Safety in Public Spaces: The Case of Osdorp-Oost
Colophon
Safety in public spaces: The case of Osdorp-Oost
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Anna Rodionova
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Preface

Before you lay the graduation report: “Safety in public spaces: The Case of Osdorp-Oost”. This master thesis describes how the graduation project developed from its start in September 2013. It contains theoretical framework, analytical framework and fieldwork that give structure and body to the design project. The graduation project took place within the graduation studio: Urban Regeneration, at TU Delft, Faculty of Architecture, and department of Urbanism. As a future urban designer, I hope I can contribute to the existing body of knowledge to safer public spaces with my graduation project.

I would like to thank my mentors, Birgit Hausleitner and Akkelis van Nes, for their interest in project, guidance, support, their critical questions and inspiring views on the research and design of this graduation project. This year has been very instructive and inspiring for me, mainly because of them. Furthermore, I want to thank my family and friends who always supported and believed in me.

Anna Rodionova
June 2014, Delft
Abstract

The planning intention of many post-war urban areas was to create quiet and harmonious, healthy dwelling areas for mostly working class families. However, unpredicted effects such as safety issues (crime and feeling of being unsafe in public spaces) started to take place in many of these areas just a few years after realization (Van Wegen and van der Voort, 1991, p. 172-173). The urban design of the Dutch post-war areas, like too wide streets, a lot of space between the buildings, windows and doors do not face the streets and blind facades of the backsides of the shops have a negative influence on safety in public spaces (Rueb & van Nes, 2009). Thus, the main research question of this master thesis is: “Which urban design interventions can improve the public space in Osdorp-Oost, in order to increase the safety for the inhabitants”.

First, the features of public space in urban environment that contribute to safety are reviewed with the help of literature research. In this report, two approaches about safe urban design are compared. The first one is called Social Safe Design made by van den Voordt & van Wegen. This approach could be described by three factors: visibility, accessibility and attraction. The second approach was made by van Nes et al. It is actually an improvement of the first theory and could be described with the next keywords: accessibility, connectedness, vitality, identity and visibility. It was made with the help of space syntax analysis, which provides a strong scientific base for this approach. The literature review concludes that the second approach is more extended than the first one and will form a good starting point for the design of the graduation project.

Next, in order to understand the main design concepts of the chosen location, in relation to safety, the social and special structure of Western Garden Cities (Osdorp-Oost) was described. Also the data research about the age groups, nationalities, incomes, housing prices and subjective and objective safety were review about the strategies that took place in order to improve the post-war neighborhoods was reviewed.

Then in order to understand how the space is currently used in Osdorp-Oost and to link the location with the theory, different fieldwork analyses was performed. Safety related factors that were defined earlier in the theoretical framework such as: infrastructure, functions, the use of the ground floor, buildings heights, location of the entrances and green facilities were mapped and analyzed. In addition, in order to define safe and unsafe places in more detail in Osdorp-Oost, the inhabitant were interviewed about their perception of safe and unsafe places in the neighborhood. Four reference cases were analyzed as well: Wsgerebbuurt, Overtomse Veld, P. C. Hooftstraat and Ertskade in Amsterdam.

The results of the performed analyses were implemented in several solutions for Osdorp-Oost in order to increase subjective and objective safety in Osdorp-Oost. The solutions were tested with space syntax analysis and the most suitable one was elaborated in to final design for Osdorp-Oost.

The structure of the thesis is as followed. Chapter 1 forms an introduction of the project and describes motivation, problem field and problem statement. Chapter 2 describes the research approach, research questions and methodology. It also provides theoretical framework and location analysis. Chapter 3 describes the fieldwork. In the last chapter 4 the concepts and final design interventions for Osdorp-Oost are described. The chapter will finish with the final critical evaluation of the methods and design.
# Table of content

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td>3</td>
</tr>
<tr>
<td>Abstract</td>
<td>4</td>
</tr>
<tr>
<td>Chapter 1 Introduction</td>
<td>8</td>
</tr>
<tr>
<td>1.1 Motivation</td>
<td>9</td>
</tr>
<tr>
<td>1.2 Relevance</td>
<td>9</td>
</tr>
<tr>
<td>1.2.1 Social relevance</td>
<td>9</td>
</tr>
<tr>
<td>1.2.2 Scientific relevance</td>
<td>10</td>
</tr>
<tr>
<td>1.2.3 Personal relevance and an ethical substantiation</td>
<td>11</td>
</tr>
<tr>
<td>1.3 Problem field and problem statement</td>
<td>11</td>
</tr>
<tr>
<td>1.3.1 Safety and post-war neighbourhoods</td>
<td>11</td>
</tr>
<tr>
<td>1.3.2 Safety and the case of Osdorp-Oost</td>
<td>18</td>
</tr>
<tr>
<td>1.3.3 Problem statement</td>
<td>22</td>
</tr>
<tr>
<td>Chapter 2 Research approach</td>
<td>23</td>
</tr>
<tr>
<td>2 Project approach</td>
<td>24</td>
</tr>
<tr>
<td>2.1 Research questions &amp; methodology</td>
<td>24</td>
</tr>
<tr>
<td>2.2 Final products</td>
<td>27</td>
</tr>
<tr>
<td>3 Theoretical framework</td>
<td>27</td>
</tr>
<tr>
<td>3.1 Definition of safety</td>
<td>27</td>
</tr>
<tr>
<td>3.2 Safety and urban design of post-war neighborhoods</td>
<td>28</td>
</tr>
<tr>
<td>3.3 Safety and urban design</td>
<td>28</td>
</tr>
<tr>
<td>3.3.1 Social safety design by van der Voordt &amp; van Wegen</td>
<td>29</td>
</tr>
<tr>
<td>3.3.2 Social safe urban design by van Nes, Lopez, de Bonth, Verhagen &amp; Waayer</td>
<td>30</td>
</tr>
<tr>
<td>3.4 Conclusion</td>
<td>32</td>
</tr>
</tbody>
</table>
# 4 Situation analyses

4.1 Urban areas of Amsterdam, planned in the thirties

4.2 Case: Western Garden Cities

4.2.1 Physical characteristics of Western Garden Cities

4.2.2 Social context of Western Garden Cities

4.3 Strategies of improvement from the 1980’s and situation at present

4.4 Consequences and situation at present

## Chapter 3 Field work

3.1 Safety related factors of Osdorp-Oost

3.2 The use of public space in Osdorp-Oost

3.2.1 Static snapshot analysis

3.2.2 Conclusions for design interventions

3.3 Safe and unsafe places of Osdorp-Oost

3.3.1 Safe places according to inhabitants

3.3.2 Unsafe places according to inhabitants

3.3.3 Personal perception of safe and unsafe places in Osdorp-oost

3.3.4 Conclusions for design interventions for Osdorp-Oost

3.4 Space syntax analysis of Osdorp-Oost

3.4.1 Introduction of space syntax

3.4.2 Space syntax analysis of Osdorp-Oost

3.4.3 Conclusions for design interventions

3.5 Reference cases analysis

3.5.1 Wisgerenbuurt, Amsterdam

3.5.2 Overloomse Veld, Amsterdam

3.5.3 P. C. Hoofstraat, Amsterdam

3.5.4 Ertshaven, Amsterdam

3.6 Conclusions from the analyses
Chapter 4 Design

4.1 Concept for Osdorp-Oost

4.2 Design for Osdorp-Oost

4.2.1 Design interventions for south area (Hoekenes) of Osdorp-Oost

4.2.2 Design interventions for the north area (Osdorper Ban) of Osdorp-Oost

4.2.3 Design interventions for the revised shopping center and water front of Osdorp-Oost

4.2.4 Design overview of Osdorp-Oost

4.3 Evaluation

Chapter 5 Literature list
Chapter 1

Introduction

1.1 Motivation

1.2 Relevance

1.2.1 Social relevance

1.2.2 Scientific relevance

1.2.3 Personal relevance and ethical substantiation

1.3 Problem field and problem statement

1.3.1 Safety and post-war neighborhoods

1.3.2 Safety and the case: Osdorp-Oost

1.3.3 Problem statement
1.1 Motivation

In 2002, the Safety Program (Naar een veiliger samenleving- “Towards a safer society”) was launched, by the first government Balkenende. Attention in this program focuses mainly on those forms of safety which affect citizens and companies/institutions in the public space (van Noije & Wittebrood, 2008: 1). Increasing subjective safety (feeling of being safe) and objective safety (factual criminality) has been high on the government list of policy priorities for a long time (van Noije & Wittebrood, 2008: 11). The mid-eighties can be described as a turning point for this topic. A big increase in crime and unsafe feeling of the citizens detected by the police in the seventies and beginning of the eighties, lead to more attention in this area (increasing safety). Then the policy about safety varied through years. In the end of the seventies law enforcement (rechtshandhaving) was the most important strategy for increasing subjective safety. Later on, the most focus was on preventing crime behavior and decreasing the opportunity to committing the crime or offence. In the beginning of the 21st century the policy changed and enforcement became an important strategy for social safety again (van Noije & Wittebrood, 2008: 65).

Although, safety seems to be important for the government and has been on its agenda for decades now, Woldendorp (2010: 68) stated that it is a topic that normally does not get enough attention in design disciplines. Also KEI Atelier (Kenniscentrum Stedelijke Vernieuwing) claims that in practice, designers often underestimate safety and find it rather dull than creative (KEI, 2010). This is unfortunate, because a lot of decaying neighborhoods from the post-war period often experience safety problems. Van der Voordt and van Wegen (1991: 172-173) claimed that the planning intentions of many post-war urban areas was to create quiet and harmonious, healthy dwelling areas for mostly working class families. However, unpredicted effect such as safety issues (crime and feeling of being unsafe in public spaces) started to take place in many of these areas just a few years after the realization. According to Rueb and van Nes (2009: 2), the urban design of the Dutch post-war areas, as too wide streets, a lot of space between the buildings, windows and doors that do not normally face the streets and blind facades of the back sides of the shops have a negative influence on safety in public spaces.

So, for my graduation project I want to focus on urban design interventions that will improve safety of public space, in post-war neighborhoods, which can be also applied in other places, where common problems occur. The aim of this thesis plan is to define urban design interventions that can improve the public space of Osdorp-Oost, in order to increase the safety for the inhabitants. First, the problem definition, design location Osdorp-Oost and the problem statement will be explained. Then, I will discuss the relevance of the topic and the planning.

1.2 Relevance

1.2.1 Social relevance

The social relevance of this graduation project lies in the improvement of the public space in the post-war neighborhoods. This is a topic that has a lot of attention in the news (see articles below, fig. 1). By improving public space and make it more safer for inhabitants, a social control and improvement of the living conditions of the inhabitants of the deprived
neighbourhoods will be provided. Also, the lessons learnt from the literature, reference projects and design could be used for other neighbourhoods in a later stage.

(Article in Volkskrant about failure in approaching the "Vogelaar wijken". 30.07.2013)

(Article about the direct link about social cohesion and safety in the neighborhood. 02.10.2010)

(Discussion of KEI about safety in public space. 09.04.2010)

**Figure 1.** Newspaper headings about “Vogelaar wijken” and safety of public space.

1.2.2 Scientific relevance

The scientific relevance of the graduation project is to review the methods and theories in order to increase safety in public spaces. The knowledge of all the writers collected in one
thesis combined with own recommendations could be a significant addition to the body of knowledge for Dutch post war neighborhoods.

1.2.3 Personal relevance and ethnical substantiation

Safety in public spaces is an issue that should not be underestimated and should be integrated into every urban design. Although, it is a topic that often does not get enough attention in the design disciplines (Woldendorp, 2010). A lot of post-war areas are experiencing safety issues in public spaces (Van der Voordt & van Wegen, 1991). It is an important topic for the governance and should be important for designers as well. As a future urban designer, I find this topic very important. Governance, inhabitants and designer should work together in order to increase safety in public spaces. I hope I can make a contribution to safer public spaces with my graduation project by involving the inhabitants in the project and considering the current policy.

1.4 Problem field and problem statement

1.4.1 Safety and post-war neighborhoods

In the end of the nineteenth century there was a huge increase in population. Amsterdam was forced to expand in order to prevent the housing shortage. Those were small, partial expansions. One general plan for the whole city was necessary. In 1935, the AUP (Algemeen Uitbreidigplan Amsterdam), an urban plan for the expansion of Amsterdam was developed. It was the solution for the big housing shortage. It was also an alternative for the chaotic and unhygienic traditional city. The long term vision until the year 2000 and the scientific research based on extensive statistical forecasts of developments in demographics were the core characteristics of the AUP. Before the Second World War only small parts of the AUP were developed, in the districts Watergraafsmeer and Bos en Lommer (see fig. 2). After the Second World War there was a vast shortage of houses again, because many were destroyed or damaged. In order to deal with this shortage, the AUP was developed in an accelerated program, those were the post-war urban areas (Hellinga 1983: 45, Cannegeiter 1985: 48).
Figure 2. The map of the AUP. The grey areas were developed before The Second World War and the red areas were constructed after (source: http://nl.wikipedia.org/wiki/Amsterdam, 2004).

There are two factors that lead to unsafe feeling of public spaces in post-war neighborhoods, the first one is built configurations and the second one is high concentration of low-income households and heterogeneity.

According to van Nes and Rueb (2009: 2) a typical post-war neighborhood has the following built configurations, “freestanding flats or row houses with a lot of open spaces between the buildings, too wide streets for looking into neighbor’s houses from one’s own home, and in many cases neighboring houses are not located parallel to one another” (see fig. 3). Van Nes and Rueb (2009: 2) also stated that “the backside of the shops in post-war housing areas tend to have blind walls with no entrances and windows, generates the possibilities for anti-social behavior of larger groups of youngsters due to a lack of natural surveillance from windows and random passing byers. So, the streets in post-war areas have low inter-visibility and low degree of social control, since few windows and doors face the streets. This leads to safety issues like criminality and unsafe feeling (see fig. 3, 4).
Figure 3. Schemes of built configurations of typical post-war neighborhoods, according to van Nes and Rueb (source: made by the author).

Figure 4. Inhabitants of Osdorp-Oost try to protect their house by putting extra security elements, those two photos show that they don’t feel safe in their neighborhood (source: photos made by the author).

The second factor of unsafe feeling in public spaces in post-war neighborhoods is the big concentration of low income households and heterogeneity. Stouten (2010: 226) stated that “in the nineties, the middle- and high income groups moved from the post-war neighborhoods to new neighborhoods with bigger houses and better quality, the houses in the post war neighborhoods became cheaper and attracted more low income households, from different ethnic groups” (see fig. 5, 6). This caused the heterogeneous society in the neighborhood. According to Stouten (2010: 226-227) “heterogeneity can cause negative experience, feelings of fear and social insecurity and violence in the neighborhoods”. The higher the concentration of low income groups and immigrants, the larger the anti-social behavior problems are in the dwelling areas in terms of vandalism and group forming of
youngsters (van Nes & Rueb, 2007: 1). “Unemployed tend to be more dependent on what the direct vicinity offers of urban activities than those who spend most of the day at work” (van Nes & Rueb, 2007: 2). So, unemployed inhabitants and immigrants, in comparison with the high income inhabitants, tend to be involved with the street life more often.

Figure 5. Average income per inhabitant Of Osdorp-Oost (source: http://www.edugis.nl/, 2014).

Figure 6 Different languages are used on the boards, on the houses and in front of the shops in Osdorp-Oost, because there are a lot of foreign born inhabitants living in the neighborhood (source: photo made by the author).

Lack of livability is also related to unsafe feeling and criminality in public spaces as indicated by different authors. Uitermarkt (2007) defines the livable neighborhood as a neighborhood where there is a low level of criminality, vandalism and nuisance. In the research of De Hart (2002) the absence of nuisance, abandonment, degradation, decay and environmental nuisance is being seen as an indicator of livability. The improvement of livability is always an
important goal in the restructuring of the neighborhoods, but it cannot be accomplished without the improvement of safety of the neighborhood (Wittebrood & van Dijk, 2007).

Van Dorst (2005) also connects safety, among other factors with livability. He claims that the physical environment makes certain forms of human behavior possible and in this way it may contribute to the well-being of people. This form of livability is called presumed because the actual results are unknown. There is a set of indicators of this possible influence of the physical environment on livability, but the influence of these indicators is normative and presumed. For example, if the environment is a neighborhood, the list of indicators that makes up the presumed livability consists of: density, spatial quality, nature, noise, safety, mixture of lifestyles, proximity of services, etc. (van Dorst, 2005: 227).

So, safety could be seen as a component of the term livability. Feeling of being safe (subjective safety) and low criminality level (subjective safety) could contribute to livability. According to the “leefbaarheidsmeter” (http://www.leefbaarometer.nl/), the livability of Osdorp-Oost is average (see fig. 7). And according to Dienst Onderzoek and Statistiek (2006: 6) the subjective safety of Osdorp-Oost lies above the average of Amsterdam. But the objective safety of Osdorp-Oost lies under the average of Amsterdam, there is a lot of breaking in to the houses and criminality (see fig. 8, 9). That means that in this case objective safety issues do not influence the livability. So, from figures 7, 8 and 9 it was concluded that subjective safety is more relevant for the livability than objective safety. However objective safety in Osdorp-Oost is bad, so urban interventions are needed in order to increase it. Although the subjective safety is average, it will be still considered in the project, because the inhabitants will be involved in the design, their opinion about safety is important. Thus both safety types will be considered in the project.

![Figure 7. Livability in Osdorp- according to ‘leefbaarheidsmeter’, light green color means that livability is good (source: http://www.leefbaarometer.nl/)](http://www.leefbaarometer.nl/)
Figure 8. Subjective safety in Amsterdam and its districts. Although there is a lot of criminality in Osdorp-Oost (compare to the whole city of Amsterdam, see fig. 9), subjective safety lies a little bit above the average (dark green color) of the Amsterdam (source: Dienst Onderzoek en Statistiek, 2006).
Figure 9. Objective safety in Amsterdam and its districts. Objective safety in Osdorp-Oost lies under the average (yellow color) of the whole city of Amsterdam. There is a lot of breaking in to the houses and vandalism (source: Dienst Onderzoek en Statistiek, 2006).

Shortly after the realization, the post-war neighborhoods that were presented as an advanced, modern living environment for the new man, changed into a problem area with physical and social issues (Oudenampsen, 2013). The first technical renovations of the houses from post-war period already started in the seventies (Hellinga, 2004). This was a so-called urban renewal period (1975-1993) that concentrated mainly on the construction of social rented housing and on the improvement of technical quality also trying to improve not just the dwellings but the whole living environment and urban structure as well (Primeus, 2005).

Since the nineties a new strategy was applied, urban regeneration. According to Harbers (2008) “in this new strategy there was a renewed attention and appreciation for details, forms and materials. It also strived to transform the open fabric into closed building blocks”.

Agriolu (2008) stated that the physical and social renewal/regeneration of post-war neighborhoods has been on the agenda of the government, house associations, architects, urban designers and scientists for years now. Also the safety of public spaces is of high priority for the government. However, there is still a lot to be done. Because, now in the 2014, there are still neighborhoods from the Western Garden Cities, like Osdorp-Oost, that are on the “Vogelaar wijken” - list of deprived neighborhoods (http://nl.wikipedia.org/wiki/De_40_wijken_van_Vogelaar). Bureau Parkstad proposed in 2004, that in the Western Garden Cities of Amsterdam, there will be new and improved neighborhoods with better living environment, new inhabitants, more and better houses in the expensive rental and for sale
sector, less public space, more semi-public space, more job opportunities, more shops and especially better social live in the neighborhoods in 2015, due to enhanced mix of inhabitants and more safety (Hellinga, 2004).

1.4.2 Safety and the case of Osdorp-Oost

For my location I chose Osdorp-Oost, in Amsterdam (see fig. 10,11), a post-war neighborhood that is on the “Vogelaar wijken” list. Many projects were already realized in order to improve the living environment, but there is still a lot to do. Because, it is a decaying post-war neighborhood with a lot of criminality (see fig. 9), so the objective safety is bad (Dienst Onderzoek an Statestiek, 2006).

Osdorp-Oost, is a part of the Western Garden Cities (Slotermeer, Geuzenveld, Slotervaart, Osdorp, Overtoomse Veld, Westlandgrachten, Kolenkitbuurt and Bos en Lommer). It was built in the fifties and the sixties of the 20th century and belongs to the early post-war neighborhoods. The main urban plan was already developed by designer C. van Eesteren and researcher Th. K. Lohuizen in 1934, called the AUP (Algemeen Uitbreidings plan Amsterdam) (Hellinga,1983: 45-51; 2005:14).

![Figure 10. Dark red color indicates Osdorp-Oost in Amsterdam (source: DOS Amsterdam, 2007).](image)
Figure 11. Problem post-war districts in Amsterdam. Osdorp-Oost is one of them, (source: DOS Amsterdam, 2007).
1. Slaterplaas

2. Monotone street profile with clear separation of pedestrians and bicycles, too wide streets and too much space between the buildings.

3. Monotone street profile with clear separation of pedestrians, bicycles and cars, too wide streets.

Unmaintained public space, blind backside facades, low inter-visibility.
Figure 12. Map of Osdorp-Oost and photos of problems in public spaces (source: made by the author).
Osdorp-Oost consists of freestanding flats and row houses with many open spaces between the buildings (see fig. 12). The streets between the buildings are too wide for looking into neighboring houses. Some houses have blind facades on the backsides. In many cases neighboring houses are not located parallel to one another. The public spaces are not well maintained. So, the streets have low inter-visibility and low degree of social control. That all can stimulate the asocial behavior of youngsters (loitering) and cause safety issues in public spaces.

1.4.3 Problem statement

Different strategies took place in order to improve the living environment in post-war neighborhoods. However, those neighborhoods still experience major problems on the physical, social and economic level. Safety issues in public spaces are often related to the social (society) and physical (urban design) problems, in those neighborhoods (Belvedere, 2006).

The observations from the problem definition lead to the following problem statement: urban design factors and social changes in the post –war neighborhood, Osdorp-Oost, have a negative influence on subjective and objective safety in public spaces.
2 Project approach

2.1 Research questions & methodology

2.2 Final products

3 Theoretical framework

3.1 Definition of safety

3.2 Safety and post-war neighborhoods

3.3 Safety and urban design

3.4 Social safety design by van der Voordt & van Wegen

3.5 Social safe urban design by van Nes, Lopez, de Bonth, Verhagen & Waayer

3.6 Conclusion

4 Location analyses

4.1 Urban areas of Amsterdam, planned in the thirties

4.2 Case: Western Garden Cities

4.3 Physical characteristics of Western Garden Cities

4.4 Strategies of improvement from the 1980’s and situation at present

4.5 Conclusion
First, this chapter will discuss the main research and design questions and methodology of the project. Next, the chapter will continue with the safety of public places. Two types of safety will be discussed: subjective and objective safety. The link between safety and post-war areas and urban design will be explained. Different authors that discuss theories and strategies to increase safety in public spaces will be reviewed.

Then, a short history of expansion of Amsterdam will be explained. The main concepts of the thirties and the AUP (Algemeen Uitbreidingplan van Amsterdam) will be reviewed. The case of western Garden Cities will be explained as well. The physical characteristics (green structure and accessibility) and social context will be discussed. After that, the main strategies from the 70s that took place in order to improve post-war neighborhoods like Western Garden Cities and their consequences will be reviewed. Finally the situation at present will be clarified.

2 Project approach

2.1 Research questions & methodology

In order to improve the safety in public spaces of post-war neighborhoods, urban interventions directed to both private and public space are targeted in my graduation project (see fig. 13). That leads to the following main research question:

“Which urban design interventions can improve the public space in Osdorp-Oost, in order to increase the safety for the inhabitants?”

In order to give an answer to the main question, the following sub questions were answered first:

Sub RQ 1: What features of public space in an urban environment contribute to the subjective and objective safety?

To answer this question literature research on safety was performed. First, general definitions of safety, subjective and objective safety were reviewed. The key authors: Blockland, De hart, Eysink & Smeets and van Noije & Wittebrood, write about the definitions of subjective and objective safety. Then the theory of safety according to B. Hillier was described. The two main background theories about safety in public spaces were shortly reviewed: Jane Jacobs’s and Oscar Newman’s. After that, two design checklists for social safety made by van der Voordt & van Wegen and a checklist for social safe urban design made by van Nes, Lopez, de Bonth, Verhaeghe and Waayer were discussed and compared. The comparison analysis of those two checklists provided a catalog of urban design in order to increase safety of public spaces.

The literature review provided theoretical framework for subjective and objective safety issues in Osdorp-Oost and generic catalog of urban features that contribute to safety in public spaces.

Method: literature review
Sub RQ2: *What are the main design concepts of the AUP (Algemeen Uitbreiding Plan) and the Western Garden Cities (Osdorp-Oost), in relation to safety?*

This is the research question for the analysis of post-war neighborhoods in Western Garden Cities. With the outcome of these analyses, the spatial and societal structure of Osdorp-Oost was described. To answer this question the following methods were used: literature review, social analysis and data research. Literature research provided the theoretical framework about the main concepts of the AUP and Western Garden Cities, strategies for improvement of post-war neighborhoods and situation at present. Social analysis and data provided the demographics overview about nationalities, income, housing prices and subjective safety and objective safety, in Osdorp-Oost.

The reviewed authors were: Hellinga, H (“Algemeen Uitbreidingsplan Amsterdam, 50 jaar” and “Ontust in park en stad, Stedelijke vernieuwing in de Amsterdamse Westelijke Tuinsteden”), Nio, Reijndorp & Veldhuis (Atlas Westelijke Tuinsteden Amsterdam) and Sabate Bel & Galindo (The Qualities of Western Garden Cities).

Method: literature review, social research and data research about inhabitants (nationalities, incomes, housing prices and subjective safety and objective safety).

Result: overview of main design concepts of the AUP and Western Garden Cities, an overview of spatial and societal structure Western Garden Cities, demographics overview of Osdorp-Oost, an overview of the Strategies that took place in order to improve the Western Garden Cities.

Sub RQ3: *How is the public space in Osdorp-Oost currently used and can objective and subjective safety be identified more detailed in the neighborhood?*

In order to give an answer to this question the following methods were used: mapping physical factors of the location related to safety, static snap shot analysis, interviewing the inhabitants, space syntax analysis and reference cases analysis.

First safety related factors of the location were analyzed: infrastructure, functions, usage of the ground floor, building high, location of the entrances and private, public and semi-private space were mapped.

Static snap shot analysis provided the overview of the usage of public facilities by people. Which areas are used and not used by inhabitants. The location was visited on three days during the week and two days during the weekend. The people and activities they performed were mapped during the certain time intervals, at 12 am, at 14 am and at 16 am. They were categorized in the following groups: age group, nationalities and gender. The public space usage was categorized in sitting, standing, passing by, playing and loitering.
Then, the inhabitants were interviewed about the safe and unsafe public spaces in the neighborhood. They were asked to draw a mental map and to show on the map what according to them safe and unsafe places are during the day and night. The outcome from the interview provided the most safe and unsafe areas of Osdorp-Oost according to the inhabitants (subjective safety). Than the results were overlapped with the conclusions of safety related factors analyses, in order to understand what kind of typology is related to safe and unsafe places.

After that, different alternatives were tested with the space syntax, in order to indicate the best solution on local and global scale.

Four reference projects were analyzed in order to define rules for urban design interventions in Osdorp-Oost: Wijsgerenbuurt, Overtoomse Veld, P. C. Hooftstraat and Ertskade, in Amsterdam. Wijsgerenbuurt and Overtoomse Veld were chosen, because they have similar typology as Osdorp-Oost and public spaces were recently restructured. The factors that were analyzed were: function of public space, zoning of public spaces, use of the ground floor, and comparison with the similar areas in Osdorp-Oost and comparison with the old and current situation of the cases. Then P.C. Hooftstraat and Ertskade were analyzed, those two reference cases were chosen because, after the interviews analysis it was decided to redesign the current shopping center and create a new waterfront for Osdorp-Oost. P.C. Hooftstraat was the reference case for the new shopping center and Ertskade was the reference for the new waterfront. The following factors were analyzed: use of the ground floor, building heights, zoning of private and public space and street.

The conclusions from the analyses provided an overview of the safety related characteristics of Osdorp-Oost, most unused and most unsafe areas of Osdorp-oost, most safe and unsafe public spaces according to the inhabitants and a catalog of rules for design interventions for those areas.

Method: Mapping safety related factors of Osdorp-Oost, static snap shot analysis, interviews with the inhabitants, testing alternative solutions with space syntax analysis, reference cases analysis

Result: an overview of safety related design characteristics, an overview of most used, unused, safe and unsafe public spaces of Osdorp-Oost, a catalogue of rules and design interventions of public spaces in Osdorp-Oost.

Sub DQ4: How can the urban design interventions be implemented in an alternative design for Osdorp-Oost?

This is the research question for the design phase of this project. All previous steps are supportive for the design phase. The analysis about safety from the previous two questions provided the scientific base for my design and the catalog of design interventions on safety helped to evaluate my design.

Method: urban design interventions based on the analysis
Result: urban design for public and private space of Osdorp-Oost, containing several urban design interventions that improve safety of public space.

2. 2 Final products

By performing various analyzes that were mentioned above and giving the answers to the questions, I want to define the generic and location related design interventions that will improve the public spaces in Osdorp-Oost and make it safe for inhabitants. The final products of the graduation project are:

- generic catalog of design interventions for private and public space, in order to increase safety of public space

- urban design intervention for Osdorp-oost

3 Theoretical framework

3.1 Definition of safety: subjective and objective safety

There are numerous indicators that represent safety or a lack of it, like threat, criminality, abandonment, degradation, decay and environmental nuisance. Those indicators can be subjective and objective (de Hart, 2002). Subjective safety is about the people’s experience or feeling of being safe. It is about the opinion of the inhabitants of how safe they feel in their neighborhood. Objective safety is standing for crime level and is measured by statistics and data. It also indicates a factual chance or an event that could affect safety. In other words, it gives the indication of the actual crime level in the neighborhood. Because of that, it could be differentiated between the actual crime level and the feeling of safety (Eysink Smeets, 2008). Different studies have shown that the factual crime level does not determine the feeling of safety (Blokland, 2009). So, both sorts of data can independently evolve from each other. The factual criminality level could decrease, while the inhabitants still feel unsafe.
the other way around, the criminality level of the neighborhood can be very height meanwhile the inhabitants feel safe living there.

3.2 Safety and urban design of post-war neighbourhoods

In the traditional urban design, before post-war neighbourhoods were developed, space was defined by a closed urban blocks. The walls of the block separated the public space (like streets, squares) with collective or private space inside the block. In the post-war neighborhoods, the urban design of public space changed to the open development. In the post-war period there was a new design: the open urban block (see fig. 14). That means that the focus was given to the flowing space. This development did not support the physical separation of public, semi-public and private space anymore. The distinction between private, semi-public and public space became less obvious for the observer, than it was with the closed building block (Agriolu et al, 2008).

In Amsterdam, the post-war neighborhoods were based on Ebenezer Howard’s idea, “Garden Cities of To-Morrow”. “It offered a basic proposal for a utopian city that would combine qualities of urban and rural life. It was meant as a solution for the urban crisis that followed the agricultural depression in the late 19th Century, it became the prime inspiration for the Garden City Movement” (Hall & Ward, 1998: 28). However, only some aspects of the Howard’s Garden City were adopted, such as the sizeable amounts of green space. But unlike Howard’s designs, in the planning of the Western Garden Cities ideas on how people use and appropriate space, were mostly absent (Oudenampsen, 2013)

Figure 14. Transition from the closed urban block (pre-war period) to an open urban block (post-war period) (source: made by the author).

At present, typical post-war neighborhoods in Amsterdam could be described according to the problem definition like a lot of open spaces between the buildings, too wide streets, houses that are not parallel located to one another and blind facades of the backsides of the shops cause low inter-visibility and a low degree of social control which leads to safety issues (crime, asocial behavior, feeling of being unsafe) (van Nes & Rueb, 2009).

3.3 Safety and urban design

There are two quite divergent views about how urban design can reduce crime (objective safety). According to Hiller (2004: 32-33) the first one is based on Jane Jacobs book “The Death and Life of the Great American Cities” in 1961, in which she advocates open and permeable environments, in which strangers passing through spaces, as well as inhabitants, are part of the natural policing mechanism. The second view belongs to Oscar Newman’s book “Defensible Space” in 1972, where he talks about closed and impermeable
environments, in which inhabitants are the only natural police, they recognize strangers as intruders and challenge them.

Hiller (2004) concludes that the first view sees strangers as a source of safety, the second as a source of danger. “In design terms, the first implies the classic urban formula of a continuous network of ‘doubly constituted’ (continuous house entrances opening onto the street on both sides) streets, the second a patchwork of inward looking, ‘defensible’ enclaves – although what is supposed to happen in between the enclaves remains obscure” (p33).

However, the behavioural implications of the two approaches should not be underestimated. Hiller (2004, p33) claims that, if you live on a normal urban street, and come out of your house and see a stranger passing close to your front door, you would not feel insecure. In fact, the presence of strangers humanises the street and makes it feel more secure. If you were to challenge the stranger, you would be thought of as committing a public disturbance. However, if you had the same encounter on an upper level walkway, where the presence of a stranger would be abnormal, then you would feel nervous and inclined to challenge the stranger. In these circumstances you would not be thought of as committing a public disturbance. Hiller also stated that, “not only is our behaviour different, but also its legitimations are different in different spatial circumstances, and these differences come from our readings of what the spatial circumstances lead us to expect” (p 2). A fully ‘Newmanised’ environment would not be expected to sustain the ordinary civilities of urban life as manifested in ordinary street behavior (Hiller, 2004).

3.3.1 Social Safe Design by van der Voordt & van Wegen

Van der Voordt & van Wegen (1990: 33-35) introduced a checklist about social safety in the neighborhood in their handbook “Social safe design” (Social Veilig Ontwerpen). This checklist names three physical aspects: visibility, accessibility and attractiveness. Visibility can be divided into two sub topics: clarity (zichtbaarheid) and inter-visibility (toezicht).

Visibility

Visibility is about seeing and being seen whereby informal control can be possible (Lopez, et al., 2008). Visibility is divided in to two core points: clarity and inter-visibility. Clarity is about the possibilities to see with the help of zoning, sightlines and lighting. Inter-visibility is about being seen by people. This is measured by the presence of people, the presents of special people who supervise a certain area and cameras (van der Voordt & van Wegen, 1990).

Clarity

Having a clear view provides a feeling of safety. By having clarity it becomes possible to predict what is going to happen. It is about marking, zoning and territoriality. It is all about the belongings and the responsibilities. Property boundaries are an example. A clear indication of the gardens with hedges or other designed property boundaries offers clearness about where people can go and where they can’t. Attention for different transitions between private, semi-public and public spaces and distribution between circulation and green space are important for zoning of the space.
Sightlines and lighting are also important for clarity. Sightlines are important for orientation and lighting is important for clarity in public spaces in the evening and night. Lightning is also important in places where people don’t go usually at night (van der Voordt & van Wegen, 1990).

Inter-visibility

Without inter-visibility (eyes on the street) there is no social control. In order to have social control in the neighborhood there are people needed who can supervise the area. It can happen by having people in the neighborhood who fulfill the supervisor function, but it could also be done by the inhabitants themselves. Cameras can also provide a certain supervision of an area (van der Voordt & van Wegen, 1990).

Accessibility

Accessibility is about a manner of how people could get to a certain place (this also applies for police) and the possibilities to find a quick escape in case of emergency or treat. It is also important to have an easy access for elderly people and disable people. Good accessibility is also important for the ambulance and fire department to get on time to the location. Alternatives routes during the day and night are important for pedestrians; that offer also a possibility to have a certain control in public spaces. A clear route gives certain clues for the inhabitants and visitors in order not to get lost. This provides a safer feeling in the neighborhood (van der Voordt & van Wegen, 1990).

Attraction

Attraction of public spaces is about aesthetical quality, attractive functions, maintenance and management, aesthetical sustainability, technical sustainability and social sustainability. Esthetical and technical sustainability is about the materialization, both appearance and use should last long. Social sustainability is about the degree of social cohesion in the neighborhood. Attraction is a very subjective term on the base of the six terms, which were mentioned above (van der Voordt & van Wegen, 1990).

3.3.2 Social safe Urban Design by van Ness, Lopez, de Bonth, Verhagen and Waayer.

Van Ness, Lopez, de Bonth, Verhagen and Waayer (2013: 4-5) also introduced in their report (How space syntax can be applied in regenerating urban areas) a similar but more detailed design checklist for social safe design based on the space syntax analysis. They use five spatial principles or concepts. These concepts can be summed up by the keywords: Accessibility, Connectedness, Vitality, Visibility and Identity. They will be shortly described below.

Accessibility

The higher the degree of accessibility of the street system on various scale levels, the higher the number of people in the streets (Hillier et al, 1998; Rueb & van Nes 2009). Conversely, a lower degree of accessibility reduces the number of people in streets resulting in less natural surveillance. Streets with a low degree of accessibility tend to be affected by burglaries (van Nes & López 2010). So, the higher the degree of street accessibility on local as well as the city
level, the more it generates a mixture of visitors and locals on the streets. A balanced mixture of different user groups on the streets increases the degree of informal social control, which reduces the opportunities for crime and anti-social behaviour and increases the feeling of safety (van Nes et al., 2013: 4).

Connectedness

The term 'connectedness' is used in this checklist to describe how the main route system going through and between neighbourhoods is connected to all the local streets. Street segments with a sharp angle from the main routes get a much higher value than street segments with a shallow angle (Turner 2001). When most dwelling streets are more than two direction changes, or more than one direction change with sharp angles from the main route network, the area got a smaller chance of burglary. Research (van Nes & López 2010) has shown that the higher the number of direction changes from the main route network, the higher the risks on burglary and anti-social behaviour. Rueb and van Nes (2009) stated that residential burglary mainly takes place in the streets furthest away from the main routes, most commonly on places with low degrees of inter-visibility. So, they concluded that the lower the number of direction changes from the main routes, the lower the burglary risk (van Nes et al., 2013: 4).

Vitality

Vitality refers to the spatial potential for vital street life and successful local businesses. When a main route goes through the neighbourhood combined with high integration values, it contributes to the location of small businesses inside the neighbourhood (Hausleitner 2010, van Nes et al, 2012). When a main route is located around the neighbourhood, the neighbourhood tends to lack small businesses and the area consists of only dwellings (Yu ye & van Nes 2012). Streets consisting of shops and retail, and with various types of people frequenting it, are often experienced as safe and lively by visitors as well as locals. For vitality it is important that small businesses are located inside the area. However, street with blind walls adjacent to services and local shopping centres contribute to a clustering of youngsters making noise and disturbances (van Nes & Rueb 2009: 4). So, the main routes located through a locally integrated center inside a neighbourhood generate opportunities for economic activities and a natural mixture between inhabitants and visitors.

Visibility

Visibility is all about to see and to be seen. People want to see and know what is going on in their spatial environment and also to know what others do (Luten et al., 2008). This has everything to do with spatial properties such as accessibility, connectedness and vitality, which bring people to the streets. Lighting quality and sight lines are important as well. Also how visible the streets are from dwellings on ground floor level and how well dwellings are visible from streets and the position of entrances and windows are important. So, both windows and doors located on the ground floor level contribute to informal social control between people in streets and people inside buildings (van Nes et al., 2013: 4-5).

Identity

The identity of a neighbourhood (its character and atmosphere) is largely determined by the attractiveness of the neighbourhood, the clarity of the functions of the public spaces and
intelligibility of its route system. If the status and function of a place (private, semi-public or public) and who is responsible for its management is not clear at a glance to any first time visitor, it contributes to a bad impression of the neighbourhood. The use of semi-public spaces almost always generates problems when the function or management of these areas is unclear (Luten et al 2008). When the function and ‘ownership’ of a place is unclear, the spaces are often being described as no man’s land. No one feels responsible for these places and law abiding citizens tend to avoid them. Van Dorst also did a lot of research about this topic.

Attractiveness is also an essential element of identity. The character and atmosphere of a residential area is highly dependent on the degree to which visible attention is paid to the environment. This includes the aesthetic quality of the built environment, range of functions, maintenance and management and aesthetic, technical and social sustainability. So, the clarity of functions, an intelligible routing system and attractive well maintained public facilities contribute positively to the character and atmosphere of the neighbourhood (van Nes et al., 2013: 5).

3.4 Conclusion

According to Hiller (2004), there are two main approaches in safe urban design: Jane Jacob’s (about open and permeable space) and Oscar Newman’s (about closed and impermeable space) that form the primary base for most theories about safety and urban design.

Van Der Voordt and van Wegen introduced a design checklist, where the following factors were named: visibility (clarity and inter-visibility), accessibility and attraction. Van Ness, Lopez, de Bonth, Verhagen and Waayer also introduced a similar design checklist. According them street segments with poor values on accessibility, connectivity, vitality, visibility and identity are more often affected by crime and anti-social behaviour than streets with good spatial values. The two theories were put in one overview (see fig. 15)
The two theories have a lot in common some of the factors from the checklist are overlapping like visibility and accessibility (see fig. 15). However the second approach of van Nes, Lopez, de Bonth, Verhagen and Waayer was tested with space syntax analysis and therefore forms a stronger scientific base, through measuring the data with space syntax. It also gives a broader description of urban factors that influence safety. It is actually an improvement of the checklist of van den Voordt & van Wegen. So, the second checklist...
provides more reliable and extended overview of urban design features that can contribute to safety.

With regards to my graduation project I can conclude that the checklist for social safe urban design that was made by van Nes, Lopez, de Bonith, Verhagen and Waayer forms a good starting point for my design. The table of features will help to evaluate my design in the analytical phase. Because it has a strong scientific base, it was made with the help of space syntax analysis. And also it is an improvement of the older version that was made by van der Voordt & van Wegen.

However, an additional point will be added to this checklist: the involvement of inhabitants. Because in my graduation project both types of safety (subjective and objective) are considered, it is important to involve the inhabitants into design project by interviewing them. That way, the design will be more suitable for the location and people who live there.

4 Case analyses

4.1 Urban areas of Amsterdam, planned in the thirties

Since the end of the nineteenth century, the number of inhabitants of Amsterdam significantly increased. Because of that, there was a huge housing shortage. It was necessary to expand the city, in order to react to it. First, the so-called ‘partial’ expansions planned by Berlage, Plan South and Plan West, were built, they were adjusted to the existing city structure. A big city expansion was not possible, because the city (even after some small annexations) still didn’t expend outside the municipality’s borders. In 1921, the “big annexation” took place, whereby Sloten, Watergraafsmeer, Buiksloot, Nieuwendam, Ransdorp and parts of Westzaan, Zaandam, Oostzaan, Diemen en Ouder- en Nieuwer-Amstel were incorporated in the city structure. This annexation brought an end to the “partial extensions” of the city. The aspects mentioned above were the motivation for one big expansion plan for the whole city of Amsterdam, the AUP. It was officially published in 1934, under the leadership of the main designer van Eestren and research van Lohuizen (Hellinga 1983: 81-86; Griffioen, 2008).

The AUP was based on scientific research about population growth and the discussion from urban congresses that took place in the twenties and thirties where the concepts of the Howard’s Garden Cities and the English and American Park-movement were discussed. The ideas of the architects and urban designers from the “Nieuwe Bouwen” (CIAM) movement were leading (Hellinga, 1983). An important factor in these developments was the rise to prominence of the Social Democrat party as a political force in the big Dutch cities. “The Social Democrats were strong advocates of government intervention to deal with sub-standard living conditions of the urban poor. They were also the principal promoters of the building of Dutch Garden Cities and garden suburbs” (Oudenampsen, 2013).

The important features of the expansion plan were: light, air and space. It was seen as the solution for the chaotic, unplanned and unhygienic traditional city. In order to implement these features, the city was divided in four urban functions: living, working, green structure and infrastructure as a connecting element. Green structure and water structure formed the main elements in the plan (Hellinga, 1983: 86).
According to Hellinga (1983, p 81), the new ideas contained the following assumptions for the structure of expansion areas:

- the high degree of the independency of the neighborhoods. This was expressed in the core area of the district where shops, social, cultural and public facilities were situated and also in the separation between the neighborhoods by wide green space. The connection with the city center was important as well, the most important facilities and work opportunities were located among the main routes.

- the city was divided in four main functions: residential area, working area, green area and infrastructure. This concept is being called the “functional city” (de functionele stad).

- separation of local and through traffic and the separation of different kinds of traffic from each other (pedestrians, bicycles, car and tram).

- the dwellings near the busy car roads were avoided, as much as possible.

- the wide green structure, where the green strokes were integrated in the neighborhoods. Those green strokes were also a part of bigger green system of the whole city.

- high percentage of single family households housing.

Important characteristics of the allotment design were the open building method, good orientation of the houses with the environment concerning sunlight and air. But the most important part of the new ideas that came from the thirties was that the AUP was based on research. That meant that the design was no longer based on the intuition and experience of the urban planners, but on functional and dimensional results from the research (Hellinga, 1983).

![Figure 16. Algemeen Uitbreiding Plan van Amsterdam. AUP. The areas in red are the new residential areas. (source: commons.wikimedia.org/wiki/File:Algemeen_uittreibingsplan_amsterdam1935.jpg)
The plan had a clear structure. The main residential areas of the AUP were developed in the West and the South part of Amsterdam. Inside the ring railway, the following neighborhoods were developed: Bos en Lommer, Westlandgrachten and Overtoomse Veld. Outside the ring railway, there were so-called Western Garden Cities: Slotermeer, Geuzenveld, Slotervaart, Osdorp and in south Buitenveldert. In the green areas, along the design ring road in the west and in Buitenveldert, the height rise development was planned. The neighborhoods were separated from each other with broad green areas. Sloterplas together with Amsterdamse Bos and Nieuwe Meer were the most important recreation areas of the AUP (see fig. 16). The extension of the harbors and industrial areas was developed in the West, where the industrial area of Amstel was located (Hellinga, 1983).

The neighborhoods that were planned according to the AUP, were supposed to be built in slow stages and be finished by 2000, but instead they were built rapidly, because of the big shortage in housing shortly after Second World War. Rapid construction, combined with low budget and shortage of building materials, lead to low qualities of the neighborhoods (Cannegeiter 1983, Hellinga 2005).

4.2 Case: Western Garden Cities

Western Garden Cities were designed according to the Garden City concepts (based on Ebenezer Howard book), as a modern residential, working-class neighborhood: light, air and space. The neighborhoods can be described as open fabric, wide green strokes between the development and good accessibility with the city center. Western Garden Cities were already shown in the plan map of the AUP, but were developed shortly after the Second World War (see fig. 16). The neighborhoods were separated by wide green strokes, with Sloterplas in the middle (Hellinga, 1983: 93-97; 2005: 32-34).

Western Garden Cities would form independent neighborhoods, according to the ideal Garden Cities concept. Because of the unilateral expansion of the AUP, those independent neighborhoods would be connected with the central area of the city through main routes. West would get its own identity and become an independent (stad-op-zichzelf) neighborhood with its own facilities and without having a disadvantage in lying too far from the city center (Hellinga 2005: 32-34).

Although these neighborhoods were called Garden cities, eventually they didn’t have that much in common with the original concept besides the large amounts of green space and gardens. The independence of the neighborhoods was too little and the density of the development was too high (Hellinga, 2005: 34).

4.2.1 Physical characteristics of Western Garden Cities

Green structure
Figure 17. Green structure of Western Garden Cities according to AUP (sources: Nio, Reijndorp, Veldhuis, 2008).

On the map above, (see fig. 17) the green strokes that divide the neighborhoods and are connected to the bigger green structures are visible. The central points of green structure in Nieuw-West are Sloterplas. It forms a conduction zone between the North and South expansions. From the central park areas there are green strokes that can be described as a park, but also as a route. Remarkable is that this green structure not only gives consistency to the green facilities, but especially that it gives order to the whole expansion of the city. The green becomes equivalent with other functions like living, working and infrastructure, it becomes a structure itself. Also other landscape elements got also a special attention in the plan. Due to the transformation of Sloderdijkmeer to Sloterplas, the landscape was brought into the city. That means that the architects began to see landscape as space (van Leeuwen, 1985).

Thus, green space was a core characteristic of the Western Garden Cities. It was conceived as neutral and quantifiable (van Leeuwen 1985). An important aspect of this characteristic is the spatial consistency between the different scale levels: from courtyards to landscapes. These consistencies together with the collective meaning of space lead to a certain neutrality of space. But eventually, in the daily use of Western Garden Cities, the experience of space became more important than the neutrality, which the designers had in mind (Nio, Reijndorp, Veldhuis, 2008).

However, the planning of the area did lack a clear vision on how people use and inhabit the space. In comparison with Howard’s design, in the planning of the Western Garden Cities ideas on how people use and appropriate space, were mostly absent. After it was
constructed, the Western Garden Cities have been seen as problem neighborhoods (Oudenampsen, 2013).

Accessibility

One of the main four functions of the AUP was accessibility. Connection by public transport and car from Western Garden Cities to the city center was important. Because a lot of job opportunities were situated in the city center. A lot of people had their jobs in the city center. (Nio, Reijndorp, Veldhuis, 2008). In the AUP a new improved infrastructure was introduced, which made a better connections with the center (Hellinga, 1983, p.). Western Garden Cities have a good connection by public transport and by car (see fig. 18, 19).

For the new inhabitants, the fact that it lies not so far from the city center and has a good accessibility was one of the motifs to choose to live there. The recreation area Sloterplaaplaas has also a good accessibility by car, public transport and bike (Nio, Reijndorp, Veldhuis, 2008).

Figure 18. Accessibility of Western Garden Cities with city center (source: Nio, Reijndorp, Veldhuis, 2008)
4.2.2 Social context of Western Garden Cities

In the first decades of realization of Western Garden Cities (shortly after the Second World War), the inhabitants were from the similar groups, mostly (young) families, who lived before in the pre-war neighborhoods of Amsterdam. There were certain differences in age and household situation among them, but the inhabitants got along well in the living style and usage of facilities and public areas. There was no major difference in the interpretation of the usage of the facilities and public spaces in the neighborhoods (Hellinga 2005).

But according to Nio, Reijndorp and Veldhuis (2008), from the eighties onwards the interpretation between the facilities, design and the inhabitants changed. The increasing mobility and prosperity were the reasons that the facilities and public spaces were no longer per se designated to the inhabitants of Amsterdam Nieuw West, inhabitants from other neighborhoods could also use them. Because of this a lot of the current inhabits left for better, more expensive houses in other neighborhoods. The dwellings in Osdorp-Oost became relatively cheap (see fig. 20).

At the same time, the new inhabitants with different backgrounds and low incomes moved into the Western Garden Cities. The new inhabitants (mostly Moroccan and Turkish) had their own interpretation of usage of the facilities in the neighborhood (see fig. 5, 20, 21, 22). The facilities of the first/former inhabitants began to decrease, their group was shrinking. The groups of new inhabitants were growing, as well as the amount of their facilities increased. The new inhabitants also had their own interpretation of usage of public space (Nio,Reijndorp,Veldhuis 2008).
Figure 20. Diagram of the house values in Osdorp-Oost, light purple color indicates the price between 0-100.00 which is relatively cheap (source: http://www.edugis.nl/, 2014).

Figure 21. Diagram of inhabitant from Osdorp in 2013, that have different nationalities (source: CBR, 2012)
Figure 22. Increase of foreign inhabitants in Western Garden Cities. Amsterdam Oost and Amsterda (source: Hellinga, 2005)

4.3 Strategies of improvement from the 1980’s and situation at present

In the end of the seventies and the beginning of the eighties the most houses in post-war neighborhood of the Western Garden Cities were renovated. The main renovation targets were to improve housing and public space (Nio,Reijndorp,Veldhuis 2008). One of the most important strategies was urban renewal. The urban renewal strategy took place between 1975 and 1993 (stouten, 2010).

In the 1970s rent protest led to policy adjustments. These protest concerned the question of “whose city, of the position of the existing tenants threatened by comprehensive demolition near city centers. This question was at that time at the heart of the urban renewal issues. At first urban renewal was very much concentrated on the social housing question but soon the problem definition was enlarged to being integrated with social, economic, environmental issues and looking for lasting solutions (Stouten, 2010: 76). The urban renewal strategy is recognizable by the project based approach, the participation of inhabitants and specific rent measures. It made important improvements to the existing urban structure in pre- and post-war neighborhoods (Stouten, 2008). It concentrated mainly on the construction of social rented housing and on the improvement of technical quality also trying to improve not just the dwellings but the whole living environment and urban structure as well (Primeus, 2005).

However, in the beginning of the nineties, representatives of municipalities, housing associations, and advisory and district administrations predicted a doom scenario for Western Garden Cities. They talked about spiral forming (spiral vorming) and ghetto formalization. Just like in Bijlmeer. The future problems will exist of mix of social problems en physical decay. Quick interventions were needed, in order to prevent this (Hellinga 2005).
The governance policy changed again in the nineties. Housing associations combined public tasks and market activities, this combination led to housing associations becoming self-reliant entrepreneurs (Stouten, 2010: 77). So, a new strategy was used: the urban regeneration. It started from 1990 and is still continuing. Processes of urban regeneration and urban renewal deals with the question of how housing stock and population characteristics have been and will be combined. The structural approach is mainly concerned with a comparison of structures of housing provision (Stouten, 2010:45). In the urban regeneration strategy there is a renewed attention and appreciation for details, forms and materials, which was less attention given to in the previous decades. The important point of the strategy is its striving for closed building blocks. This means the return of the (residential) street and with this an introduction of a clear border between public and private. A second characteristic is the treatment of ground floors of the buildings (plinth) to avoid blind facades. This enhances the connection from the building to the street and thus can have an effect on livability (Harbers et al, 2008).

At present, large-scale demolition is taking place in the area of Western Garden Cities. According to Oudenampsen (2013) an important factor for that is the ongoing privatization process of the housing corporations and the housing stock, which has led to a renewal process that concerns itself more with the needs of the local real estate market, than the needs of the inhabitants themselves, with corporations increasingly withdrawing themselves from government oversight and neighborhood control. “In the Western Garden Cities, the renewal plan proposed for the area aims to privatize the green space and do away with the open character of the area by intensifying the density of construction” (Oudenampsen, 2013).

4.4 Conclusion

From the literature review it became clear that the green space was a core characteristic of the plan. However the most important part was missing in the expansion plan. The ideas of how people use and appropriate the space in Western Garden Cities, was not clear.

Social changes like increasing mobility, big concentration of low income inhabitants and inhabitants with different backgrounds led to safety issues in public space (see fig. 19, 20). It caused a heterogeneous population in the neighborhood. According to Stouten (2010) a heterogeneous population can cause negative experience, feelings of fear and social insecurity in the neighborhoods. Because, according to van Nes and Rueb (2009), the higher the concentration of low income groups and immigrants, the larger the anti-social behavior problems are in the dwelling areas in terms of vandalism and loitering.

In order to improve the living environment of the post-war neighborhoods, two main strategies were implemented. Although policy changed through time, the main focus of the strategies is mostly on improving the quality of dwellings and public spaces. They had a positive effects and negative effects as well. Although the last strategy (urban regeneration) is still in the process and new outcomes will show in the future how successful it is. The Western Garden Cities are still being seen as problem neighborhoods, caused by the heterogeneity and anonymity in the area. The current strategies and the strategies that already took place in order to improve the living environment of Western Garden Cities are still paying little attention to inhabitants and their use of space.
So, chapter two provided the table of design features that will help to evaluate my design in the analytical phase. But it is also important for my project, to take into account the problems mentioned in chapter four: little attention to the wishes of inhabitants, no clear idea about the usage of public space and heterogeneous population that lead to safety issues in public spaces.
CH 3 Field work

3.1 Safety related factors of Osdorp-Oost

3.2 The use of public space in Osdorp-Oost

3.2.1 Static snapshot analysis

3.2.1 Conclusions for design interventions

3.3 Safe and unsafe places of Osdorp-Oost

3.3.1 Safe places according to inhabitants

3.3.2 Unsafe places according to inhabitants

3.3.3 Personal perception of safe and unsafe places in Osdorp-oost

3.3.4 Conclusions for design interventions for Osdorp-Oost

3.4 Space syntax analysis of Osdorp-Oost

3.4.1 Introduction of space syntax

3.4.2 Space syntax analysis of Osdorp-Oost

3.4.3 Conclusions for design interventions

3.5 Reference cases analysis

3.5.1 Wisgerenbuurt, Amsterdam

3.5.2 Overtoomse Veld, Amsterdam

3.5.3 P. C. Hooftstraat, Amsterdam

3.5.4 Ertshaven, Amsterdam

3.6 Conclusions from the analyses
3 Field work

This chapter will begin with the analysis of safety related factors of Osdorp-Oost. Subsequently, the use of public space of the area will be analyzed. Then the research about safe and unsafe places of Osdorp-Oost will be presented, and the results will be compared with the conclusions from the safety related factors analysis in order to understand what typology applies to the most safe and unsafe spaces.

This will be followed by the space syntax analysis that was performed in order to test different design solutions for improving the safety of public spaces and analysis of four reference cases: Wijgerenbuurt, Overtoomse Veld, P. C. Hooftstraat and Ertskade in Amsterdam.

The conclusions from analyses provide an overview of the areas of Osdorp-Oost where design interventions are needed in order to increase safety and a set of characteristics (rules) for design interventions.

3.1 Safety related factors of Osdorp-Oost

This subchapter will review the safety related factors of Osdorp-Oost: infrastructure, functions, use of the ground floor, buildings heights, location of the entrances and public facilities.

Infrastructure analysis has shown that Osdorp-Oost is well connected with the west side of the city of Amsterdam for travel by car, public transport, bicycle and on foot. However, there is only one main motorway link between the center of Osdorp-Oost and the southern side of Amsterdam through Lelylaan (see fig. 23, 24), where the city center of Amsterdam is located. So, the accessibility from the south side of the city could be improved in order to create a better connection of the area with the city center of Amsterdam.

![Figure 23. The map shows the main connection of Osdorp-Oost with the city center of Amsterdam via Lelylaan (source: www.Amsterdam.nl, 2014)](source: www.Amsterdam.nl, 2014)
Figure 24. Infrastructure of Osdorp-Oost (source: made by the author).
Through the functions analyses, it became clear that most of the commercial and leisure functions are concentrated in the middle of the area, where the shopping center is located. There are also residential functions in the shopping center, which are located above the shops. However, small shops, schools, sports facilities and offices are also located on the northern and southern sides of the area (see fig. 25). Most of the area is used for residence

![Diagram](Image)

**Figure 25.** Functions of the area (source: made by the author).
The ground floors of the buildings on the northern side of the area are mostly used for circulation space and storage. The dwellings start from the first floor. According to theoretical framework this creates low inter-visibility and lack of social control (see Ch. 2) which lead to safety issues in public spaces. On the southern side of the area most of the ground floors are occupied by dwellings. In the middle of the area, where the shopping center is located, the ground floor is used for commercial functions. So, it is only used during the day (from 8 till 19 o’clock). There are also some small commercial, educational and sports facilities on the ground floors on the southern and northern sides of the area (see fig. 26).

Figure 26. The usage of the ground floor in the area (source: made by the author).
Most of the high rise buildings (in this case high rise development is free-standing apartment buildings) are located in the northern side of the area and in the shopping center. The ground floor in these buildings is used for circulation or for shops. Low rise (row houses of max. 3 layers high and a backyard) buildings are located on the south side of the area (see fig. 27), and the ground floor there is used for residence.

Figure 27. The buildings height of the area, the dark colors indicate high rise, light colors indicate low rise (source: made by the author).
Most entrances to the buildings are not facing each other on the street (see fig. 28). The entrances are separated by the private or public space between the blocks. According to the theoretical framework, this typology creates low inter-visibility and low informal social control of the area, which can lead to decrease in objective and objective safety in public space.

Figure 28. The locations of the entrances on the ground floor of the buildings (source: made by the author).
Osdorp-Oost is surrounded by different kinds of green facilities like agricultural land on the northern side and big recreation areas like Sloterplas and Kasterleepark on the eastern and southern sides (see fig. 29).

**Surrounded green facilities**

![Map showing surroundings of Osdorp-Oost](source: made by the author)

*Figure 29.* Surrounded public green facilities of the area (source: made by the author).
Within the area, most of the green facilities consist of semi-private and public areas inside the residential blocks. There are also a lot of children’s playgrounds (see fig. 30). Due to a large amount of semi-private spaces, there is no clear zoning of space. According to the theoretical framework, no clear zoning of space has a negative effect on subjective and objective safety in public spaces.

**Green facilities of Osdorp-Oost**

![Map of Osdorp-Oost](source: made by the author)

**Figure 30.** Public, semi-private and private facilities of the area (source: made by the author).
Through the safety-related characteristics analysis of Osdorp-Oost it becomes clear that the area does not have a sufficient amount of connections with the southern side of Amsterdam, where the city center is located. Also certain factors, like unused ground floor, entrances that are not facing each other on the street and no clear zoning of public and private space lead to safety issues in public spaces. Most of these factors were detected in the northern part of the area.

3.2 The use of public spaces in Osdorp-Oost

3.2.1 Static snap shot analysis

In order to understand how public facilities are being used by inhabitants of Osdorp-Oost, static snap shot analysis was done. The location was visited within three time intervals (12h, 14h and 16h) on one day during the weekend and two days during the week in February (Sunday, 16.02.2014, Tuesday, 18.01.2014 and Thursday, 20.02.2014) and one day during the weekend and one day during the week in March (Saturday, 15.03.2014, Thursday, 20.03.2014). The weather was fine with no rain; however, it was still cold in February, and in March it became warmer. There was also a market on Tuesday, and on Thursday all the shops were open until 9 p.m.

The people that were mapped were divided into the following categories: age group, nationality (factors like clothes, talking in foreign language were considered to identify the nationality), gender and couples. The activities that took place in public spaces, were divided as follows: sitting, sitting in groups, standing, standing in groups, passing by, passing by in groups, walking with a dog, women with kids, a group of women with kids, fishing, playing and loitering (see fig. 31).

On Sunday, February 16th, there was the fewest amount of people on the streets in comparison with the other analyzed days (see fig. 32). The reason for this is that all the shops and other facilities are closed on Sunday. Also, the weather was still cold in February. On Thursday, February 20th, in the evening and on Saturday, March 15th, in the afternoon there was the highest amount of people on the streets (see fig. 33 and fig. 34). The most used area was the shopping center. So, the reasons for the high concentration of people on those days are that the shops are open until late on Thursdays and a lot of people are free on Saturdays (for full static snap shot analysis see Appendix 1 “Static Snap Shot”).
Figure 31. Legend for static snapshot analysis (source: made by the author).
16-02-2014, 12:00 h
Sunday, good weather, cold, no rain
The day with the fewest amount of people in February

Figure 32. Static snapshot analysis of all activities by all groups at 12 o’clock on February 16th (source: made by the author).
20-02-2014, 16:00 h
Thursday, good weather, cold, no rain
The day with the most people in February

Figure 3. Static snapshot analysis of all activities by all groups at 16 o’clock on February 20th (source: made by the author).
15-03-2014, 12:00 h
Saturday, good weather, sunny, warm
The day with the most people in March

Figure 34. Static snapshot analysis of all activities by all groups at 12 o’clock on March 15th (source: made by the author).
After performing the analysis, the conclusion is that the most used public places are the shopping center and Sloterplas, as well as the areas near the facilities, such as: schools, gym, children’s playgrounds and the police office (see fig. 35, red color). Various groups of people perform different activities and form big groups (15 or more people). Also, different kinds of activities performed by groups of smaller size (14 or less) were detected behind the shopping center and near the small shopping center in the southern part of the area (see fig. 35, orange color). The most unused areas are on the northern and the southern (Osdorper Ban and Hoekenes) edges of Osdorp-Oost (see fig. 35, dark blue color). In those areas, the people are only passing by and do not perform other activities.

**Figure 35.** General overview of the usage of public facilities according to static snapshot analysis (red areas indicate the intensive use of public facilities, orange color indicates the normal use by smaller groups of people, the dark blue
area indicates that the areas are almost not used, people are only passing through those areas and don’t perform other activities) (source: made by the author).

The area that is used mostly by women is the public space near the school, on the southern side of the area (see fig. 36, orange color). The areas that are used mostly by men and foreign-born men are the areas behind the shopping center and a small shopping center on the southern side of Osdorp-Oost (see fig. 36, blue color). Shopping center, playground on the northern and southern sides of the area, sports facilities and areas near the water are used by both groups (see fig 36, red color).

**Figure 36.** Places that are mostly used by women, men and both (source: made by the author).
School playgrounds and public playgrounds are intensively used by children; most of them are using the area in bigger groups (15 or more). Sloterplas, the rear sides of the shopping center and playgrounds are used by groups of youngsters (see fig. 37). However the most used playgrounds are located in the southern part of the area. Sloterplas is mostly used by groups of youngsters (loitering).

Figure 37. Places that are mostly used by kids and youngsters (source: made by the author)
According to the static snapshot analysis, the streets with the largest people flow are the streets that lead towards the shopping center. All the main cross connections (Osdorper Ban, Tussenmeer and Calndlaan) in the middle of the area are intensively used. They all lead to the center of Osdorp-Oost. Hoekenes and Meer en Vaart are intensively used as well (see fig 38). However, as already mentioned in the infrastructure analysis, there is only one main connection of the center of Osdorp-Oost to the city center of Amsterdam, through Lelylaan. According to static snapshot analysis, it is barely used by pedestrians. New connection for pedestrians and cyclists could link the center of Osdorp-Oost with the city center of Amsterdam better.

Figure 38. The flow of the people through the streets according to static snapshot analysis (source: made by the author)
3.2.2 Conclusions for design interventions for Osdorp-Oost

From the static snap shot analysis it can be concluded that the most unused areas are the areas on the northern and southern sides of Osdorp-Oost. According to private and public space analysis (see fig. 30) there is a lot of semi-private space in these areas with no clear zoning. And according to the use of the ground floor analysis (see fig. 26), most of the ground floor in the northern part of the area is used as circulation space or storage. However, in the southern part of the area the ground floor is used for dwellings. So, smaller scale design interventions are needed in order to make the zoning of space more clear and activate the use of the ground floor (see fig 39).

Another conclusion from static snap shot (see fig. 38) and infrastructure analysis (see fig. 23, 24) is that there is only one main connection between the center of Osdorp-Oost and the city center of Amsterdam, and it is almost not used by pedestrians or cyclists. Thus, an additional connection for pedestrians and cyclists is necessary in order to enhance the connection between the center of Osdorp-Oost and the city center of Amsterdam (see fig. 40).

Figure 39. Design conclusions for Osdorp-Oost from static snap shot analysis (source made by the author).
Figure 40. Design conclusions for Osdorp-Oost from safety-related characteristics and static snap shot analysis (source: made by the author).

3.3 Safe and unsafe places of Osdorp-Oost

3.3.1 Safe places according to inhabitants

In order to indicate the most safe and unsafe areas of Osdorp-Oost the inhabitants were interviewed (in total 48 inhabitants, 22 men and 26 women). They were asked two questions: first to show on the map of Osdorp-Oost what are the most safe and unsafe places according to them during the day (8-19 h, when the shops and other facilities are open) and evening (20-23 h, when all the facilities are closed) and give a short explanation with the key words why they think so.

So, according to the results of the interviews, the safest place according to men and women during the day is the shopping center. It is considered as safe, because there are always a lot of people and there are houses above the shops (mixed use: commercial/dwellings) (see fig. 41). However during the night, when the shops are closed and the center becomes empty, it is not considered as safe anymore (see fig. 42). A lot of people consider their own living environment as safe, because they are familiar with the surrounded environment and know the people who live next to them. Women see places like children playground safe because of lack of through traffic and clear sightlines. Playgrounds are also being considered as a safe place during the day and the night (see fig. 42).
Figure 41. Conclusions from the interviews: safe places during the day (8-19 h)

Conclusions from the interviews-Safe places during the day (8-19 h)

Figure 41. Conclusions from the interviews: safe places according to men, women and both, men and women, during the day. The brown areas without names are the areas where the interviewed people live (source: made by the author)
Conclusions from the interviews: Safe places during the evening (20-23 h)

Figure 42. Conclusions from the interviews: safe places, according to men, women and both, men and women, during the night, the brown areas without names are the areas where the interviewed people live (source: made by the author).
In order to understand what kind of typology applies to the areas that inhabitants consider safe, the conclusions of the safest places during the day and evening were overlapped with maps of ground floor usage and building heights (see fig. 43, 44, 45, 46).

**Figure 43.** Most safe places during the day combined with the use of the ground floor map (source: made by the author).
Figure 44. Most safe place during the night combined with the use of the ground floor map (source made by the author).

Figure 45. Most safe place during the day combined with the building height map (source made by the author).
Figure 46. Most safe place during the night combined with the building height map (source made by the author)
Figure 47. Typology of safe places (source made by the author and google maps).
The conclusion is that the safest areas have the following characteristics: doors and windows are located on the ground floor, the ground floor is occupied by dwellings or commercial functions, most of the development are row houses with the height of max. 3 m and back gardens (see fig. 47).

However, when the ground floor is used for commercial/leisure functions that are open only during the day, the area is considered as safe only when the facilities are open, during the evening and night it becomes unsafe (see fig. 48).

Characteristics of perceived safe places
Interaction on the ground floor

3.3.2 Unsafe places, according to inhabitants

According to the interviews, the most unsafe area during the day and night is Sloterplas, it was described by both men and women as a dangerous place, because of loitering and criminality (robbery, murders). Also factors like trees that block the view (no clear sightlines), bad maintenance and poor lightning during the night time were mentioned.

Although, Osdorp Park was named as a safe place, it was also said to be unsafe (see fig 49, 50). Men think that it becomes unsafe in the night time; women consider it to be unsafe the whole time. The factors that made it unsafe were: trees that block the view, poor lightning at night, bad maintenance and loitering.

The shopping center is considered as safe during the day and unsafe during the evening and night. During the evening and night, it was described as empty, with poor lightning and a lot
of loitering. The area near the Osdorper Ban was described as unsafe as well; the factors, such as criminality and bad maintenance were mentioned.

**Figure 49.** Conclusions from the interviews-unsafe places during the day (8-19 h).

The map shows the unsafe places according to men, women, and both, during the day.
Figure 50. Conclusions from the interviews-unsafe places, according to men, women and both, men and women, during the day and night time (source: made by the author).
In order to relate the unsafe areas with building typology, the most unsafe areas, according to the interviews (Sloterplas, Shopping center and the area in the North), were compared with the use of the ground floor, and buildings height maps during the day and night.

Thus, the most unsafe area during the day and night is Sloterplas, a big recreation area with a small amount of facilities. The most unsafe area during the evening (20-23 h) and night (24-8 h) is the shopping center, because the ground floor is not used then (see fig. 51, 52, 53, 54). Other unsafe areas that were mentioned by some people are located in the northern part of the area. The ground floor is mostly used for circulation space and there are a lot of free-standing apartment buildings (high-rise) in that part of Osdorp-Oost (see fig. 55).

Figure 51. Most unsafe place during the day combined with use of the ground floor map (source: made by the author).
Figure 52. Most unsafe place during the night combined with use of the ground floor map (source: made by the author).

Figure 53. Most unsafe place during the day combined with the buildings height map (source: made by the author).
Figure 54. Most unsafe place during the night combined with the buildings height map (source: made by the author).
Figure 55: Typology of unsafe places (source made by the author).
From the comparison analysis it becomes clear that the areas with a lot of free-standing apartment buildings, ground floors that are used for circulation space (blind facades) and no clear functions and zoning of private and public space can be described as unsafe (see fig. 55, 56). Those characteristics are in correspondence with the theory of safe urban design (see Ch. 2). So, in other words, the unsafe feeling is related to the activities in and along the public space. Active ground floor for longer periods of the day and activation of the public space (clear functions) could contribute to safety in public spaces.

Thus, this means that investigation about how the activation in and along public space and the zoning of space can be enhanced is needed. This characteristic will be analyzed with the reference cases.

**Characteristics of perceived unsafe places**

**Interaction on the ground floor**

1. Considered unsafe during day and evening

2. Considered unsafe only during the evening time (when the shops are closed)

**Functions**

1. Considered unsafe during day and evening

2. Considered unsafe only during the day time (when the shops are open)

**Zoning**

1. Considered unsafe during day and evening

**Figure 56.** Schemes of typology of unsafe places (source: made by the author).
3.3.3 Personal perception of safe and unsafe places of Osdorp-Oost.

The analysis of personal perception of safe and unsafe places was made as well. The factors like loitering, blind facades, no clear view, unmaintained public places (trash on the streets, trees that block the view), no windows on the ground floor and unused ground floor were important for mapping the unsafe areas. And the factors like a lot of people, clear zoning of space, windows and doors located on the ground floor were important for mapping the safe places. So, according to personal perception, the most unsafe areas are around the shopping center and Sloterplas, the rest was considered as safe (see fig. 57).

Figure 57. The map indicates my own perception of safe and unsafe places (source: made by the author).
3.3.4 Conclusion for design intervention for Osdorp-Oost.

From the performed analysis of safe and unsafe places, it can be concluded that the most unsafe area is Sloterplas and the shopping center (during the evening and night). So, in order to improve safety during the day and night, design interventions, such as activation of the ground floor for longer periods of the day, clear functions and zoning of public and private space, doors and windows on the ground floor, are needed in order to increase safety of public spaces. Those characteristics will be analyzed with the reference cases.

Figure 58. Design interventions for unsafe areas in Osdorp-Oost (source: made by the author).

3.4 Space Syntax analysis

From the infrastructure analysis and static snapshot analysis it becomes clear that there is only one main connection between the center of Osdorp-Oost and the city center of Amsterdam (see fig. 23, 24, 38). However it is intensively used only by cars and not by pedestrians. So for design interventions, the conclusion is that an additional pedestrian and bicycle (local) pathway could create a better accessibility of the city center of Amsterdam from the center of Osdorp-Oost (see fig. 40).

So, in order to investigate what kind of street structure will better connect the shopping center area and the waterfront with the city center of Amsterdam, the current situation and different solutions on a local and global level were tested with the space syntax analysis. First, a short introduction about the three main concepts of space syntax will be provided.
3.4.1 Introduction of space syntax

Space syntax is a form of computer modelling of space in built environments developed by B. Hillier at the University College London. It can serve as a powerful basic instrument for investigating the influence of space on crime patterns (Hillier and Hanson, 1984; Hillier, 1996). It is a set of computer techniques for modelling buildings and cities, in which spatial layout is first represented as systems of linked geometrical elements – lines, when studying movement, convex elements, when studying interaction, fields of view, when examining more complex patterns of behaviour – and then analyzed in terms of the relations between each spatial element and all the other spatial elements in the layout. It measures something like our intuitive sense of how easy it is to move around a local network of spaces. We call it the ‘local integration’ analysis, and, even though it is a purely spatial analysis, it has proved a powerful predictor of movement patterns, both pedestrian and vehicular. A darker line is more ‘integrated’ into the local network, and has more movement potential in that network, and lighter ‘segregated’ with less movement potential (Hillier, 2004).

According to Hillier, there are several reasons why we think space syntax models are the right instrument for investigating urban crime patterns. Firstly, to investigate ‘natural policing’, we can, by definition, rarely know who is around, when crimes are committed, but because space syntax does give a pretty reliable indication of movement potentials, we can use it as a surrogate to investigate the likely effect of movement on crime (Hillier, 2004: 33).

Secondly, social processes tend to be quite gross and to differentiate this urban area or that estate from the other, but they are less virulent at the micro-scale of differences between individual spaces. Space syntax allows us to investigate, with equal rigor, not only the differences between areas, but also the micro-patterns of differences within areas, using the same methodology. Since the latter is much less likely to be susceptible to social processes than the former, if we find comparable spatial effects at both levels they are not likely to be social effects in disguise (Hillier, 2004).

Finally, we can use space syntax to give spatial variables the same numerical status as no spatial social and economic variables in our data table, so we can make space an equal partner in multivariate analysis. In this way, we can compare the effect of space and the effect of socio-economic variables – although difficulties in accessing fine scale data usually confine such analysis to the area level (Hillier, 2004).

3.4.2 Space syntax analysis of Osdorp-Oost

First of all, the current situation of Osdorp-Oost was analyzed with the typological analysis in space syntax, using the axial map on a local and global levels. The local scale analysis indicates the main routes going through and between urban areas and the degree of spatial integration. The global scale analysis indicates how well the neighborhood is connected to the city center of Amsterdam. The lines on the map indicate the streets. The warm colors (red, orange yellow) indicate the high integration of the streets, cold colors (blue, light blue) indicate the low integration of the streets (see fig. 59).

The analysis of the current situation showed on the local level that the shopping center of the neighborhood has a high integration on a local level (red and orange colors), that means
that livability is high. However, the edges (the northern and the southern sides) of the area are low integrated and less livable (blue colors). On the global level, the area has low spatial integration (blue color), because the main routes (red colors) go around the area and the city center and not through it (see fig 59). The global typological analysis also showed Lelylaan as a main connection to the city center of Amsterdam (yellow color). However, on the local scale the connection is low integrated (blue color).

Figure 59. The typological analysis of the current situation of Osdorp-Oost (white frame). The map above shows the local scale and the map on the bottom shows the global scale integration of Osdorp-Oost (source: made by the author).
3.4.3 Conclusion for design intervention for Osdorp-Oost

In order to improve pedestrian and bicycle connection between the center of Osdorp-Oost and the city center of Amsterdam, different solutions were tested with the help of space syntax (for full space syntax analysis see appendix 2: space syntax analysis). As it was already mentioned in the current situation analysis (3.4.2) the main routes go around the central area. So, the possibilities to create a new main route (new centrality) that goes through the center of Osdorp-Oost (and not around it) and enhance the connection with the city center of Amsterdam were tested. After testing different solutions for local and global level, the best one was chosen that had the highest integration on local and global level of the area (see fig. 60).

Figure 60. Solution for new structure of shopping center and waterfront tested with space syntax (source: made by the author).
Thus, from space syntax analysis it was concluded to connect the shopping center and the waterfront with the new main route through the shopping center. A strip of shops could be created along the new waterfront, as well, in order to enhance the connection; this will be investigated further with the reference cases analysis (see fig. 61).

![Figure 61](image)

**Figure 61.** Design interventions for improving the structure for Osdorp-Oost (source: made by the author).

### 3.5 Reference Cases

In order to activate the use of the public and private space and enhance the zoning of public and private space on the northern and southern sides of the area the following reference cases were analyzed: Wijsgerenbuurt in Amsterdam and Overtoomse Veld in Amsterdam. Those two cases were chosen because they belong to the same concept of Garden Cities by Howard and are similar to the situations in the southern and northern parts of Osdorp-Oost. Also, the public and private space was recently renovated in those two reference cases. The old and current situations were compared and analyzed.

With the purpose of increasing safety in the shopping center and waterfront the reference cases P. C. Hooftstraat and Ertskade were analyzed. Those two cases were chosen because both of the neighborhoods lie in the safest areas of Amsterdam, according to Dienst Onderzoek en Statistieken (2006). The factors as the use of the ground floor, building heights, zoning and street structure were analyzed.

#### 3.5.1 Wijsgerenbuurt, Amsterdam

The Wijsgerenbuurt in Amsterdam-Geuzenveld is a neighborhood that was built according to the Garden Cities concept of Howard. The neighborhood was developed in 1954 (see fig. 62).
It exists of long, two layers high row houses with the green space in-between. The green space had no particular function, it was meant to be looked at and not to be used. There were no paths through that space. Most of the green space existed of grass fields with some small bushes at the edges, which separated the public space from private gardens (van Donkelaar, 2009) (see fig. 63, 64). So, interventions were implemented in order to activate the use of the public space.

Figure 62. Wijsgerenuurt in Geuzenveld (source: www.googlemaps.nl)

Figure 63. Old situation of Wijsgerenuurt, according to original design concepts (source: made by the author).
The old situation of Wisgerenbuurt is comparable with the current situation of Hokenes in Osdorp-Oost (see fig. 65). From the static snap shot analysis it has been concluded that the area is not used by the inhabitants (people are only walking in this area and do not perform other activities) and interventions for activation of public space are needed (see fig. 36).

The Hoekenes consists of the two layer high, row houses with the grass fields in between the houses. The two areas (Wijsgerenbuurt & Hoekenes) have been compared with the space syntax analysis. The topological analysis demonstrates that the Wijsgerenbuurt and Hoekenes areas have similar local and global integration and have comparable structure of the routes (see fig. 66, 67).
Figure 65. Hoekenes in Osdorp-Oost, can be compared with the old situation of Wijsgeren buurt (source: made by the author).
Figure 66. Current situation of Wijsgerenbuurt analyzed with space syntax (source: made by the author).
In order to activate the use of public space in Wijsgerenbuurt, design interventions on a smaller scale were implemented. Public space between the building blocks was redesigned and divided into different functions: moestuin (vegetable garden), children’s playground and leisure (see fig. 68). Secondary paths were added through the public space as well. Also the zoning of public and private space was redesigned (see fig. 69, 70).

The new zoning could be split into two situations. In first situation there is a moestuin between the private and public space; this way inhabitants can use and maintain the public space regularly (see fig. 69). There is also a transparent fence that has been put in front of the private gardens instead of closed fence (like it was in the old situation, see fig. 64). That way the inhabitants get a better overview of the public space.

Figure 67. Current situation of Hoekenes, Osdorp-Oost analyzed with space syntax (source: made by the author).
This solution creates an informal social control and increases the inter-visibility (see fig. 69). In the second situation there is a transparent fence between private and public space as well (see fig. 70), but, instead of moestuin there are other public functions. According to the old situation and current situation analysis, it can be concluded that clear functions and zoning of private and public space can contribute to the more intense use of public space.

The ground floor is used for residence and there are doors and windows on the ground floor (see fig. 68, 71), like it was already mentioned before it creates informal social control and contributes to safety in public spaces.

Figure 68. Analysis of the current situation (source: made by the author)
Figure 69. Analysis of the design interventions for activating the public space (source: made by the author).
Figure 70. Analysis of the design interventions for activating the public space (source: made by the author).

Figure 71. Current situation of public spaces in Wijsgeren buurt (source: made by the author).
Thus, from the analysis of Wijsgerenbuurt it can be concluded that clear functions and zoning of private and public space can contribute to the more active use of public facilities and, according to literature review, increase safety. The functions like moestuin and children’s playground contribute to the use and maintenance of the public space by the inhabitants (see fig 71).

Micro scale element as transparent fence enhances the physical border between private and public but still offers the opportunity for informal social control. Also used ground floor and doors and windows on the ground floor contribute to safety, because this characteristics increase informal social control and inter-visibility as well, according to the theoretical framework.

So, the following rules for urban interventions in Hoekenes, in Osdorp-Oost can be distinguished: clear functions of public space (moestuin, children’s playground, and sports facilities), see through fence in order to increase social control and residence on the ground floor (see fig. 72).

![Diagram of characteristics of perceived safe places and clear zoning and functions between public and private space](image-url)

**Figure 72.** Rules for design interventions in Hoekenes, Osdorp-oost, according to Wijsgerenbuurt analysis (source: made by the author).
3.5.2 Overtoomse Veld, Amsterdam

From static snapshot analysis it has been concluded that the area in the northern part of Osdorp-Oost (near Osdorper Ban) is unused as well (see fig 69). For this area the reference case Overtoomse Veld was analyzed (see fig. 69). This reference case was chosen because the old situation is comparable with the current situation in the northern part of Osdorp-Oost (see fig. 36, 70, 71, 72). The North of Osdorp-Oost consists of free-standing apartment buildings, with the circulation space on the ground floor and dwellings on the upper floors. In between the building blocks there is public space. However, it is not used by inhabitant; there is no clear zoning between private and public space and no clear functions of space.

Figure 69. Overtoomse veld (source: google.maps.nl)
Figure 70. Analysis of the old situation, Overtoomse veld (source made by the author).
Figure 71. Scheme of the transition of the zoning in old situation, Overtoomse veld (source: made by the author).
Figure 72. Osdorperbaan, in Osdorp-Oost could be compared with the old situation of Overtoomse Veld (source made by the author).
Overtoomse Veld and Osdorper Ban were compared with the space syntax analysis (see fig. 73, 74). The areas show some similarities on the local and global level, they both located near the main high integrated route on local and global level (red, yellow lines in the maps).

Figure 73. Typological analysis of Overtoomse Veld in space syntax on a local (top map) and global (bottom map) levels (source: made by the author).
According to the current situation analysis, extra development was added to the existing blocks in order to enhance the zoning between the private and public space (see fig 75). In order to separate the street with the space between the blocks, the transparent fences were put to enhance the zoning between private and public space. That way public space becomes private, but because there are gaps in the fences, people who are passing by can still see what is happening inside the block (see fig. 75, 76, 77). So, there is still possibility for the social control.
Figure 75. Analysis of the current situation, Overtoomse Veld.

Scheme of the transition and zoning from public to private (current situation)
Also, according to the old situation analysis, the ground floor of the blocks was used as a circulation space. In order to activate the ground floor, new blocks were added with dwellings on the ground floor and on the front side of the new building blocks. Daily use functions were added, such as: doctor, gym, travel agency and so on (see fig. 78, 79).

Because of the dwellings and daily use functions on the ground floor, the informal social control by inhabitants is increased in the area.
Figure 78. Function analysis of the current situation, Overtoomse Veld (source: made by the author).
So, according to the Overtoomse Veld analysis, micro scale interventions, such as a transparent fence, can enhance the zoning between private and public space, while doors and windows on the ground floor offer the opportunity for informal social control. Also interventions on a local scale, such as adding dwellings and daily use functions on the ground floor, increase inter-visibility and informal social control, and that increases safety in the neighborhood, according to theoretical framework (see fig. 80). Also daily use functions on the front side of the residential block enhance new centrality along the main route. Space syntax analysis of Overtoomse Veld shows that route in green color on a local scale and red color on a global scale (see fig. 73).
Figure 80. Rules for private and public space for Osdorper Ban, Osdorp-oost (source: made by the author).
3.5.3 P. C. Hooftstraat, Amsterdam

From the interviews analysis it was concluded that the shopping center should be revised in order to make it safer during the night. Interventions, such as an active ground floor for longer periods of the day, clear functions and zoning of public and private space, doors and windows on the ground floor are needed to increase safety. Space syntax analysis also showed that the new main route through the shopping center and the waterfront will increase the integration of Osdorp-Oost on a local and global levels and enhance the connection to the city center of Amsterdam.

P. C. Hooftstraat was chosen as a reference case for this intervention (see fig. 81). According to the Subjective and Objective index of Amsterdam (Dienst Onderzoek en Statistieken, 2006), the area lies in the very safe neighborhood (see fig. 82). Although the street is located in a very expensive area of Amsterdam, according to space syntax analysis, the street has a high integration on the local and global level (see fig. 83). Thus, the factors as high integration of line centralities, use of the ground floor and zoning between private and public space can be implemented in the center of Osdorp-Oost as well.

Figure 81. P. C. Hooftstraat, Amsterdam [source: google.maps.nl].

Figure 82. Subjective and objective index of Amsterdam, area 2 is P. C. Hooftstraat [source: Dienst Onderzoek en Statistieken, 2006]
The use of the ground floor, zoning between private and public, buildings heights and the street structure of P. C. Hooftstraat were analyzed (see fig 84, 85, 86, 87, 88). The ground floors of the area are used for residence or for commercial. Most of the space inside the blocks is private; fences separate the private from public space. All the development is 4 layers high, so it is a low rise area. The structure of the street can be described as followed; there is one main shopping street that connects to the city center of Amsterdam. It has some secondary cross connections, but the main flow leads to the city center of Amsterdam through the shopping street.
Figure 84. Use of the ground floor P. C. Hoofstraat (source: made by the author)

Figure 85. Private and public space, P. C. Hoofstraat (source: made by the author)
Figure 86. Buildings heights, P. C. Hoofstraat (source: made by the author).

Figure 87. Street structure, P. C. Hoofstraat (source, made by the author).
The reference case analysis of P. C. Hooftstraat, leads to the following conclusions: active ground floor on a local and global scales (dwellings, commercial), clear zoning between private and public space with micro scale elements, such as transparent fence, doors and windows on the ground floor, and the shopping street as a line centrality that connects the area with the city center of Amsterdam on a local and global level (see fig. 89).
Figure 89. Rules for the revision of the shopping center of Osdorp-oost, according to P. C. Hooftstraat analysis (source: made by the author)
3.5.4 Ertskade, Amsterdam

From the interviews analysis the need to redesign the waterfront of Sloterplas in order to make it safer became evident. Comparison analysis (see Ch. 3.3.1 has shown that interventions, such as a ground floor that is active for longer periods of the day, clear functions and zoning of public and private space, doors and windows on the ground floor, are related to safety in public spaces. Ertskade, in Amsterdam was chosen as reference case for the revision of the waterfront in Osdorp-Oost. That case was chosen because the neighborhood is located on the waterfront of Amsterdam and it is being considered as very safe on subjective and objective level, according to Dienst Onderzoek en Statistieken (2006) (see fig. 82, number 3 shows the location of the Ertskade on the maps).

Figure 90. Ertskade, Amsterdam (source: google.maps.nl)

Space syntax analysis showed that the area is connected with the city center of Amsterdam through central route (see fig. 91), light blue color on local level, orange color on global level). This connection is good integrated on both, the local and the global levels. This reference cases analysis will investigate the functions on the ground floor along this route.
So, the components that were analyzed are: functions on the ground floor, zoning between private and public space, buildings heights and the street structure (see fig. 92, 93, 94, 95, 96).

Most of the ground floor of the area is used for residence. However along the route that had the good integration on local and global level, according to space syntax analysis (see fig. 91, 92, 95), there are commercial and leisure functions on the ground floor (see fig. 92).

There is clear separation between private and public space, it is separated by a (transparent) fence. Most of the development is 2-3 layers high. There are two blocks that have more than 9 layers (see fig. 94).
Figure 92. The use of the ground floor, Ertskade (source: made by the author).

Figure 93. Private and public space, Ertskade (source: made by the author).
Figure 94. Buildings height, Ertskade (Source made by the author).

Figure 95. Street structure, Ertskade, (source: made by the author).
The reference case analysis of Ertskade brings us to the following conclusions: active ground floor on a local and global scales (dwellings, commercial), clear zoning between private and public space with micro scale elements, such as transparent fence and doors and windows on the ground floor increase safety of the neighborhood. (see fig. 96). Commercial and leisure activities along the main route that connects the area with the city center of Amsterdam provide a higher integration of the area on a local and global levels (see fig. 97).
Figure 97. Rules for the waterfront line for Osdorp-Oost (source: made by the author).
3.6 Conclusion from the analysis

In order to link the location with the catalog of urban features that contribute to safety, defined with the help of literature review (see fig. 15), various analyses have been performed. First, the safety related factors of Osdorp-Oost have been mapped and analyzed. Then, the factors, such as infrastructure, functions, use of the ground floor, building heights, location of the entrances and green facilities have been examined. The main conclusions are that the area has only one main car connection through Lelylaan to the city center of Amsterdam; a good pedestrian and bicycle connection is missing (see fig. 23-30).

Static snapshot analyses provide an overview of the areas of Osdorp-Oost that are intensively used (people perform different kinds of activities in those places) by different groups of people and an overview of areas that are almost not used, besides for walking through. The most unused areas are the northern (Osdorper Ban) and southern (Hoekenes) edges of Osdorp-Oost (see fig. 39). Reference cases analysis of Wijsgeren buurt and Overtoomse Veld (see Ch. 3.5.1 & 3.5.2) provide an overview of characteristics on local and micro scales for design interventions for private and public space in order to increase the use and safety of public space (see fig. 72, 80).

In order to define in more detail the most safe and unsafe areas of Osdorp-Oost, inhabitants were interviewed. Thus this analysis provides an overview of most safe and unsafe areas of Osdorp-Oost, according to the inhabitants (see fig. 58). The analysis also gives an overview of characteristics that define safe and unsafe areas (see fig. 48, 56). Analysis of the reference cases P. C. Hooftstraat en Ertskade (see Ch. 3.5.3 & 3.5.4) in Amsterdam outlines the requirements for enhancing the connection between the shopping center and the city center of Amsterdam and characteristics that contribute to subjective and objective safety (see fig. 89, 97).

Thus, the characteristics for activation of public space and increasing the subjective and objective safety are: active ground floor that is occupied by dwellings or commercial that is active for longer period of the day and evening (informal social control), doors and windows on the ground floor (informal social control, inter-visibility), clear separation between private and public with a transparent fence (micro-scale), clear functions of private and public facilities (see fig. 97). According to the interviews, trees (vegetation) that do not block the view and good lightning during the night (micro-scale) are important as well.

So, design interventions for Osdorp-Oost, will focus on the one hand on the global scale of the structure of the street network. That means enhancing the local and global integration of the main route that connects the area with the city center of Amsterdam, by adding commercial and leisure functions on the ground floor of the surrounded development. On the other hand, the design interventions will focus on the micro-scale interventions (fence, trees, lightning) inside and outside the blocks in order to improve the use and safety of public spaces.
4.1 Concept for Osdorp-Oost

4.2 Design for Osdorp-Oost

4.2.1 Design interventions for the southern area (Hoekenes) of Osdorp-Oost

4.2.2 Design interventions for the northern area (Osdorper Ban) of Osdorp-Oost

4.2.3 Design interventions for the revised shopping center and waterfront of Osdorp-Oost

4.2.4 Design overview for Osdorp-Oost

4.3 Evaluation
4. Design interventions for Osdorp-Oost

This chapter will explain the final design interventions for Osdorp-Oost in order to increase the use, as well as subjective and objective safety in public spaces. All previous steps were supportive for the design phase. The performed analyses about safety have provided the scientific foundation for design and the catalog of design interventions on safety.

First, this chapter will explain the concepts for the design interventions of Osdorp-Oost. Next, the interventions for the southern (Hoekenes) and northern (Osdorper Ban) areas will be explained. Thereupon, the chapter will continue with the explanations of design interventions for the revised shopping center and waterfront. Then the whole design will be explained with section visualizations and several maps: green facilities, functions, ground floor use during the day and evening, car accessibility, pedestrians and cyclist accessibility, location of the entrances and parking. This chapter will conclude with the critical evaluation of the process, methods and design and further reflections.

4.1 Concept for Osdorp-Oost

The concept for Osdorp-Oost, can be divided into 3 steps. Step 1 is focusing on the city scale with the structure of the street network, by enhancing the global integration of the new connection to the city center.

Step 2 is focusing on the enhancing of the new connection to the city center on a local level with diversity in residential and commercial typology along the new connection. It is also focusing on increasing the subjective and objective safety of the revised shopping center and waterfront on local and micro scale (functions, zoning, trees, and lightning).

Step 3 is focusing on the micro-scale interventions (fence, trees, lightning) inside and outside the blocks in order to improve the use and safety of public spaces (see fig. 98).
4.2 Design for Osdorp-Oost

4.2.1 Activation of public space in the southern part of Osdorp-Oost (Hoekenes)

According to the performed analyses, the public space of the area on the southern edge of Osdorp-Oost is not used by the inhabitants. Most of the space consists of the grass fields with no functions. Reference case analysis of Wijsgerenbuurt has provided an overview of design interventions on a local scale. Those interventions are: clear functions of public facilities, such as moestuin, children’s playground, sports facilities and leisure.

So for the redesign of public space in Hoekenes three options are proposed (see fig. 99). In the first option the public space is used for children’s playgrounds, sports facilities and leisure, in the second and third option the public space is used for moestuinen. In all three options...
paths through the public space are added. Micro-scale interventions, like trees that do not block the view and good lightning at night, are also considered.

Hoekenes

Hoekenes, current situation

1. Hoekenes, variant—children playground, sport facilities and leisure
4.2.2 Activation of public space on northern side of Osdorp-oost (Osdorper Ban)

According to the performed analyses, the public space of the area on the northern edge of Osdorp-Oost is not used by the inhabitants either. Most of the space consists of the grass fields with no functions. Reference case analysis of Overtoomse Veld has provided an overview of design interventions on a local and micro scale. Interventions on a local scale, such as adding dwellings and daily use functions on the ground floor, increase inter-visibility and informal social control and that increases safety in the neighborhood, according to the theoretical framework. Daily use functions on the front side of the residential block enhance new centrality along the main route. Micro-scale interventions, such as a transparent fence, can enhance the zoning between private and public spaces, while the doors and windows on the ground floor offer the opportunity for informal social control. Micro-scale interventions that were defined with the help of interviews, such as trees that do not block the view and good lightning during the evening and night are also considered in the interventions (see fig. 100).
There are two design options for Osdorper Ban. In the first option the zoning between the private and public space inside and outside the block is enclosed with a transparent fence. In the first option the ground floor is already used for residence, however an additional small building for daily use function, such as a doctor’s practice, a hair salon, travel agency, etc. is added; the doors and windows of the new block are located on the ground floor and are facing the street.

In the second option, extra residential block of 4 layers high is added to the existing block, the ground floor is used for residence and doors and windows are facing the street in the new block. In the existing block, the ground floor is used for circulation space, in order to increase inter-visibility and informal social control, the ground floor will be redesigned for dwellings, with doors and windows facing the street as well. The zoning between private and public will be enhanced with the transparent fence. On the front side of the streets there is a transition zone between private and public, for appropriated use.
Figure 100. Design interventions for Osdorperbaan (source: made by the author).
4.2.3 Revision of the shopping center and water front of Osdorp-Oost

In order to increase safety of the shopping center during the evening mixed use blocks with commercial and leisure functions on the ground floor and dwellings on the upper floors have been implemented. Some of the commercial functions such as sports facilities, cafes, restaurants and beauty salons will stay open until late in the evening (until 10 p.m.), in order to activate the ground floor for a longer period of the day. The private and public space of the blocks is separated with the transparent fence. On the front side of the blocks there is a transition space between private and public for appropriated use. The doors and windows are located on the ground floor and face the streets, in order to increase inter-visibility and informal social control. Trees that do not block the view and good lightning during the evening and night are also implemented in this area (see fig. 101).

For making Sloterplas safer, new design for the waterfront is proposed, the design interventions for the waterfront are the same as for the shopping center. Mixed use blocks with commercial and leisure functions on the ground floor and dwellings on the upper floors were implemented as well. Some of the commercial functions such as sports facilities, cafes, restaurants and beauty salons will stay open until late in the evening (until 10 p.m.), in order to activate the ground floor for a longer period of the day. The private and public space of the blocks is separated with the transparent fence. On the front side of the blocks there is a transition space between private and public for appropriated use. The doors and windows are located on the ground floor and face the streets, in order to increase inter-visibility and informal social control. Trees that do not block the view and good lightning during the evening and night are also implemented in this area (see fig. 103).
Currently there are 21,275 square meters of commercial functions and 900 residence in the shopping center, the new design will provide 21,855 square meters of commercial functions and 940 new residences (see fig. 102). So there will be enough space to relocate the exiting functions and there will extra space for new ones.
4.2.4 Overview of the design for Osdorp-Oost

The figure 103, 104 provides an overview of the current and possible new situation for Osdorp-Oost in order to activate the public spaces and make it safer. Black color indicates the existing development and red color indicates the new development (see fig. 104, 105). Figure 105 shows the section and figure 106 shoes 6 impressions of possible new situations (see fig. 105, 106).
Current situation

Figure 103. New design for Osdorp-Oost (source: made by the author).
Figure 104. Possible new design for Osdorp-Oost (source made by the author).
Figure 105. Sections of design interventions of Osdorp-Oost [source made by the author].
Figure 106. Sections of design interventions of Osdorp-Oost (source made by the author).

In order to activate the use of the ground floor for a longer period of the day and evening mixed use blocks with commercial and leisure functions on the ground floor and dwellings on the upper floors were implemented in the new design of the shopping street and waterfront. Some of the commercial functions such as sport facilities, cafes, restaurants and beauty salons will stay open until late in the evening (till 23 o’clock) (see fig. 107). On the north side of the area, new dwellings blocks were added, with the daily use or residential functions on the ground floor. The ground floor of the existing dwellings blocks was transformed into dwellings as well.

Figure 107. Functions and the use of the ground floor during the day (8-19) and evening (20-23) (source made by the author).
Figure 108 provides an overview of green facilities of the new design of Osdorp-Oost. All green space inside the block has clear functions (see fig. 108).

**Green facilities**

Figure 108. Green facilities of possible new design for Osdorp-Oost [source made by the author].
Figure 109 shows the main network of exciting car roads and the new ones. Shopping center and waterfront is a car free zone. However destination traffic for shops or in cases of emergency can still go through the area. Figure 110 shows the main exciting and the new network of pedestrian and bicycle connections. Some of the collective private space on the north side of the area and moestuinen on the waterfront are accessible for every one during the day (8-10). During the evening and night, the facilities are only accessible for the people who live there (see fig. 109, 110).

Cars accessibility

Figure 109. Accessibility map of the new design for cars (source: made by the author).
Pedestrians and cyclists accessibility during the day (8-20h) and evening/night (21-7h)

Figure 110. Accessibility map of the new design for pedestrians and cyclist during the day and evening/night (source: made by the author).
The entrances of the new design are located on the ground floor and in most cases are facing the main street. That way, the inter-visibility and informal social control will be increased, according to theoretical framework (see fig. 111).

**Location of the entrances**

*Figure 111*. Location of the entrance of the new design (source: made by the author).
The next map shows the buildings heights of the new design. New mixed use (commercial/dwellings) and apartment blocks are not higher than 4 layers. New row houses are not higher than 3 layers (see fig. 112).

*Figure 112.* Buildings heights of the new design (source: made by the author).
Figure 113 shows the parking solution for the new design of Osdorp-Oost. Because new development is added to the exciting situation, new parking facilities are required as well. There are three underground parking garages. One is located on the north side of the area; the second one is in the center and third one on the new waterfront area (see fig. 113). The parking garages offer enough parking spaces for inhabitants (2 cars per household) and visitors.
4.3 Evaluation

This evaluation will provide critical reflection on the methods, process and design of this master thesis. The main question of the thesis is “Which urban design interventions can improve the public space in Osdorp-Oost, in order to increase the safety for the inhabitants?” In order to give an answer to the main questions four sub questions were answered first with the help of various methods and analyses.

First of all, the features of public space in an urban environment that contribute to the subjective and objective safety were defined with the help of literature research. Two design checklists for social safety made by van der Voordt & van Wegen and a checklist for social safe urban design made by van Nes, Lopez, de Bonth, Verhaegh and Waayer were discussed and compared. The comparison analysis of those two checklists provided a catalog of urban design interventions in order to increase safety of public spaces. The literature review method that was chosen for answering this question worked well. It provided a theoretical background of urban design characteristics that contribute to safety.

Then, the main design concepts of the AUP (Algemeen Uitbreiding Plan) and the Western Garden Cities, in relation to safety were reviewed with the help of the literature research and demographics research about nationalities, income, housing prices, subjective safety and objective safety in Osdorp-Oost. The methods that were chosen for answering this question provided enough information for answering the question. However, a demographics overview could have been examined more closely. Statistics of the incomes and housing
prices of the inhabitants of Osdorp-Oost could have be compared with the average statistics of incomes and housing prices of the whole city of Amsterdam. Also, criminality level of Osdorp-Oost in comparison with the whole city of Amsterdam could have been compared in more detail. For example, different years could have been compared in order to understand how the criminality level changes in the neighborhood in relation to the whole city of Amsterdam.

After that the current use of public space in Osdorp-Oost and identification of subjective and objective safety in the neighborhood has undergone an in-depth analysis through the use of the following methods: mapping of physical factors of the location related to safety, static snapshot analysis, interviewing the inhabitants. Static snapshot analysis provided an overview of the most used and unused public spaces in Osdorp-Oost. The interviews with the inhabitants supplied the data on the perceived most safe and most unsafe areas of Osdorp-Oost. Then, the most safe and unsafe areas of Osdorp-Oost were overlapped with the use of the ground floor and buildings heights maps, in order to correlate certain typologies of the buildings and public spaces with the most safe and unsafe spaces. The results were in correspondence with the design checklist that was defined previously with the help of literature review. So, the performed analyses linked the problematic areas of Osdorp-Oost with the design checklist that was made by van Nes, Lopez, de Bonth, Verhaeg and Waayer. Thus, the chosen methods worked very well in order to give an answer to the third sub-question. The most unused and unsafe areas of Osdorp-Oost were chosen for design interventions in order to activate the use of the public space and increase subjective and objective safety. However, if there was more time more extensive static snapshot analysis during different seasons (winter to summer) could have been performed in order to obtain even more detailed information about the use of the public space in Osdorp-Oost.

In order to test the different solutions for connecting the center of Osdorp-Oost with the city center of Amsterdam, those alternatives were tested with by means of space syntax. This analysis helped a lot to understand the current integration of Osdorp-Oost and improve it with the new design. It also helped to understand the local and global integration of the reference case and compare it with similar areas in Osdorp-Oost.

Then, four reference projects were analyzed in order to define the characteristics on local and micro scale for the four areas in Osdorp-Oost: Wijsgerenbuurt, Overtoomse Veld, P. C. Hoofstraat and Ertskade, in Amsterdam. Wijsgerenbuurt and Overtoomse Veld were chosen, because the old situations have a similar typology as the areas on the southern and northern edges of Osdorp-Oost. The old and the current situations of the reference cases were compared with each other. The results provided characteristics of design interventions on local and micro scale: dwellings and daily use functions on the ground floor increase intervisibility and informal social control, and that increases the safety in the neighborhood (local scale). Daily use functions on the front side of the residential block enhance new centrality along main route (local scale), and transparent fence and doors and windows on the ground floor can enhance the zoning between private and public spaces and still offer the opportunity for informal social control (micro scale). Those characteristics were in correspondence with factors from the design checklist that was defined by means of the literature review in the earlier part of the thesis.
The reference cases P.C. Hooftstraat and Ertskade were analyzed for the shopping center and waterfront areas of Osdorp-Oost in order to enhance the new connection to the city center of Amsterdam and increase safety. The analysis provided a set of characteristics that could be implemented in the similar areas (the shopping center and waterfront) in Osdorp-Oost. Active ground floor on local and global scales (dwellings, commercial) and clear zoning between private and public space with micro-scale elements, such as transparent fence, were concluded for the design interventions. Those factors were implemented into design. However, the analyzed cases are situated in a much more expensive area in comparison with Osdorp-Oost. So, a preliminary demographics overview of housing prices, incomes and nationalities of the reference cases could have helped to choose more suitable and more comparable case for the shopping center and waterfront of Osdorp-Oost. Also, the activation of the ground floor for longer period of the day could have been analyzed with additional reference cases, in order to define the precise functions and precise active time periods that increase the safety of public spaces.

The conclusions from the performed analyses were implemented in four areas of Osdorp-Oost in order to enhance the connection between the center of Osdorp-Oost and the city center of Amsterdam, activate the use of the public spaces and improve safety of the areas.

The implemented interventions correspond with the theory that was reviewed in the second chapter of the thesis (see fig. 15, 89). So, in theory, the safety of the public spaces would be improved in the areas where the interventions are applied. However, factors as informal social control depend not only on the urban design, but also on the inhabitants. If the inhabitants are not willing to participate in it, than subjective and objective safety could not increase. Also for adding the new development and refurbishing the ground floor and public space of the existing blocks, actors, such as housing corporations and government, should be interested and willing to participate in the project as well.

Also the interventions are implemented only in four areas of the neighborhood, in order to increase the safety of Osdorp-Oost similar interventions should be applied everywhere in the neighborhood.

Thus, the new design should improve safety in theory, unless the inhabitants, housing associations and government are willing to participate in the project as well.

The part of the new design provides a new situation for the shopping center and waterfront. That means that the old development should be demolished, and some part of the Sloterplas will be developed with the new commercial and residential blocks. Although the new design provides enough space for relocating the current functions and dwelling, these interventions can still cause conflicts with the involved actors. The possible conflicts could be that the housing associations and government will refuse to spend their money on the new project or some inhabitants will refuse to move from their houses.

Thus, the new design should improve safety in theory, unless the inhabitants, housing associations and government are willing to participate in the project as well. However, for the further improvement of the design the participation and interest of the actors should be considered in the design process as well.
CH 5 Literature list

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