locations received an equal number of "attractivity" and "activity" stickers, with the exception of the Bloomsteynweg (more attractivity sticker) and the Plompertstraat (more activity stickers). Another interesting observation is that younger children appear to appreciate all locations very similarly. Among the older children, on the other hand, there is one clear favourite with two secondary locations. This can likely be attributed to the fact that each location targets different age-groups. While the younger children are right in the middle of all the age groups and can thus go all ways, the older children are mainly on the upper end.
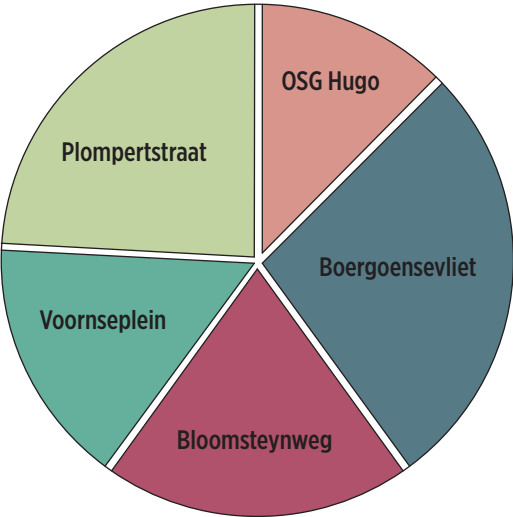
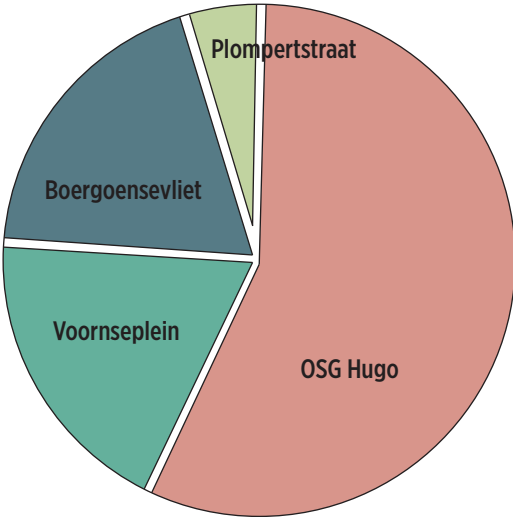*Figure 6: Children ages 7-8. Pie chart portraying their appreciation of each location (combined).*

Figure 7: Children ages 13-14. Pie chart portraying their appreciation of each location (combined).

REFLECTING ON THE PROCESS (PERSONAL REFLECTION)

At the start of this graduation project, I already had a very clear idea about the direction I wanted this project to take. This ensured a certain kick-start of the project, allowing me to focus on its content from the very beginning. However, it also caused some difficulties, namely in narrowing down the scope of the project. It was through initial theoretical research that I discovered an interesting link between problem neighbourhoods, neighbourhood effects and social learning theory, which would prove to be the framework upon which the entire project stands. While designing for children and adolescents was never the initial intent, additional research into the social learning process showed that children and adolescents are, by far, the most relevant usergroups for this topic of research. This resulted in a further narrowing of the scope of the project, which made it a feasible 10-months graduation project. While the entire project, until then, had been a primarily top-down proccess, it became more bottom-up in choosing a location. This location, initially a difficulty, was finally chosen by connecting to an existing, real-life development. In addressing this development and meeting with the management responsible, further participation was discussed. This opened up an even larger contribution of bottom-up methodologies and the unique opportunity to engage children in the design process by allowing them to be co-designers.

Undoubtedly incorporating bottom-up research and design due to this development, the project can still be described as being predominantly top-down. This has resulted in a linear process, in which each part of the

research was conducted after the other, finally resulting in a design. This is in contrast with the "average" urban design process, which combines research and design throughout the entire project, though research is the predominant activity in the first parts of a project, whereas designing is the predomimants activity in the latter parts of a project. The question that can be asked is wether the linear process of this graduation process is in any way inferior to a less linear approach. The answer to which, however, is not very easily given. While there is a certain advantage in starting a design at the onset of a process, simultaneously with the research, this was simply not feasible for the current project. Because this project aimed to create a link between the social learning processes udnerlying neighbourhood effects and the spatial determinants that influence this social learning, it was necessary to first conduct research into the social dimension of this socio-spatial issue. Afterwards, the focus shifted to the spatial dimension of the issue, however, before being able to create a design, a strategy first had to be developed that allowed me to combine the social and spatial dimensions of the issues in such a way that they would provide directions for a design. While this did result in a linear process, it would have been impossible to achieve the intended result without it.

Yet, it might have been possible to create a less linear and more iterative process by "anticipating" certain issues. For instance, towards the end of the theoretical research, it became evident that using patterns as a strategy in connecting the social and spatial dimensions of the

issues at hand required far more time and work than I had initially anticipated. An arguement can be made that with the proper foresight, this process could evolved a lot earlier in the process. For instance, rather than finishing the theoretical research, this strategy could already have been designed after finishing one "socio-spatial set". Subsequently, this would have allowed me to start designing with that specific pattern a lot sooner in the process. In starting the design earlier, the entire process would have become less linear and more iterative, which might have meant being able to, for instance, improve the pattern libraries during the projects.

However, as the English say, "hindsight is 20 / 20" (which describes perfect vision). Looking back on the project, I do not believe that I could have had the necessary foresight at the beginning. After all, the insight necessary to perceive this improvement has been a product of the project as a whole, which has been an incredibly learning experience from start to finish. It is this knowledge that, and all the other knowledge, skills and experiences gathered during this project, I will take with me after concluded this graduation project and will allow me to start whatever endeavour comes next with more knowledge and insight than I started with at the beginning of this project.

R ECOMMENDATIONS

At the conclusion of this project, there are several recommendations that can be made regarding future developments necessary to advance the topic of this research

Additional Theoretical Research
There are multiple different ways in which additional theoretical research is required. First, research looking into neighbourhood effects and their spatial determinants should be the focus of more study. Currently, looking at the socio-spatial nature of neighbourhood effects takes a backseat to research looking into the individual neighbourhood effects themselves. In order to advance a socio-spatial approach to neighbourhood effects, this link must become the *focus* of future study. Secondly, while the implications of social learning for the field of urbanism have been described, culminating in the double triangle, it will be necessary to create a more extensive link between these two fields of study. In this research attention should be paid into creating a more pronounced and concrete bridge that would be able to convince a more general public of both fields of the theoretical importance of a socio-spatial perspective.

Additional Practical Research
While this graduation project provides a first glimpse into a socio-spatial approach to prevalent neighbouirhood problems, its effectiveness remains a mystery. Its most meaningful evaluation can not be tested on paper, but rather, will have to be tested in practise. This will require not only a "sample project", but also the formulation of

testable research criteria that can be used to evaluate the effectiveness of this approach. In line with this practical evaluation, it will also be necessary to look at secondary initiates that need to take place for this approach to work. A good example of the way in which this approach does not stands on its own is the partnership with the OSG Hugo the Groot. After all, the school environment is another important neighbourhood factor that influences neighbourhood effects, and so is for instance the home environment. In order for this approach to work, additional research will be required into the other factors influencing neighbourhood effects, and ways in which they can be addressed (for instance through social initiatives like the one at the OSG Hugo de Groot). Lastly, another important evaluation is the degree to which different designs contribute more, or less, to the restructuring of a neighbourhood. In conjunction to this, an important question to ask is what the fasing of this restructuring would be, and which development should be realized at the begininng, in the middle, and in the end. For instance, we could argue that the developments of a larger importance, such as a new bridge between Rotterdam-Noord and Rotterdam-Zuid, should be realized at the start of the project. After all, it are those patterns that have the widest reach. However, in contrast, starting with smaller co-design initiatives inside the neighbourhood might be just as valid a starting point, since it requires less initial investment and has the potential to generate its own revenue and spin-off. Clear is that both possibilities have the potential to succees in practise, and further research and feasability studies will

have to be conducted in order to distinguish the best succession of development for a specific project.

Additional Pattern Development
Following from the analysis of the pattern methodology, we can state that the pattern libraries as they exist today will have to be improved before they can be used by a wider target audience. This specifically applies to making some of the more abstract patterns more concrete, but includes writing new pattern summaries that better address the finer points of each pattern in a more condensed form. Lastly, while working with patterns is not new, it does appear to be a rare occurance in urbanism practices today. Rather than a traditional design which starts with a concept and a solid vision for the future, patterns suppport a different way of designing. As illustrated in this project, rather than a clearly defined vision for the future, working with patterns requires something more akin to a *direction*. It is this direction that serves as a guideline throughout the design, ensuring the image of the future envisioned by the designer while, simultaneously, allowing more room for different actors or real-life developments to change the final design. The steps taking during the design process are much smaller, making the design itself more flexible and more easily changed. As long as the intended patterns guide the design, the design is assured to follow and support the direction created at the start without already defining every aspects of it like a traditional vision would. This pattern design process is something that should be further studied and elaborated.