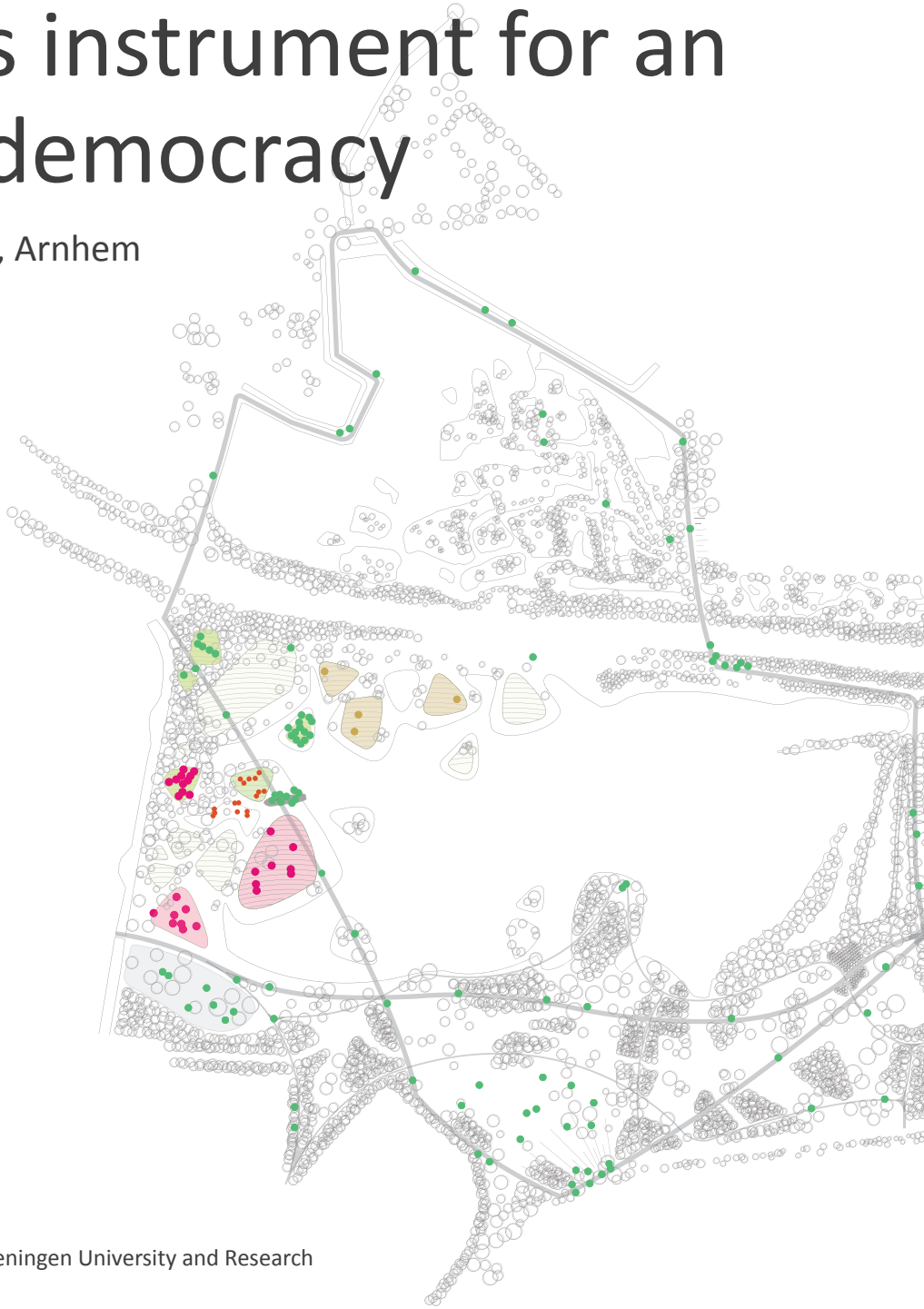
The park as instrument for an ecological democracy

A design for Park Immerloo, Arnhem



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A design for Park Immerloo, Arnhem

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Preface

In the past year I took the chance to think about the design of the large park in contemporary society. In order to say something about the meaning of the large park I had to understand both the park and the city, and this also means understanding society and culture. These are very broad themes and understanding them is very complicated but I integrated them in this thesis as this is important to make the design of a park a success.

The topic and the focus of this thesis is entangled with my personal drive to work on a sustainable way of living and quality of life in cities. More specific I like to work on the design of cities in relation with green (park) structures. My interest for parks was encouraged when I visited modern and historic parks in New York, Italy, England, Germany and Denmark, and when I worked on parks during my internship at Bureau B+B in Amsterdam. During this thesis I started to realize that these parks are embedded in a cultural history that is so fundamental that I was blinded for it. Becoming aware of the characteristics of the Western culture in which I grew up was one of the greatest discoveries for me. This made me aware of the fundamental causes of many environmental problems in contemporary society. It created awareness for looking at other types of parks in the world that work on a balanced relation between man and nature. When I started this thesis I found I lacked vision and meaning in my designs. This thesis reflects my search for meaning for the large park, but also the search for meaning for my personal worldview. I am very glad that during my thesis I found a direction on which I can work in the future. I see this thesis as a first step for me to design on the quality of life in cities, with special attention in this case for the design of the large park.

I would like to thank my tutor and supervisor Jusuck Koh for inspiring and guiding me during my thesis. I further like to thank Paul Roncken, Marlies Brinkhuijsen and Adriaan van Haaften for giving me additional advice during my design process. I thank Hans van Ammers for giving me trust and support during my thesis process, and for giving me the possibility to work at the municipality of Arnhem for half a year to get in-depth knowledge of Arnhem and Park Immerloo. I also like to thank Eline Dekkers, Christine Paris, Robin Driessen, Rick Backx, Jeroen Kautz, Pieter Polman for their support and feedback. Finally, I like to thank Lisette Kouwenhoven for her love and support.

Summary

Chapter 1: From the analysis of the general cultural context and social needs results that two large issues are relevant for the design of the large park in contemporary society. The first one is the existence of a plural society with many different wishes and needs for the park. Different leisure-time profiles exist and people have different images of what nature has to be. Dealing with this plurality of wishes and needs is inherent to a democratic design. The second issue is the existence of a bad relation between man and nature and the existence of unrooted cities. These two issues reveal the need for ecological understanding and democratic decision making in the designs of our cities and parks. The aim of this thesis is to explore the meaning of the large park as instrument for an ecological democracy. Ecological democracy is defined as 'government by the people emphasizing hands-on involvement. Actions are guided by understanding natural processes and social relationships within our locality and the larger environmental context'. Knowledge about the meaning of the large park is generated by doing research-by-design on Park Immerloo in Arnhem, a park that deals with the named issues. This research-by-design is done based on a landscape approach to design.

Chapter 2: The design of our cities, parks and landscapes is a form of adaptation to local biophysical circumstances that is influenced by cultural values. When looking deeply into these values it becomes clear that in our Christian based Western society man was seen as steward of nature. Here a science could develop that made nature abstract and put man increasingly above nature. For the design fields this led to an architectural approach to design that have been used to design many post-war (Modern) cities. This approach puts attentions on functional designs with a focus on composition, program and the (egoistic) vision of the designer. It lacked attention for full sensory experiences on the body and the mind, and lacked attention on working ecological and social processes. These designs are not ecological (in the broad sense - holistic) as they do not include human and natural processes in the design. This lacking attention explains the relevance of cultural values and makes reaching for ecological understanding an explicit goal of park design.

Chapter 3: Enhanced by globalisation there are different groups with different images of nature in contemporary society. As park design can be seen as a reflection of images of nature in society it is important to realize that some old images are

diminishing and new images get growing importance. This explains the need for democratic designs that are open and adaptive so that they can deal with an ever changing society. The designer should be able to step back, but should also offer something for the people based on contemporary ecological (aesthetic) theory.

Chapter 4: The large park is a unit that is part of the complex dynamic collective entity city. It is complex as not all relations can be overseen. It is dynamic as the cultural context and physical context change over time. It is collective as the park needs other units (e.g. neighbourhoods and infrastructures) in the city to exist. There needs to be legitimization for it to be a park and it has to find a 'niche' in the 'ecosystem' city. A legitimization can be found on different scales and if no legitimization can be found there might be thought of other forms of land-use. This definition offers a way of seeing the large park as an interwoven part of the city. It explains the growing role for hybrid parks that offer more functions and can be both park and city.

Chapter 5: This chapter presents a theoretical framework for designing the large park. The base of a park should consist of a solid and resilient framework of ecological habitat and infrastructures that embeds the park into the city and with ecological networks. This makes that the park can act with purpose in the city and the landscape. The framework has to offer possibilities for user-groups to appropriate spaces in the park and needs to have the capacity to offer possibilities for future user-groups to appropriate spaces in the park. This capacity has to be reversible to make the park open and adaptable for future circumstances and gives it the possibility to evolve in time to maintain its niche in the city. The capacity to hold different user-groups turns the whole into an inclusive environment instead of a design for all. Public infrastructures run through these different 'spheres' so that the public space can be appropriated by user-groups and turn it into public domain. These domains can be experienced as such when others enter them and this helps to experience and understand other communities. Common values (perhaps with supervision) have to safeguard that one feels safe and is able to enter another public domain and that ecological accounting is taken in actions and activities in the park. The park has to be developed from the bottom-up. Attention is put on self-building, self-organization and spontaneity. To stimulate, support and guide such a development strategy an organisation structure is necessary. This organization (perhaps a foundation) zooms

in on society and searches for ways to put (new) attention on the park. They provide guidelines for developments and help to create collective values. They work with a focus on the user (what do you need?) and offer a platform for democratic decision making. This development strategy makes the design of the park a reflection of society instead of a design imposed on society. Our landscapes affect our cultures. The relation between man and nature can be improved by making use of ecological aesthetic principles instead of architectural (Modernist) aesthetic principles. Ecological aesthetics have the potential to restore the relation between man and nature as they focus on designing with natural processes and a full sensory experience of these natural processes. The focus on the creativity of the mind can help to develop ecological understanding in the minds of people.

Chapter 6: All these theoretical concepts are tested on an empirical case: Park Immerloo in the Dutch city of Arnhem. This case starts with an analysis of the social-cultural context of the park and the characteristics of Arnhem-culture. This analysis makes clear that an opposition exists between 'rich' Arnhem-North on the hillsides of the Veluwe-moraine and 'poor' Arnhem-South in the river landscape of the Rhine. The social context of the park shows the existence of a plural society with different user-groups that need different kinds of experiences (e.g. quiet walk in the park and gardening vs. extreme urban activities) and do not always go well together. Existing policy stresses the need for possibilities for social improvement (sociale stijging) for people in this part of Arnhem. Also the design and layout of Arnhem-South do not contribute to ecological understanding and a better relation between man and nature as large parts of the (Modern) post-war urban expansions of Arnhem-South have a functional layout and show an architectural design approach. From the existing policy can be concluded that Arnhem wants to improve the quality of life in the city and exploit the character as green and creative city to become (or stay) attractive for (new) citizens and businesses in the future. This analysis reveals the need for an ecological democratic design for Park Immerloo.

Chapter 7: The genes of the park are conducted from an analysis of the cultural context and the social needs and is in line with the theoretical framework. The core points are that the park has to be open and adaptive to future circumstances so that it can evolve and remain its niche in the city. The park should be democratic by offering possibilities for user groups to be actively involved in the development of

the park. By providing an environment that offers full sensory experiences of nature on the body and the mind there can be worked on developing ecological understanding. The river landscape can function as a theme for the park as it puts the park opposed towards the traditional parks on the moraine in Arnhem-North. This park should provide windfall for Arnhem-South bringing them benefits 'instead of Arnhem-North'.

Chapter 8: This chapter contains a site analysis on Park Immerloo and an inventory of the local program. The important conclusions are that the site is situated in the river landscape with as main feature an old clay extraction pit that is split in half by a motorway. Alongside the edges solitary developments take place and there lacks a vision to develop the site as a whole. Only for ecological concerns there is a coherent vision as the site is part of the ecological main structure (EHS). Drinking water extraction takes place so there are limitations for the use and accessibility of the water. In general it can be said that most of the park has wildered and sufficient cleaning and restructuring of spaces and paths (new connections) in the park needs to be done to make it representative for more people and to put renewed attention on the park.

Chapter 9: This thesis presents a design for Park Immerloo that assigns three different zones that reflect images of nature but are interpreted by the designer. These different zones help to make the total an inclusive environment that is a reflection of society. In the north a 'Wilderness' is created that builds upon the ecological values of the EHS. In the south the existing 'Traditional Park' is cleaned up and improved so that it offers possibilities for a walk and a pick nick. Here the short mown grasslands (e.g. the lawn) provide a platform that is open for many forms of use. The 'River' in the west offers a high variety of different open units that can temporally be appropriated by people. It's braiding pattern reflects the change of users over time and corresponds with the river theme. The base of the total park consists of working ecological processes and sufficient infrastructures that embed the park in the city. A foundation hosts into a central meeting place (a boat) and offers possibilities to discuss issues and to work on democratic decision making. This boat can also be used as viewpoint over the water, play facility, for eating and drinking, and storage room for facilities.

Chapter 10: The conclusion. Ecological democratic designs are a reflection of society and they are based on ecological understanding. The large park as instrument for an ecological democracy influences the cultural values of people. As an inclusive environment it can bring together different groups in society and create understanding about others. By focusing on ecological aesthetics and experiences on the body and the mind the park can create ecological understanding. The large park defines the form of the city, and as a complex dynamic collective entity the large park can become an interwoven part of the city that can have a major contribution to creating a responsible freedom of our cities.

Contents

FIG. 1.1: The contemporary urban periphery host a plural society with different backgrounds, values, wishes and needs.

1. Introduction

1.1. A plural society and an unrooted city

The shaping of our cities and parks is a long process of cultivation, occupation and creation. As such the cities become in many ways the context of people's lives as it reflects their memories, values and the experiences they have of a place. This means that it becomes part of their collective identity (Kerkstra 2003; Moore 2010). This counts as well for large parks as they say something about themselves and the experiential worlds they generate can give direction to cultural values and the form of the city (de Jong 2011). The ongoing expansion of the peripheral urban field in urban regions explains today's interest for the meaning and the design of the large park (Van der Velde 2010). When analyzing the social context of the large park in the urban periphery two issues catch immediate attention.

First, contemporary society is a plural society with many different wishes and needs for the content of the park. Globalization and individualization contributed to an urban periphery that now hosts a multicultural society with many different user-groups that have different backgrounds, values, wishes and needs (Hajer and Reijndorp 2001; Jacobs, Lengkeek et al. 2003; Thompson 2007; Olin 2011, p. xi) (fig. 1.1). This plurality results in the need for different kind of experiences in society, ranging from intense rest to extreme kicks (Motivaction 2009), that has affect on the wishes for the content of the large park. But it does not work to make an average of all the wishes and needs as doing that represses all sorts of processes by which certain user-groups appropriate spaces in the park (Hajer and Reijndorp 2001; Beardsley 2007; Thompson 2007). For example some groups are restricted from using a space in a park when other, more dominant groups, are already occupying it. Some groups needs spaces for their own and interference with others can prevent them from going to the park. This means that plurality of society has implications for the ways by which we design the large park (Corner 2007; Czerniak, Hargreaves et al. 2007) and is an issue that should be dealt with.

The second issue is that in contemporary society the relation between man and nature has been disturbed and nature and city are seen as opposing elements. In modern industrialized society the relation between the functioning of the natural environment and the build environment became abstract and often unnoticeable (Ruff

1982, p. 175), and human culture and nature became treated as separate realms (Lister 2007, p. 39). It resulted in a society in which nature is set against city (Spirn 1984). The same holds for the fundamental aspects of the Dutch peripheral city (Steenbergen 2010). In Dutch national policy (Nota Ruimte) it was also stressed that the relation between man and nature should be restored (VROM 2006). This means that the experience of ecological processes by humans and the effects this has on a culture has often been neglected in the ways by which we design our cities. This distinction between man and nature is specifically relevant for the development of the urban periphery. Large parts of the urban periphery have been built shortly after the Second World War when there was urgency for creating a massive amount of cheap housing rather than qualitative living-environments. In this Modern period the growing influence of science reinforced the so-called architectural design approach in the design fields (Koh 2008). Especially in the period 1930s-1970s Modernists created cities and urban expansions based on architectural design principles. This approach was present in architecture and urban design, but also the history of landscape architecture was influenced significantly by these professions as the theory and principles available in architecture were used for example to design parks (de Jong, Kolen et al. 2007; Koh 2008). Here 'vision is privileged over experience, appearance over system, product over process, function and 'program' over ecological and cultural relevance' (Koh 2004). In this approach nature is reduced to abstract forms and attention is put on creating a certain composition and scenic experience, with eye for Euclidian geometry. This makes these designs visual, static, one-sided and distemic, and also dominant and authoritarian (Koh and Beck 2006; Koh 2008). Parks which are designed based on this approach neglect a full sensory and participatory experience of the user. They limit creativity and cognitive learning (Koh 1982). Because they are functional and authoritarian they restrict other forms of use and spontaneity. Whilst the relation between man and nature has to be improved we can still notice the lingering influence of Modernism with a Western aesthetic theory that can be recognized by the sense of order and dominance over nature (Koh 2004) (fig. 1.2). The result of the opposition between man and nature was described by Hester (2006, p. 4), who warns for the damaging effects: "the vicious interactive cycle in which insecure and unrooted individuals make insecure and unrooted cities, which make even more insecure and unrooted individuals, was generations in the making and will be generations in the undoing. Shifts that dis-

FIG. 1.2: Marking parks that show the development of the park in Western society. The 'Garden of Eden' (1) as the archetype of the garden (source: http://www.dailymail.co.uk), the Italian Renaissance garden (2) with the formal mastery of nature (1550), landscape as scenic experience (3) in English picturesque gardens (18th century), the public park (4) as contributer to quality of life in cities (from 19th century), highrised buildings (5) in a green space (1950s-1970s) (source: ANP), a hybrid park (6) with a grid of pavilions (Parc la Villette, 1980s), and (7) Park21 a park as recreational bufferzone outside the city (source: Bureau Vista). Following from the last developments the question rises what the park of the 21st century should be?

rupt the unhealthy cycle are essential. (…) dealing with this is the great challenge of our time". Also ecologist Dramstad (1996, p. 10) stresses the importance of 'a new form of linkage between ecology and culture, land and people, nature and humans'. Dealing with the unrootedness of cities and an aesthetic theory that is able to bring man and nature closer together is the second relevant issue that needs to be dealt with when talking about designing the large park.

Dealing with a plural society and unrooted cities are the relevant issues for the large park in contemporary society and will be addressed in this thesis. But how can we describe the large park? The definition of a large park will be discussed later in a separate section (chapter 4), but in short it can be said that a clear description of the park is ambiguous as there are many kinds of parks and park systems that have different scales, functions and meanings (Vroom 2006). As such, today's parks and

cities can be interwoven and hybrid, multifunctional, being both park and city, nature and building, offering different opportunities for both human and ecological purposes (fig. 1.3). It comes down to the fact that a definition of the large park is hard to give. Therefore the term 'large' in this thesis has on the one hand to do with size, but it also refers to what Czerniak calls 'ambition' (Czerniak, Hargreaves et al. 2007, p. 26). Now what is said about the issues in contemporary discourse concerning the design of the large park?

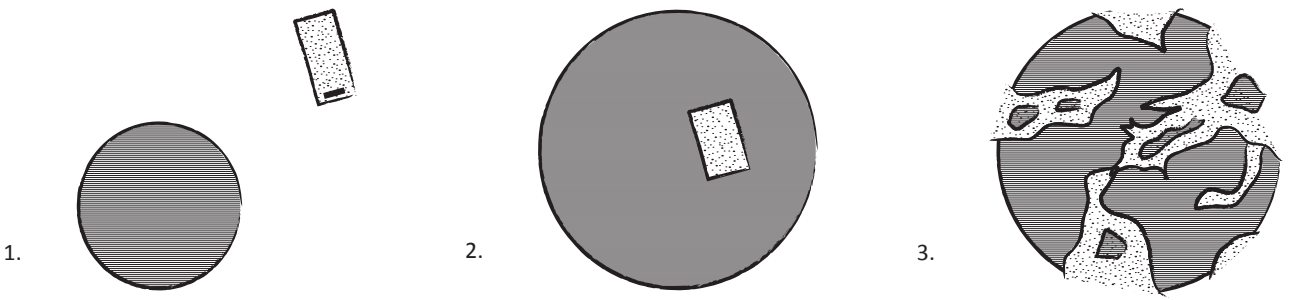


FIG. 1.3: The position of the park in the city during the centuries. As (1) private estate located out of the city (1500-1850), (2) as inner-city park for the people (1850 - 1990), (3) as interwoven part with the city where town-country opposition becomes less strong (contemporary).

1.2. Contemporary discourse and research gap

In the past decades park designers put more attention on dealing with ecological and social uncertainties and complexity. This corresponds with science's view on nature that changed in the past decades with the discovery of instabilities, chaos, fluctuations and the rediscovery of the role of time (Pulselli and Tiezzi 2009). Pulselli (2009) wrote that 'the observation of these characteristics of the real world and especially their variations in time, attracted the attention of various scholars and since then has orientated scientific research towards the new fields of environmen-

tal, ecosystem, and social complexity (…); the novelty of discovery or rather rediscovery of the role of time'. It was for example discovered that ecosystems did not fell back in a certain state, but small differentiations at the start could have major effects over time. It became clear that when dealing with complex (living) systems designing parks based on a defining architectural approach becomes difficult and there should be thought more in terms of open and adaptive designs for parks.

In 2007 a large conference was held by Harvard University with world-wide leading researchers and professionals concerning the design of the large park. Inspired by this conference a book (*Large Parks)* was published that gives insight in contemporary discourse on large park design. This conference made clear that the designer can no longer design for the whole park as the park is simply too large and the processes are too complex. Therefore the focus shifted on designing a sustainable structure, named as a 'framework' or 'matrix'. The framework should be resilient, it should be able to handle disturbances of man and nature, to make it both ecologically and economically sustainable. For this framework special emphasize is put on working with theory from ecology with attention for concepts like time, adaptation and resilience. In the last decades the concept of 'regeneration' was often used. Regenerative parks are meant to restore and regenerate polluted sites, often former industrial sites or landfills. Renowned examples of regenerative parks are Landschaftspark Duisburg-Nord in Germany and Fresh Kills Landfill in New York, which show attention for decomposition instead of composition (Tate 2001; Czerniak, Hargreaves et al. 2007). Especially in the last decades regenerative parks got special attention as they have been researched and described many times, and therefore this theme gets less attention in this thesis.

At the conference also the meaning and use of the parks by different users was discussed. It is stated that 'we need to promote them (Brandsma: parks) neither simply nor primarily as revenue streams but as the vital laboratories of democracy (...). Parks are where we test the limits of our tolerance and our capacities for acknowledging difference' (Beardsley 2007, p. 212). The park is seen as a place where different groups in society meet and reflect upon their own and others cultural values. This is no new idea. Already in the late 19th century it was believed that promenading or riding in the park generated civilization and community as 'a democratic community emerged through the enactment of everyday recreational

spatial practices in constructed rural scenery' (Meyer 2007, p. 61). The park was supposed to reinforce a sense of community and citizenship. But the value-patterns and leisure-time profiles of today's user-groups differ much more than in the 19th century. Therefore there is discussion about making democratic designs that represent the different users and that can cope with different public and private parties. This privatization has specific relevance in contemporary city as increased commercialization and privatization of the city fosters the need for freedom and community in the park (Koh and Beck 2006, p. 15). It becomes clear that the discussion about the use of parks for different user-groups and public and private parties gets growing importance. Then designing for a park that is democratic gets growing attention and importance for designers in contemporary society.

Improving the relation between man and nature is also part of contemporary design discourse. It was realized that for designs to be ecological, knowledge from ecology has to be integrated with knowledge about culture (Lister 2007; Van der Ryn 2007). This means that the base of a design consists of working ecological systems, but these systems are interpreted for the local cultural context. Such a design becomes not an ecological deterministic park but a park that suits with the value patterns of local user-groups. Koh and Beck (2006, p. 16) say about this that ecological processes as well as human processes have to be included in the design process. According to them 'the park has to be multi-functional, ecologically performing and culturally enhancing (...), and the park itself has to be living, healing the land, teaching us how to live, showing nature's ability to create and sustain, and human ability to reciprocate with nature'. To reach for this the park has to be interwoven with its context. So the park is not only a reflection of society, but it also contributes to it. The role of the designer is not only to reflect, but also to create and to offer something. Koh and Beck suggest that 'the park should be on the one hand open visually, socially and ecologically. On the other hand the park should be open for a changing program, open for community participation, aesthetic participation, and a temporal or shared use' (Idem, p. 16). A park design is not only about designing for activities, but also for designing for aesthetic experiences. Both relate to preferences of user-groups that have specific value patterns. This shows that improving the relation between man and nature and making democratic parks are two issues that are relating to each other. Then how do we make an inclusive environment that is democratic and brings different kind of aesthetics experiences that are rooted in

local culture, but as well bring man and nature closer together?

This brings us to the challenge of designing for an ecological democracy. 'Ecology' is generally defined as the science that studies the relationships between organisms and their environment. 'Democracy' originates from Demos (people) and Kratein (governance) and is defined by the Oxford English Dictionary (2002) as 'a state or community in which the power of government resides in or is exercised by the people'. According to Hester it is about government by the people through active local involvement and elections. According to Hester (2006, p. 4) 'neither applied ecology nor direct democracy alone can overcome the today's problems, but when combined they offer hope'. Ecological democracy is then defined as 'government by the people emphasizing hands-on involvement. Actions are guided by understanding natural processes and social relationships within our locality and the larger environmental context' (Idem, p. 4).

1.3. The meaning of the large park as instrument for an ecological democracy

This thesis focuses on what the large park can be in the peripheral urban field and positions itself in the debate about what the large park should be. Furthermore it focuses on the public park and explores how it can be a democratic tool by being inclusive and not authoritarian as it follows and evolves with dominant cultural values. This kind of democratic park fits with the many different cultural communities that exist in contemporary plural society and fits with Dutch democratic decision making and search for finding ways that suit for all parties. This thesis explores as well how the large park can be a tool for creating ecological understanding. This means that people are aware that human actions have consequences on ecological and social processes and it can be expected that they take an approach that prevents damage to these processes (Hill, White et al. 2002). The purpose of this thesis is to explore the meaning of the large park as instrument for an ecological democracy.

1.4. Strategy of inquiry

1.4.1. A landscape approach to design

To explore the meaning of the large park as instrument for an ecological democracy the field of landscape architecture provides a sufficient base. Therefore the strategy

of inquiry builds on the landscape approach to design as described by Jusuck Koh (2008). This approach brings the holistic philosophical standpoint that man and nature are part of the same system and therefore should be integrated in the design. This approach includes the everyday landscapes, including our urban spaces and cities. The landscape approach takes into account the values of ecological processes as well as the experiential effects of the landscape on the body and the mind. It takes into account the culturally defined mental constructs and perceptions of people about what they think landscape, city, nature or the park is. This is essential, because it are these mental constructs that influence how people value their environment and act towards changes in their environment. This means that in the landscape approach designs are no longer made by one authoritarian power, but they are built in a democratic way by taking into account the cultural context. Koh states that the landscape approach contributes in experiencing and learning about what landscape and ecological processes do for the city and the people. As 'to see and experience is to know, and to know is to care' (Koh 2008, p. 7) a landscape approach is not only about designing ecological processes but as well of bringing man and nature closer together.

The landscape approach has three distinct phases that are run through iteratively (fig. 1.4). In general there is built on a knowledge base of theories and design principles. In this thesis a design principle is defined as a specific design rule that helps the designer to set theory into practice. This knowledge base helps to answer the question 'how' we can design an ecological democratic park. Phase two and three are named as the genotype design and the phenotype design. Going through these two phases iteratively will help in creating and adjusting the knowledge base. These phases get their definition from biology and are both part of the landscape approach (Koh 2008; Koh 2011). In biology genotype is defined as 'the genetic constitution of an organism' (Eichhorn 2004). The genotype design gives an answer to the question 'what the design should be?'. The input for the genotype design is given by the social needs and the cultural context of the design case. Phenotype is defined as 'the physical appearance of an organism that results from the interaction between the genetic constitutions of the organism and its environment'. The phenotype design answers the question 'how the design should look?', and gets its input from the local physical situation and local program.

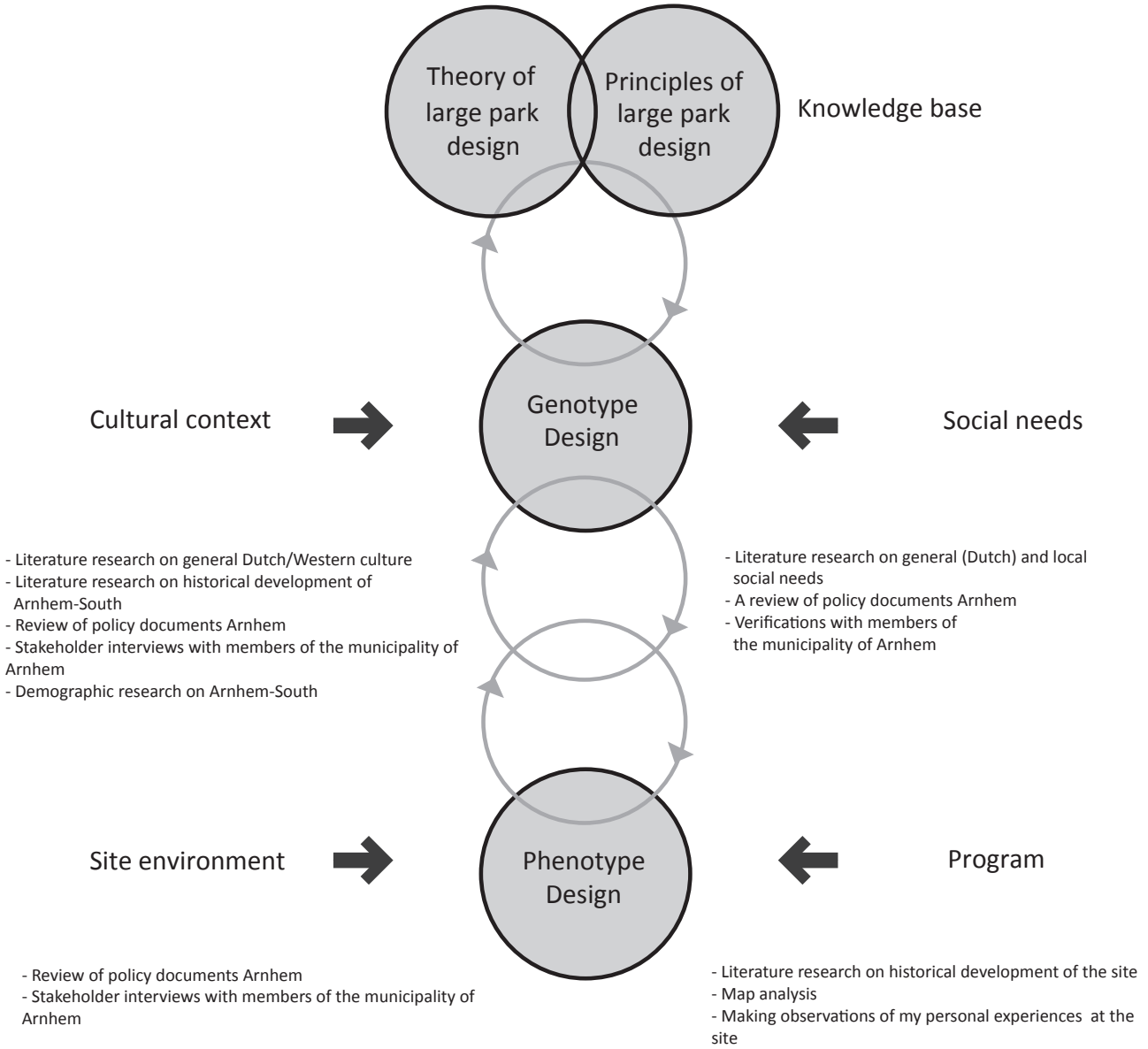


FIG. 1.4: Overview of the research-by-design process. A knowledge base is developed and adjusted by going through the genotype design and the phenotype design. This is an interative process.

In the ideal situation a participatory design process is run through to get as much knowledge as possible from the local inhabitants (Czerniak, Hargreaves et al. 2007). Although it is desirable to get as much knowledge about the local cultural context as possible, it is not the main goal of this thesis. As this thesis focuses on strategies for making democratic designs a time consuming participatory process is left out as there is not enough time to go through it. Nevertheless my findings are reflected upon by stakeholders of the municipality of Arnhem and are therefore good enough for this thesis.

1.4.2. Site: Park Immerloo, Arnhem

The landscape approach will be applied by doing research-by-design on a case to generate knowledge about designing for an ecological democracy. This case has to be a large park in the urban periphery with a context that shows a high cultural diversity and urgent need for a (renewed) design. The location chosen in this thesis is Park Immerloo in Arnhem. Arnhem is a city of approximately 146.000 inhabitants and is located at the southern part of the Veluwe-moraine, at the transition towards the river landscape of the river Rhine (fig. 1.5). Park Immerloo is a park of 103 hectares that is located in the old river landscape and points as a 'green finger' into the urban periphery of Arnhem-South (fig. 1.6). Its major feature is a clay extraction pit that is now filled with water (fig. 1.7). This pit has been split in two by a motorway, creating a northern part and a southern part that show similar characteristics but are badly connected. The municipality is not seeing north and south as a whole and that is why coherent vision is lacking. As a result we can find independent developments even within the northern part and the southern part, resulting in areas that have different management and meaning. In this thesis the northern part and the southern part are seen as a whole. The reason for this is that both parts together form the 'green finger' that points into Arnhem-South and intertwines the city with the landscape. As such the park has a major contribution to the air quality of Arnhem-South (Burghard, Katzschner et al. 2010), it has important ecological functions as it is part of the ecological main structure (EHS) (Gemeente Arnhem 2004), and it has a separate water system as drinking water is extracted from the site (done by Vitens). The most important reason to see the two parts as a whole is that a coherent vision for a larger park can have greater potentials as the reach stretches further into Arnhem-South (see box 1).

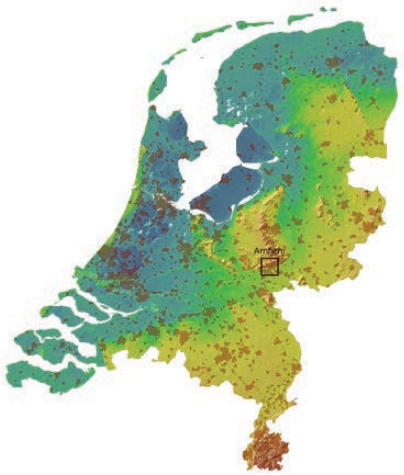


FIG. 1.5: The position of Arnhem in the Netherlands. Arnhem is located at the transition of the Veluwe moraine to the river landscape of the Rhine.

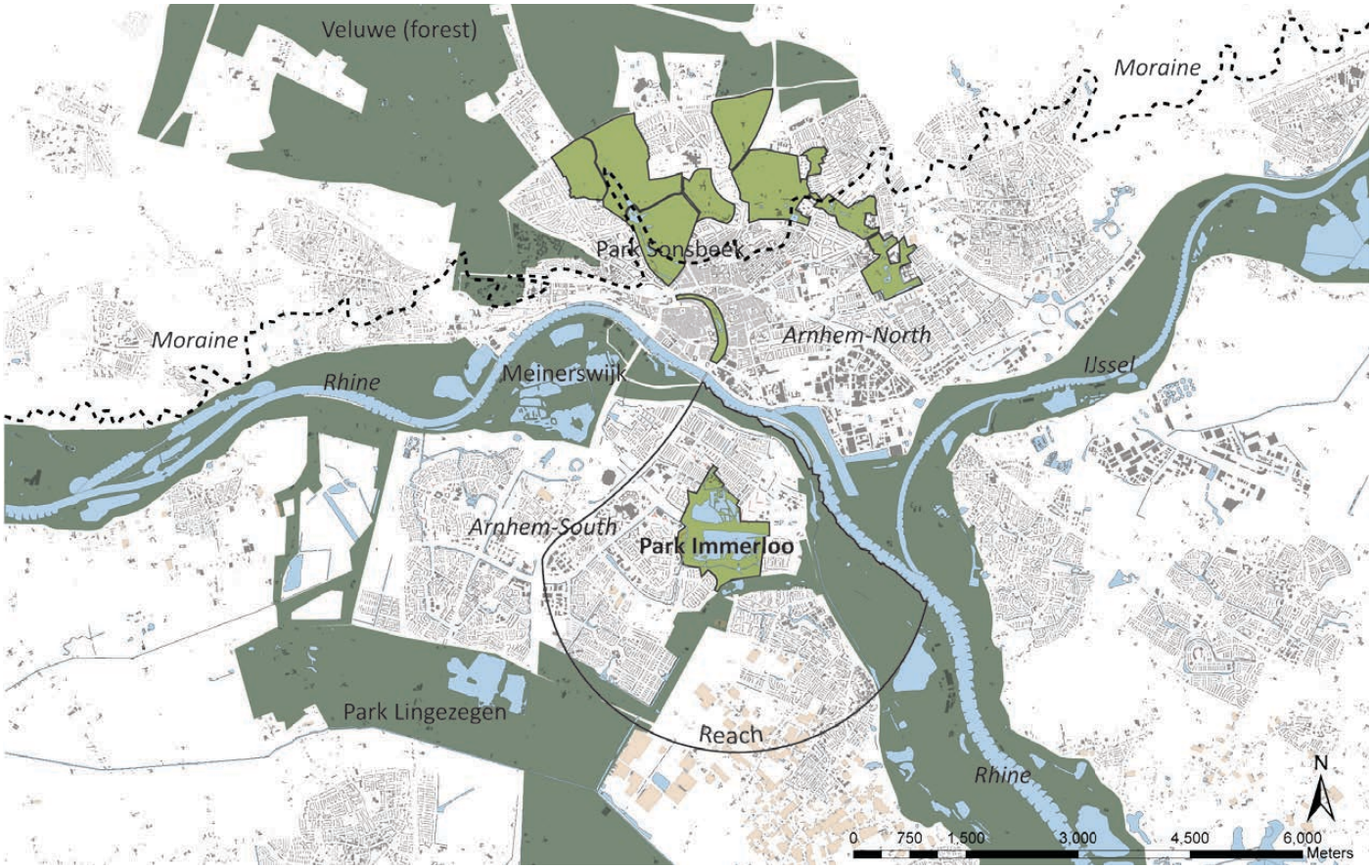


FIG. 1.6: The position of Park Immerloo in the park system of Arnhem, with landscape parks (dark green) and city parks (light green). The parks in Arnhem-North (north of the Rhine) are mainly located on the Veluwe moraine and the parks in the south are located in the river landscape. Park Immerloo reaches far into Arnhem-South.

Box 1: Relation between the size of parks and their reach (source: *Groen Goed, 2010*):

Park:	**Size:**	**Reach:**
Regional park	> 400 hectares	15.000 m
Large cityparks	150 – 400 hectares	6.000 m
Small cityparks (Immerloo)	**75 – 150 hectares**	**2.600 m**
Borough park	20 – 75 hectares	1.600 m
District park	5 – 20 hectares	1.000 m
Neighbourhood park	< 5 hectares	600 m

The context of Park Immerloo shows many different user-groups (Motivaction 2009), both high and low on the social ladder (Gemeente Arnhem 2011). Therefore there are ambitions to create activities that contribute to social improvement (Gemeente Arnhem 2011), which means that recreational possibilities are offered that can increase peoples skills and bring them in contact with others (VROM-raad 2006). There are potentials for Park Immerloo to contribute to social improvement, but the park is now a backside for the neighbourhood as large parts are inaccessible

FIG. 1.7: Birds-eye view over Park Immerloo, looking towards the south (situation 2009) (source:http://www.malburgen.com/custom/block/88.pdf).

and user-groups are not represented (Gemeente Arnhem 2011). Overall, there is necessity to re-vision the site as both coherent vision and sufficient maintenance is lacking. There is potential to transform Park Immerloo from a backside into an ecological and democratic park that is part of people's lives and an interwoven part with the city. The whole offers potential for activities that bring man and nature together and contribute to social development and quality of life. Therefore not only management and clean-up needs to be done, but there is also a need for coherent vision as opportunities are missed to make the park important for both human and ecological purposes. The challenge is how this can be done in the multicultural society of Arnhem-South. Therefore this case is interesting for this thesis.

1.4.3. The researchers role

This is a qualitative research and an interpretative research (Creswell 2009). This introduces a range of strategic, ethical and personal issues into the research process. It is therefore wise to explain a little bit of my personal background (Creswell 2009). My interpretations follow from my background as Dutch student in landscape architecture at Wageningen University. During my education and in this thesis I am as well influenced by my supervisor Dr. Jusuck Koh. He made me aware of the characteristics of the Western culture in which I grew up, and inspired me to explore more about ecological aesthetical principles. For me, environmental awareness and ecological thinking, besides a cultural thinking, are important core values in my education. This resulted in designs in which sustainability, mitigation and adaptation to environmental problems played an important role. This research will follow on this theme.

1.4.4. Verification

There needs to be some verification to check if this thesis is consistent with other researches and projects (Creswell 2009). Therefore the reliability of this thesis will be tested by member checking and having external auditors. In case of 'member checking' parts of the report will be presented to stakeholders to check if those parts are right and accurate. In this thesis this will be done by members of the municipality of Arnhem. There are 'external auditors' who review the thesis and contribute to its reliability.

1.5. Research questions

The goal of this thesis is to explore the meaning of the large park as instrument for an ecological democracy. We can bring in the following main research question and relating sub-questions to explore this goal. The main research question is:

- *"Following the landscape approach, what is the meaning of the large park as instrument for an ecological democracy?"*

To answer this question several sub-questions are formulated. These sub-questions are:

- *How can the large park in the urban periphery be conceptualized?*
- *How can we create an inclusive large park for different cultural groups with different leisure-time profiles?*
- *What strategy needs to be used to develop a large park in contemporary urban periphery?*
- *What aesthetical principles should be used to reach for an improved relation between man and nature?*

1.6. Significance of this thesis

Designing for ecological democratic parks is important for several reasons. It points at the complementarities that can exist when large parks are interwoven with the city. It therefore hooks on the interest of governments to improve the quality of life in their cities. It gives input to the recent discussion about the meaning of the large park in contemporary metropolitan city held by the Dutch Association for Garden and Landscape Architecture (NVTL). When focusing on Arnhem this thesis helps to improve practice as it can be an input for the Green Agenda (Groene Agenda) that the municipality of Arnhem has devised to get more benefit out of their green environment. In particular the design for Park Immerloo shows potentials for creating a qualitative living environment in the urban periphery of Arnhem-South. The latter shows as well coherence with Arnhem's political agenda that aims on improving the quality of life in their city in order to attract new inhabitants and

companies(Gemeente Arnhem 2010). Finally, this is a thesis in landscape architecture at Wageningen University.

2. The need for ecological understanding in society

2.1. Introduction

The design of our landscapes, cities and parks is a cultural practice that reflects mans adaptation to local biophysical circumstances (Cohen 1968; Koh 1978). Therefore a description is given of landscape as form of adaptation. This helps to get understanding of the development and position of the park, especially to understand the impact of culture on the design of parks and the cities and vice versa. This description is based on a cultural model of Koh (1978) that is based on a model of anthropologist Yehudi Cohen (fig. 2.1). This model will be used to describe the urban periphery as form of adaptation. This chapter will be concluded with general (Dutch) cultural characteristics and social needs that influence the design of the large park in this thesis.

2.2. Landscape design as culture

Culture can be seen as mankind's strategy of adaptation to local biophysical circumstances (Cohen 1968; Koh 1978) (fig. 2.1). It is a process of mankind's adaptation towards making effective use of the energy potential in his environment (Cohen 1968; Burg 2001; Pulselli and Tiezzi 2009). According to Cohen this environment, the biophysical habitat, can be described as an area with roughly similar landscape characteristics and is possibly bounded by legal borders. The energy potential can be goods and services like food, fuels, heat and materials. The implicit goal of a culture is to gain more freedom and efficiency and be less dependent from the local biophysical habitat. The organizations which are the primary forms of adaptation of a culture to the biophysical habitat are its 'technologies', the 'political organizations' and the 'economical organizations'. The technologies describe the total of knowledge and techniques available to extract and make use of the energy from the habitat. It also includes our building techniques and the knowledge which we use to design our cities and parks (shelter and settlement patterns). The political organizations describe the social institutions and organizations that exist to make use of these techniques. This has a range from the family level (household organizations and kinship) to the national political level (municipality, province, state). The

Box 2: Some general characteristics of culture have been given by Nigel Holden (2002):

(1) Culture is produced by the past actions of a group and its members;
(2) It shapes their behaviour and influences their perception of the world;
(3) These people then share a set of ideas and values that are transmitted by symbols;
(4) Culture is learned.

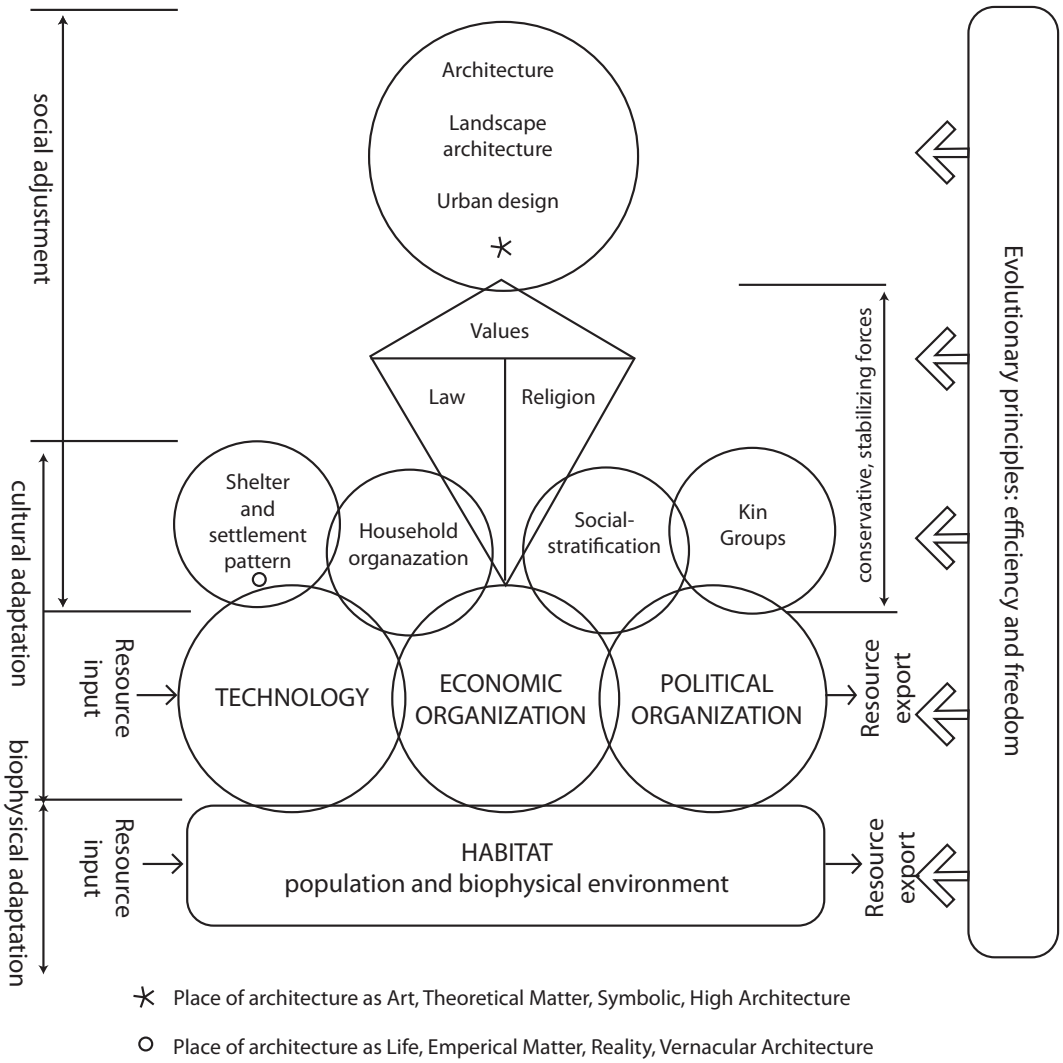


FIG. 2.1: Conceptualization of landscape, architecture and urban design as culture by Koh (1978).

economic organizations were added to suit for the economic systems that came with industrial society.

Every time when a new technique or political system was introduced to extract energy from the biophysical habitat peoples' social relations, and with that their culture, changed. But when changes are at hand they are to some extend controlled and suppressed by so-called 'stabilizing forces'. On the one hand these stabilizing forces refer to the presence of the existing techniques and institutions, and on the other hand existing laws, religion and cultural values suppress fast changes (see also box 2). Cohen (Cohen 1968, p. 45) says about this: "Man (…) has sought to free himself from the restrictions and limitations of his habitat. This is the mainspring of cultural evolution. However, it must be borne in mind that although people may welcome technological innovations that provide them with increasing mastery over their habitat, they tend to resist the necessary accompanying changes in their organization of social relations". As becomes clear, the step for society to embrace new techniques (like sustainable urban design typologies or ecological park designs) is not made easily. Now how can contemporary society and urban periphery, the context of the large park in this thesis, be described as form of adaptation?

2.3. Living in unrooted cities

The position of nature in society was and still is an important input for the designs of parks and cities during the centuries and reflects society's values and needs concerning the type of nature. For the Netherlands counts that it is part of the Western society which developed from Greek and Christian values (Burg 2001). It was the Christian based society in which mankind was seen as a steward of nature, in which status, order and domesticity are found important (de Jong, Kolen et al. 2007), and in which eventually science could root (Burg 2001). Science, with its abstract view on nature and the human being, became very influential (Burg 2001). For example in the 19th and 20th century when nature was more and more seen as a complex system of forces that could be revealed by scientific research (Buijs 2009). This had a strong influence on the position of nature in our society as the techniques and the value-system were increasingly positioned above nature (Abram 1997; Buijs 2009). The understanding and the inclusion of the natural environment and its processes became less important for daily life.

Where in the beginning the use of the energy potential was related to the extractions from the local landscape and local adaptations to the landscape, in today's globalizing society our energy-resources are extracted all over the world. This is reflected in the design of our cities. In the old city there was a strong relation between the biophysical habitat and the technical adaptations towards it. The position of the old towns often can be related to higher and dryer places, waterways or defensive positions, and the materials that were used were all relating to the local landscape. But the layout of the peripheral city, for eighty percent created after World War 2 (Hoop 2009), was developed in a time of increased scientific knowledge that led to new building techniques (e.g. concrete) and new forms of communication that contributed to globalisation and exchange of knowledge. Designers could allow themselves to make 'egoistic' designs that were unrooted. In many urban regions in the world these political, economic and technological developments resulted in changes in de urban context, in the development of city regions and mega-cities (Van der Velde 2010). In this field there is an important role for mobility that gives access to a mix of functions, like housing, industries, offices and recreation. Here individuals assemble their city from a wide variety of elements and locations (Hajer and Reijndorp 2001, p. 29). As design discourse in architecture, urban design and landscape architecture is influenced by mega trends in society (Reijndorp 2006; Koh 2007), modern times' strong emphasis on efficiency and economy brought society freedom, spare time and increased mobility, but it allowed us as well to live in unrooted cities (Hester 2006). In this society a freedom developed that neglected local and ordinary landscape processes in urban design and park design. It neglected human experiential processes and ecological processes and this contributed to its unrootedness (fig. 2.2).

2.4. The need for ecological understanding in society

From (Modern) societies unrootedness follow numerous problems, like climate change, the global food crisis, degradation of ecosystems, loss of biodiversity, increasing environmental hazards and the loss of human cultural diversity degrade the quality of human life (Karr 2002). Ecologists Gunderson and Allen state that "perhaps ecology, rather than economics, should be called 'the dismal science' because the popular application of the information generated by ecologists is generally

bad news" (Gunderson and Allen 2010, p. xiii). This comes down to the fact that some parts of human society are significantly threatening the earth's living systems and the way we inhabit the earth now is not sustainable (Karr 2002, p. 135). The existence of the different ecological crisis is a world-wide phenomenon for which actions are, and have to be, taken at several governmental levels. These actions imply changes in our techniques of city building, in our economic system and in our social organisations. In the end decisions about our landscapes are guided by our values (Lister 2007, p. 48). Decisions at this level are made easier if there is an ecological understanding in society (Hill, White et al. 2002). Such an ecological understanding is reflected by the value patterns of individuals and groups. This makes reaching for an ecological understanding an explicit goal of urban design and landscape design. Reaching for ecological understanding is not the only goal of urban design and landscape design. The park should also be a reflection of society and this asks for democratic parks.

FIG. 2.2: Large parts of the urban periphery have a design language that is functional, one-sided and abstract. These un-rooted cities lack human experiential processes and contribute to a society in which nature is set against city (pictures of Arnhem-South).

3. The need for democratic parks

3.1. Introduction

This chapter describes the characteristics of the existing plural society and the effects it has on the design of the large park. It will start with explaining the need for a landscape that offers different kinds of experiences for different user groups. This is closely related to the different images of nature that exist in contemporary society.

3.2. Need for different kind of experiences

In contemporary society new user-groups settled and developed that have differing cultural backgrounds, values, wishes and needs (Hajer and Reijndorp 2001; Jacobs, Lengkeek et al. 2003; Thompson 2007; Olin 2011, p.xi). As there are also differing wishes and needs between different generations (Thompson 2007) this adds up to the plurality that already exists. Furthermore globalisation had its contribution in creating this plural society. Some of these groups became independent and self-navigating, and they shop between different cultural levels. This explains why in contemporary society existing living and thinking patterns became diffuse and differentiated (Dagevos 2003, p. 14). The symbolic values of products, actions and activities become important as they reflect people's identities, and therefore issues like self-realization, aesthetic pleasure, intellectual as well as spiritual satisfaction, the feeling that is evoked and the story that is told get growing attention (Buijs and Luttik 2003; Dagevos 2003). 'People put together a lifestyle, as it were, from the components on offer' (Hajer and Reijndorp 2001, p. 65). This relates to the fact that the landscape is more and more consumed (Dagevos 2003) and has to be full of experiences (Jacobs, Lengkeek et al. 2003). Because the experience a certain activity brings confirms and contributes to the identity of the user, there is a greater search for different type of (sublime) experiences, ranging from rest to kicks. Non-western immigrants have other life-style values and leisure time profiles than native Dutch inhabitants (Buijs 2009), and for example young couples have different patterns than elderly (Thompson 2007). Thompson (2007) wrote about the differing wishes and needs between different generations. According to Thompson for children the landscape functions as a play-environment. It is especially important to think about what play-environment is offered in the park, as these experiences become part of

a person's nature and affects their value-pattern. Teenagers desire places that support their social lives. Finally elderly appreciate good and solid accessibility of the landscape in order to get outdoors. Here they enjoy walking (with the family), being healthy and meeting other people.

For contemporary society in general counts that it can be described as 'an archipelago of enclaves where people have developed ever more effective spatial strategies to meet the people they want to meet, and to avoid the people they want to avoid' (Hajer and Reijndorp 2001, p. 53). It becomes clear that a diversity of wishes and needs has always existed in society, but this diversity has increased further with contemporary plural society. According to Castells (Hajer and Reijndorp 2001, p. 56) 'everyone creates their own city for themselves, a combination of the various places that are important for that individual'. There has to be designed for different leisure time profiles to represent groups in the park.

3.3. Different images of nature

In addition to the diversity of wishes concerning the leisure-time profiles we can also distinguish different images of nature in society. In the park a relation is constructed between man and nature (Baljon 1992). As the images of nature are an important source of input about what the park has to be, it is interesting to find out what images of nature people have in contemporary society. What images of nature are ingrained in our cultures? It becomes clear that in today's dominant images of nature the dominance of man over nature is still reflected, but plural society gave room for new and other worldviews with other images of nature (Buijs and Luttik 2003). According to Buijs (Buijs and Luttik 2003; Buijs 2009) there are four dominant images of nature in contemporary Dutch society (fig. 3.1). These images are the *image of wilderniss*, the *broad image of nature*, the *aesthetical image of nature* and the *fucntional image of nature*:

- In the 'image of wilderniss' nature is autonomous and self-relient and mankind should not intervene. This image is very eco-centric. It are mostly highly educated people and young urban people that appreciate this image of nature. It is expected that this image of nature will become more popular in the future.

- In the 'broad image of nature' the values in nature are interpreted for every plant or creature individualy. This means that individual plants and trees should be cared for, instead of the ecosystem as a whole. This is a biocentric view on nature in which the presence of people is not very disturbing.

- In the 'aesthetical image of nature' the beauty and experiences that nature offers are appreciated. This is an anthropological view with no primary focus on the material use of nature. According to this view management should focus on creating attractive landscapes and optimizing recreation. Within this view the traditional Arcadian view of the pastoral landscape, especially appreciated by low educated elderly, is placed but diminishing on the long term.

- The 'functional image of nature' is prevailed by farmers and original inhabitants of the countryside and it is not an elitist view on nature. Nature here is seen in terms of utility, although some recognicance existed of protecting nature. It is expected that this view of nature will diminish.

1. 2. 3.

FIG. 3.1: Different images of nature exist in society: (1) nature as wilderness, (2) nature as aesthetical image, (3) functional image of nature.

Since we are no longer immediately depending from our environment for our sources of energy there is also space for new images of nature (fig 3.2), named as the *technological image of nature*, the *interactive image of nature*, and renewed *functional image of nature* (Buijs and Luttik 2003).

- A new image of nature is the 'technological image of nature' with a focus on the integration of nature with technology. As nature is combined with modern techniques, nature and culture are not opposed but they reinforce each other.

- In the 'interactive image of nature' individuals or groups take responsibility for nature. This image represents the trend that people value and take action for nature in their living environment.

- Finally there is renewed interest for the functional image of nature for non-western immigrants. For many of them the Islam forms the base of their culture. In the Islam mankind is seen as a steward of nature. For immigrants nature is the background of activities and less a goal on itself. These immigrants show a new emphasis of the functional image of nature, as they bring old nature experiences from their home countries. The second generation, the children of the first immigrants, show a view on nature that resembles a little bit more with native Dutch inhabitants (Buijs 2009), but still this requests new functional meaning for nature.

1.

2.

3.

FIG. 3.2: New images of nature are: the (1) technological image of nature, (2) the interactive image of nature, (3) the renewed interest for functional nature.

We see that some images of nature (the traditional functional image of nature and Arcadian image of nature) are diminishing on the long term, whilst new images (e.g. wilderness, technological image and new functional image) come up in contemporary society. It is interesting to see that the traditional images, with a high sense of order over nature, are diminishing. The new images show higher attention for ecological processes, restored connections between man and nature and a seeking for new combinations of architecture with landscape. This shows resemblance with contemporary discourse. This requires us to think about what image of nature our parks should offer and what directions to choose for. How should be dealt with this issue? What approach should be taken? Do these images matter? And is there some universal design language?

3.4. The need for open and adaptive democratic parks

A plural society exists with different leisure-time profiles and different wishes and needs for what the park has to offer and what form of nature it should represent. This expresses the need for a democratic park with active involvement of people and participatory design processes. In this way learning and evolution of culture can take place. There should be room for the designer to offer and create something new, and to give room for reinterpretation as this can contribute to creating ecological understanding and foster cultural evolution in that sense. The ever-changing plurality in society does require the need for contemporary parks to be open and adaptive so that they can evolve in time with their cultural context.

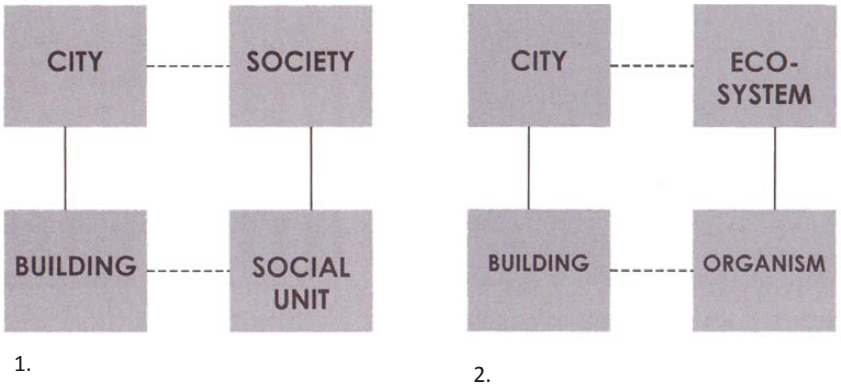


FIG. 4.1: According to Marshall (2009) the city is to society what a building is to an individual person or a social unit (1). A city is more like an ecosystem than an individual organism (2).

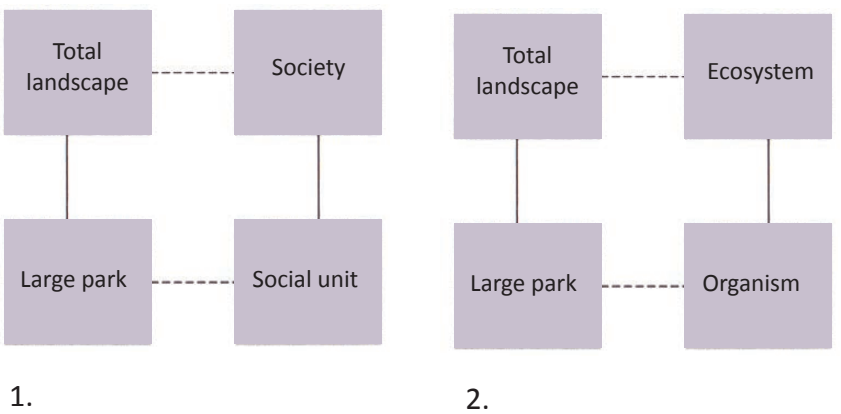


FIG. 4.2: Based on the work of Marshall this thesis states that the total landscape is to society what a large park is to a social unity (1). The large park is to an organism what the total landscape is to an ecosystem (2). This helps to understand the importance of evolving and adaptive parks that can maintain a niche in the city.

4. Concept of the large park

4.1. Introduction

This chapter gives a conceptualization of the large park in the urban periphery. This conceptualization follows from work of Stephen Marshall (2009), who wrote about evolving systems and urban design. I will give his conceptualization of the city and interpret this for a conceptualization of the large park. This conceptualization is given to understand how the large park works and evolves as an interwoven part with the city.

4.2. Concept of the city

According to Stephen Marshall (2009) the city as a whole can be seen as a super-unit, composed of different components that are themselves units (fig. 4.1). Think of houses, offices, infrastructures and parks. All these units together form a 'complex dynamic collective entity' (Idem, p. 135). In this complex dynamic collective entity each unit has its own agenda and there is a competition between the different units (e.g. for attention, energy, money, space, etc.). Seeing the city as a collective is different from seeing the city as a corporate being (or the often named organism) where all units work together to support the whole, is that 'a collective entity (e.g. society) is a super-unit that is an aggregate of many individual components (...). The main distinction is that a corporate object has central intelligence whilst a collective entity has collective and distributed intelligence' (Idem, p. 135). Here each unit competes with others and some units need each other. The relations that exist are 'complex'. This term distinguishes itself from 'difficult' as it refers to the many parts of the city that are not pre-specified and which relations cannot be completely overseen by anyone. As such uncertainties always exist. In addition 'time' causes changes and dynamics over time. When looking at the competition in the city some units are fitter to survive than others, but possibilities to adapt to changing circumstances offers units chances to gain or remain a niche in the city. According to Marshall (, p. 161) 'this fitness is significantly to do with adaptation to the environment and this adaptation comes through feedback from the environment'. Building on this, how can the large park be conceptualized? In the next paragraph this theory will be applied on one of the units in the city: the large park.

4.3. Concept of the large park

Building on the statements of Marshall in this thesis the large park is conceptualized as a landscape structure that is an interwoven part of the complex dynamic collective entity city (fig. 4.2). It is a competitive unit that must derive its legitimacy from the many different kind of values it can have on different scales. Like in an ecosystem it can benefit when coupling with other units, bringing mutual benefits and complementarity. The park needs the city and the city needs the park. Because large parks can be part of larger networks, and the legitimacy of parks can also be derived from them, an analysis needs to be done on different scales (think of ecological values, cultural heritage values, contribution to health and air-quality, attractiveness of the city, pricing of real-estate, recreational amenities etc.). By doing this there can be sought for a legitimization or a niche for the park in the 'ecosystem' city.

The large park is a competing unit that has to find a legitimization for it to be a park. It has to compete for land, money and attention of the user as people have a choice to go to a park or to choose for another form of leisure. Also between parks there is competition and when there are more parks where people can go they have to make a choice (de Josselin de Jong 2010). Especially when many similar parks in a competing range offer the same functions this can be unfortunate and there might be thought of re-visioning some parks. Also when there are no parks in a dense urban area there might be thought of creating some. By constantly reviewing the existing situation of the city the park can maintain its niche in the city.

Seeing the park in the peripheral city as a competitive unit legitimizes the request for arguments for it to be a park, and why not something else. This opens up possibilities to leave the old concept of the park as an enclosed piece of nature in and opposed to the city, and create hybrid parks that offer a combination of land use forms, functions and experiences. Creative combinations can be made. As such the park (or park system) becomes interwoven with the city. These situations need not to be fixed, but flexible so that they can change and evolve over time. When dealing with complexity this asks for open, adaptive and emergent design strategies with emphasize on the concepts of time and evolution. If the park can adapt to changing circumstances it can grow and evolve in time. Overall, weaving the park as landscape feature with the city has to happen through all scales, thereby referring to large scale system processes and human scale. This builds on fractal geometry (fig.

4.3). Weaving the large park with the city makes clear that 'large' is not necessarily referring to size, but merely to designing through all scales. The latter is also why 'ambition' is stated as a characteristic that is important for park designers.

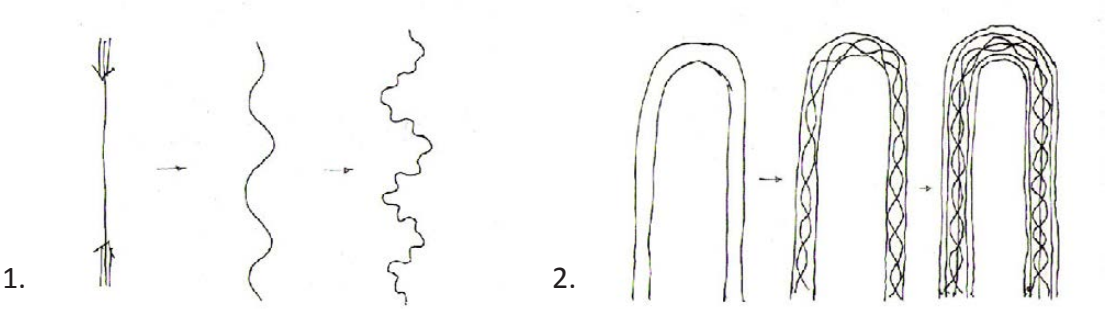


FIG. 4.3: Fractal geometries are very common in nature. They are based upon self-repeating elements that work through all scales (1). Using fractal geomety as a source of inspiration can help to connect different scales. On the lower scales (2) fractal geometries can help to provide an ´information field´ (Salingaros, 2004) that is more entruiging to the eye than the Euclidian geometry often used in Dutch Western aesthetic languages (source of images: http://www.katarxis3.com/Salingaros-Fractals.htm).

5. Designing the large park

5.1. Introduction

Following from this conceptualization of the large park it can be asked how to create an inclusive large park for different user-groups? What design-strategies should we use to develop a contemporary park? And based on what aesthetical principles should this be done to reach for an improved relation between man and nature? In this chapter available theory for dealing with the design of the large park will be discussed that can contribute to make the park an instrument for an ecological democracy. When taking a landscape approach to design (see paragraph 1.4.1) man and nature are seen as part of the same system and should be integrated in the design. Therefore first the design of the base of the park will be discussed,. This base is a framework that consists of infrastructures and working ecological processes that embeds the park in the city and larger ecological networks. This continues with a discussion about how a democratic large park can be designed that can deal with the many wishes and needs from society. Then ways to develop parks in contemporary society will be addressed. Finally there will be addressed how there can be designed for an improved relation between man and nature by focusing on the experiential effects of the landscape on the body and the mind. In the final paragraph the approach for designing the large park will be summarized by proposing design principles.

5.2. Embedding the park in its context

5.2.1. Basic infrastructures that embed the park in the city

Before people appropriate a space in the park and make it part of their city they need to be able to reach and access the park. In order to act with purpose in its context the large park has to be accessible to embed it in the city. As park design is one of the oldest parts of the profession of landscape architecture there is many useful literature written about park design and the position of the park in the city. According to Jane Jacobs (1961, p. 99) it is important to have eyes-on-the-street to improve the sense of safety as 'in cities, liveliness and variety attract more liveliness; deadness and monotony repel life'. Bringing a high diversity of people to the park that have

different schedules improves the use of the park during the day and makes the park safer. The design should not be about architectural diversity but about diversity of usages during the day (Idem, p. 99). The success of parks also comes from a certain rarity: "city people would have to devote themselves to park use as if it were a business" (Jacobs 1961, p. 102). People do not spread over all the parks in the same amount but they choose for a park based on certain rarity. As Jacobs states: "some parks are basically unfitted, whether by location, size or shape, to serve successfully in the public yard fashion I have been discussing". When unfitted, parks can be located at the places where there are no people and this can result in problems (e.g. the park as a backyard) (Corner 2007). Although a disconnection of parks can be a positive thing in some cases (e.g. for ecological purposes), it is important to research how the park can be embedded in the city. Recently the Technical University Delft analysed the context of parks in the city that supports the thoughts of Jacobs. The TU Delft looked at seven factors that influence the use of parks, independent of the design, but seen as position of the park in the city. A final eight factor includes the identity of the park itself. According to the TU Delft the following factors count as important for the embedding of the park in the city (de Josselin de Jong 2010):

1. *Reach* Parks have a hierarchy based on their size. The assumption is made that there is a relation between the size of a park and the maximum travel distance and period of stay in the park by people.
2. *Density* When the actual reach of the park is calculated there can be counted for the amount of people (the potential users) that live within the reach of the park.
3. *Uniqueness* When there are more parks in reach people are forced to make a choice between parks.
4. *Availability of facilities near a park* A higher variety of people who visit a park make it more attractive. The rhythm of the neighbourhood and the spreading of facilities in it depends the activities in the park. The density of facilities around the park gives an impression of extra visitors of a park.
5. *Embedding* For the use of parks it is of importance that it is on a route of the pattern of daily life of people. When people cross the park often they are more likely to make a visit.
6. *Accessibility* A park should be easily and good accessible. The more entrances a park has the easier it will be to enter the park.

7. *Routes* A park profits of people who are just passing by.
8. *Identity (extra)* This factor is about the design of the park and includes the attractiveness and 'identity' of the park. The identity of the park is more intense if the recognisability, individuality, personal connectedness, readability, and attractiveness is high. The recognisability is higher when the contrast between the park and the urban surroundings are bigger. The uniqueness of a park is depended by the presence of unique characteristics that distinguish the park from other parks. The personal connectedness will be higher when there is a versatile arrangement for different kind of users and the park will be of meaning for more groups of people. The readability of a park is depended by orientation points in the park. Finally the attractiveness is depended by the availability of cultural heritage and program of a park. The same counts for a variety of program and activities like events.

5.2.2. Ecological theory as basis for a framework

Besides the embedding by infrastructures also embedding in ecological processes and networks is stressed. It is often discussed that the base of a sustainable park should consist of a working solid ecological system (see paragraph 1.2). This should not only be good for ecological purposes, but it can also save money to work with ecological processes instead of fighting against it. This paragraph will shortly describe contemporary insights in the science of ecology.

A few decennia ago, the science of ecology went through a paradigm shift. From a view in which ecosystems were seen as being linear and having stable climax-states, it shifted to a view of unstable, open, holistic, self-organizing systems with sometimes sudden unpredictable changes (Lister 2007; Gunderson and Allen 2010, p.51). According to this new viewpoint ecosystems generally develop from simple to complex states along many possible paths and they can suddenly change into entirely new states (Lister 2007). A certain stage can fall back if it is disturbed by either natural or human causes. After a disturbance an ecosystem reorganizes or renews itself into either a similar or a different state (Gunderson and Allen 2010). Depended by disturbances a mosaic pattern develops containing different stages of natural development. This is important as a high biodiversity at many scales increases the ability of ecosystems to recover, reorganize and adapt (Gunderson and Allen 2010), and it makes large parks more adaptive and resilient (Lister 2007).

When creating habitat for species several principles should be included (Dramstad, Olson et al. 1996) (see also fig. 5.1):

- Make patches as large as possible to create more core habitat;
- Make ecosystems more resilient by connecting patches with larger ecological networks;
- Create edges with high structural diversity for higher biodiversity and less erosion;
- Create different stages of habitat to increase system resilience and include the possibility of disturbances.

Now the question can be asked whether we have to leave everything open and let nature go its way? Or do we need to bring (or perhaps restore) parks into a certain state? A strategy to design for this kind of open-systems is necessary to 'anticipate to several possible future states, based on the local system history and the social narratives that support it' (Lister 2007, p. 43). Also Koster and Oosterbaan (2003, p. 41) state that 'special attention is put at the habitat characteristics of species that live in and around the city as they lived there already before the city existed'. According to Gunderson 'planning and management require some estimate of future conditions' as often many things are known (Gunderson and Allen 2010, p. xix). Therefore the first focus for large park design should be on creating and supporting (e.g. connecting) the habitat in the park for core-species that are part of local ecological systems and the ones that potentially make use of the site.

5.2.3. Conclusion

The base of a park should consist of a framework that consists of infrastructures and working (resilient) ecological processes that embed the park in infrastructure networks and ecological networks. Sufficient infrastructures help to make the large park optimal accessible and embedded in the city so that it can act with purpose. The TU Delft provides a method that can be used to embed the park in the city. This method provides possibilities to depend the reach of a park, define the different user-groups, to analyze the uniqueness of a park and its niche in the city. The ecological framework is based on contemporary theory in the field of ecology that aim to make the ecological system resilient.

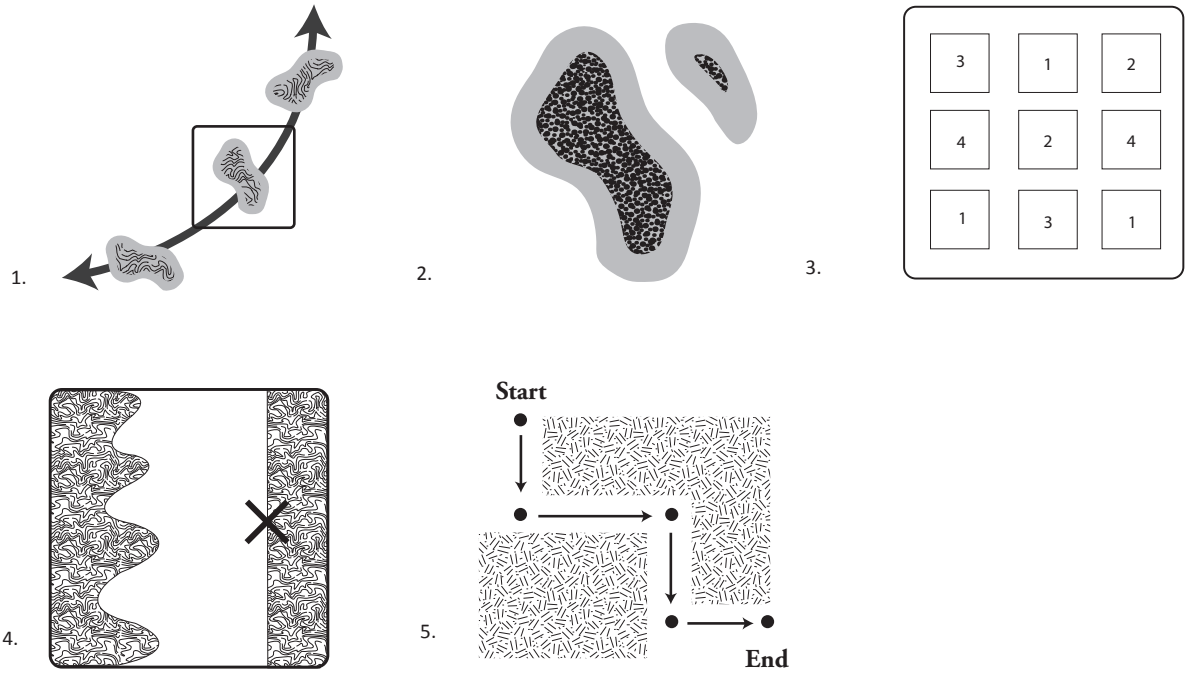


FIG. 5.1: Tools for building on a resilient ecological framework (Dramstad, Olson et al, 1996): by (1) making ecosystems more resilient by connecting patches with larger ecological network; (2) make patches as large as possible to create more core habitat; (3) create different stages of habitat to increase system resilience (include the possibility of disturbances); (4) create edges with high (fractal) structural diversity (higher biodiversity/less erosion); and (5) create paths with intermediate goals to combine human use with nature.

5.3. Designing for different user-groups

5.3.1. The park as reflection of society

In a democratic park different groups in society (individuals, entrepreneurs, public parties) are invited to participate actively in the design and layout of the park. In this thesis the focus will be on bringing together several user-groups in the park in a way that the park is not one mean for all but acts as an inclusive environment for many. The park needs to acknowledge and enable differences to become what Pollak (2007, p. 87) calls a 'heterogenic landscape that folds the multiplicity of social and natural concerns'. The park is a landscape that reflects social and natural values. For such a park a unified and static design will not suit as large parks receive different influences from the cities on which they touch (Jacobs 1961, p. 90). Also Koh and Beck (2006) stress that the park 'does not have to be one unified and coherent master-image'. This gives input to a design approach where the people and the ordinary processes by which they appropriate the space is central. By using this approach the design of the large park can become democratic. The park can become part of people's lives. If the park can evolve and adapt to changing cultural context then this helps to maintain its niche in the. Now the question can be asked how we can design a park for different user groups that can evolve over time? This will be elaborated by first discussing the use of grass areas in the park. This is followed by recommendations about how we can design for different spheres or 'parochial spaces' in the park.

5.3.2. The use of grass areas in the park

This paragraph is about the ways by which people use short mown grassed areas. These grasslands are neutral spaces in the park that function as a platform for many forms of use (Goličnik 2010). The question is: how do people use these spaces and what needs to be designed for to support it? Goličnik and Thompson researched the use of large short mown grass areas and offer some guidelines for the design. According to them the size and shape of the areas is not very important for passive forms of use, but it does influence the use of active informal (ball) games. Such use takes place at a certain distance from physical spatial boundaries and from each other (fig. 5.2). There are so-called bufferzones between people doing activities and between people and the edges. These bufferzones help for 'a successful spatial cohabitation of occupancies in places' (Idem, p. 46). These distances are culturally

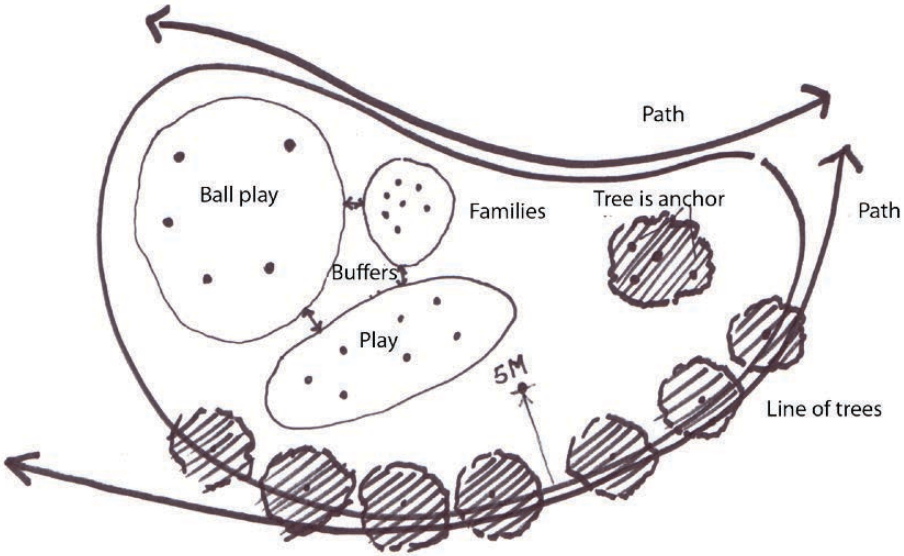


FIG. 5.2: An open plot of short mown grass provides a platform on which users can undertake many activities. Bufferzones are made by people themselves to prevent interference with other users. Such grasslands cannot provide a platform for all wishes and needs in society and therefore there also needs to be thought of seperate zones where activities can take place.

defined. For the design of grass areas some guidelines were given to stimulate the occupation of short mown grasslands (Goličnik 2010):

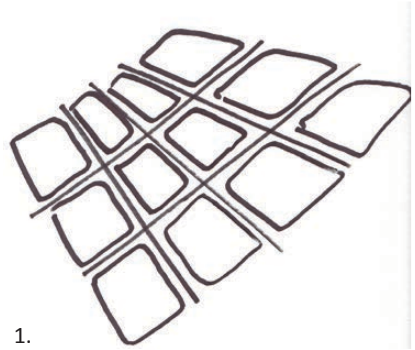
- People will sit up against a solid edge such as a steep embankment.
- People will sit on grass at least 5m (a buffer that makes it comfortable) away from tree-lined pathways. When the size of the grass area increases the buffer will be larger.
- People will not sit in the middle of a large open area, but large trees can provide an anchor or edge for people to sit against in the middle of a large area.

What can be concluded is that neutral grass areas offer a platform for a high variety of activities instigated and organized by people themselves. This gives these grasslands a strong position in the park as it gives the possibilities to evolve with different requirements in society. The designer only has to design for a grassland with anchor

points and edges that work. As such a grassland is open for many forms of use and adaptable for other forms of use in the future. But a grassland or lawn cannot offer all (extreme and sublime) activities demanded by a society. Therefore it is necessary to see how this can be done in the large park.

5.3.3. Designing for parochial spaces and a public domain

The design of the park asks for a distinction between different user-groups. It requires making the total park an inclusive environment instead of a mean for all. How can this be done? As stated before (paragraph 5.2.1) if a park has a diverse layout that offers many different amenities, then it will be more attractive for more user groups (de Josselin de Jong 2010). The park should consist of a diverse amount of different environments that are attractive to different user-groups and there should be activities that fit with these user-groups. This refers to a social cognitive theory which suggests that the activity patterns of people are influenced by the person's recognition of opportunities for activities, their own skills, and the expected benefits from the activity (Bandura in Thompson 2007, p. 34-35). Important is the belief a person has in his ability to perform an activity in a setting. The affordance that an environment brings for different people takes a primary role in the design task (Moore and Cosco, 2007). It implies that different kind of experiences with different affordance levels should be available so that more people become represented in a park and exploring ones capacities can be stimulated.



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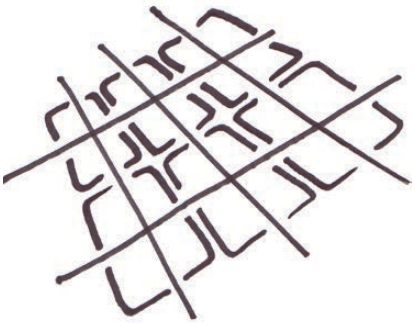

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FIG. 5.3: Instead of designing for a neutral public space (1) there should be designed for public space in parochial spaces (2). Then public space can become a public domain and other user-groups can be experienced.

Instead of designing a mean for all it is advisable to zone different forms of use to prevent conflicts. This approach is supported by sociologists Hajer and Reijndorp (2001), who advised to design for the existence of different user-groups. According to them a diversity of functions should be carried by a solid public domain (fig. 5.3). This public domain is defined as 'those places where an exchange between different social groups is possible and also actually occurs' (Idem, p. 11). The existence of a sufficient public domain is important as it is the place were different groups are confronted with each other: 'It is in this confrontation with other opinions that we develop our own ideas (...). We also assume that the concrete, physical experience of the presence of others, of other cultural manifestations, and of the confrontation with different meanings associated with the same physical space, is important for developing social intelligence and forming a judgement. Personal perception and

direct confrontation can be an antidote to stereotyping and stigmatization. The term 'exchange' implies that such confrontations can also be symbolic' (Idem, p.12-13). In the network society users create their own city and users select their own public domain. Hajer and Reijndorp state that user-groups claim certain spaces that become 'parochial spaces'. These parochial spaces, 'although open to the public, are spaces that evidently constitute the space of a certain group' (Idem, p. 85). According to them the idea that public space should be a neutral meeting place for all groups is hindering the development of public domain.

An example of a design which is build on this concept of creating different forms of use for different user-groups is the design of Karres and Brands (fig. 5.4), which was rewarded with the second price in a design competition for the post-war Bijlmerpark in Amsterdam. This design was price-winning because it brought a concept that was new for the Netherlands (Stichting Jaarboek landschapsarchitectuur en stedenbouw 2004). A program was made for different forms of use and clear edges and borders were created between them. The aim was to give every user-group a clear place in the park. The design consisted of an archipelago of islands in a green environment. Every island offered another activity of sports, recreation or relaxation. Some islands were publically accessible, others enclosed and again others were open at certain times of the day. A walking route connected the different islands and offered a nice walk through the park. Special attention was given to the edges of the islands as they have a big influence on the ratio between public and private, and they influence the spatial quality of the park. However this design was never realized.

5.3.4. Conclusion

A large park should offer the opportunity for different groups to appropriate spaces in the park. This means that within the framework open spaces (open units) have to exist that can be taken by groups to fulfil their needs. These spaces provide a diversity of functions that match with the leisure-time profiles for the different groups. The design of the park asks for a park in which different 'enclaves' exist side by side, not mixed, in combination with a well-designed public domain. As the values and leisure-profiles of different user-groups differ and sometimes conflict it is useful to make a zoning for the different groups. Groups whom value-patterns (to a large extend) match and do not conflict can be brought together. If it results in a conflict

the functions need to be separated. Different spheres can make different values explicit. This will make the public domain not a neutral space, but a domain of a group in which others should be able to enter. Then interaction and exchange of knowledge and cultural values can take place in this public domain. The public domain builds on the existence of collective values and should function well to reach for social interaction and understanding. This means that basic norms and values are important in order to safeguard the use and entry of 'others' in a certain domain. These collective values are to be actively promoted to let the democratic park work. By emphasizing and actively promoting this it becomes a park that can engage all kinds of users in one environment. In this way the whole park becomes a reflection of society and an inclusive environment instead of a mean for all.

FIG. 5.4: The design for the Bijlmerpark design competition (2003) in Amsterdam shows attention for designing different enclaves for different user groups. According to the Stichting Jaarboek Landschapsarchitectuur en Stedenbouw this park concept is new for the Netherlands (source: www.karresenbrands.nl).

5.4. Development strategies for the large park

5.4.1. Search for successful development strategies

Relevant for the development of parks is the fact that in contemporary society the role of the public sector is diminishing. Economic times require governments to push off responsibilities and to do more with less. This can have damaging effects as the park can become a neighbourhoods backside. There has to be searched for development strategies where there is merely a supportive role for the public sector. Because not much literature is available about designing for contemporary financial context, the focus will be on recent discussions and debates to find solid grounds. Therefore it is interesting to search for successful contemporary development strategies, also in other fields than landscape architecture. What works? What is successful?

5.4.2. Self-building, self-organization and spontaneity

The choice of creating different spaces for the wishes of different user-groups can be related to a new way of city-building that fits better to both the social context of individualisation and pluralisation, and on the other hand a retreating government. In this approach there is more attention for self-building, self-organization and spontaneity that comes from bottom-up instead of top-down. When looking in the field of urban design and landscape architecture the Dutch Institute for Planning and Housing (Nirov) presents ten 'commandments' for urban developments in contemporary financial situation:

1. Strengthen existing qualities;
2. Give more freedom to entrepreneurs and individuals;
3. Focus on the city as a place where living, entrepreneurship, working and leisure meet;
4. Adapt infrastructures to the demands of the time;
5. Improve the quality of the living environment in urban restructuring;
6. Use temporality as a strategy;
7. Create a diversity of creative environments;
8. Take a low investment level with short payback times and be prepared to take a long breath;

9. Push regulatory boundaries;
10. Have an open and decisive organisation.

These principles show that a top-down approach is no longer sufficient and that freedom and responsibilities should be given to locals (bottom-up) and benefits should be made from local qualities. Flexibility and temporality (also in financial investments) become keywords in order to make a park that can evolve over time. At a recent urban design symposium organised by the Technical University Eindhoven contemporary financial and social context were discussed and there was pledged for a spontaneous city as a reaction on the ready-made city (VIA Event 2011). The conclusion was that in this spontaneous city coincidence and surprise can have place as these are the aspects that make a city vital and sustainable. In this city there is a growing role for self-building and self-organisation. The spontaneous city is presented as an open concept in which many participants can join and it supports initiatives from individuals and entrepreneurs. An essential aspect of the spontaneous city for governments is to have trust in people, individuals and entrepreneurs as initiators for developments in the city. There should be trusted on people whilst the focus for the designer should be on creating a framework that leaves room for developments. The designer has to aim for creating collective values that give interpretation to the framework. In this approach the thriving forces come from bottom-up instead of top-down. When developing a park in this way, slowly things need to be added so that whole can grow step-by-step. Hereby the designer can get to know the 'customers' and the 'customers' get to know each other and they gain knowledge and experience of the (social) matter they are dealing with. This helps the democratic decision making process. In order to strive for a spontaneous city Urhahn (2010) presents four principles: (1) zoom in; (2) organise flexibility; (3) create collective values; and (4) work with a focus on the user. These principles are interpreted for the design and development of the large park:

- *Zooming in:* This means lowering the scale by making an inventory of the local needs and the relevant players surrounding the park. The success of the design and development comes through the potentials and constrains they see. When zooming in the concept of time gets increased attention and there has to be thought in small steps, which means embracing the process of development

while supporting many initiatives at once at different places in the park.

- *Organise flexibility:* Organising flexibility is about directing many initiatives in the park at the same time, in different speeds and directions. This is important as the functions, lifestyles wishes and needs in cities change constantly.

- *Create collective values:* Having shared ambitions for what the park is and has to offer is an essential part to make the design a success. Collective investments in the large park creates collective values. This is of strategic importance to let the involved people start dreaming about the future of their park.

- *Work with a focus on the user:* The energy, creativity and investments of anybody should be used to design for future challenges in the large park. This requires new approaches and tools, reaching from micro-financing to connecting people to the park with digital platforms. These innovations need to be intensified to reach initiators, from (top-)entrepreneurs to individuals in the poorer neighbourhoods. Central goal for the designer is to stimulating investments that come from bottom-up. This requires that the urban designer needs to design custom-made in the large park, based on the possibilities of the user. Asking 'what do you need?' becomes a central question.

For the design of a successful framework that has collective values attached to it we can find an interesting source of inspiration in the field of telecommunications and music (fig. 5.5). We only have to look at today's smartphones. These consist of a solid framework, the hardware, which functions as a platform for software on which every individual can develop and add his own applications and share it with others. Everybody is invited to add things and in this way everybody can create his own unique telephone, an extension of themselves. Devisch (2010) address jazz as a source of inspiration. Jazz has a baseline, a theme or rhythm, on which musicians can improvise and complement each other. Jazz is about creativity, consciousness and understanding of the other players. Improvisation in jazz creates understanding in the play of the other musicians and the topic, in this case music, itself.

FIG. 5.5: Today´s smartphones are successful because they offer a platform (hardware) on which people can add things. Improvisations in the park can be compared to jazz. There is one baseline and many players who improvise with understanding of the others (Source: VIA Event, 2011)

5.4.3. Conclusion

It becomes clear that the park needs to have a framework (ecological system, infrastructures (roads, paths, parking, internet)) that is solid and has a low pulse (fig.5.6), in combination with a fast pulse of spontaneous developments that are attached to it that can fill the needs in society (it can bring new trends to the park). Designing for temporality makes the park flexible and generates possibilities to adapt to changing circumstances. Temporality as a strategy helps to let the park adapt to changing circumstances so that it can evolve over time in order to maintain a niche in the city. Giving responsibility to the user helps to make the park economic sustainable as investments and financial responsibilities can be for the entrepreneur and not for the

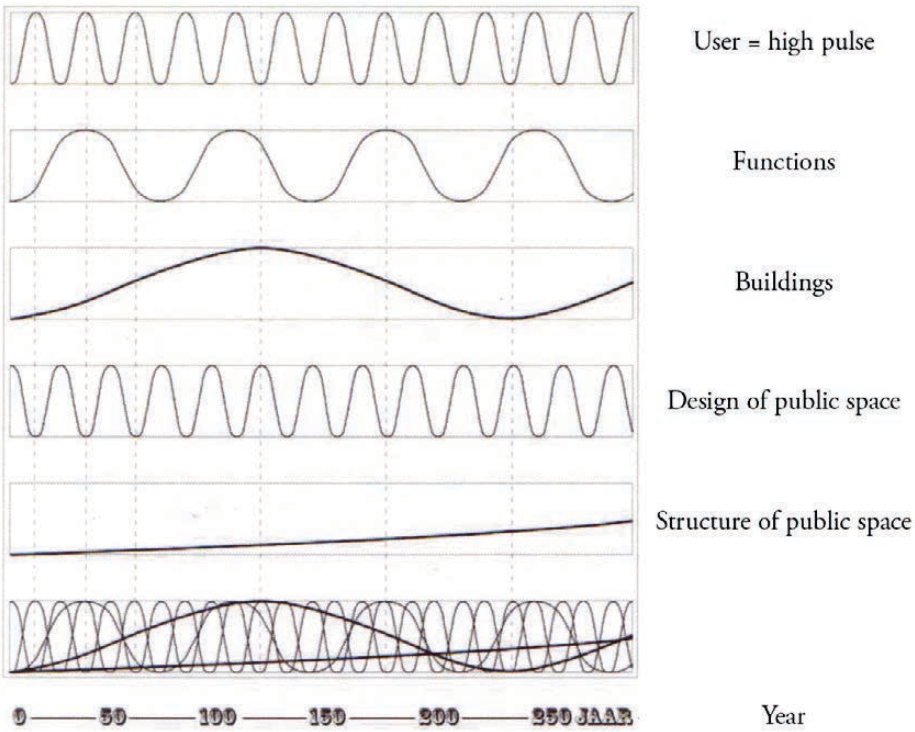


FIG. 5.6: The city is in constanct change, though with different frequenties. Urhahn defines different 'pulses' in the city (source: Via Event, 2011). The framework of the large park can have a low pulse whilst the users can bring fast pulses to the park.

government. Investing in the park requires a strategy that is prepared to take a long breath. There cannot be designed for a whole park immediately as this will cost too much money. Therefore there should be small investments with short payback times that attract entrepreneurs. Also regulatory boundaries have to be rethought to make such design strategies possible (this has to be studied for). Finally, there should be an organisation that takes hold of all the developments in the park. This organisation takes care of investments in the park, and safeguards democratic decision making processes and presents guidelines to safeguard collective values. In the ideal (democratic) situation this organisation represents all stakeholders and user-groups.

5.5. Aesthetic language

5.5.1. Integrating ecology and culture in the large park

People see through cultural lenses and these looking glasses decide whether they appreciate the landscape or not (Nassauer 1995). Aesthetic principles have to be discussed to reach for an improved relation between man and nature, as 'aesthetics matter and effectively influences cultural change. (…) and successfully promulgating ecological designs requires the recognition and application of culturally based aesthetics' (Mozingo 1997, p. 57). There is a need for ecological understanding in society, but how can we involve people in natural processes and how should we communicate these processes? As aesthetics influence cultural change then what aesthetical principles should be used to reach for an improved relation between man and nature? The landscape affects our culture and this requires thinking about how the large park should be designed. But how do these learning processes work? This chapter explained the meaning of a framework that functions as a solid base of the park; designing for different users, and directions for development strategies. In the final step will work towards the use of ecological aesthetic principles. These are principles that, unlike the architectural principles, can help to bridge the opposition between man and nature.

To bridge the gap between man and nature it is important that insight is gained about the ways by which ecological and human processes work. Ecological aesthetics are based on the concept of creativity (Koh 1988). Everyone is influenced in their choices by aesthetic considerations and when human and ecological proc-

esses are perceived by people they gain cognition and experience (Koh 1988). The aesthetic experiences which the park offers are transformed by the creativity of the mind into cognitive learning. It then can become part of a certain perception of the world and translated into cultural values (Buijs 2009) (fig. 5.7). Research shows that there is for example a link between play and natural environments as these early experiences become part of a person's nature, starting in the childhood (Thompson, 2007). Based on the theory of creativity ecological aesthetics can be a source of inspiration for designers, rather than the aesthetics derived from an architectural approach (Koh 1988; Koh 2004). Koh presents three aesthetic principles that provide a vocabulary for a holistic and inclusive design of parks and cities: *inclusive unity*, *dynamic balance* and *complementarity.* These principles cover the issues which are addressed in the previous paragraphs. These principles are described shortly and with extra focus on what can be learned from them for the design of the large park. The ecological aesthetic principles might present a way for the large park to find and maintain a niche in the city as they enhance a sustainable relationship between man and nature taking place in the park.

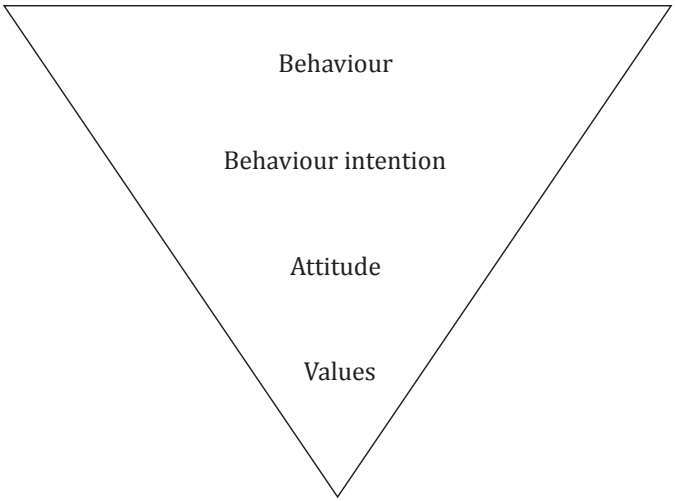


FIG. 5.7: The image of cognitive hierarchy is often used to show how values relate to behaviour (Buijs 2009).

5.5.2. Inclusive Unity with People and Place

The first principle 'Inclusive Unity' points that a design is not (only) in unity internally (think of internal order, symmetry or composition) but in unity and with purpose in its context. If a design is acting in unity with the context (people and place) this contributes to it being seen by the people as beautiful. "Unity with people" means that the design integrates, expresses and responses to the users and 'invites aesthetic participation' (Idem, p. 183). People have to be 'invited to participate and give them a sense of control and belonging, which, in turn, seems to give users and observers a sense of freedom and a greater sense of security, comfort and pleasure' (Idem, p. 184). Koh names a number of aesthetic languages and design strategies that can be used to express inclusive unity with people and place in the landscape (Koh 2004). In the scope of this thesis they are interpreted for the design of the large park:

- *'Connection and expression of temporality and time (cycle, change); diurnal, seasonal rhythm; tidal 'cycle'; process of change, aging, development, process'*
  By emphasizing time, cycles and changes temporality can be stressed. This puts attentions on the cyclic aspects of nature and on the changes and evolution of the park in time.

- *'Grounding, undergrounding, backgrounding: revealing the ground, and framing the background, responding to topography'*
  By emphasizing the characteristics of the ground different units with different biophysical characteristics can be createdv (e.g. wet/dry, open-public/enclosed-private).

- *'Sense of 'connectedness' to nature, landscape: fitness (to function and program and environment and context)'*
  The program of the park and the functions that take place relate to the possibilities generated by the park. No function should harm the framework or the activities of other groups. Activities are based upon ecological understanding.

- *'Circular arrangement: equity and community'*
  By working on active involvement of citizens in the design of the park (participation) the park can become democratic. A reflection of society. This helps to

work on social understanding and community building.

- *'Aesthetic and design participation: engagement and user participation; void, room with openness, open-endedness, openable window, changeable and moveable seats and walls'*
  By putting emphasize on democratic decision making processes the park can become a place for all. Sustainability means that the design offers future groups the same chances as the groups that exist today. By leaving opportunities for future user-groups to take a place the park can evolve through time and can remain its fitness in the city.

- *'Territorial articulation, identity and autonomy: dike, wall, fence, threshold, entry, stoop, passage, gateway, territorial marker, boundary, edge'*
  By emphasizing spaces and spheres territories for certain users are articulated. One becomes aware of certain communities when they enter their domain.

- *'Multi-functioning and Niche (time-sharing)'*
  By creating multifunctional land-uses that can be used for different purposes during the day the capacities of the park can be enlarged and the design of rarely used mono-functional landscapes prevented. Sometimes niche-activities have to be designed for specific forms of use (e.g. certain forms of art, tree-house, certain sports etc.).

- *'Materiality: local material, natural material tactile and haptic experience'*
  By using local and natural materials the attention can be put on experiencing the local biophysical habitat and local natural processes. This includes a focus on textures of materials.

5.5.3. Dynamic balance

In traditional aesthetics 'balance' points at the appearance of form. Dynamic balance (or creative balance) on the other hand is about dynamics, change and balance. It relates to the ways by which ecosystems and evolution act. This principle refers to the balance between distinctive terms, like order/disorder (think of Nassauer's (1995) 'messy ecosystems orderly frames') and composition/decomposition. Designers have to shift their focus from ordering of form towards ordering of process

as this fits better with contemporary uncertainties and the possibilities to adapt to future needs (Idem, p. 186). When looking at aesthetic languages and design strategies Koh names the following to express dynamic balance in the landscape (Koh 2004):

- *'Change, mutation and transaction'*
  Change and mutations are prominent aspects of the park in order to evolve and maintain its niche in the city. The design of the park should be open for changes and mutations. Change can count both for human and ecosystems.

- *'Change and continuity (unity with environmental, and human change); tradition and innovation'*
  Where the users and their wishes change, the continuity of the park should be cared for by providing a sufficient framework that can handle changes. An organisation structure can take safeguard common values, like ecological accounting and respect for different forms of use, to let the park function as instrument for an ecological democracy.

- *'Fluvial forms: stains, sedimentation, erosion of flow, erosion, decay, sedimentation; 'Sensitive Chaos', 'Fractal"*
  By revealing flows of energy and water the natural processes that play in the park become visible and can be experienced by people. These processes should not be hided.

- *'Juxtaposition of Opposites (old and new; change and continuity; regular and irregular, natural and artificial, order and disorder, organic and geometric; simplicity and complexity)'*
  Bring together inorganic and organic, order and disorder, building and landscape. City and nature become interwoven in the park.

5.5.4. Complementarity

The principle of complementarity reflects the relation between the ways by which we try to order and define the world around us and the order of nature. Complementarity is about the order between our subjective "selves" and the objective world (Koh 1988, p. 186). It is about our personal interpretation (subject) and the real

world (object). With this subjectivity complementarity refers to thinking and feeling, of body and mind. The uncertainties that exist in science (see also paragraph 1.2) reveal the indeterminacy of our knowledge. This indeterminacy can be better understood by an aesthetic brain than a rational logocentric brain.

It brings together the objective world with the (individual) integrative nature of creativity. 'When the beautiful and the meaningful - form and content - are integrated, aesthetic experience is likely to be more intense' (Idem, p. 187). A relationship between people and environment can be created when meaning is present, therefore 'design must not only delight our senses and body to generate intense aesthetic experience - it must also enlighten our soul and mind and raise the awareness of sensitivity of self and environment instead of just prompting easy gratification' (Idem, p. 188). The complementary view brings together the Western formal aesthetics 'with focus on the objective, external world and on the clarity of expression and the ordering of complex environments' with the aesthetics of the subjective, internal world (Idem, p. 188). When looking at aesthetic languages and design strategies Koh names the following to express complementarity in the landscape (Koh 2004):

- *'Positive/negative form integration and interpenetration: indeterminacy, uncertainty'*
  Positive and negative form can emphasize nature and the user, both taking part in the park.

- *'Simultaneity / engaging ambiguity'*
  The park itself or the single elements in it can have different meaning for different people. By having an artistic approach an element can become more than only a functional element. It can get different meanings. By increasing simultaneity the park can be of importance to more people.

- *'Materiality and spiritually complementarity'*
  In contemporary plural society activities reflect the value-patterns of users. Symbols are part of cultures and different cultures can have different symbols. We can bring complementarity to the material (what is there in the park) and the spiritual (the meanings that are attached to it). This helps to make the park part of people's lives.

5.5.5. Conclusion

The principle of 'inclusive unity' put a focus on the large park acting on purpose with the city and the larger landscape. The park is no longer a unit acting on itself but it is part of a larger system, a network. It is embedded and interacting with biophysical processes and its users. When it is in unity with its context the park can become beautiful in the minds of the people. It becomes an ordinary landscape for the people, a reflection of society, instead of a design for the magazines. Aesthetics here are concerned with more than form alone but is explained as aesthetics of environment.

For the large park counts that there has to be dealt with many uncertain processes (both in ecological and social processes). Then the best choice is to design for processes. Dynamic balance for example relates to resilience theory as it is about the ecological systems in the park that have a higher level of complexity. Therefore there has to be dealt with disorder and spontaneity for the large park as a whole and local order for people to understand and work with the park. This requires the search for strategies for the park to be open and adaptive to changing ecological and cultural context. This helps for the park to evolve over time and maintain its niche in the city.

A deterministic approach for designing a park in a plural society cannot work and therefore there has to be turned towards an aesthetic approach. The uncertainties in society require a turn towards an aesthetic approach for park design where attention is put on art, experiencing cultures (the other), experiencing beauty and the sublime. This approach can help us to deal with the questions and uncertainties that we cannot answer by scientific rational thinking. Complementarity gives room for feeling, multiple interpretations in society, more than a singular truth, fantasies, intuition. The large park can contribute in restoring the relation between man and nature by giving room for these uncertainties that exist in our society.

5.6. Design principles for the large park

5.6.1. A landscape approach for the design of the large park

This paragraph brings a summary of this chapter and design principles that can be used for the design of the large park. The base of a park should consist of a solid and resilient framework that embeds the park into infrastructure networks and ecological networks. This makes that the park can act in unity and purpose with the city and the landscape. The framework has to offer possibilities for multiple user-groups to appropriate spaces and start activities and it has the capacity to offer possibilities for future user-groups to appropriate spaces in the park. The framework is the low pulse and the things to be added are the fast pulses of the park. This capacity makes the park open and adaptable for future circumstances and gives it the possibility to evolve in time and maintain its niche in the city. The capacity to hold different user-groups turns the whole into an inclusive environment. The infrastructures run through these different domains so that they can become public domain. These domains can be experienced when one enters them and this helps to experience and understand other communities. Common values (perhaps with supervision) have to safeguard that one feels safe and is able to enter another public domain and that ecological accounting is taken in actions and activities. The development strategy for the park points at taking an approach that works from the bottom-up. Attention is put on self-building, self-organization and spontaneity. Part of this can be pulling functions that put (renewed) attention on the park. These are so-called catalysts. They partly fill in the open units. Their design is based on an inventory of social needs and cultural context. The aesthetical principles of the park relate to ecological aesthetics instead of architectural (Modernist) aesthetic principles. Ecological aesthetics have the potential to restore the relation between man and nature as they focus on full sensory experience of natural processes and the creativity of the mind. This contributes to cognitive learning and ecological understanding worked out in the people's minds. This approach makes the design of the park a reflection of society instead of a design imposed on society.

5.6.2. Building on an organization structure

A park should not be a free-state and order and guidelines should be given. Therefore a foundation or organisation is necessary to facilitate democratic decision making and to guide actions in the park. This organisation can consist of designers,

government officials, land-owners, and locals. It helps if there are local pullers in the organisation as they are often known with the social circumstances and they know how to put attention on the park. First there should be searched in the surroundings of the park if there are individuals, artists, or entrepreneurs who can initiate activities in the park and put (renewed) attention on the park. The designer has a facilitating role and has to bring together these ideas. An idea is that the designer provides certain codes from which a design can 'emerge'. The municipality needs help in actively search for program in the neighbourhoods and for entrepreneurs who want to invest. Make sure that different cultural groups are represented, also in decision making processes. An important goal is to explain situations and choices in order to create social understanding. The municipality has to take a facilitating role. (Micro-)financing and funds need to be provided to take a first step. By doing this, the investments can help entrepreneurs and by developing new business models (e.g. renting, leasehold) this can offer ways to earn (small) money. The organisation has to think of maintenance and safety in the park. They secure ecological understanding by providing guidelines and rules that focus on ecological accounting in activities. By focusing on this the organisation can actively work on zooming in, organising flexibility, creating collective values and working with focus on the user (what do you need?).

5.6.3. Design principles

The following scheme (fig. provides an overview of design principles that can be derived from the theoretical framework. For this thesis a design principle is defined as 'a specific design rule that helps the designer to set theory into practice'.

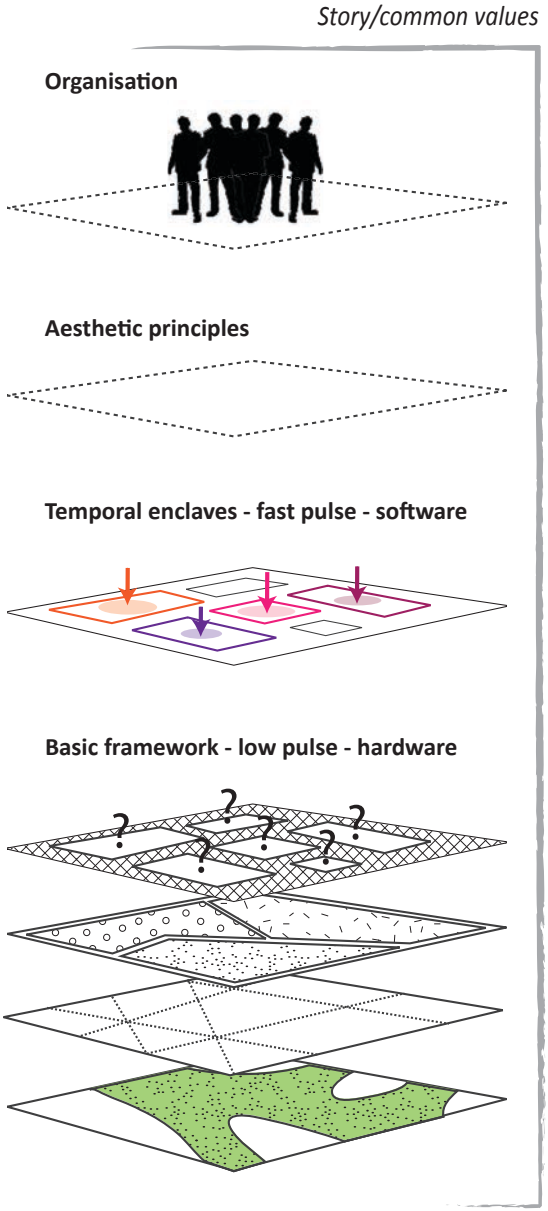


FIG. 5.8: These design principles can be used to set theory into practice.

Description:

Develop an organisation structure that can deal with democratic decision making and that can take responsibilities and guide actions in the park

Design the large park based on ecological aesthetic principles

Use catalysts to put (new) attention to the park and foster appropriation of the open units in the park

Create parcels with different characteristics that groups can appropriate and that can work as temporal enclaves

Based on social research direction needs to be given for different spheres that represent different user-groups

Attach the park to the infrastructural networks on several levels and provide accessibility for all user-groups

The base of a large park consist of a resilient and working ecological system that is embedded with larger ecological networks

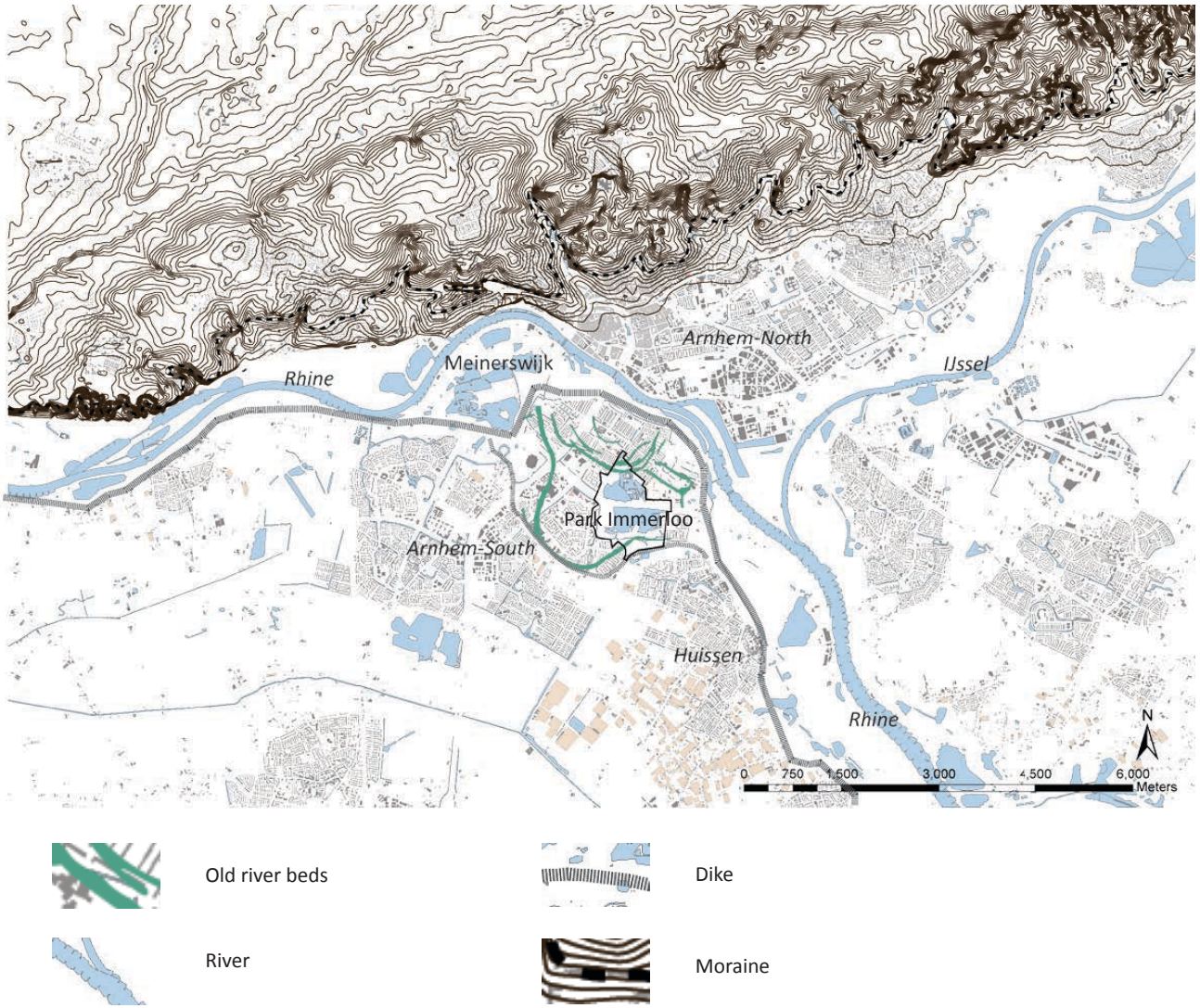


FIG. 6.1: Park Immerloo is situated in the former river area of the river Rhine.

6. The plural society of Arnhem-South

6.1. Introduction

An analysis of the cultural context is necessary to embed the park in local culture, but due to time limitations this thesis cannot contain an in-depth social research to get grip on the local culture. Therefore assumptions need to be made based on researches and available literature about Arnhem and Arnhem-South. Making generalizations of groups of people is a sensitive subject and can be dangerous. But designing a large park without saying something about the social context can lead to designs which are not rooted in the local culture. Therefore it is worthy to bring in some generalization of the values and lifestyles as an input for the design. But keep in mind that the statements are about expressing the spheres in a neighbourhood, and the statements do not say anything about the values and leisure-profiles of a single person as these can differ. This chapter starts with giving a short overview of the history of Arnhem-South to show in what way this city (or landscape) forms an adaptation to local biophysical circumstances. Then the underlying cultural characteristics that are part of the culture of Arnhem and Arnhem-South will be highlighted. Based on demographic research and available cultural-geographic research this will be continued with a more indebt description of the dominant user-groups that exist in reach of the park. This chapter concludes with the ambitions and social needs for Arnhem-South as expressed in policy documents. An assumption of the social needs for Arnhem-South is made based on recent policy documents, interpretations of researches and discussions with members of the municipality of Arnhem.

6.2. Short overview of the development of Arnhem-South

In this paragraph is about the development of Arnhem-South in order to say something about this city as form of adaptation to local biophysical circumstances. One of the core features of Arnhem is the river Rhine that splits the city in half (fig. 6.1). The old city of Arnhem is located north of the Rhine and is situated at the transition from the sandy hills of the Veluwe moraine to the river as this provided a defensive position. The first urban expansions took place also on this side of the river and consisted of housing of the high-class who wanted to live on the hill sides. Some

estates have remained and function today as 'green fingers' that reach almost to the old historic city. The other part of the city is located in the river landscape south of the river Rhine. The original landscape was formed by people's adaptation to the wet and seasonally circumstances of the Rhine. This landscape was dominated by a system of dikes, ditches, drainage systems, and fertile levees with orchards and crops (fig .6.2). Later a sprawl of brick factories and relating infrastructures could be found in this landscape at places where clay could be extracted from the soils for the fabric of stones.

FIG. 6.2: This picture (date unknown) shows what now is Arnhem-South. We can see agricultural activities and the Huissense Dike in the middle of the image (source: Gelders Archief).

The first urban expansions that took place south of the Rhine were initiated in 1933, following the expansion plan designed by the office of Granpré-Molière, Verhagen and Kok. The focus of these expansions was on quantity rather than quality, mainly due to a shortage of materials and urgent need of housing in the post-war period. The grasslands were replaced by housing, thereby keeping hold on the dominant directions of the agricultural lands. The expansions showed a functional layout (fig. 6.3) with a full profile of post-war building types (1933 – 1990) (fig. 6.4 and 6.5). Especially before the 1970s there was high attention for creating many cheap houses and less attention for ecological and social processes. These neighborhoods reflect a scientific architectural approach to city building that today we would call functional, cheap, anonymous, and neglecting personal expression. From the 1970s onwards there was increased attention for social processes and community building. Neighborhood-layouts and houses showed more attention for the human scale. The expansions of Arnhem-South further included several shopping centres, a shopping mall (Kronenburg), greenbelts, schools, two event/sport stadiums (Gelredome and Rijnhal), some business-districts, industrial sites and sport fields. These functions were connected by many roads that range from local to regional importance.

In general we can say that in the neighborhoods surrounding the park there is a lack of attention on experiencing the environment with all senses. Most neighborhoods are anonymous, functional, one-sided and distemic. If people live in this city it affects their culture and value pattern. This counts as well for the children that grow up here. It is no more than logical that the creativity of their mind is not challenged with elements that can bring both a social and an ecological understanding. This is the relatively low dense urban periphery of Arnhem-South.

FIG. 6.3: This development plan "Malburgen" from 1966 shows the functional layout of Arnhem-South (source: Gelders Archief).

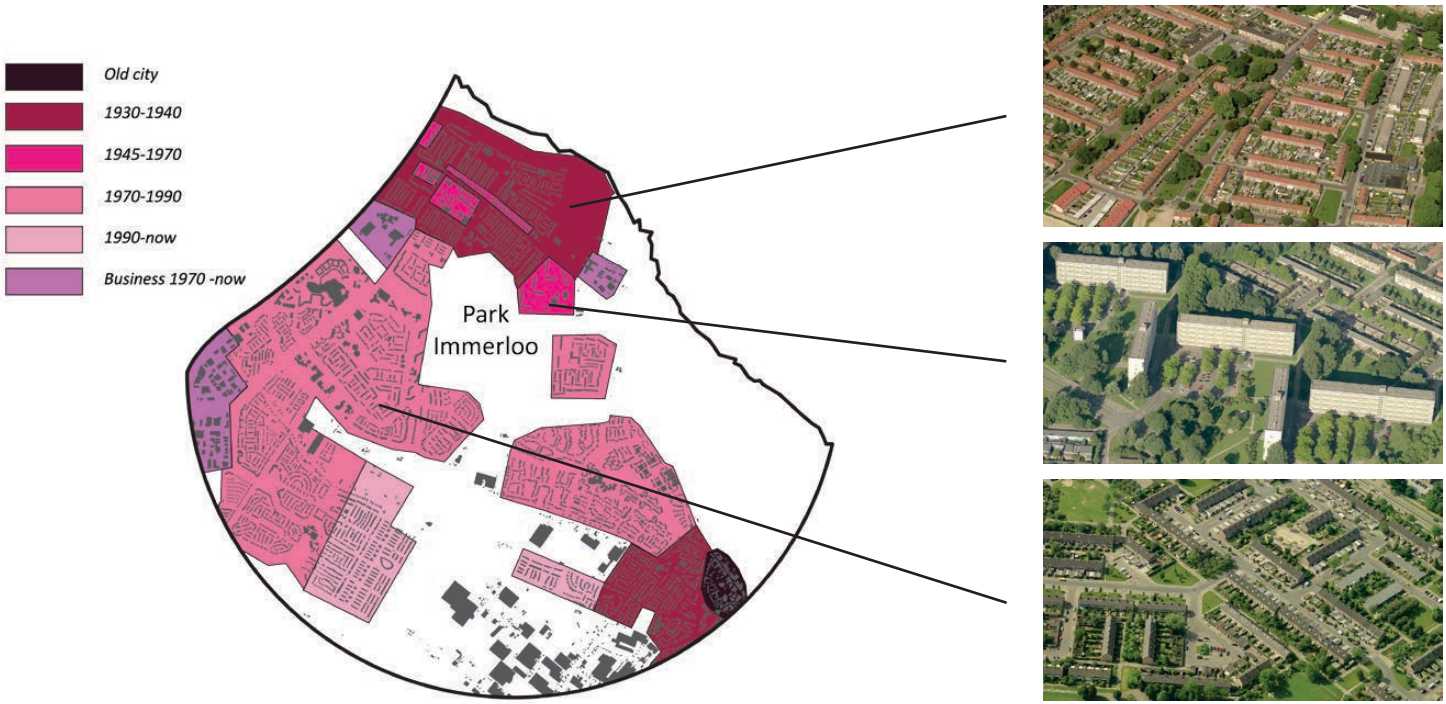


FIG. 6.4: Many neighbourhoods near Park Immerloo have a functional and anonymous layout that neglects personal expression.






FIG. 6.5: Many neighbourhoods near Park Immerloo have a functional and anonymous layout that have an origin in architectural design language that neglects personal expression and full sensory experiences. This landscape is drifting apart man and nature.


Kronenburg

6.3. Distinction between Arnhem-North and Arnhem-South

In order to make a sustainable design that is fits in local culture it is wise to get grip on the identity of the city and especially the characteristics of its citizens. To explain more about the characteristics of the citizens I want to refer to the urban sociologist Arnold Reijndorp (2006, p. 67) who prefers not to name the identity but to name the 'spirit of the city'. When focusing on the development of our cities these values are part of a history that is constructed in the people's minds. Cities have their own character depended by their own history and such unique histories are again expressed in the local culture. Worldwide developments result in changes in society, but local cultural characteristics, traditions, knowledge and networks depend how these developments end up on the local level. Now what are the local cultural characteristics of Arnhem?

We can notice a profound distinction between the rich and wealthy living environments in Arnhem-North and the low-quality poor living environments in Arnhem-South. The 'rich' North, located on the hills of the Veluwe-moraine, is remarked as beautiful whilst the cheap housing of Arnhem-South is remarked as ugly (Gemeente Arnhem 2009; CASA 2011). This is the distinction between the high-class and high-culture in the North, which since 1450 hosts different levels of governance and administration (the court, province and the municipality) and international cultural events, and the South were historically the 'working-class' and middle-class were dominant that lives in the cheaper housing. This historical opposition contributed to a opposition between these two parts of the city that still can be recognized today (Gemeente Arnhem 2009; CASA 2011).

Social research shows that Arnhem has in many ways two faces (Gemeente Arnhem 2009): Arnhem is green (parks) and gray (facades), with beautiful front sides (rich culture and parks) and raw backsides (criminality, social problems). In the distinction between Arnhem-North and Arnhem-South we can observe that the positive side of Arnhem is mostly reflected by Arnhem-North and the negative ones by Arnhem-South. Arnhem-North is located on the hills of the Veluwe moraine and has a high quality living environment with rich housing, many facilities, a high cultural diversity and many nearby parks. In promotion policy the characteristics of Arnhem-North (green and creative) are pointed at (Gemeente Arnhem 2010) (fig.

6.6). Arnhem-South has a relative low quality living environment in the flat river area. It hosts the 'raw backsides' showing neighbourhoods with many social problems. Think of Malburgen (a district located north of Park Immerloo) which was listed by the Dutch State as one of the forty neighbourhoods with the biggest social problems in the Netherlands. This distinction pinches the relations between the two parts of the city. Surprisingly this distinction is felt more from North towards South than otherwise, as in South there are as well many immigrants who don't have this feeling (Gemeente Arnhem 2011). But whilst the distribution of citizens between north and south is equally devided, there is a feeling that Arnhem-South is necessary to generate money to do investments and organise cultural activities for the favours of Arnhem-North (Gemeente Arnhem 2011). In general it can be said that the distinction between North and South is lingering in the back, deeply in Arnhem culture. Although expensive urban restructuring takes place in Arnhem-South it would be fine if investments generated by South would flew back to South to contribute in more notable ways to the quality of life in this part of the city. There is need for a project that brings windfall for Arnhem-South and a new city-park can bring this.

FIG. 6.6: The promotion policy of Arnhem focuses on the green and creative side of the city.

6.4. The different user-groups surrounding Park Immerloo

The neighbourhoods that are in reach of the park, and some parts of the town Huissen, count more or less 49.000 inhabitants. What generations are dominant in this area? From the demographic numbers (CBS 2011) we can conclude the following (fig. 6.7):

- **0-14:** Almost one fifth of the population (9.000) consist of children (0 - 14 years). There are relative many children in the new neighbourhoods (1990 - now) and in the neighbourhoods located directly north of the park. Making the park attractive and educative for young children is therefore an important goal.

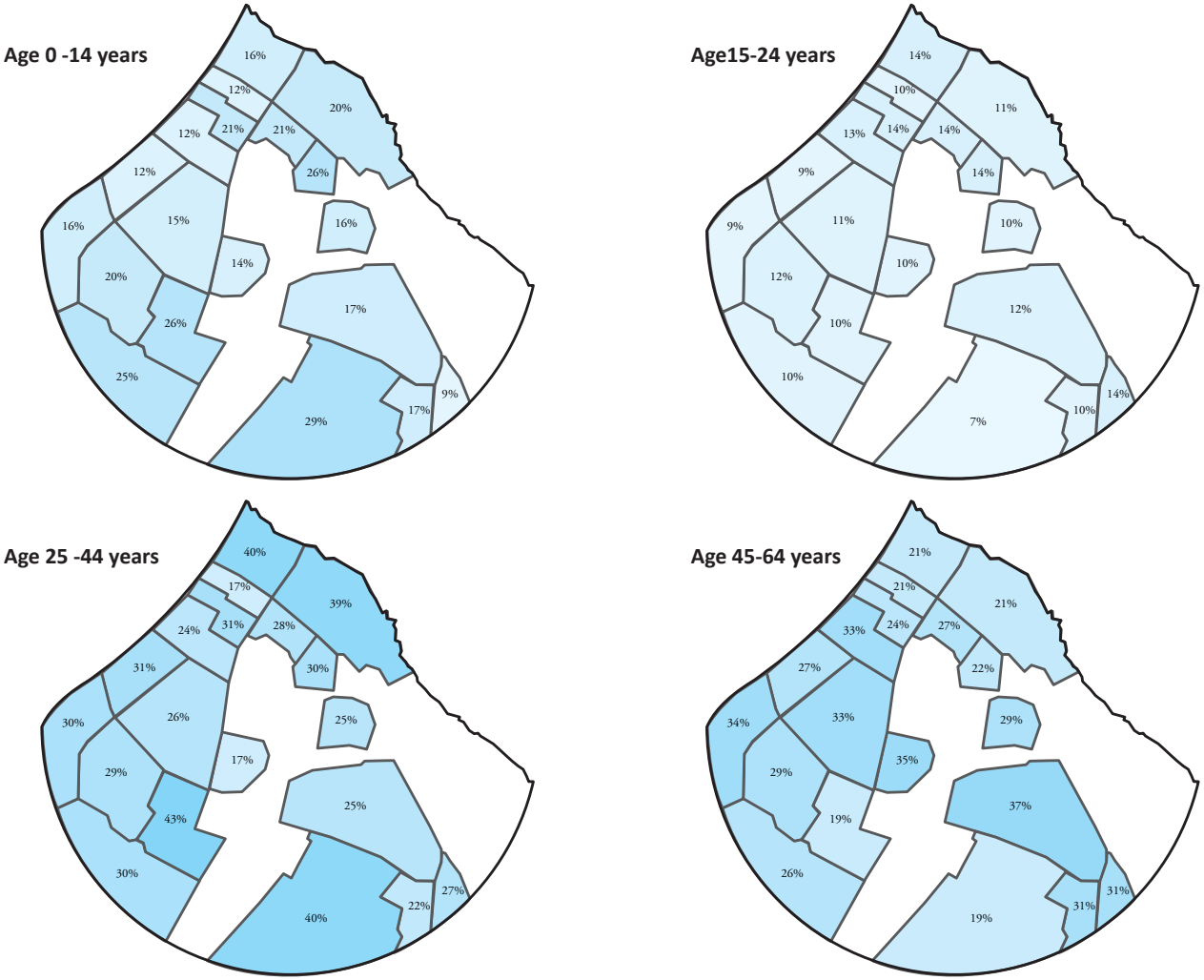
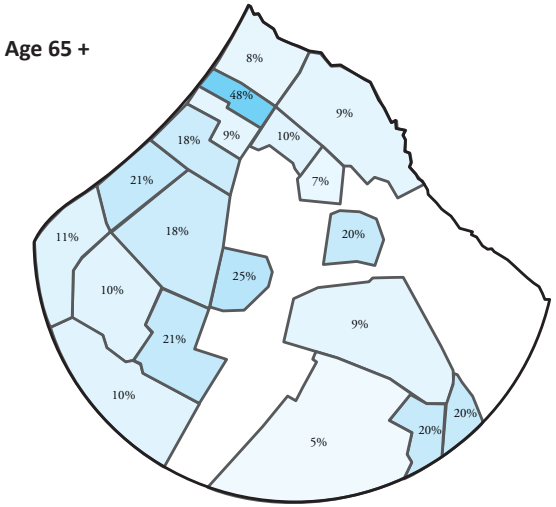


FIG. 6.7: This shows the relative representation of certain age groups per neighbourhood (in percentages).

- **15-24:** The generation of teenagers and young twenties is spread evenly over the neighbourhoods and consists of a total of 5.430 people. This means that they are a relative small group that will increase in the future. For this generation there can be thought of sport activities and activities that bring extreme experiences. They need to be able to distinguish themselves from other user-groups in the park.



- **25-44:** The generation 25-44 is in general highly represented (almost 1/3, or 14.300 people). They are especially represented in the new neighbourhoods (1990 – now) and in the parts north of the park. For the leisure-time profiles of this group I want to refer to paragraph 6.5.

- **45-64:** The generation 45-64 is overrepresented in the neighbourhoods west of the park and in Huissen and consists of 13.400 people. For the leisure-time profiles of this group I want to refer to paragraph 6.5.

- **65+:** Although there is a relatively young population, the share of elderly (65+) will rise (from 13% now, till 18% in 2035). The elderly (total of 6.500) are mostly represented in the neighbourhoods west of the park and in the neighbourhood Middelgraaflaan en Omgeving. Making the large park accessible and safe for elderly is necessary to get them in the park.

FIG. 6.8: Names of the 19 neighbourhoods that are in reach of the park (source: CBS).

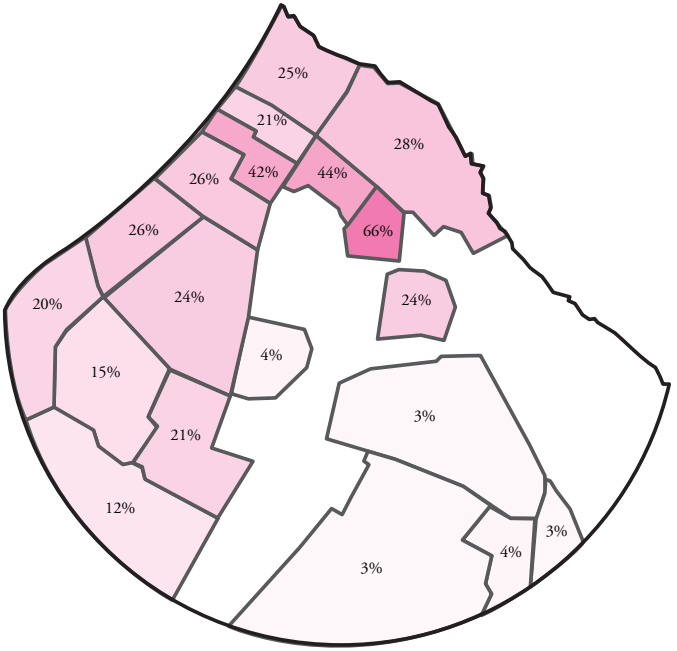


FIG. 6.9: This map shows the percentage of non-western immigrants per neighbourhood. There is a relative high amount of non-western immigrants in the neighbourhoods north of the neighbourhood.

Table 1: Overview of demographic numbers for the neighbourhoods in reach of Park Immerloo (source: CBS)

Neighbourhood	total inhabitants	non-western immigrants	total	Western immigrants and autochthonous	total	aging	0-14	15-24	25-44	45-64	65+	total numbers	0-14	15-24	25-44	45-64	65+
Arnhem																	
Immerloo 1	1150	47%	541	53%	610		21%	14%	28%	27%	10%		242	161	322	311	115
Immerloo 2	2010	66%	1327	34%	683		26%	14%	30%	22%	7%		523	281	603	442	141
Kamillehof en Bakenhof	3385	28%	948	72%	2437		20%	11%	39%	21%	9%		677	372	1320	711	305
t Duifje	1580	24%	379	76%	1201		16%	10%	25%	29%	20%		253	158	395	458	316
Zeegsingel en omgeving	1310	42%	550	58%	760		21%	14%	31%	24%	9%		275	183	406	314	118
Vredenburg	4285	24%	1028	76%	3257		15%	11%	26%	26%	21%		643	471	1114	1114	900
Holthuizen	885	5%	44	95%	841		14%	10%	17%	35%	25%		124	89	150	310	221
Middelgraaflaan en omgeving	1070	21%	225	79%	845		5%	10%	17%	21%	48%		54	107	182	225	514
Eimersweide	680	26%	177	74%	503		12%	13%	24%	33%	18%		82	88	163	224	122
Kronenburg	2415	26%	628	74%	1787		12%	9%	31%	27%	21%		290	217	749	652	507
Rijkerswoerd-Oost	2865	21%	602	79%	2263		26%	10%	43%	19%	2%		745	287	1232	544	57
Overmaat	745	20%	149	80%	596		16%	9%	30%	34%	11%		119	67	224	253	82
Rijkerswoerd-West	4820	15%	723	85%	4097		20%	12%	29%	29%	10%		964	578	1398	1398	482
Rijkerswoerd-Midden	4850	12%	582	88%	4268		25%	10%	30%	26%	10%		1213	485	1455	1261	485
Groene Weide	2120	25%	530	75%	1590		16%	14%	40%	21%	8%		339	297	848	445	170
Huissen																	
Oude stad Huissen	735	3%	22	97%	713		9%	14%	27%	31%	20%		66	103	198	228	147
Uitbreiding stad Huissen	5955	4%	238	96%	5717		17%	10%	22%	31%	20%		1012	596	1310	1846	1191
Zilverkamp	6490	3%	195	97%	6295		17%	12%	25%	37%	9%		1103	779	1623	2401	584
Verspreide huizen Hoeve- en Loo	1570	3%	47	97%	1523		29%	7%	40%	19%	5%		455	110	628	298	79
total in reach park	**48920**	**18%**	**8934**	**82%**	**39986**		**19%**	**11%**	**29%**	**27%**	**13%**		**9177**	**5430**	**14320**	**13436**	**6535**
Arnhem	147420	18%		82%			0.17	0.13	0.33	0.25	0.13						
Huissen		4%		96%			0.19	0.1	0.25	0.31	0.14						
Netherlands		11%		89%			0.18	0.12	0.27	0.28	0.15						

- **Non-western immigrants (fig. 6.9):** The average percentage non-western immigrants is 18%, which is a total of 9.000 people, but there is a high variety between the different neighbourhoods. The neighbourhoods located north of the park have a relative high percentage of non-western immigrants. Also west of the park there relative many non-western immigrants. In Huissen we see a low percentage of non-western immigrants. Many non-western immigrants have their own behaviours and wishes for the park. In general they favour the park to be orderly and neatly. The park should provide functional uses, like food production and possibilities for gardening.

The previous numbers say something about the different generations that live in reach of the park. In addition to this I bring a research that the municipality of Arnhem conducted on the presence of cultural groups in the city. This research focused on dominant groups that live in neighbourhoods in Arnhem and that depend the sphere. For this research the city was divided in different districts by looking at the zip codes. The conclusion was that different cultural communities and user-groups exist in Arnhem-South. These groups have different values and leisure time profiles. Some of these groups don't go very well together as their values, needs and leisure time profiles conflict too much. Within the reach of the park four dominant groups were distinguished (Motivaction 2009) (fig. 6.10):

- **Modern bourgeoisie:** Their general lifestyle values are focused on family, status, consuming, enjoying and security. For them, leisure time has no goal but it is a goal. It is about relaxation, amusement and massive entertainment, but it should be popular culture and no vulgarity. Cosines with friends and family are appreciated. Safe and transparent environments that are cared for and child friendly are found important. Characterizing hobbies are keeping pets and gardening.

- **Traditional bourgeoisie:** Are conservative, dutifully and local based. In their leisure time they enjoy easy forms of leisure with family, preferably in their own neighbourhood. They prefer clear situations and events, and collective happenings. There is aversion towards hectic and vulgarity. They like uplifting culture but as well pure amusement. Sobriety and thrift are leading themes in leisure time. Characterizing hobbies are reading, walking and crafts.

- **Upward mobiles:** Have a focus on making career and getting status. In their leisure time they search for kicks and tension. They like status and differentiation from others by visiting events and places where you can be seen, of 'being part of it'. This group is rather trend following than trend setting. Much needs to be done in less time, with need for good infrastructure and combining activities.

- **Postmodern hedonists:** This is a strong urban group with no taboos, attention for personal development, and enjoying. In their spare time these people go for the kicks and experiencing new things. It is about everything that is not standard. There is no distinguishing between high culture and low culture. There is a strong individual focus, not one on status. There is rather more attention for small undiscovered events than big mass events. It is about authenticity, rather than being part of the group.

FIG. 6.10: This map shows the dominant user-groups per zipp-code (source: Motivation).

At the moment the surrounding neighbourhoods are turned away from the park. For many that live in the reach of the park the park is not part of their city. For them the park is not offering activities that match their needs and as a result they are not represented in the park (Gemeente Arnhem 2011). Besides there are no initiatives taken from the neighbourhoods to turn these people's eyes on the park. This makes it difficult to identify the social needs in the surrounding neighbourhoods. What can be said is that the value-patterns and leisure time profiles of the different groups do not always match and they sometimes conflict. For Arnhem-South counts that the post-modern hedonists conflict with the value-patterns of the modern bourgeoisie and the traditional bourgeoisie. This results in social conflicts that are fought out in public space. For designers this is something to deal with, but besides this it is difficult to predict what the social trends of the future will be and what activities relate to them. This leaves uncertainties for the designer.

6.5. Need for qualitative living environments

Recently the vision on the city structure for Arnhem was presented and agreed upon by the municipal board. According to this vision (Gemeente Arnhem 2010) it is expected that in the next twenty years the total population of Arnhem will grow with 9% (fig. 6.11). Although some uncertainties exist, there is a big chance that the growth will stop and there might be a crimp of the total population after these twenty years. This is why Arnhem, just like many other cities, tries to pull and keep as many new inhabitants, companies, visitors and students as possible (Hospers 2011). In order to keep a high diversity of citizens and pulling new ones political boards of Arnhem stressed that there is priority for high-quality living-environments that offer multiple urban functions for the city as a whole. This shows that there is willingness to invest in a high diversity of urban facilities that attract companies, jobs and people. For example the green fingers and the city-edges need to be improved. This is supposed to attract companies and jobs.

Also Arnhem must deal with financial cutbacks, therefore Arnhem's board (Stadsbestuur Arnhem 2010-2014 2010) wants to focus less on top down policy, but rather bottom-up, having entrepreneurs and inhabitants talk with the municipality about the problems they have and the potentials they see. Only then the municipal-

ity wants to start with making plans in a cooperative way. The design and layout of the park system of Arnhem is acknowledged as being an important contributor of quality of life to the city. Therefore, while there are cuts on the budgets for the park, there are also investments. The potentials of the parks are recognized by the political parties, but they are to be designed in a economically sustainable way. For Arnhem-South the goal is to create a cultural 'breeding-ground' where young talent and older artists can get in contact. Money will be available to create a space to practice music, dance, circus and theatre in Arnhem-South.

In Arnhem some find their way up and others find this difficult and don't find a way. There is a growing segregation between these two groups, which is a problem. A large part of the district Malburgen, located north of Park Immerloo, is listed as one of the forty districts with the biggest amount of social problems in the Netherlands. A misbalance of opportunities for social improvement leads to social problems in the city and therefore this situation needs to be improved (Gemeente Arnhem 2010). A further segregation of the groups needs to be prevented. Special attention and

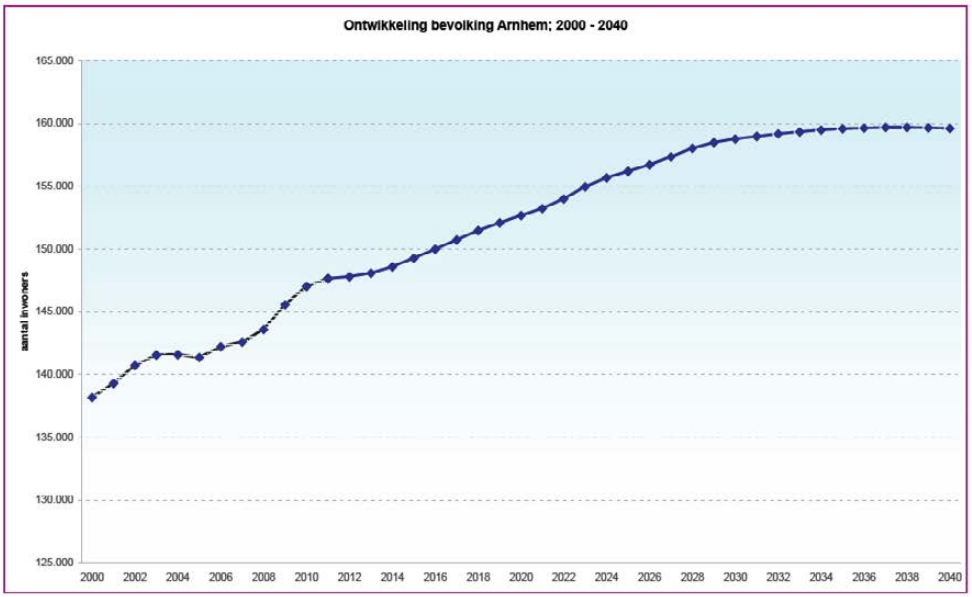


FIG. 6.11: There are priorities for high quality living environments to compete with other cities. Arnhem is expected to grow for the next twenty years (source: Gemeente Arnhem, 2010)

money is made available for regenerating these districts to offer people chances for social improvement (VROM-raad 2006; KEI 2007). Recently the Dutch ministry of VROM (Ministry of Housing, Spatial Planning and the Environment) plead for the wish of inhabitants to move forward on the social ladder as a starting point for urban renewal. The meaning of moving forward and social improvement is different for every person, as 'it can be about having a higher income or a better job, spending more time with the children, finishing an education or moving towards a more familiar environment' (VROM-raad 2006, p. 13). In the end social improvement is about 'creating or maintaining space for the own lifestyle' (VROM-raad 2006, p. 13). The board pleads for extra steps on the social ladder, as social improvement generally goes in small steps. These steps should be created in the fields of living, working, education and leisure. The park can offer such opportunities. Policy stresses that cultural differences exist between the neighbourhoods in Arnhem. The diversity of identities enriches the city, but at the moment some groups are excluded and isolated, and some groups have bigger chances for personal improvement than others and this remains an issue (Gemeente Arnhem 2010).

6.6. Conclusion

It becomes clear that towards the outside the identity of Arnhem is represented by Arnhem-North. The image of the city is brought as attractive and green, a city with beautiful fronts, beautiful houses, boulevards and strong contrasts between the urban edges and park-landscapes. Whilst the South has a less outspoken character of postwar neighborhoods which have a lower density of housing, more public space and green interwoven in the neighborhoods. The urban context of Arnhem-South is unrooted, thereby missing the chance of reaching for social and ecological understanding. We can conclude that in Arnhem-South different user-groups exist with different cultural backgrounds of which some the values and leisure-time profiles do not match. There is need for possibilities of social improvement for some as there is a misbalance of opportunities right now. There is a distinction between the 'rich' North and the 'poor' South that can offer opportunities for giving something to Arnhem-South that gives them windfall. There is a need for an attractive city that offers multiple urban functions, in order to reach for a high diversity of citizens in the future.

When looking at the dominant groups in reach of the park we can cluster three groups with characterizing value patterns. Assumptions are made about their images of nature. The first consists of the non-western immigrants who show a high cultural diversity. Their image of nature is in general a functional one that includes a dominance of man over nature. For them, nature should be domesticated and usable. The second group consists of the urban group of postmodern hedonists and the upward mobiles whose experiential world is faster and who are constantly moving and climbing on the social ladder. These relatively young and high educated generations have leisure-profiles and value patterns that match quite well. The dominant image of nature for them is the technological image of nature and wilderness. The last group consists of the relative older generation named as the traditional bourgeoisie and the modern bourgeoisie. The relatively older modern bourgeoisie and the traditional bourgeoisie represent groups of people who see the world around them changing. In general these groups prefer the Arcadian image of nature and the traditional function image of nature. For them there is a strong wish of keeping order over chaos.

For the future Arnhem is less focused on growth and more focused on keeping a diversity of citizens. Staying and becoming more attractive for different groups with different backgrounds becomes the ambition. Attractive here means offering a sustainable, clean and safe living environment that matches with the different user groups and that offers possibilities for social improvement. In order to become more attractive in the future Arnhem has the great potential to use its landscape-qualities represented by its park system. The parks offer an intrinsic quality that is not related to a 'temporal' kind of industrial sector (think of Philips for Eindhoven). The availability of green is more or less timeless and in that way investments in the park system are sustainable. Ambitions to look after the qualities of the parks are acknowledged and contemporary policy stresses the importance of the green environment. Although the landscape plays a visible role in Arnhem, what is often described as the 'DNA' of the city, there is still the need to strengthen an ecological understanding in the values of the people. This touches to what is called the spirit of the city, the genes of the people, and is what I think the real DNA of the city.

7. The genes of Park Immerloo

7.1. Introduction

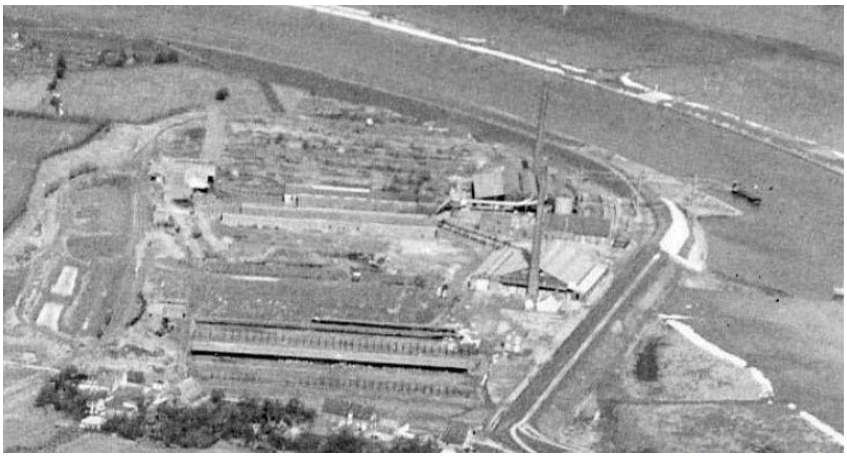
The knowledge of park design in combination with the analysis of the cultural-geographic situation and the social needs forms the input for answering the question what Park Immerloo should be. This chapter presents what the characteristics of the design are without looking at the site itself. It is about the genes of the design and is what is called the genotype design. This genotype forms the input for the phenotype design (chapter 9), which is about the looks and the outcome when the genotype design interacts with the physical 'field'.

7.2. Description of the genes of Park Immerloo

Park Immerloo has to be an instrument for an ecological democracy. It has to be based on working ecological systems and sufficient infrastructures that embed it into Arnhem-South and make it unity with its environment. It has to be an educative park that offers full sensory experiences so that it challenges the creativity of the mind and contributes in reaching for ecological understanding. It is democratic as it is an inclusive environment that offers different forms of use and experiences that can match and evolve with the wishes and needs of the different cultural groups and users in time. This makes it a reflection of society that offers possibilities for plural cultural expressions. Being democratic also means that the park offers possibilities for active involvement of people in deciding what the park should be. The park is a reflection of society; inclusive of people and nature and not exclusive; an ordinary landscape for local inhabitants and not elitist design; embracing instead of dominant and authoritarian; engaging and building on community; offering opportunities for both public and private parties; offering possibilities for users to work on social improvement; it has to work with bottom-up processes and top-down organisation. This park is never finished. It has to be a park for the 21st century and further.

7.3. Theme of the park

When looking at the culture of Arnhem and the position of Arnhem-South it becomes clear that there is still a distinction between Arnhem-North and Arnhem-South. The rich part in the north is located on hills of the Veluwe-moraine. The 'poor' housing in the south is located in the river landscape. This distinction can be used as input for the design and the river can be a source of inspiration (theme) for the design. Park Immerloo has to become an urban city park that takes the river landscape as a source of inspiration and a theme. It has to bridge the gap between north and south. It has to make south proud and (finally) bringing them windfall instead of the north.



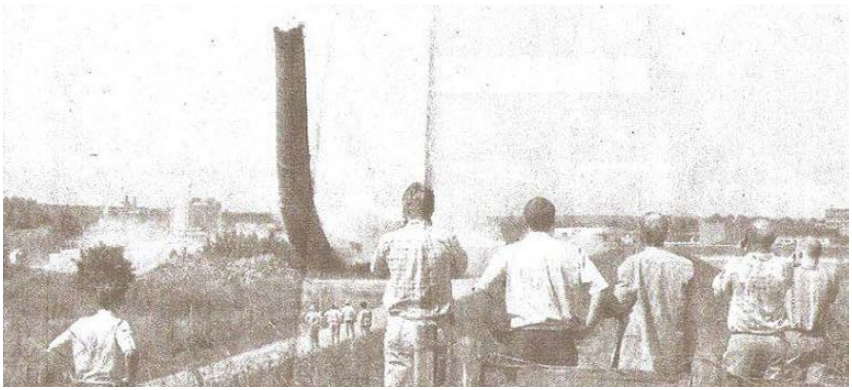


FIG. 8.1: Nothing has remained of the brick factory "Malburgen" to which the clay from Immerloo was transported (year unknown) (source: www.steenfabriekmalburgen.nl). The brick factory of Malburgen was demolished in the early 90s and the land was sold to a project developer (source: www.steenfabriekmalburgen.nl).

8. Site analysis of Park Immerloo

8.1. Introduction

This chapter presents an analysis of the site that shows the relevant processes that are at hand right now and the experiential world that it brings. I will start with a description of the developmental history of Park Immerloo in Arnhem-South. Following on that I will do a landscape analysis that includes an analysis of the biophysical habitat, the occupation and adaptations to this habitat and the larger networks in which the park is embedded. The analysis of the biophysical habitat contains an analysis of soils, water systems and ecological processes. The occupation layer contains an analysis of the land use forms and configurations (e.g. spaces, edges, corridors and sightlines). The network layer contains an analysis of connections and infrastructures. As the landscape approach points at the experiential world and the sensing body I will put emphasize on the way I experience these different factors. I will conclude this analysis-phase by pointing at the actual problems and potentials.

8.2. Historical development of Park Immerloo

The site of Park Immerloo contained a very heterogenic soil composition where clay was present in the top soils. This made these lands very wet and that is why the site was used as agricultural grassland. The name Immerloo still refers to an old farm named Jammerloo that stood at the site. Only in the 1950s, when the first building activities in Arnhem-South had already started, there was started with extraction of clay from Immerloo (lasting till 1991). The clay from the pits of Immerloo was transported to a nearby brick factory that now has been demolished (fig. 8.1). Also the relating infrastructures are no longer there. Similar pits and brick factories can be found in the floodplains of park Meinerswijk that is still under influence of the river and located a little bit further downstream.

FIG. 8.1: Image of the extraction pit seen from the south (1980s) (source: Gemeente Arnhem)

Located in the old river landscape its most prominent feature is a former clay extraction pit that now forms a lake (fig. 8.2 and 8.3). When the urban expansions grew in Arnhem-South there was need for new forms of recreation for the new inhabitants of Arnhem-South. Therefore in the late 60s and early 70s the south-

FIG. 8.3: Areal view of Park Immerloo (source: www.bing.com/maps).

ern bank of the extraction pit was transformed into a Volkspark. Bordered by the Huissense Dike in the south we can find a park that was realized in 1969 to serve the surrounding neighbourhoods (fig. 8.4). The Park Immerloo was supposed to be a park for the people. The design of the park was functional, with possibilities for a walk, places to sit, play and places to sun. The layout of this part is still based on the original design from 1969. Due to failure of management nature took over and the original intended sphere of order has changed into a sphere of unintended chaos. The municipality of Arnhem just started with re-visioning and creating a new management-plan for this park as its layout and management is out-dated and inadequate for contemporary users. The name of this park is Park Immerloo, but for this thesis the whole site will be named as such as there are potentials to create

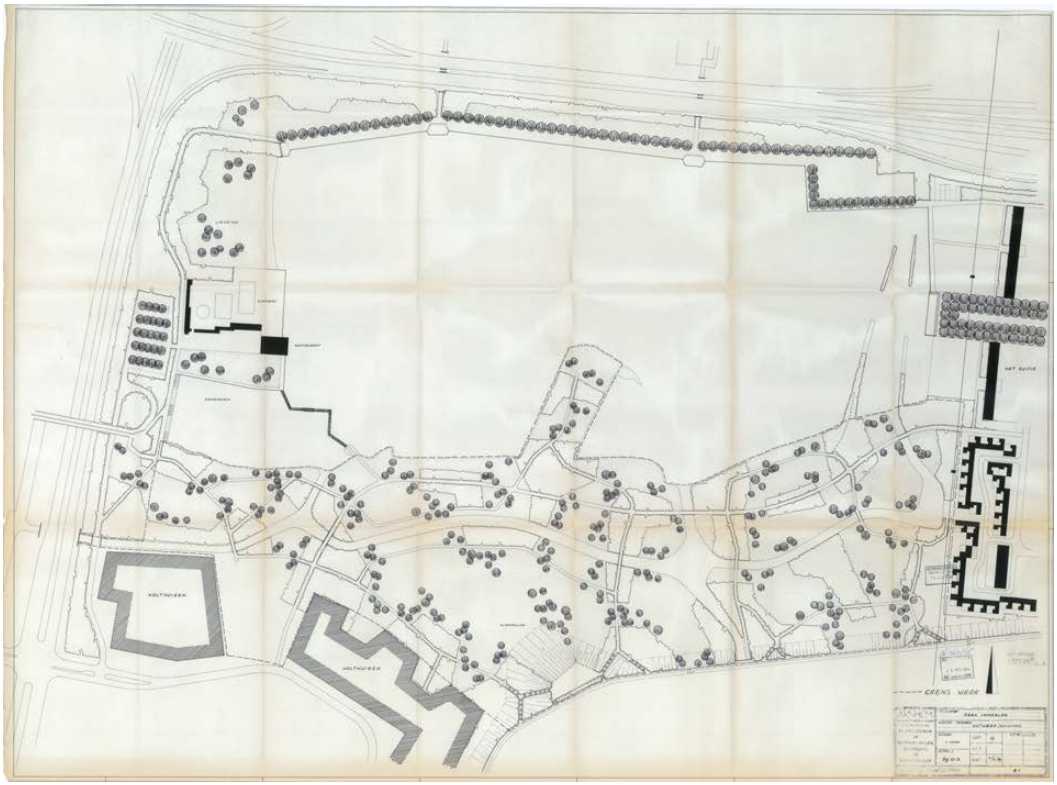


FIG. 8.4: Design for the southern part of Park Immerloo (1969). The design for the southern part is functional, clean and one-sided (source: Gemeente Archief).

an intertwined park with a greater reach in Arnhem-South. The first designs showed plans for open air swimming pools and a harbour so that people could enter the water with a boat. This idea was never realized because the pit was still privately owned and later drinking water extraction took place so that water quality had to be guaranteed and accessibility to the water was not allowed. Now the whole site is owned by the municipality and, as drinking water extraction is still at hand, some activities are tolerated but certainly not stimulated. As such the protection of drinking water has a major contribution to making Park Immerloo a backside of Arnhem-South. Part of the urban expansions were also an improved infrastructure. A big road (the Pley) was created that split the water into two parts. There was also a plan for a road towards the south, but whilst the soils had been modified already and the trees (poplars) have been planted, this road has never been realized. The remnants of the plan can be found in the western part of the park. To a large extend the edges have remained as they were left behind. We can now find the contours of the pit that have remained as if untouched and taken over by nature.

8.3. Description of the site

8.3.1. Area north of the motorway

This area (fig. 8.5) consists of an open water, housing developments and a nature site. In the upper-north we can find a primary school with play facilities that are partly public accessible. During school-breaks you can hear the children play. The surrounding neighbourhoods are turned away from the park and there are many parking lots and common neighbourhood green. The total experience of the edges generates a feeling of a backside and a lack of interest for the park, but new housing developments are planned that put re-attention on the water and the park. Right now the sites have been prepared for building, but building developments are not happening now since the housing market is on a hold. In the mean time there are open planes with pioneer planting where there is going to be built in the future. Here the water is visible and as the water is open it can be a cool and windy spot. The water is shimmering in the shining sun and the reflections of the skies can be noticed in the bright surface of the water. The Pleyroute on the opposite is discarded by trees but you can hear a monotonous sound of cars at a distance. There is the marking of a big artwork that functions as a landmark. When the water is low shrubs grow out of the water and signals are there that the water is not deep here.

FIG. 8.5: Area north of the motorway >

The windy, wide and open view towards the south.

The high-rised flats feel anonymous as they are not grounded in the park. There is only a visual focus on the site for the upper apartments.

Small nature areas develop, providing habitat for reptiles. It feels like entering a different domain. The small clear waters with gently sloped banks, the colourful diversity of plants and animals (many different bird-types, frogs and running hares) make it small undiscovered paradise in the park.

Small nature areas develop, providing habitat for many birds.

According to ecologists of the municipality of Arnhem if nothing will be done the water will grow full within 20 years. Access to the park is blocked by fences, so we cannot find any people entering the site. There are people cycling and walking along the edges. It can be noticed that it is a multicultural neighbourhood as people with many different ethnic backgrounds pass by.

8.3.2. The park in the south

This park that was designed in 1969 consists of one main feature, a big lawn (fig. 8.6), and a network of paths (fig. 8.7, 8.8 and 8.9). A water system wanders through the park and is meant to function as an amenity (fig. 8.10). This water catches the eye but merely because of the failed attempt to connect it with the big water. Today the park is very overgrown and many paths are in bad quality or in some cases completely gone. The main paths are in good shape and intensely used. An asphalt path (4m wide) connects 't Duifje with the neighbourhoods at the other side. This path is used quite often by people who cross from 't Duifje, that has no facilities, to the supermarkets and shopping centres (Kronenburg) at the other side.

The bare dike lies super-imposed against the park. It is long and open and stretches out towards the horizon. It is a technical rational element. At the point of the view-

FIG 8.6. The lawn

FIG. 8.7, 8.8 and 8.9: the park in the south >

As extention of the Huissense Dike in the South a viewpoint was created. In 1980 the artist Marius van Beek created a solar gate at this point. This solar gate emphasizes were the sun rises at 21st March and 21st September and the highest point of the sun at 21st June. At the moment the solar gate is no longer working because the sun is blocked by full-grown trees.

A neighbourhood facility at the big lawn pretends the low ambitions of the park. These monufunctional facilities have to be removed from the lawn.

The timbering at the edges of the water are very bad maintained and in bad quality. The water is clear, showing water lilies, algae and small fish.

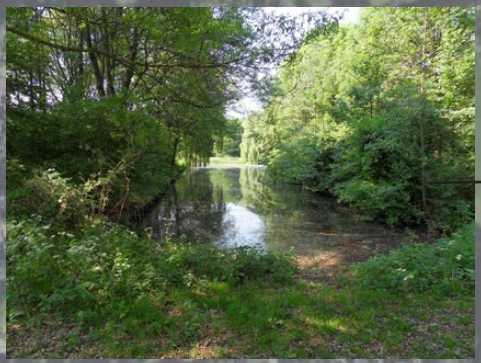
The bare dike lies super-imposed against the park. It is long and open and stretches out towards the horizon. It is a technical rational element. The bare dike lies against the park and is almost juxtraposed on it.

Many paths are in bad shape or even totally overgrown by bushes. This gives the sense of a useless structure of the pathways. A restructuring of the paths is necessary.

Young growth prevents a sight on the water. The presence of poplars cannot be ignored as the wind is whispering the leaves in the tops of the trees. On the ground there is no wind. Birds can be heard all around and sun and shadow move over the long grass.

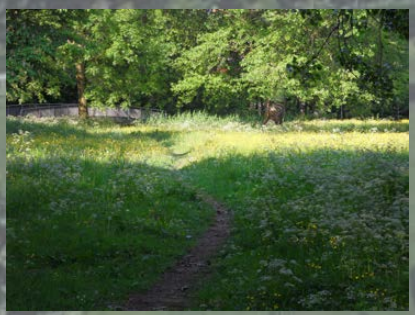
The main paths are in good shape and intensely used. The quality of the path is good, but there is cheap furniture and lighting.

The appearance of the characteristic high trees alongside the curving path is impressive. In combination with the wind that is whispering though the leaves of the high poplars it generates majestic effect.



At many places in the park we can find overgrown bushes and shrubs. There is need for major clean-up in the park.

Some shortcuts have been created, which shows that the original design misses some direction at some points.



One of the few spots to have a view on the water. This picture shows that the edges are overgrown.

A view on the water is blocked by bushes. This area provides habitat for birds and reptiles.

The connection between the open water and the pond was never made as the water systems need to be kept separated.

These pinetrees provide a contrast with all the deciduous trees. The pines spread their characteristic smell. This place can be mystical when the sun is shining only at some spots the sunbeams reach through the trees, causing a beautiful pattern on the ground In the back the sun shines fully at the long yellowish grass, lighting the whole thing up.

point its openness is replaces by a closed darkness. A viewpoint was constructed by making an extension of the Huissense Dike. Here the sundial, constructed out of massive stones, at the top of the hill draws the attention. It is a pity that it is not working, simply because just a few trees became too big and a little bit of maintenance can bring it back to life. Standing on top of the hill we have sight on a big lawn that stretches out till the extraction pit. When standing at the viewpoint you position yourself at the level of the dike, which is super-imposed on the park. With the wind going through the poplars this point provides a moment of overview, silence, emptiness, beauty and unity. This is disturbed by a set of small blue football goals in the middle of the field. These goals relate to the neighbourhoods around and to not fit in this place. Think of the relation between the abstract art of the sundial and the simple goals in the back. This spot provides a sublime moment, on that is already worth a visit, but the situation is not optimal and can be improved.

FIG 8.10: The pond in the south.

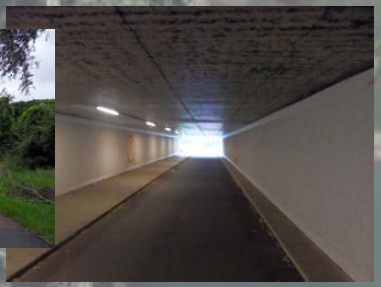
FIG 8.11: A large plot of grassland in the west.

8.3.3. Grasslands in the west

The western part of the park is marked by the remnants of the planned but never finished exit of the big motorway (fig. 8.12). This is an enclosed space with beautiful grasslands (fig. 8.11). It has no visual relation with the water. It is a place that is marked by silence and the sounds of birds. There is a remnant structure of the road which was planned to go through this area. These remnants are now filled with high poplars that whisper when the wind blows. Now cars can be heard here. A path runs straight through the grasslands.

8.3.4. Stretches alongside the Pleyroute

The stretches of land alongside the Pleijroute (fig. 8.12) should be named as areas that have ecological value, but also block the experience of the waters from the motorway. This means as well that the views on the motorway are blocked from the park. The Pleyroad crosses the park east-west, making it a big barrier. When driving on the road or the cycling path bushes prevent a view on the water on either side. There are all kinds of traffic that bring a monotonous sound and bad smells. The cycling path opens towards the road and not towards the water and this is surprising. The landmarking artwork can be seen clearly. There are many pioneer shrubs growing everywhere and no older trees. There is clearly no intention to do something with the edges. We can only see a marginal amount of maintenance, one meter of mown grass directly besides the cycling path. At some points you can see the flats reaching out above the trees. There is quite some sight on the skies but no sight on the water.



8.4. Analysis of larger networks and systems

8.4.1. A fluctuating water level and drinking water extraction

Water from the Veluwe-moraine that runs through the first aquifer is drained by the Rhine (fig. 8.14). Another part of the water from the Veluwe runs through the second aquifer towards the south. This results in seepage in Arnhem-South. The dikes tamed the river, but still seepage affects the site. Although Park Immerloo seems to be separated from the watersystem of the river Rhine, this is not the case. Water from the Rhine flows slowly underneath Immerloo and the rest of Malburgen, making a 'short cut'. As a result the waterlevel of the waters in Immerloo are fluctuating with the level of the Rhine, though with some delay. This can cause fluctuations of the water level of about one meter resulting in disturbances in the habitats of animals and plants and dynamics within the park.

Drinking water is extracted from Arnhem-South and this causes limitations on the use of the water in the pit (fig. 8.13, 8.14 and 8.15). Therefore the site is separated in two watersystems (the extraction pit and the urban water system) to prevent direct exchange of water and perhaps pollution (fig. 8.16). There is an old waterway of the Rhine alongside the Huissense Dike, which is separated from the urban watersystem. When the water is low the swamp area at the site can be damaged, and at that point extra (slightly polluted) water is pumped to the area from the Pannerdensch Kanaal. Both waters are connected to a pipeline from the Zwanewater, near the Pannerdensch Kanaal. The presence of drinking water extraction from the site makes the situation much more difficult and complex as it prevents certain polluting forms of use. The waters of the park were to be connected with the lake, but because of the risk of pollution and property conflicts in the past this connection has never been made.

FIG. 8.13: Drinking water is exctracted from Park Immerloo. This means that no poluting water activities can take place at the waters of the park.

< FIG. 8.12: The grasslands in the west and the sites along the Pleyroute

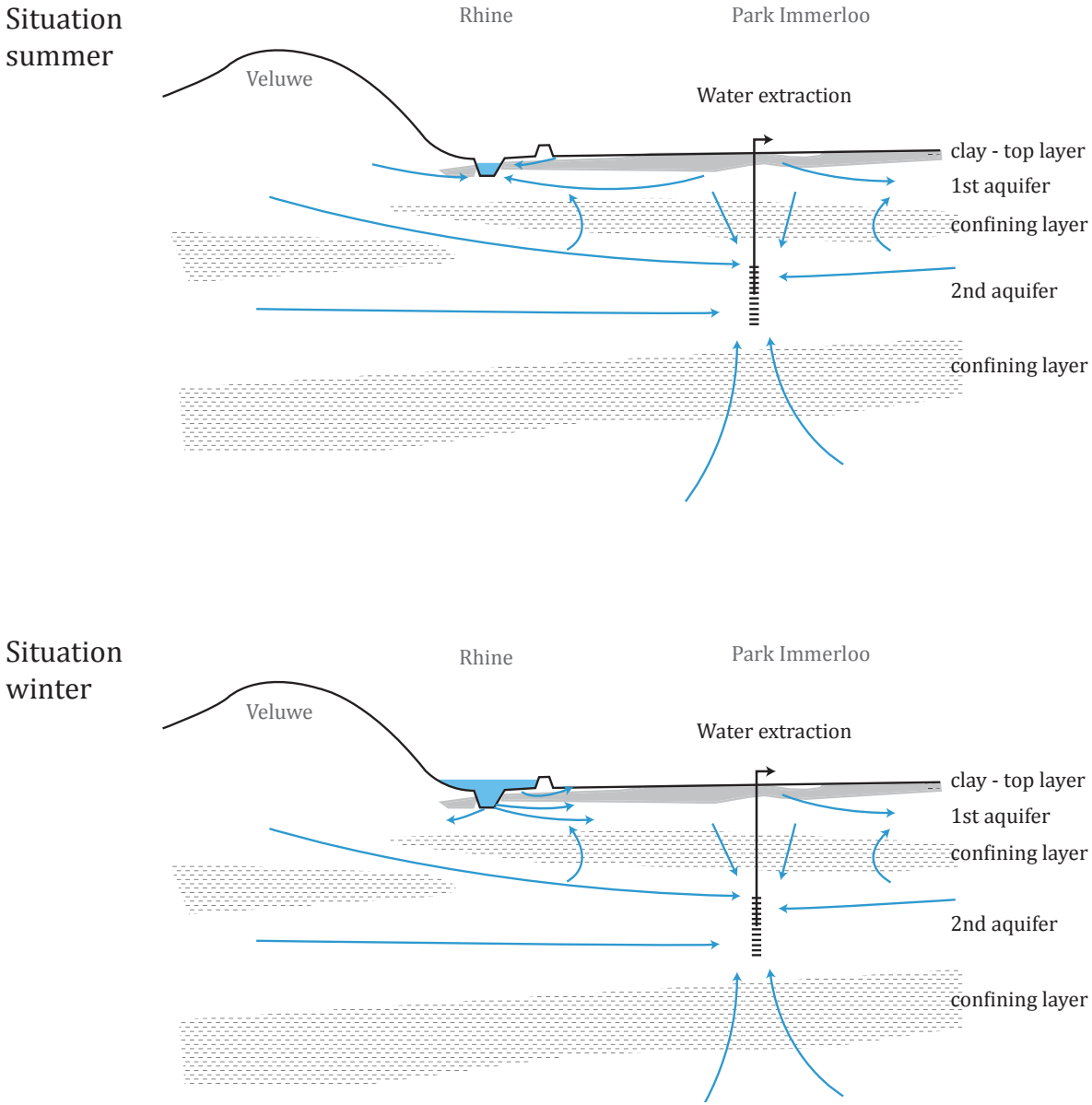


FIG. 8.14: As the clay was removed at Park Immerloo clean water from the Veluwe-moraine comes up here and is extracted. The waterlevels at Park Immerloo are slowly following the level of the river Rhine. This means that height-differences up to two meters occasionaly exist (source: Gemeente Arnhem).

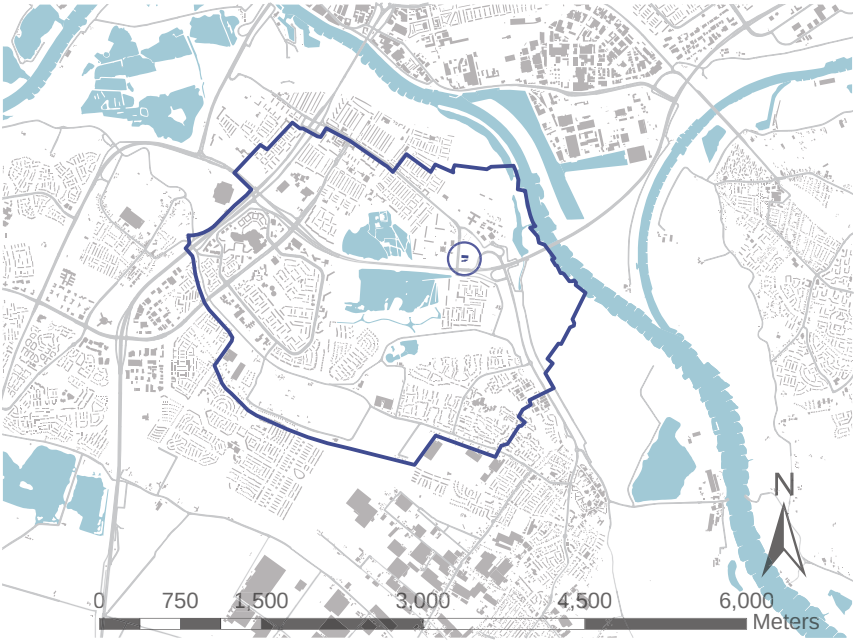


FIG. 8.15: Large parts of Arnhem-South, including Park Immerloo, are part of a drinking water extraction area. This means that new developments should have no damaging effects on the groundwater (source: Gemeente Arnhem).

FIG. 8.16: The watersystems are separated to prevent pollution in case of floodings (source: Gemeente Arnhem).

8.4.2. Park Immerloo is part of the ecological main structure

At the moment Park Immerloo is addressed as ecological core zone as part of the Dutch ecological main structure (EHS) (fig. 8.17). The EHS aims on connecting natural habitats in order to support biodiversity and to prevent extinction due to isolation of patches. The EHS consists of assigned target species, which are species that are representing a certain type of habitat with relating species. In order to design for these species there are specific habitat requirements for animals and plants. Park Immerloo is addressed as ecological core zone because the park has a high diversity of habitat types and dynamics over time. We can distinguish the large waters that remained after the clay was dug out, but also some smaller holes (in the north-east, south-east) that remained. These areas became marshes with different plant species and tree species. In the north-east we have open waters moving into nature friendly banks that give opportunities for small animals like reptiles to move out of the water. Another prominent part of the area, especially the dryer part, consists of forests of ash and elms that provide habitat for different bird species.

Five animal target species play a role in the ecological core-zone in Park Immerloo (Gemeente Arnhem 2004) (fig. 8.18, 8.19, 8.20 and 8.21). The requirements of their habitat is based on the Handboek Robuuste Verbindingen (Alterra 2001). The habitats for the animal target species *grass-snake (Latin: Natrix natrix; Dutch: ringslang)* and the *sedge warbler (Latin: Acrocephalus schoenobaenus; Dutch: rietzanger)* consists of large open water moving into marshes, thicket and grasslands (fig. 8.19). The thicket needs to be connected through the landscape as well as the waters. Parts of the marshes and the waters should be disclosed for recreation purposes. The grasslands give more opportunity for recreation purposes. The habitats for the target species *great reed warbler (Latin: Acrocephalus Arundinaceus; Dutch: grote karekiet)* and the *crested newt (Latin: Triturus cristatus; Dutch: kamsalamander)* includes as well open waters, but with nature friendly banks, thicket and marshes (fig. 8.20). It includes as well grasslands with small waters. The grasslands contain small waters, which can be connected by ditches. As this is quite similar to the previous habitat type, this habitat has benefits for these species as well. The last animal target species is the e*urasian nuthatch (Latin: Sitta europaea; Dutch: boomklever)*. The habitat of this bird consists of forests on poor and (moderate) rich sandy soils, and zoom vegetation on sandy soils with small waters (fig. 8.21). Within the site we can find three

environments with characteristic target plant species. At the dry and nutrient poor sandy soils we can find the *yellow oat-grass (Latin: Trisetum flavescens; Dutch: Goudhaver).* At the moist, nutrient poor soils we can find the *crested dogstail (Latin: Cynosurus cristatus; Dutch: kamgras).* And the plants at the water banks and in the water we can find the *fringed waterlily (Latin: Nymphoides peltata; Dutch: watergentiaan).*

For many species Park Immerloo is a steppingstone. Certain minimum sizes are given for the species (see Groenplan), but for some these cannot be reached (by far). Maybe the goals should be adjusted, but this thesis won't go further into that. Except for the minimum sizes the habitat conditions are sufficient for the named species. Although some species are not there (yet), not much needs to be done in order to reach for the ecological goals as stated by the municipality. If we make a design for this park and changes are made in the habitats of these species, these changes should be made by acknowledging the habitat characteristics.

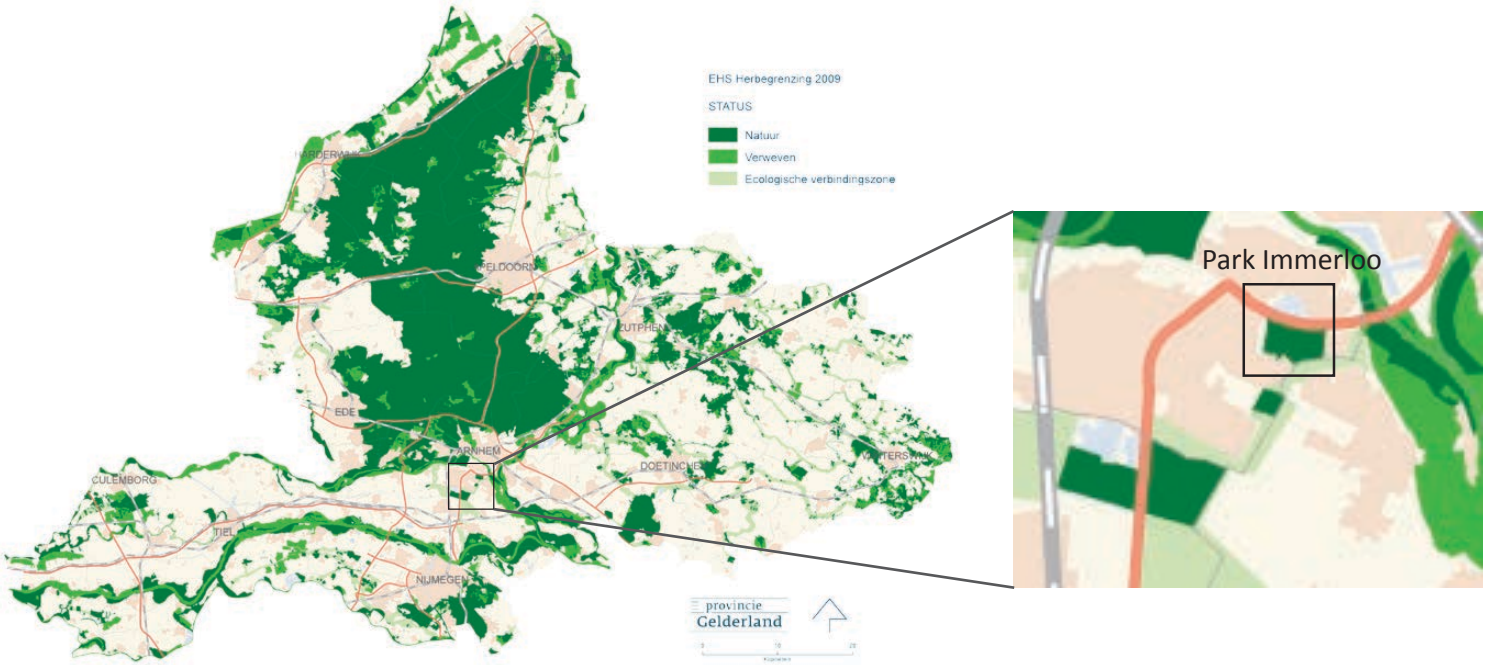


FIG. 8.17: Park Immerloo is part of the ecological main structure (EHS) and functions as a steppingstone for birds and amphibians (source: www.gelderland.nl, 2009 / Groenplan, 2004).

FIG. 8.18: Five main habitat types can be distinguished.

FIG. 8.19: Swamp and wet habitat. Typical habitat for the grass-snake and the sedge warbler

FIG. 8.20: Swamp and wet habitat with small pools. Typical habitat for the great reed warbler and the crested newt.

FIG. 8.21: Dry forest on poor and moderate rich sandy soils. Typical habitat for the eurasian nuthatch.

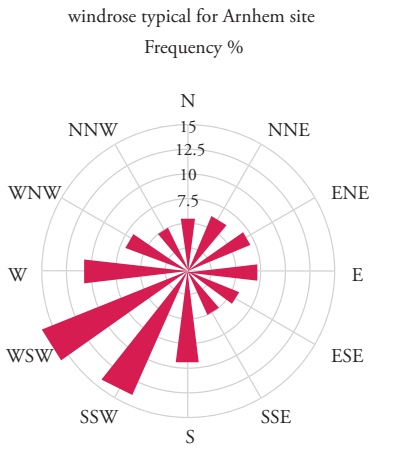


FIG. 8.22: Windrose typical for Arnhem site (source: Nuon)

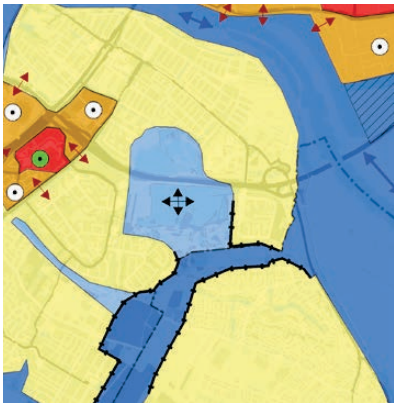


FIG. 8.23: Park Immerloo disperses cool air to its surrounding neighbourhoods, thereby reducing the damaging consequences of the urban heat island effect (UHI) (source: Gemeente Arnhem)

8.4.3. Park Immerloo cools the city

The Dutch climate is strongly affected by the sea. For example the average Dutch wind direction is the south-west and this direction often brings cool and instable weather with a mix of sun, rain and showers (fig. 8.22). The park will be more popular when the Netherlands is in influence of a high-pressure area and there is no wind or a dryer wind from the south or the east. This situation happens less often, but it results in bright weather and higher temperatures in summer and colder temperatures in winter. An analysis of today's urban climate in combination with the future effects of a changing climate is important for the design of cities. Special attention is given to the urban heat island-effect (UHI), which refers to the difference between the temperature in the city and its surrounding area. With the expected global climate change an analysis of the UHI can be used to mitigate heat stress and heat risk (Burghard, Katzschner et al. 2010). The municipality of Arnhem acknowledges this and is participating in several research programs that address this topic. This has resulted in a Heat Recommendation Map of Arnhem (concept march 2011) (fig. 8.23). The Urban Climatic Map of Arnhem City classified Park Immerloo and its surrounding neighbourhoods as having 'cool-air' and a 'mixed climate' . The surrounding neighbourhoods show 'moderate urban heat' which means that there is some heat storage but that it is mainly buffered through greeneries and wind. New developments are allowed in all but the 'cool-air areas', when care is taken for ventilation and the urban/green ratio. The advice for the surrounding neighbourhoods is that the existing situation can be kept. The conclusion for this thesis is that there are no big problems with the urban heat island-effect in Park Immerloo and the surrounding neighbourhoods, and that no special care needs to be taken. The locations in the park that are classified as bringing 'cool-air' are intended to stay so.

8.4.4. Unicity of Park Immerloo

Park Immerloo distinguishes itself from the city-parks in Arnehm-North as it situated in the river-area (fig. 8.24). Right now Meinerswijk-Stadsblokken is developed as a real park in the floodbanks and has therefore different potentials than Park Immerloo. South of Park Immerloo there is Park Lingezegen that is a regional landscape park of a different size that offers other recreational activities that do not fit in a city-park.

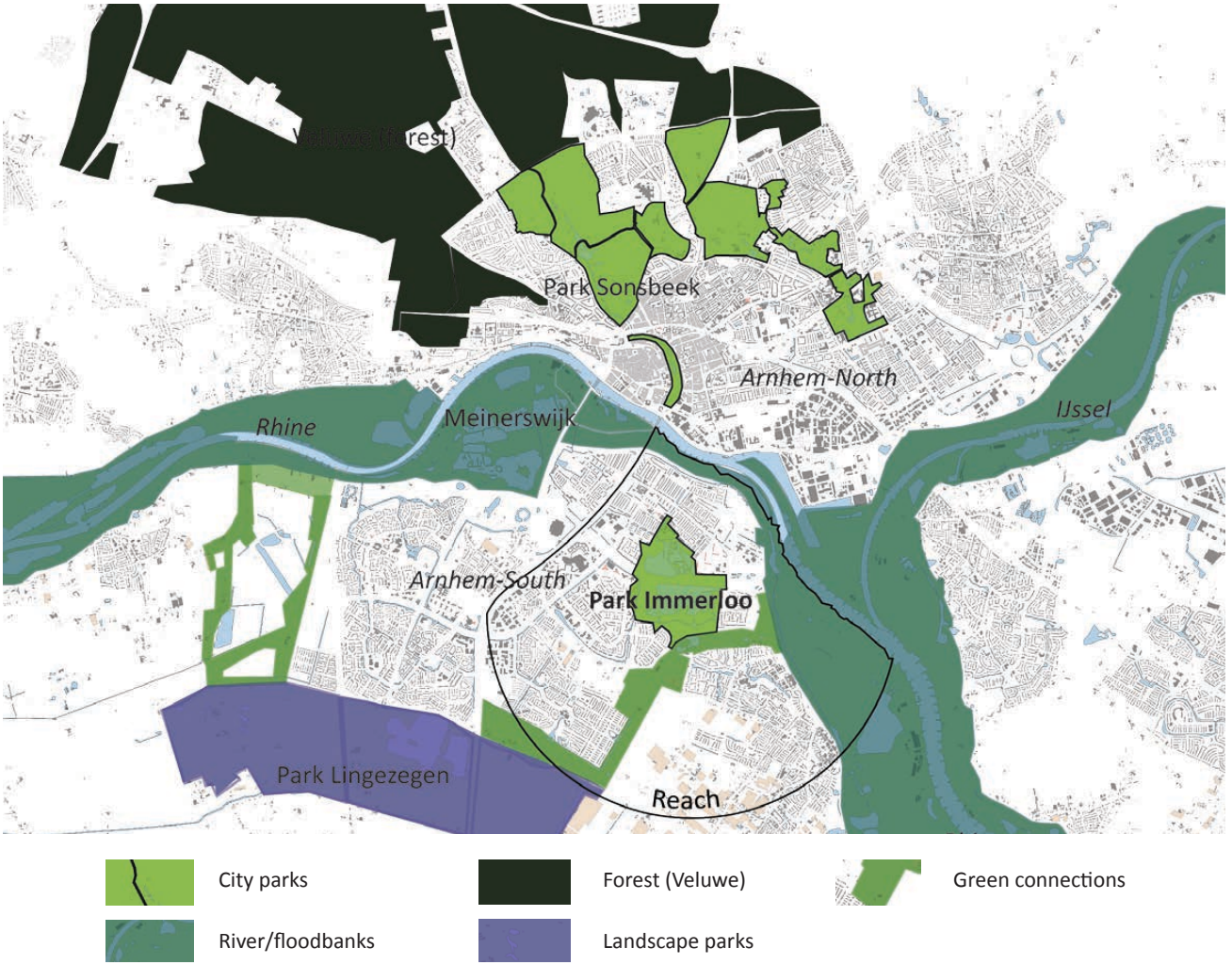


FIG. 8.24: Park Immerloo finds its nich as being the only city-park of Arnhem-South.

8.4.5. Embedding of the park

Except for the southern part Park Immerloo is well embedded in Arnhem-South (fig. 8.25). This reveals potentials for the park to be part of people's lives. Special attention needs to be put on creating sufficient connections or routing towards the park and creating connections with the neighbourhoods in the south. The embedding was researched by using a method of the TU Delft (de Josselin de Jong 2010). For every road that touches on the park the adjacent roads are included as roads that are likely to bring people in contact with the park. Do this again and you calculate the embedding of the park in the city.

FIG. 8.25: Except for the southern neighbourhoods Park Immerloo is well embedded in Arnhem-South.

8.4.6. Large scale connections

The surroundings of Park Immerloo consists mainly of housing areas and several shopping centres (fig. 8.26). The biggest shopping centre of Arnhem-South, Kronenburg, has a wide reach and pulls people that go there by bike or car. The main directions through the park go in east-west direction. A sufficient north-south route through the park does not exist. Overall there is not much variety in daily patterns of people and this affects the use and safety of the park.

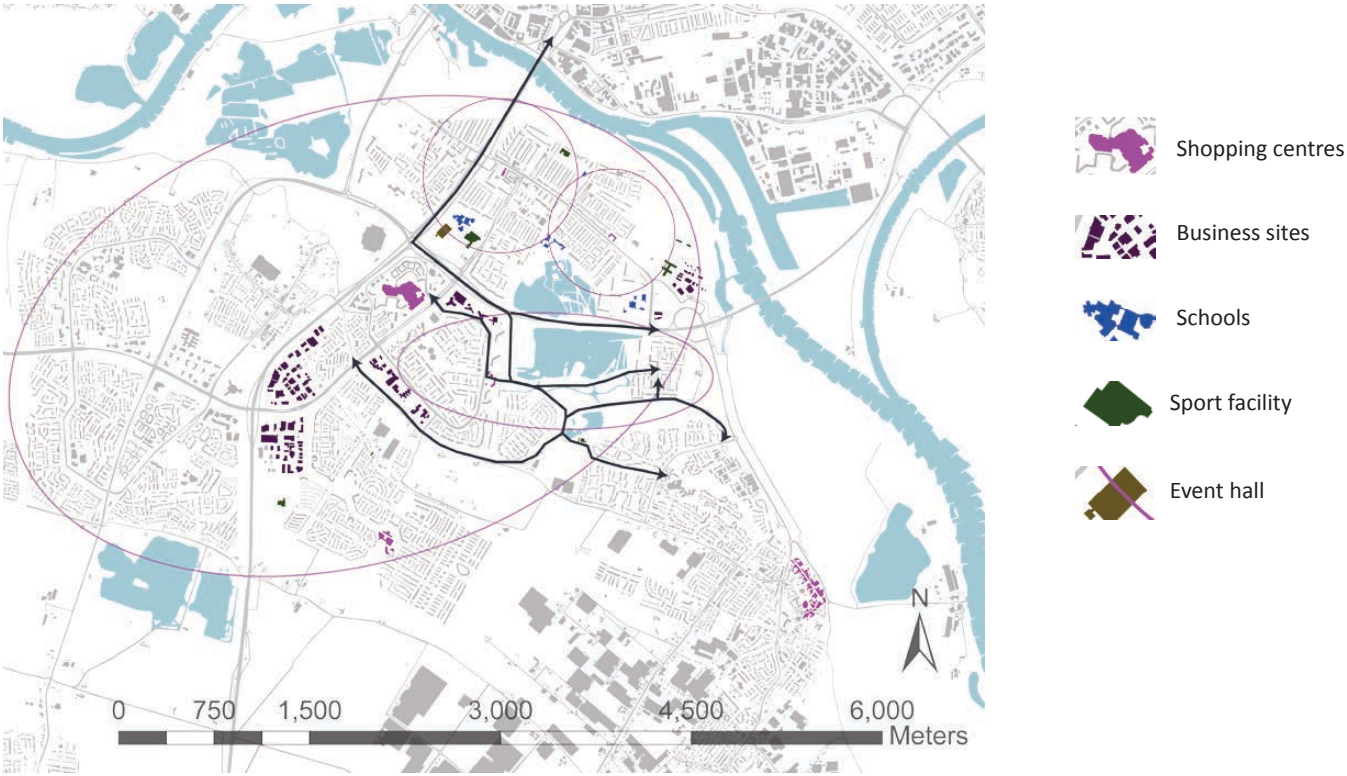


FIG. 8.26: Functions and connections. Shopping centre Kronenburg has a reach that stretches out over whole Arnhem-South. Several smaller centers with supermarkets have a neighbourhood function. The most frequently used way to get to Arnhem-North (city centre) is by taking the John Frost Bridge.

8.4.7. The park as a backside of Arnhem-South

The houses surrounding Park Immerloo are not oriented on the park. This contributes in making the park a backside of Arnhem-South. New housing is supposed to put renewed attention on the park (fig. 8.27).

8.5. Site characteristics

8.5.1. Current uses

The park has many neighbourhood facilities (fig. 8.28). It offers several play environments. For example in the north we can find an extended play environment, relating to a school. In the edges of the park we can find play facilities that relate to the high-rise housing created in the 60s. These are soccer fields and jeux de boules fields. These facilities are monofunctional and especially the low budget goals are not very attractive. It is okay to have neighbourhood facilities at the edges of the park, but there should not be neighbourhood facilities in the centre of the park, as this does not reflect the ambitions the park has. At the moment such cheap neighbourhood facilities can be found in the park. Characterizing therefore is the existence of a low budget soccer field in the middle of the big lawn in the centre of the park (see fig). In general the play environments are monofunctional, outdated and they look cheap. They are not all engaging and challenging the users, and their educative functions do not reflect the goals of the park.

8.5.2. Infrastructures in the park

The main directions in the park go from east to west (fig. 8.29). There is no real connection from the north to the south. This is a missed opportunity as on a larger scale this connection could be a good route for Arnhem-South. Also a connection from 't Duifje to the viewpoint on the dike and further is missing. Many paths are in bad quality or in some cases completely gone and this is not contributing to proper use of the park. The main paths are in good shape and intensely used. An asphalt path (4m wide) connects neighbourhood 't Duifje, that has no facilities, with the neighbourhoods and the supermarket at the other side.

< FIG. 8.27: Besides that many inhabitants are not represented in the park the housing at the edges of the park are turned away from it. The highest floors of the high-rise buildings (red) only make visual connections but miss touchable distance. There are some people on the street, but mainly at the parking lots. Houses surrounded with gardens (green) make no visual connection at all. Newly planned housing (blue) is aimed to put renewed attention on the park.

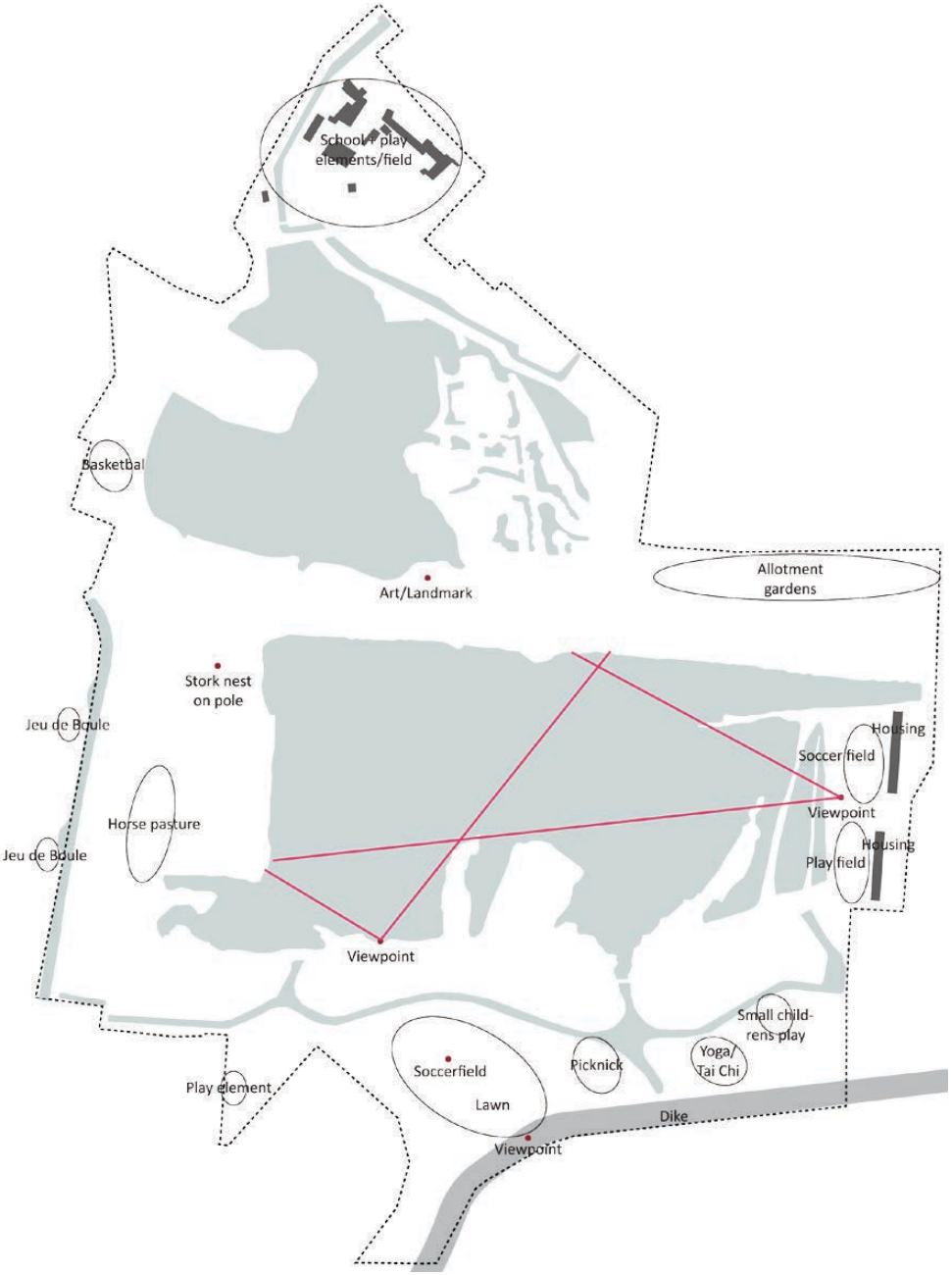


FIG. 8.27: Current land uses: there are many neighbourhood facilties in the park that do not fit with a city-park.

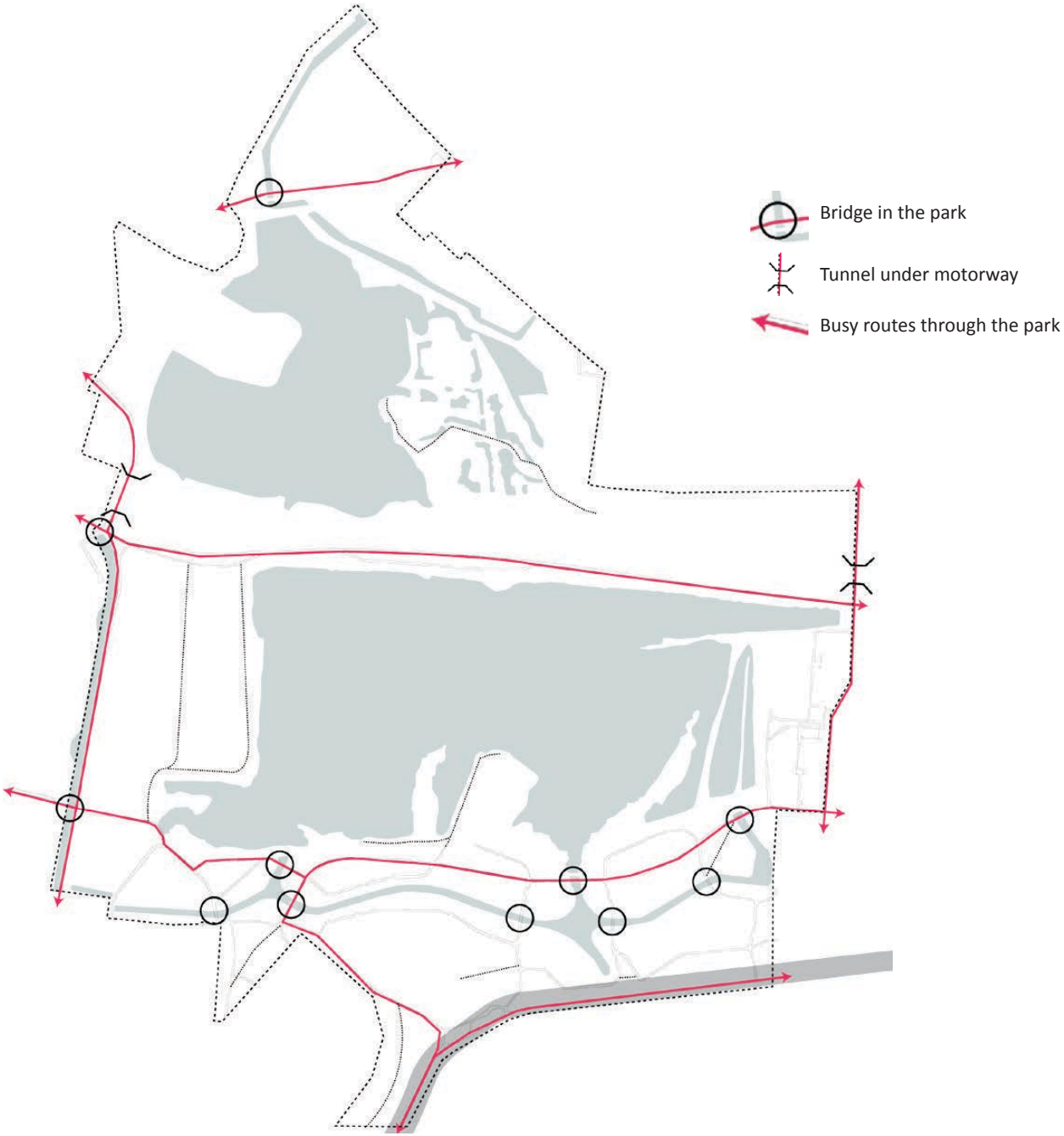


FIG. 8.28: Connections and routes through the park. The current paths are insufficient and of bad quality.

8.5.3. Edges and spaces

It was stated before that especially the park in the south is very overgrown (fig. 8.29). This results in the existence of many enclosed spaces and also many small spaces (fig. 8.30) that bring less variety. Only the lawn is an open spot in the park and the water can hardly be noticed and experienced from the park. This is a missed opportunity. The original edges of the extraction pit are still existing (fig. 8.31). These edges have to be rethought as a new form can be more suitable for the use of

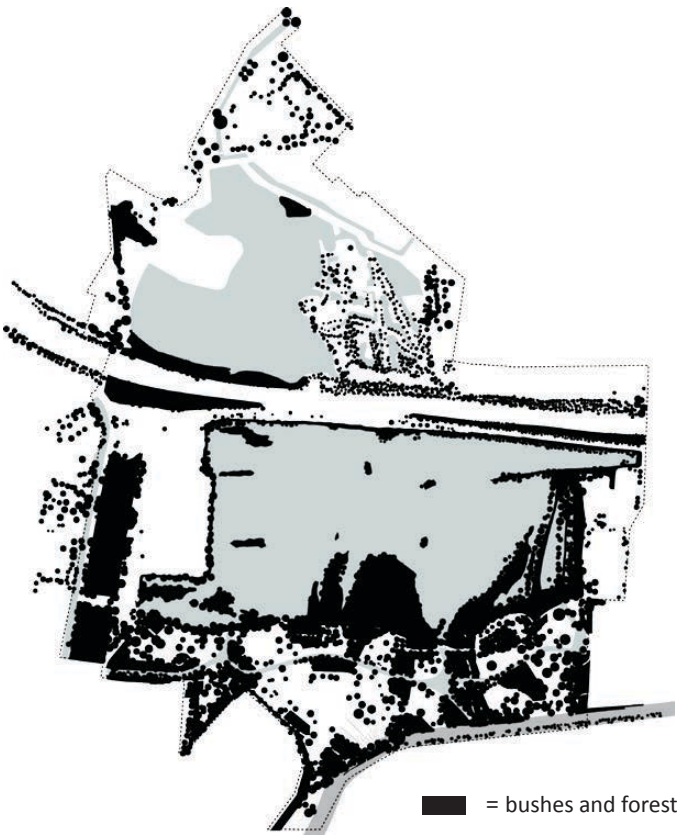


FIG. 8.29: Actual vegetation at the site. It becomes clear how the trees and bushes are taking the sight on the water in the south. The actual vegetation in the site had to be personally inventoried.

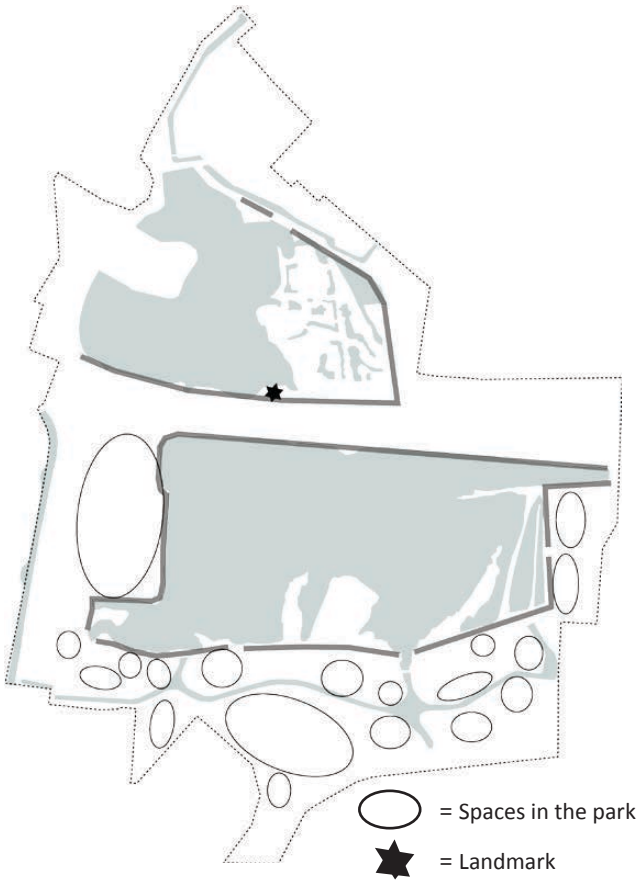


FIG. 8.30: There are many similar size spaces in the park. As many parts are overgrown sights there are not many points where the sky can be seen. More different kind of spaces can make the park more diverse.

the park. We can also notice that the pond is still designed for a connection with the main water (fig. 8.32). This connection will not work as long as drinking water is extracted. Therefore the shape of the pond can be adjusted.

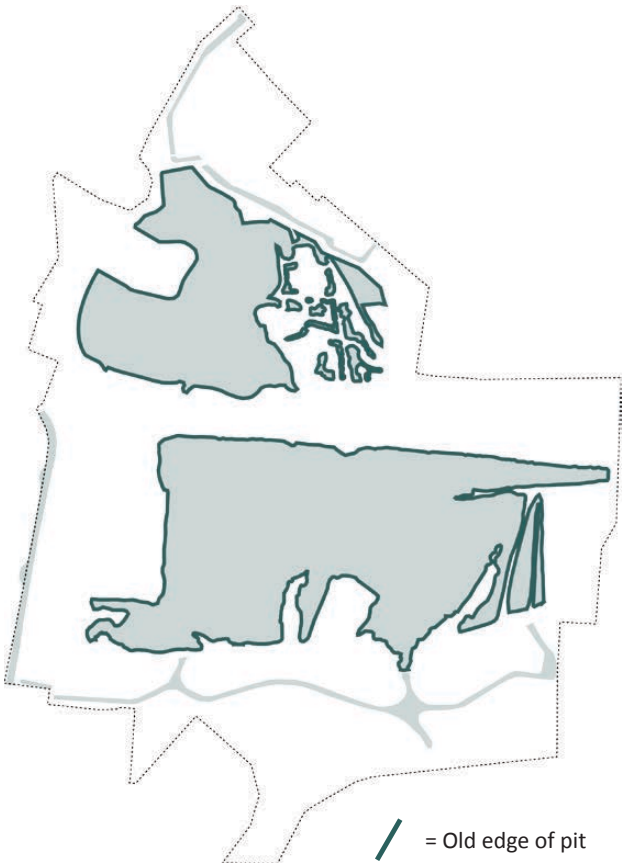


FIG. 8.31: The edges of the extraction pit have been left behind without further modification. The edges are left-overs of an industrial landscape that can be modificated to suit better for its purpose as a park.

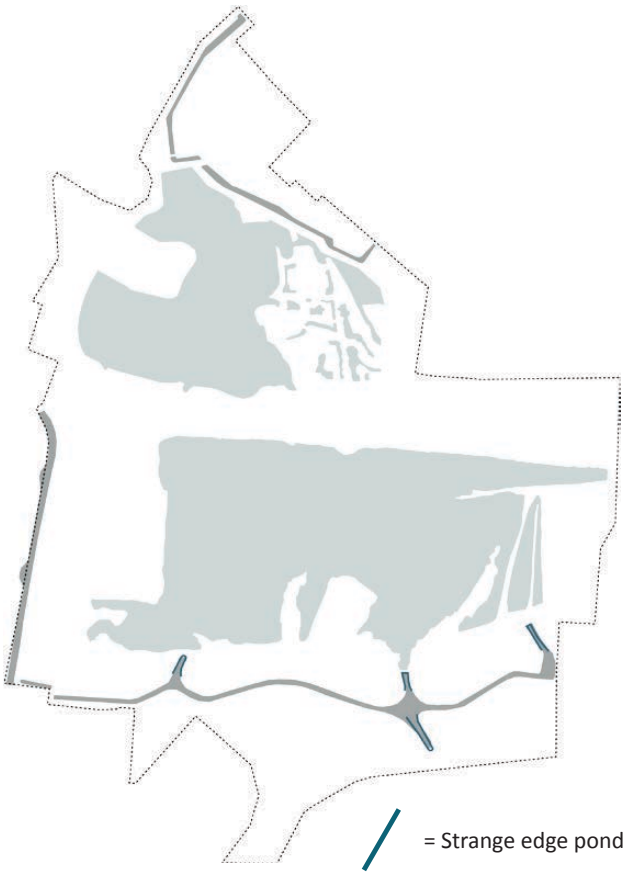


FIG. 8.32: Connections were to be made with the open water, but this was not possible because of drinking water extraction. Now the left-vers have remained, leaving behind strange edges.

8.5.4. Topography

Some ground levelling took place at the site (fig. 8.32). The design made use of the presence of the old Huissense Dike to create a nice viewpoint. Typical are the levelled soils that had to function as sound barriers for the motorway that was never realized. This lies in the site as a strange body. It reminds of the time that huge plans were imposed on the landscape. This body needs to be changed and the soils can be modified.

8.5.5. Legal possibilities (ownership)

In order to do interventions in the landscape it is an advantage to have ownership of the site. Ownership has influence on the possibilities for making changes. The whole space is owned by the municipality (fig. 8.33).

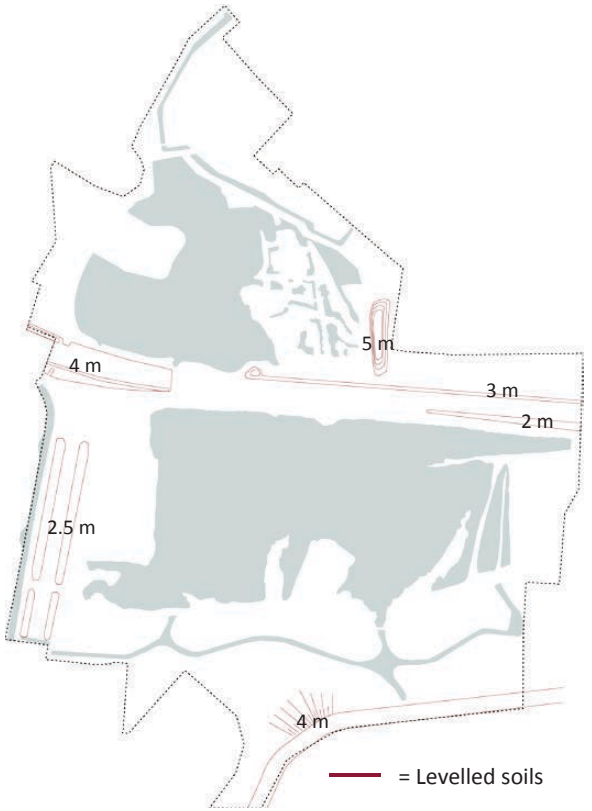


FIG. 8.32: The topography of Park Immerloo shows the dike with the viewpoint in the south, the (un-used) sound-barriers in the west and an un-used hill in the north-east.

FIG. 8.33: The whole site is owned by the municipality (source: Gemeente Arnhem). This gives freedom to develop the park.

8.6. Given program for the site

From available policy documents and the analysis comes the following program for the site. This program will be used as input for the design:

- Ecological goals according to ecological main structure (EHS);
- The park has to cool Arnhem-South;
- Drinking water extraction should be maintained;
- A breeding place/free state for artists and other creative persons (for Arnhem-South);
- New housing in the northern part of the park;
- Ice skating possibilities on the southern lake should remain and facilities should be created;
- There is need for natural play environment for children;
- The open water should remain open.

8.7. Conclusions and potentials

The overall impression is that the park is a backside of Arnhem-South. Many parts of the park are inaccessible and the total layout is incoherent and consists of individual developments. The park has very rich ecological values, but nature, are call it wilderness, took over the park. This meant a transition from an orderly park to a disordered park, and from a functional design to a design that is not functioning. Contemporary situation may be good for some users of the park (e.g. the ones who favour wilderness), but it can prevent others from going to the park. The park is not an inclusive environment. The ecological base is good, but the connections are insufficient. A balance seems to be missing between human use and ecology. There is need for major clean-up of the park as the park becomes a wilderness that even takes out the view on the water.

When looking at the functioning of Park Immerloo and the position the park has in Arnhem-South we can conclude that there are reasons for the park to exist as an interwoven part with the city. The park contributes in ecological goals, it cools the city and it provides drinking water (both ecosystem services). But the park is not

acting with purpose in the city whilst there are great potentials if it does. If the park would be embedded in the city, and if it would be an inclusive environment, then it can contribute to social improvement (ambition municipality), community building and an improvement of the quality of life in Arnhem (ambition municipality).

Overall park offers functions which are important on neighbourhood level and not on district level (Arnhem-South), whilst the potentials are there for the park to have a function on this level. There is no direct connection with the river but the park is related to the river through its history (dike and extraction pit), because the water levels are actively following the level of the river Rhine and the parks biodiversity relates to the circumstances of the river landscape. The park can finds its niche in being a city park with attention on its position in the river landscape. This concept can be worked upon in the materialization and detailing of the design. In this way the park can distinguish itself from the active river park Meinerswijk.

9. Design for Park Immerloo

9.1. Introduction

In the phenotype design we translate the statements from the genotype design, the inner characteristics of the site, in a design that fits with the local physical context. The phenotype design is about the looks and the outcome of the park in the real situation, a concrete manifestation of the genotype in the field.

9.2. General theme

The general theme of the park is the river. The park has to express and make benefits out of its position as inner-city park in the river landscape and put is opposed to the parks on the moraines in the north. It has to become an educative environment that is benefitting of the fluctuations of the water level. By being a city park Park Immerloo can benefit of a niche in Arnhem. This river-theme has to be expressed and experienced through all scales and the detailing of the design. When thinking of a river one can think of the following characterizing aspects that can be expressed in the park:

- Basic needs of human life/essence of life, habitat for man, flora and fauna (fig. 9.1 and 9.3);
- Part of larger (weather) system;
- Flows, meandering and braiding rivers, gulfs/fluidity, traces, expression of temporality, cycle and change, process, occupation and retreating (fig. 9.2);
- Erosion, sedimentation, stone-sand-clay, deep and un-deep (fig. 9.2);
- Chaos and fractal geometries (repeating patterns through all scales) (fig. 9.2);
- Shimmering/reflection/self-reflection (fig. 9.4);
- One of the elements, three states (gas, fluid, ice);
- Infrastructure/transport/finding a way, easiest way (fig. 9.5);
- Environment for sport and play, interactive and educational, recreational amenity (fig. 9.6).

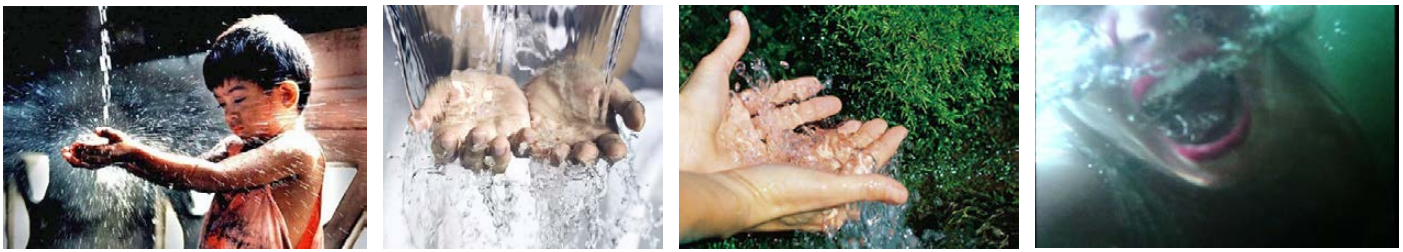


FIG. 9.1: River and water as basic needs of human life/essence of life

FIG. 9.2 River flows, occupates and retreates, part of larger system, chaos, fractal geometries, erosion, sedimentation, deep and un-deep, traces.

FIG. 9.3: River as habitat for man and nature

FIG. 9.4: River as shimmering, reflection, self-reflection.

FIG. 9.5: River as easiest way, form of transport

FIG. 9.6: River as recreational amenity, play environment, interactive and educative environment.

9.3. Rough outline of the park

9.3.1. Conceptual design

Following the design principles the base of the design consist of a working ecological framework and a working infrastructural framework that embed the park into the city and with ecological networks. This makes that the park can with purpose. The base of the design consist of several spheres that relate to the images of nature that exist in local culture. Finally within this framework and within these spheres open units exist that offer spaces for users to appropriate and turn it into their places. Infrastructures have to cross these spaces. Finally, there is a central meeting spot (a boat) where an organization structure can host and work on developing the park. This paragraph describes the conceptual designs for Park Immerloo.

9.3.2. Ecological framework

The ecological framework builds on the existing plans for the ecological main structure (EHS), but the goal is to strengthen the fragile parts to make them more resilient (fig. 9.7). Therefore the area north of the motorway, which already has habitat that is suitable for amphibians, will be enlarged to the west and connected to a larger network (fig. 9.8). This cannot be done by passing the motorway, so this connection will be made to the east. This means that the allotment gardens have to go out. As this cannot be the goal of developing a park for the people, these allotments have to be replaced somewhere else in the park. In the southern part of the park there will be build upon the forests as bird habitat, and extensive grasslands have to be part of the design.

FIG. 9.7: This is going to be the rough outline of the ecological framework. With a focus on amphibians in the north-west. Extensive grasslands between housing in the north and extensive grasslands and bird-habitat in the south.

FIG. 9.8: A new connection for amphibians has to be created. Ideas for creating such a connection are not new and have been suggested before.

9.3.3. Infrastructure framework

In order to connect the northern part and the southern part of the park a circular route (boulevard) will be made (fig. 9.9 and 9.10). This means that a bridge has to be build over the motorway. All areas and spheres in the park are attached to this boulevard. By giving inherent qualities to this boulevard it can pull people to the park. Therefore this boulevard is attached to the existing viewpoint in the south, and there can be a new viewpoint at the bridge where the whole park can be overseen. This boulevard needs to be recognizable in its appearance.

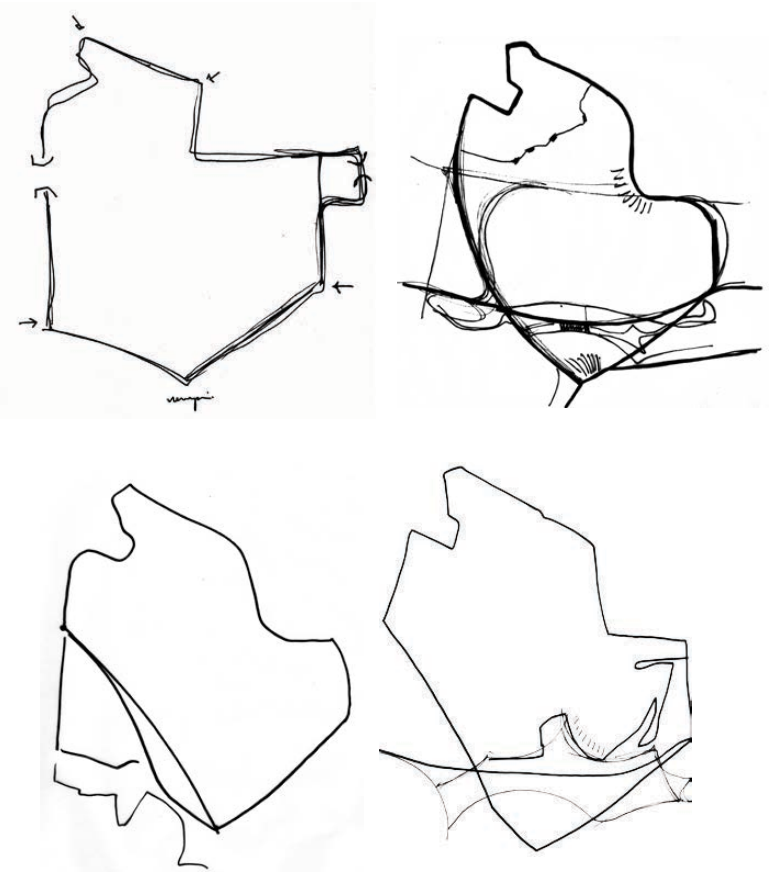


FIG. 9.9: The design for the infrastructures was found after a long study for the right way of connecting the different neighbourhoods.

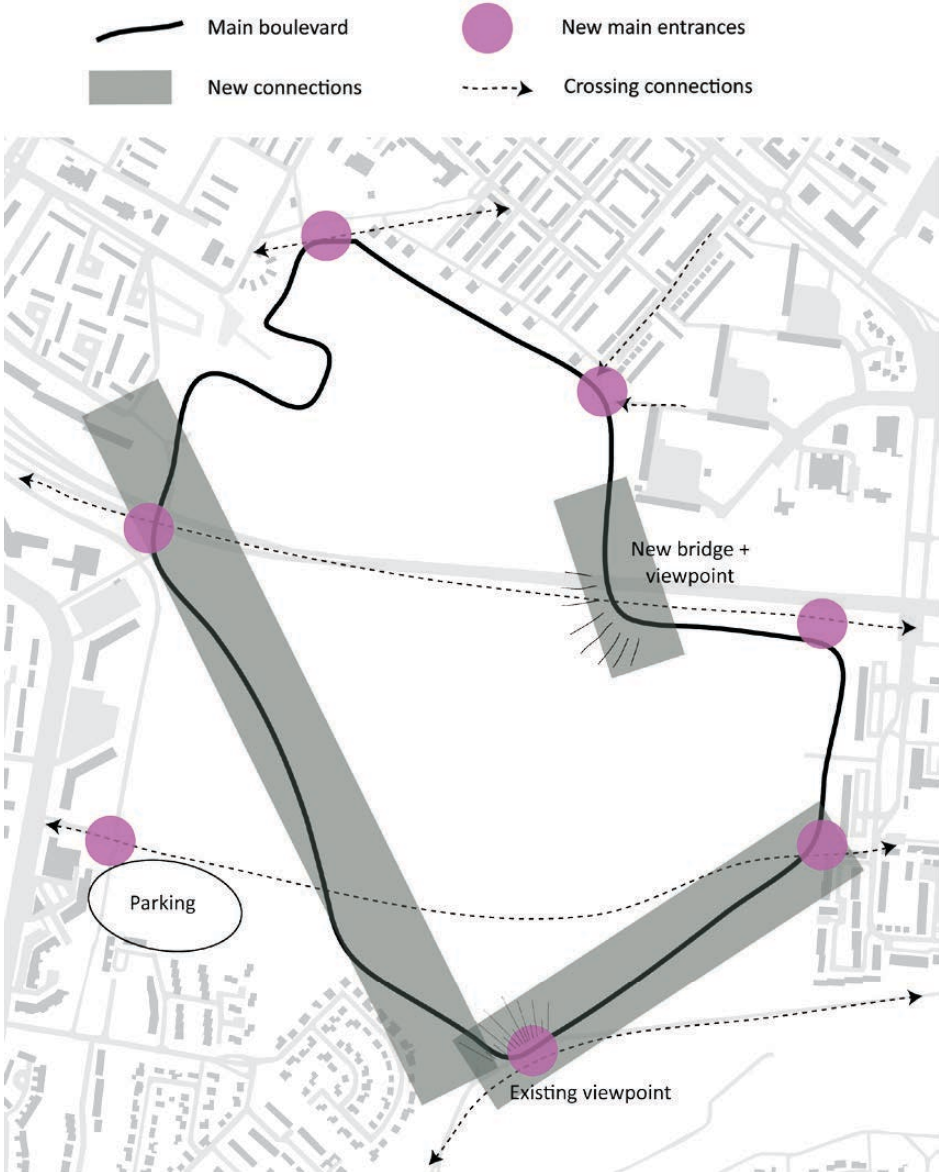


FIG. 9.10: The concepual map for the infrastructure framework connects different entrances and includes special viewpoints so that it becomes more attractive.

9.3.4. Different spheres

For Park Immerloo there is pointed at the existence of three zones that present possibilities for different experiences that forms a reflection of the cultural context. An assumption is made for the existing images of nature surrounding the park. From the social analysis follows that the traditional Arcadian image of nature and the traditional functional image of nature are dominant for the inhabitants (older / traditional bourgeoisie) living closely to the southern part of the park. Therefore the existing park in the south will be developed as a *Traditional Park* (fig. 9.11). Here major cleanup will be done and a new path will be designed that is ideal for 'a small walk in the park'. No specific functions will be assigned. Quietness and rest are keywords. The image of wilderness is appreciated more and more by citizens. Wilderness is appreciated, but people must be able to experience that it is a human intension (order vs. disorder / 'messy ecosystems orderly frames' (Nassauer 1995)). The area north of the motorway is assigned as core habitat for amphibians. This habitat can be enlarged and strengthened and become the *Wilderness* of the park. People must be able to experience this nature zone, but they are not allowed to fully access it as this would bring to much disturbances. This can become a diverse nature area full with bushes and small waters. The Traditional Park and the Wilderness are rather static. There is also a need for an area where all other (extremer) experiences can take place. This area offers the opportunities for groups to appropriate spaces. Here the spaces are open and flexible. This area is essential to give the park the capacity to adapt and evolve in order to maintain its niche in the city. Here entrepreneurs can initiate things. This area is called *The River* , referring to the braiding pattern of the river. The River can be a hybrid park, being both park and city, and it asks for active participation in the layout of the park. This way of designing the park shows coherence with the raising importance of the technological image of nature, the interactive image of nature and the new functional image of nature that (immigrant) citizens have.

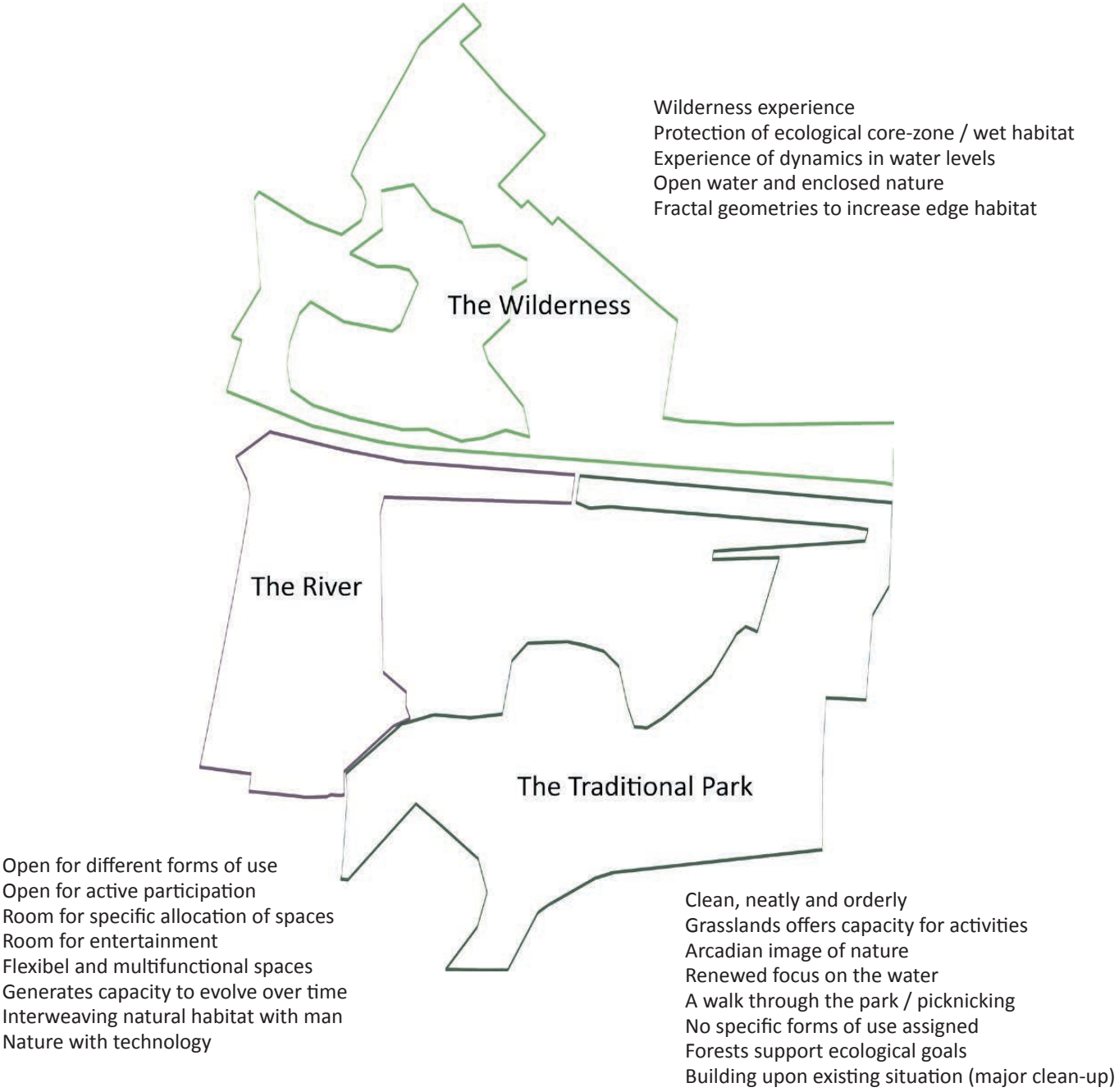


FIG. 9.11: Conceptual plan for Park Immerloo with three zones: the Wilderness, the River and the Traditional Park.

9.4. Spatial configurations

9.4.1. The Wilderness

This paragraph goes into the spatial configurations of the three different zones. The Wilderness in the north (fig. 9.12) has to foster ecological resilience. Therefore the spatial configuration has a fractal structure that provides a high amount of transitions from land to water (fig. 9.13). This increases the biodiversity and it provides better habitat for amphibians. The ratio open water / nature area is not balanced. The nature area can extend its reach into the water. This has the advantage that more habitat for amphibians can be created. The path follows the edges of the open water and then turns into the close intimate space of the nature (fig. 9.14). A small walk in the Wilderness is made possible by designing small bridges that function as intermediate goals. By designing these intermediate goals people will not bring unwanted disturbances if they wander around in the area.

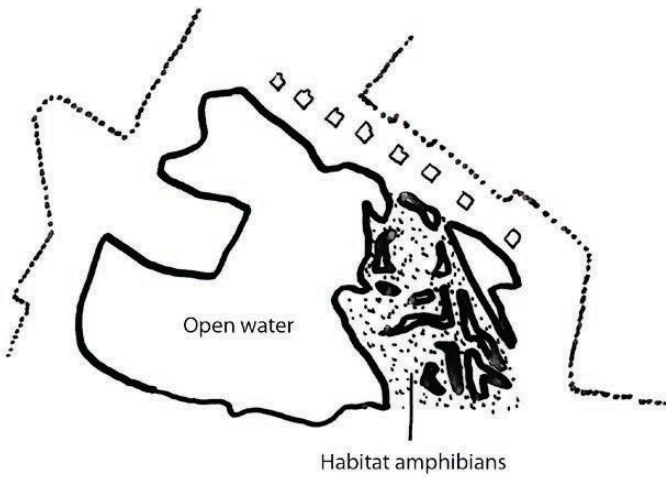


FIG. 9.12: The existing situation in the north.

FIG. 9.13: The (traditional) model of a park (left) misses a fractal structure. Also the ratio land-water is not really balanced. The model on the right is better as water and land interpenetrate. This model provides more relevant habitat for amphibians.

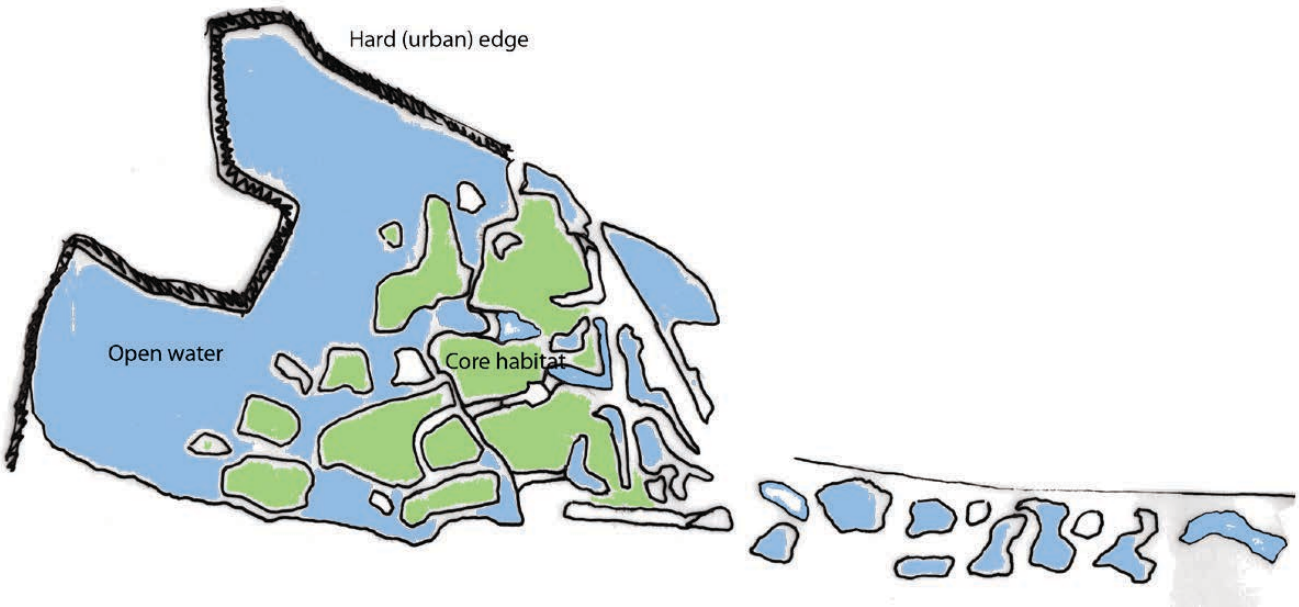


FIG. 9.14: Spatial configuration for the Wilderness in the north.

9.4.2. The Traditional Park

In the traditional park (fig. 9.15) the original design is completely overgrown. The current situation will be cleaned up so that the diversity of spaces in the park becomes bigger and views on the water are provided (fig. 9.17 and 9.18). The structure of the paths is adjusted so that a circular walk becomes possible and nice views are provided (fig. 9.16).

FIG. 9.15: The existing situation in the south.

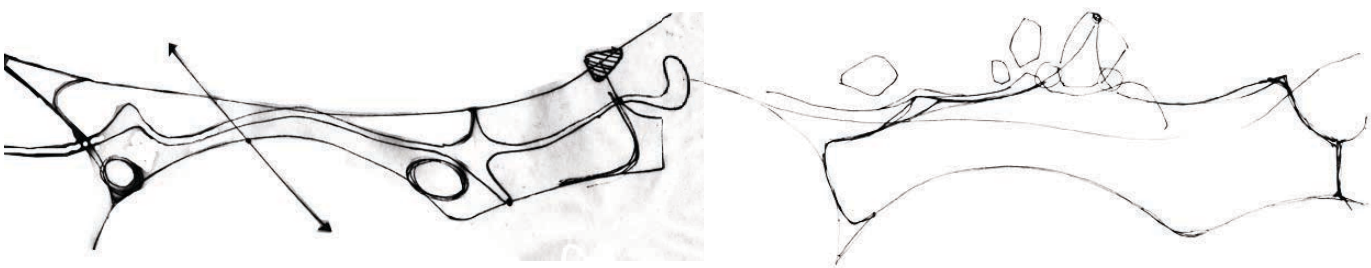


FIG. 9.16: Studies of a new pond in the park in combination with a walk through the

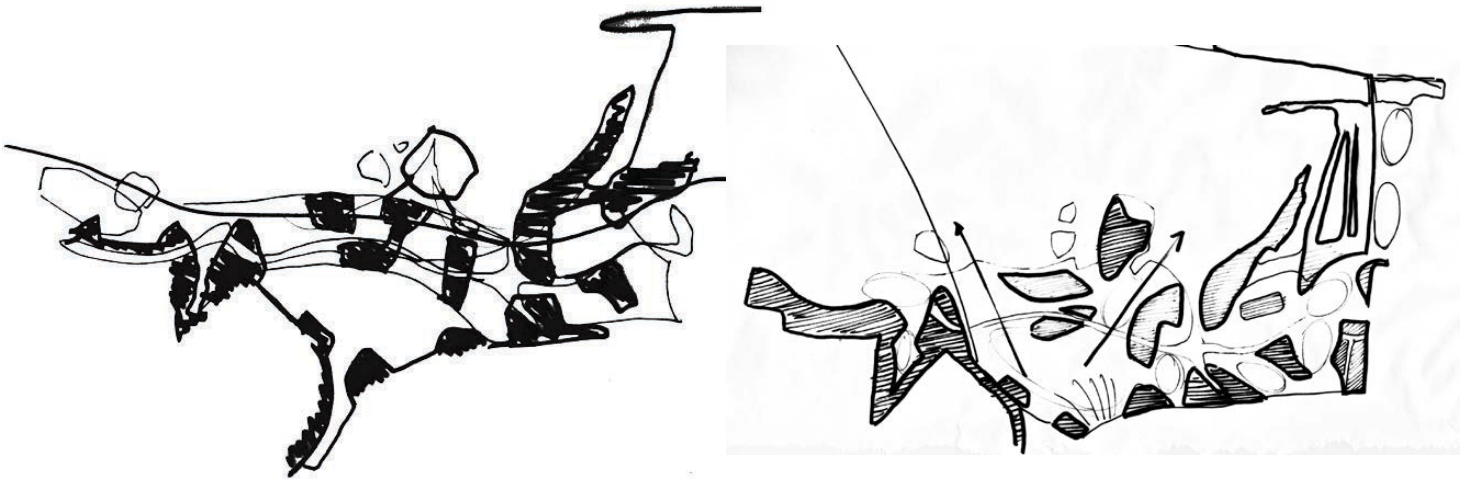


FIG. 9.17: Studies of opening up the park towards the water. Providing a view from the lawn towards the open water.

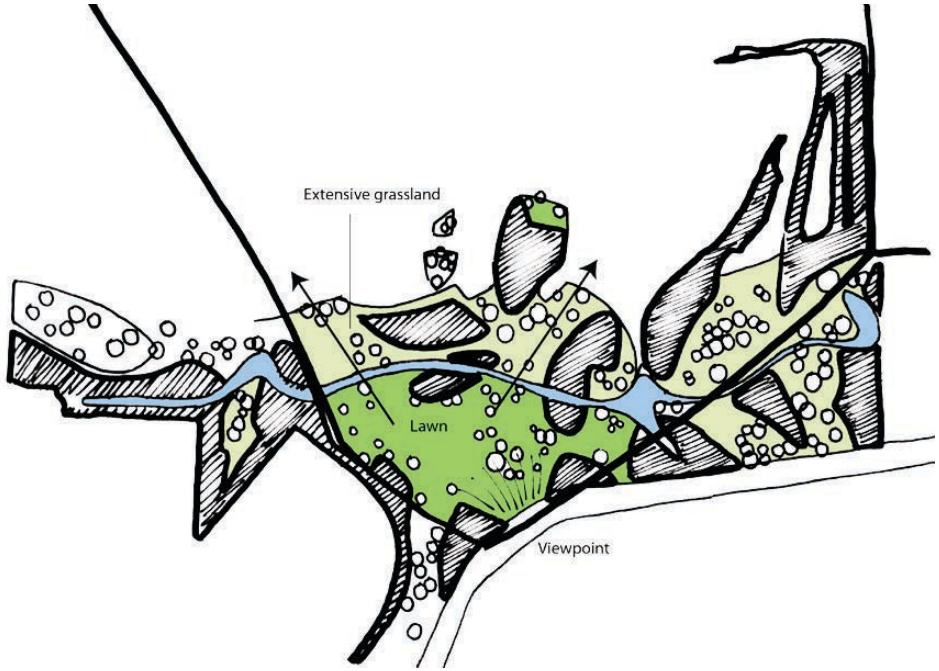


FIG. 9.18: Spatial configuration for the Traditional Park in south.

9.4.3. The River

For the west (fig. 9.21) the braiding pattern of the River reflects the flow and the dynamics of the water and the ever changing patterns that develop (fig. 9.19 and 9.20). The highest 'driest' places are the open units that can be taken by people (fig. 9.22). When they are not taken these places have an ecological function as extensive grassland. The lower (and sometimes wetter) places in combination with new forest (fig. 9.23) provides an ecological framework that functions as buffer between activities. The boulevard crosses the area thereby intersecting the open units and 'entering' different domains (fig. 9.24 and 9.25).

FIG. 9.19: Inspirations for the River. The water left behind a pattern of lower (wet) and higher (dry) places.

FIG. 9.20: The search for a form that works and occupies the open water in an attractive way that refers to the river.

FIG. 9.21: The existing situation in the west.

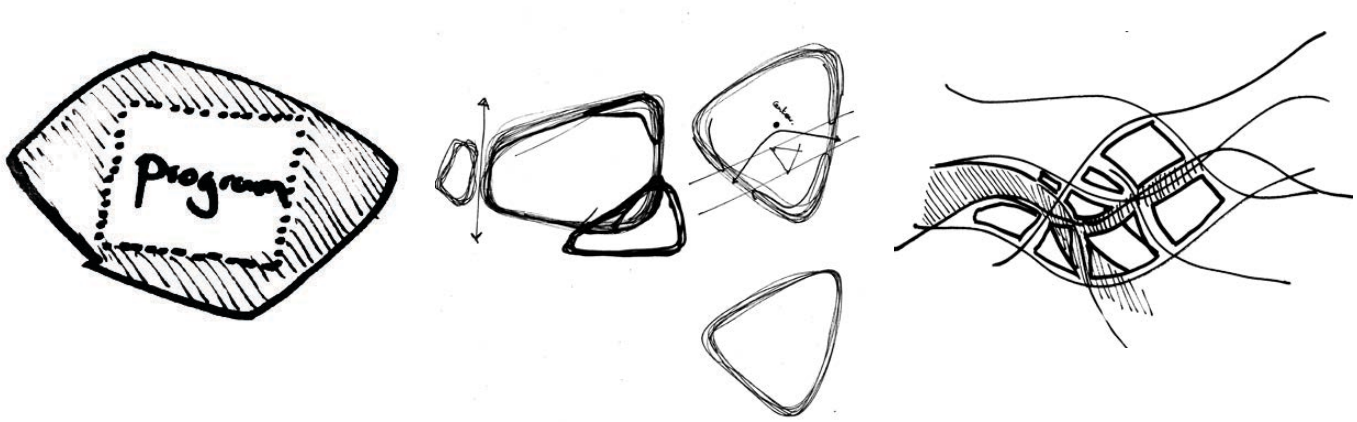


FIG. 9.22: Ideas for filling higher places with program.

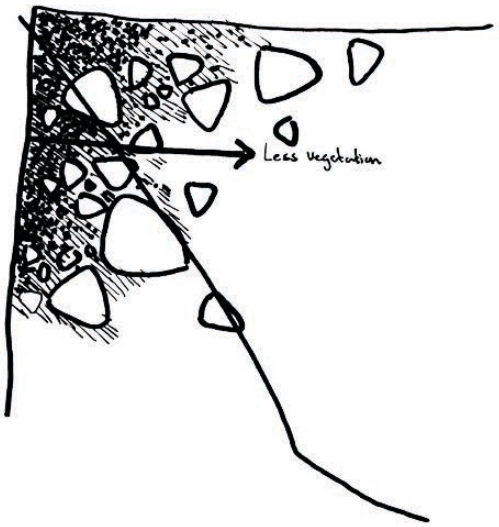


FIG. 9.23: A gradient switch of trees (dense to less dense) can generate different spaces and give open spaces different characters.

FIG. 9.24: The main boulevard crosses the different units so that people cross other domains and experience these users.

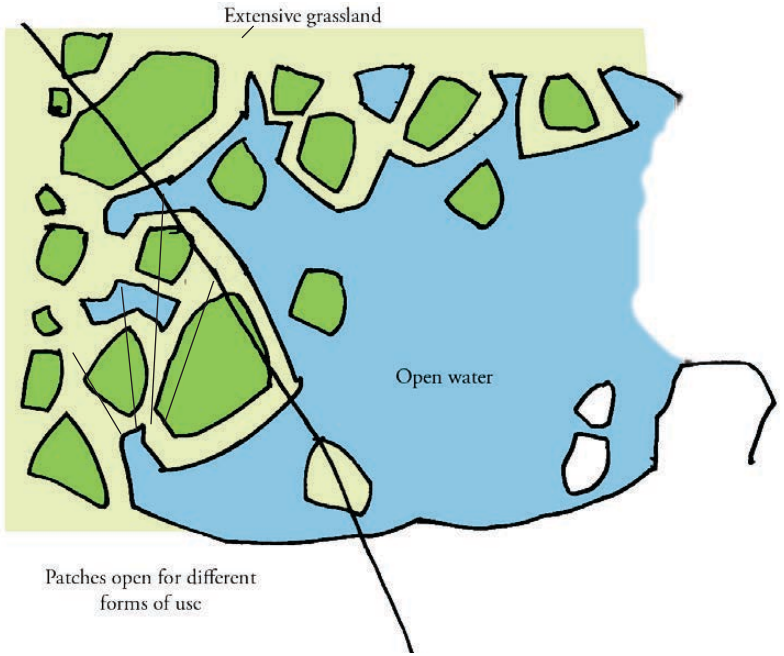


FIG. 9.25: Spatial configuration for the River in the west.

9.5. The frame of Park Immerloo

The framework for Park Immerloo (fig. 9.26) shows the ecological system and the infrastructures that are embedded in larger networks and the open units. The boulevard (fig. 9.27) connects the different neighborhoods and provides a walk around the park. To make this boulevard attractive it includes two viewpoints (at the lawn and at the bridge) and is several times exposed to the open water. In the Traditional Park a major clean-up took place. A higher variety of spaces has been created and the water has been made visible (fig. 9.30. A new path provides a pleasant walk in this part of the park (fig. 9.27). In the Wilderness core habitat is created for amphibians and by selecting the right trees bird-habitat is created (fig. 9.28). In the Traditional Park the lawn provides a huge grassland that forms a platform that is open for many sorts of activities (fig. 9.29). The existence of this lawn is very important for the park as a whole as it gives the user the opportunity to start any activity that is suitable on a lawn. The River provides a diversity of open units that are buffered by trees and waters (fig. 9.29). As the future developments are uncertain there is no access paths designed for this area jet. By providing open units (fig. 9.31 and 9.32) the park can adapt to changing social circumstances and this makes it a stronger unit in the city. When the units are unused they are used as extensive grassland so that they contribute to the ecological system.

FIG. 9.26: The framework for Park Immerloo >


Open
Bridge - viewpoint
Viewpoint
Parking
Viewpoint
N
0
125
250
375
500
Meters

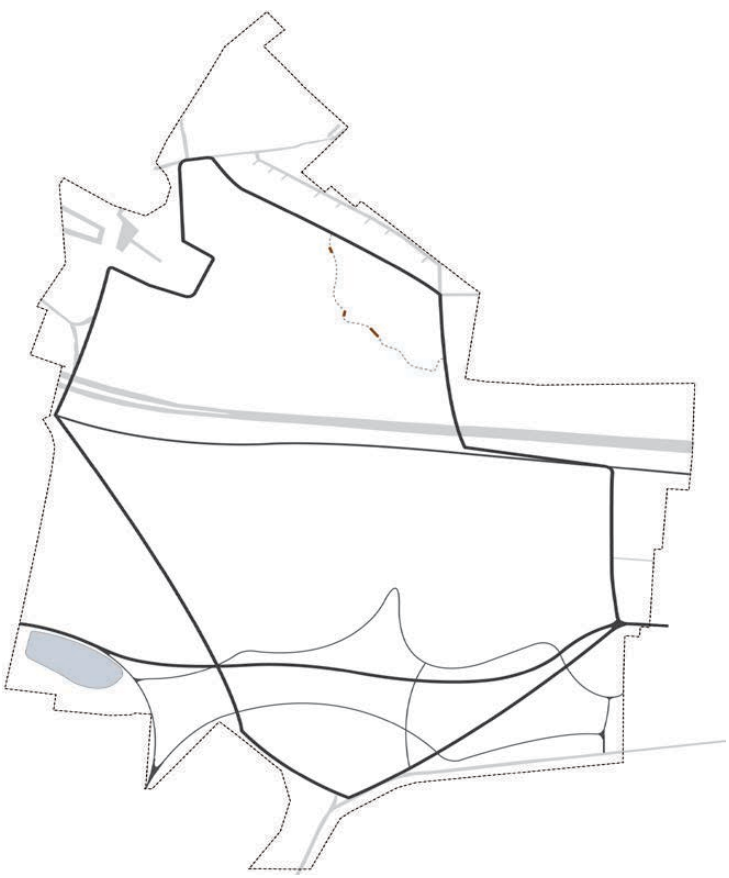


FIG. 9.27: The infrastructure framework connects the different neighbourhoods and provides a nice circular walk through the park, crossing through all the domains. In the south a seperate walk is designed that provides a nice walk the southern part of the park.

FIG. 9.28: The total ecological frameworks consists of habitat for birds and amphibians. The extensive grasslands hosts special plant species.

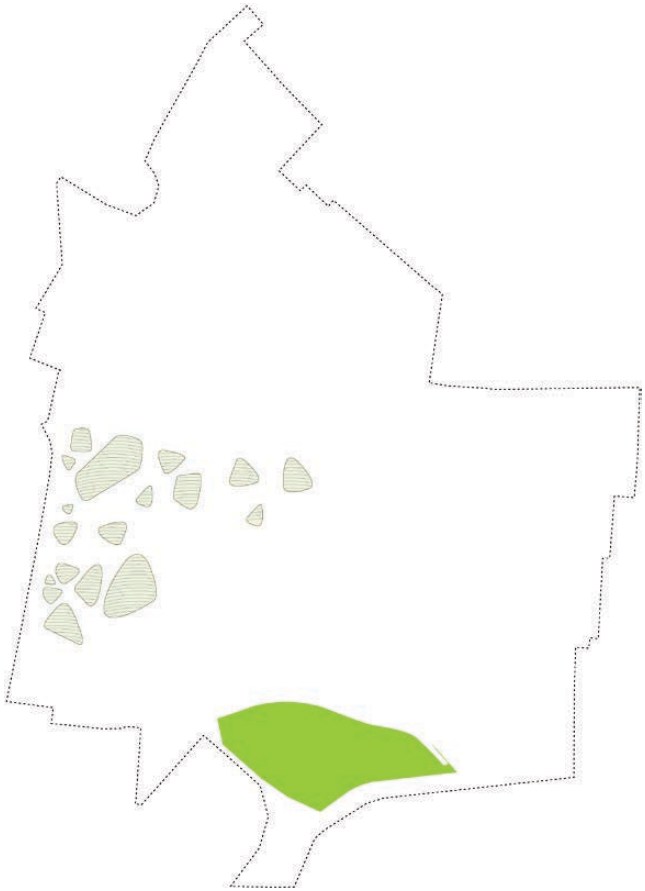


FIG. 9.29: The short mown grassland is designed as an open platform for different forms of use that can take place at a grassland. The open units can be appropriated by groups or entrepreneurs to start activities.

FIG. 9.30: The new design offers a larger variety of different spaces that contributes to its experience.

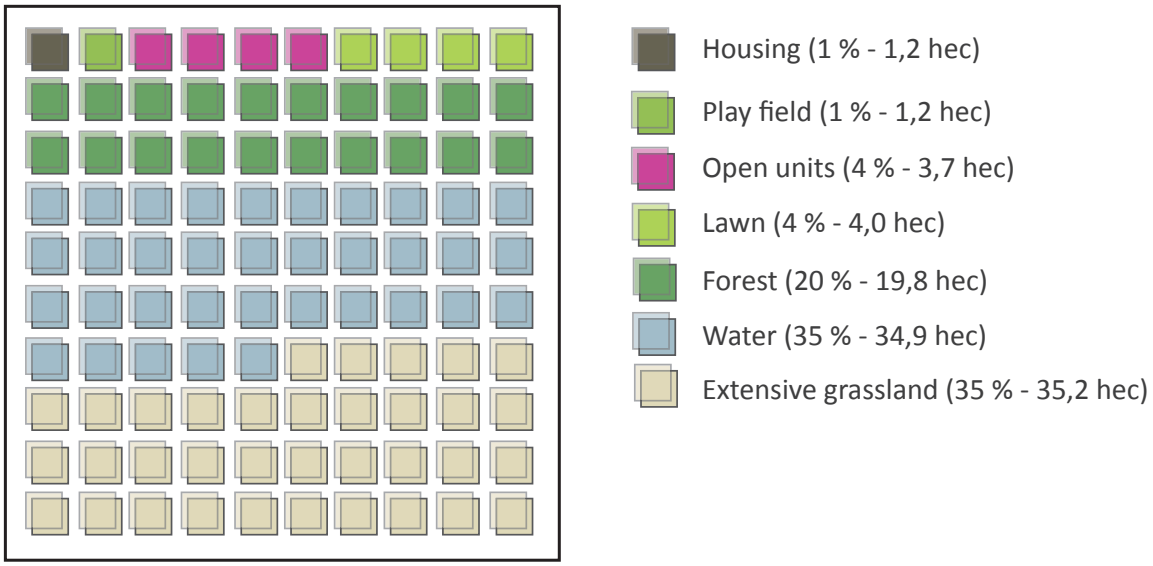


FIG. 9.31: An overview of actual surfaces and percentages of land use in the park. This overview includes the surface of the water. The framework takes 90% of the park, whilst the open spaces take 8% (lawn + open units).

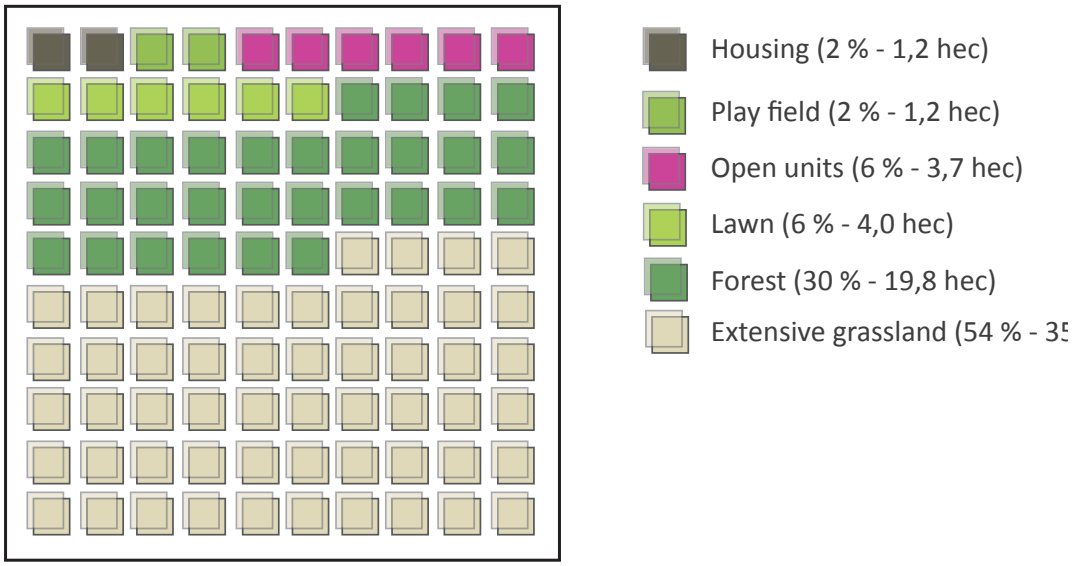


FIG. 9.32: An overview of actual surfaces and percentages of land use in the park. In this overview the water is excluded.

9.6. Foundation

Park Immerloo needs a foundation that oversees all the developments that are at hand and that protects common values. This foundations includes local pullers (the ones who know Arnhem-South very well), designers, ecologists, sociologists and members of the municipality. A large park acting as a free-state will not work and therefore proposals have to be tested on ecological accounting, financial costs and on disturbance for other users. This foundation provides guidelines for use of the park and a platform where democratic decision making can take place. A management-team guides developments to make sure that the park stays a democratic inclusive environment and that no harm is done to the environment. There can be actively looked for chances and changes in society as change can result in new demands. Of course society can turn towards this foundation as well. By working like this the park keeps adapting to new situations and evolving and maintaining its niche in the ecosystem city. The designer guarantees the quality of the framework and creates spaces where entrepreneurs and groups have the freedom to initiate activities. The core business for the designer and the management-team is to promote entrepreneurship and to create conditions that put attention on the park. We don't know what kind of economy will develop in cities in the coming decades, so there has to be room for experiments and the simple daring to do it. The municipality has to step back and help when necessary by questioning 'what do you need?' Regulatory boundaries have to be stretched and new forms of financing to be developed (small money on big scale). This 'spontaneous' city comes then from the bottom up. Financial support remains necessary, but money is earned by developing a park this way. A park develops that fits in Arnhem-South and that shows activities that follow from local cultural context. Then, in the end, the municipality has the benefits from it.

This foundation needs a prominent place in the park and will be seated in the most active and concentrated part of the park: in The River. A large boat will be transformed in a meeting place for the people (fig. 9.33). This eye-catching (land-mark) boat offers room for presentations and discussions. In addition it can contain an eating and drinking facility and standing on top it can provide nice views over the water. This boat is really necessary for an active manifestation of democracy in the park.

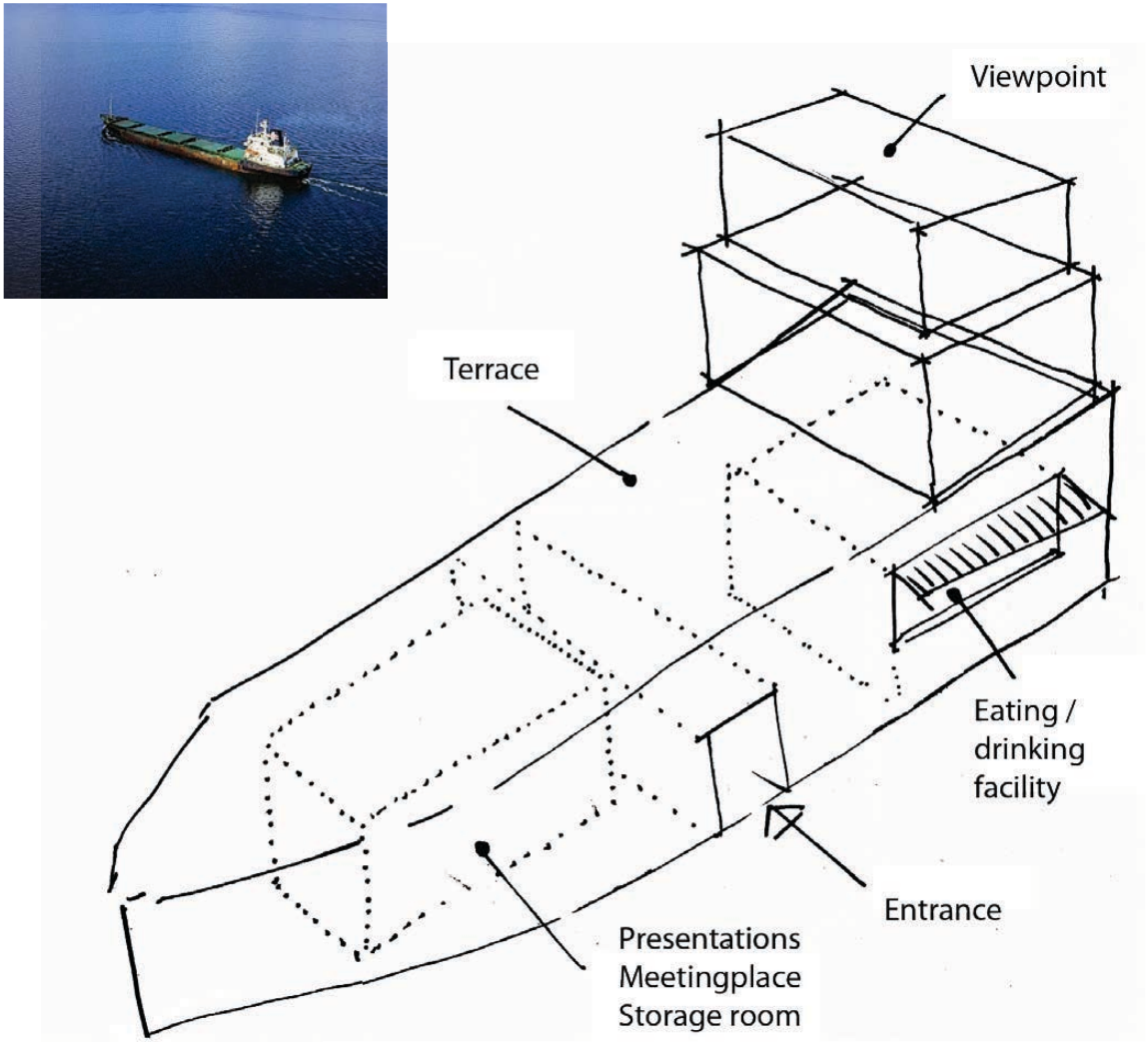


FIG. 9.33: As prominent place in the park a river boat will be transformed into a meeting place for the people. It offers room for discussions and presentations, has eating and drinking facilties on deck and a viewpoint on top. The boat is going to be the central place where decisions can be taken and democracy opens up towards the people.

9.7. Catalysts to pull attention

Designing just a framework can already pull attention on the park. But in order to reach for spontaneous processes that come from the bottom-up we can create initial pulling functions that put attention on the park from certain user-groups. These functions work as catalysts for following developments and are part of a strategy to pull new users and entrepreneurs to the park. The following catalysts were found by zooming in on the social context and by looking at the existing program for the park. We can bring the following pulling functions for the park:

- **Children's Play** (fig. 9.33); From the existing program follows the need for a natural play environment. The park can provide a natural play environment that can pull children (with their parents) from whole Arnhem-South. This can also be the place where people can put on their ice-skates in winter. Connected to the children's play there can be an eating and drinking facility (Koek en Sopie in winter). By providing challenging play environments that offer full sensory experiences we can create educative designs that help children to test their limits. Playing in natural environments helps to raise ecological understanding.

- **Urban Sports** (fig. 9.34); Some neighborhood facilities have been removed for the design of the park. These facilities will be brought together to provide an urban sports environment. Based on social analysis extra facilities such as a skating ground, soccer fields, basketball fields and meeting spots can be designed for to pull attention on the park. This Urban Sports environment offers ways for youngsters and urbanites to come together and play. This environment can help social improvement.

- **Breeding Ground** (fig. 9.35); There is need for a breeding ground in Arnhem-South. This breeding ground can manifest itself in Park Immerloo. There can be thought of different spaces that offer opportunities for pavilions, theater and shows, fields for events and more intimate happenings. It cannot exactly be predicted what will happen in the park so much has to be left open, but there can be designed for a body that provides a theater in the park.

FIG. 9.33: Children's Play: by providing challenging play environments that offer full sensory experiences we can create educative designs that help children to test their limits and to raise ecological understanding by play.

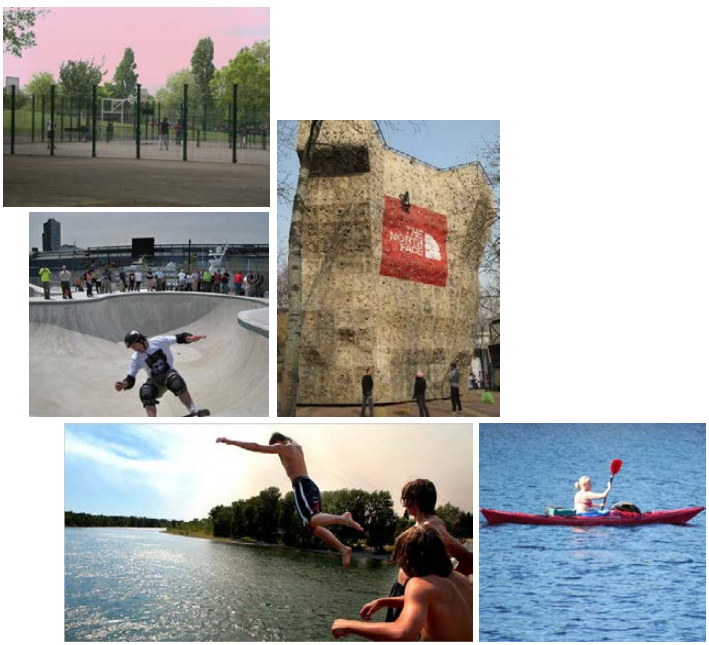


FIG. 9.34: Urban Sports: environment for extremer sports and activities where the older generation can test their limits.

FIG. 9.35: Breeding Ground; place for expression of new Arnhem(-South) culture (e.g. fashion).

FIG. 9.36: Urban Gardens; provide room for active participation and involvement by gardening. Helps to create engagement and a symbiotic relation with the environment. Unity with place.

- **Urban Gardens** (fig. 9.36); Allotments gardens have been removed in the north-eastern part of the park (total 350 x 37 = 130 gardens of 10x10 m). These gardens will come back in the park as urban gardens. These gardens can have different characters (e.g. clean and tidy or wild gardens) so that they match with different needs. These gardens need storage facilities and clean water.

These pulling functions will get a place in the park. A zoning will be made to define the positions for these functions (fig. 9.38). For the Children's Play and the Urban Sports count that they need to be located closely to the main infrastructure routes. The same counts for the Breeding Ground, but it can be imagined that some spaces need to be located far from busy infrastructures to provide intense experiences (fig. 9.37). For the Urban Gardens count that they are semi-private areas, so they have to be disconnected from the main infrastructures, but still experienced by the people (e.g. at a distance / visually).

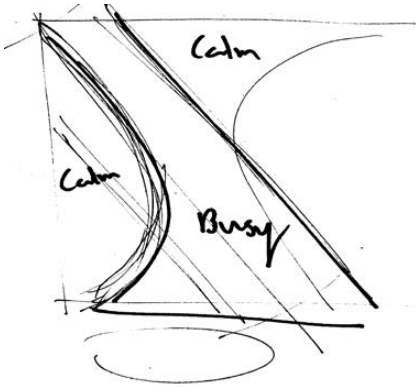


FIG. 9.37. Alongside the main boulevard it is busy. At a distance from it it is less busy. This knowledge can be used to zone the different catalysts.

FIG. 9.38. Zoning and development directions for the different catalysts.

9.8. Use of the park

In order to say something about the use of the park we have to test it. These are possible situations:

- On a pleasant evening in spring (fig. 9.39 and 9.40) we can find a diverse group of citizens maintaining their Urban Garden, whilst youngster meet each other at the Urban Sports area. Some people go jogging around the boulevard and elderly go for a small walk in the Traditional Park. Some young families go with their very young to the Children's Play.

FIG. 9.39: The use of the park at a pleasant evening in spring.

FIG. 9.40: People can take a walk along the boulevard and walk through the nature area.

- On a warm day in summer (fig. 9.41, 9.42 and 9.43) activities happen all over the park and the park is intensively used. Groups and individuals make use of the lawn. People sit and drink at the deck of the boat and children make use of the Children's Play. Somebody uses a unit to get married in the park. Some take the chance to transform a unit into a place for having a barbecue with friends. There is also theater going on. A few take the effort to work in the garden, but the most people take a stroll along the boulevard to pass all forms of use to see and be seen.

FIG. 9.41: The use of the park at a warm day in summer.

FIG. 9.42: On a warm day in summer **the boat offers a place to eat and drink and have a nice view over the water. The Children's Play offers a natural play environment.**

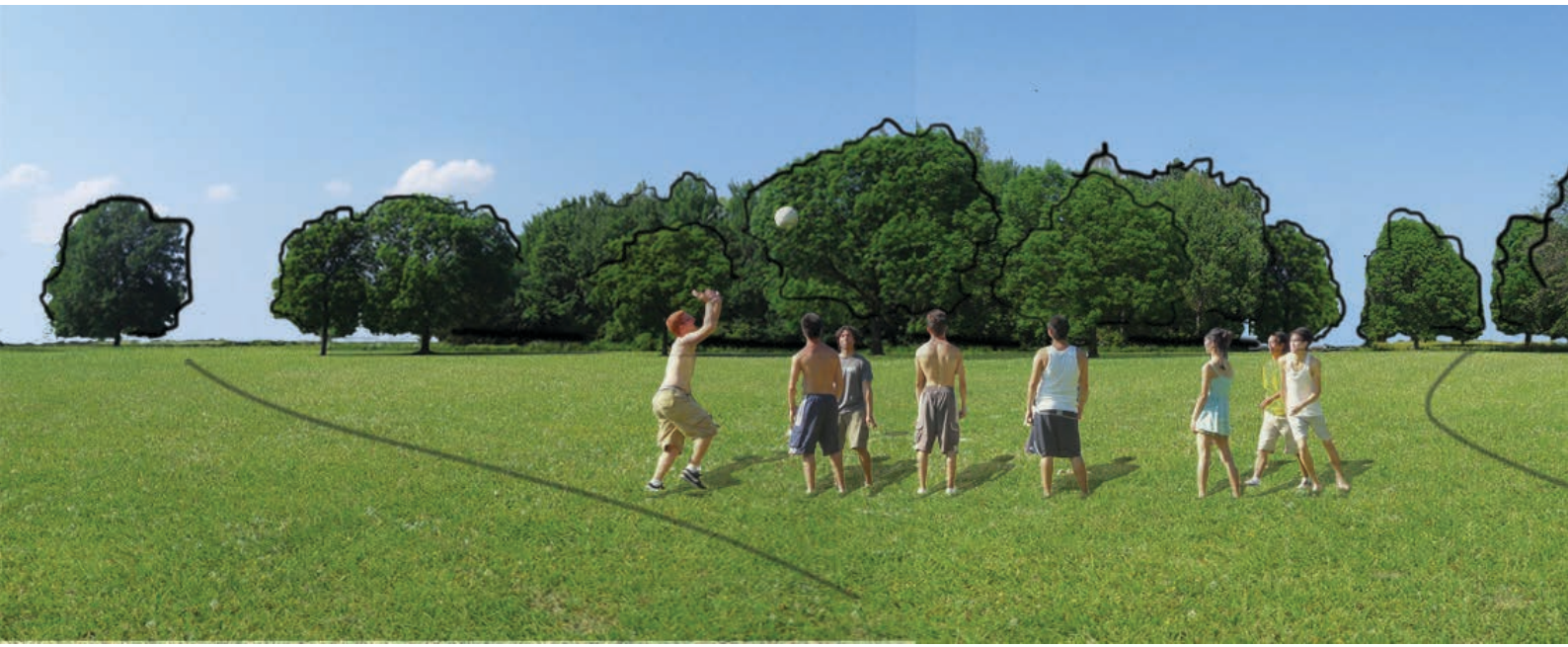


FIG. 9.43: The short mown grassland in the Traditional Park is an open neutral place were different kind of activities can take place. People create bufferzones between activities by themselves. Larger and extremer activities can take in the River. The view towards the water is opened up.

- When there is a festival (fig. 9.44) the Breeding Zone is intensely used. Here temporal pavilions can be placed and theaters build. For occasions people can be brought to the islands in the water for special happenings and experiences. Users find their way from the parking through the River, creating paths that fit best for that moment.

FIG. 9.44: The park when there is a festival.

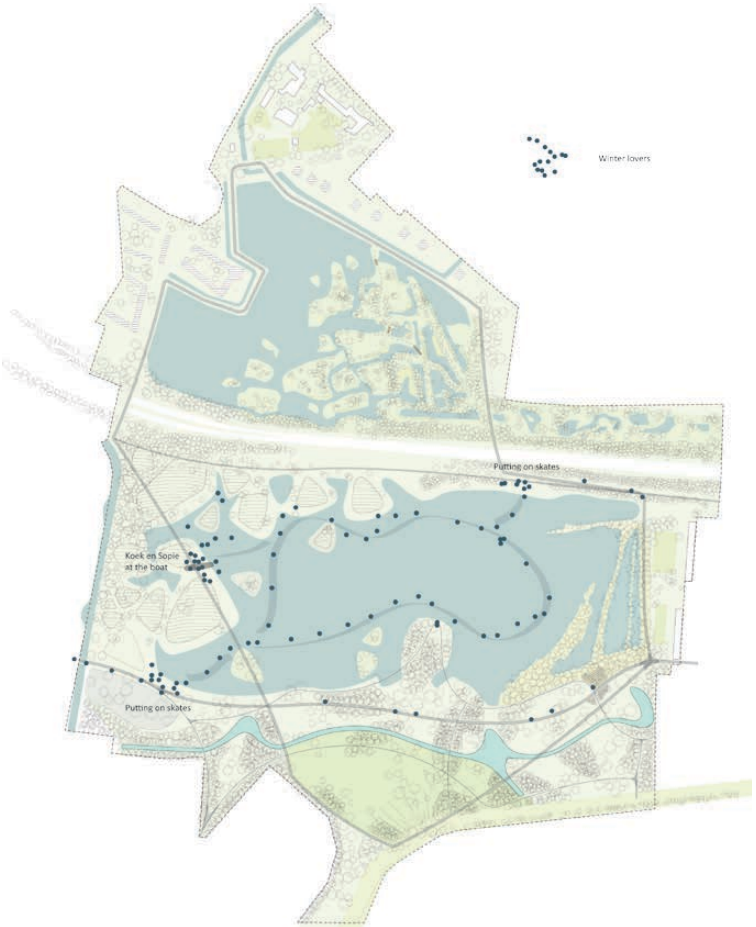


FIG. 9.45: A day in winter when there can be skated on the ice.

- If there is ice (fig. 9.45 and 9.46) the southern part of the pit is often used for ice-skating. At the moment there is a request for extra facilities that support this activity. The eating and drinking facility in the boat can be opened in winter to provide a warm drink (Koek en Sopie).

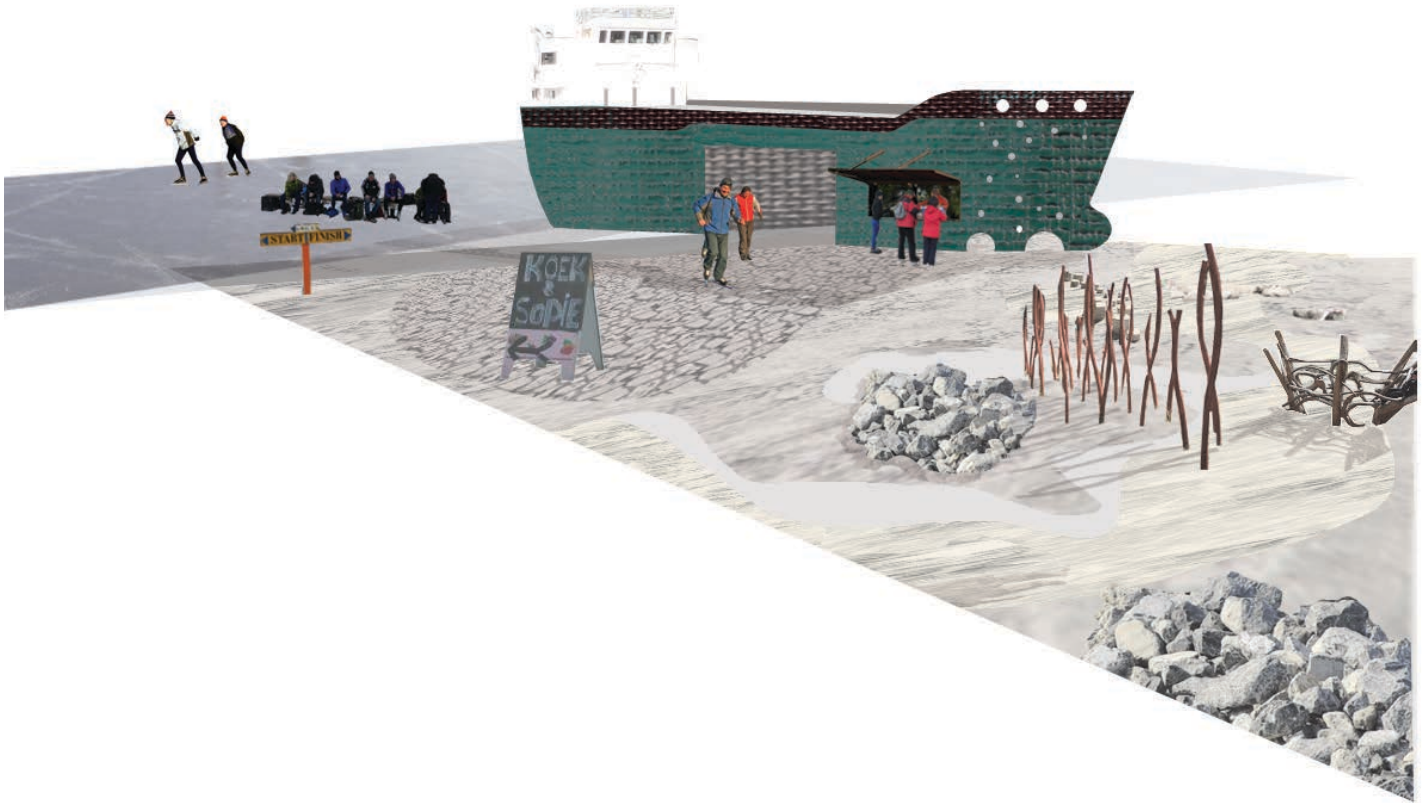


FIG. 9.46: Koek en Sopie at the boat on a day in winter when there can be skated on the ice.

10. Conclusions

10.1. Introduction

This chapter brings the conclusions of this thesis that had the purpose to explore the meaning of the large park as instrument for an ecological democracy. This chapter will start with the results of this thesis and a discussion of these results. Then the research questions will be answered. The concluding paragraph will set out the meaning of this thesis for the field of landscape architecture and will include recommendations for Park Immerloo and further research.

10.2. Results

This thesis presents a base for Park Immerloo that is designed based upon the design principles for the design of the large park. This base consist of an ecological framework that embeds the park in larger ecological networks and gives coherence with the goals set for the ecological main structure (EHS). This base also includes an infrastructure framework that embeds the park in larger infrastructure networks and contributes to its accessibility. This framework is expressed in three spheres that show coherence with wishes and needs in society. There is a Wilderness where nature is the core-experience. There is an orderly and neatly Traditional Park that shows connection with the older Arcadian image of nature that is still present in society. And there is the River that is the place for extremer activities, experiments and the expression of new images of nature (technological image/interactive image/new functional image). Part of the framework are open units that can be temporally appropriated by groups. In the Traditional Park the lawn offers possibilities for groups to appropriate a space and start activities. But larger and more extreme activities that can interfere with other activities in the park take place in the River. Here a number of patches (the open units) with different characteristics have been set out that can form the base for activities that come from society. Users can appropriate these spaces and make it their domain. Infrastructures cross these domains so that others can experience groups, exchange cultural values and gain understanding. There are also some open units where this is not the case. The active manifestation of a foundation in suggested. This foundation has to be prominent in the park to (1) safeguard collective values of ecological understanding and democracy, and (2)

develop the park by putting attention on the park for users and entrepreneurs and offering them help. As a starting point for developments a number of catalysts, including a zoning, have been suggested that follows from a research on the social context. The use of the park by different groups has been shown to illustrate how the park can work.

10.3. Discussion of the results

The design for a large park brings many uncertainties. These are the most important points when discussing the results:

- In the design principles it is concluded that the park should be designed based on (1) a resilient ecological framework, (2) an infrastructure framework, (3) different spheres in the park, (4) open units that can be taken, (5) catalysts to pull attention, (6) ecological aesthetics, and (7) a foundation. When there is looked at the results it must be stated that a lower scale is missing that is necessary to express more of the ecological aesthetic principles. Sufficient visualizations of what the park actually is going to end-up to are missing. This means also that the design of the river theme to the detail level is missing. On the higher scale inclusive unity is safeguarded by making the design acting with purpose in the social and ecological context, but results of the human (experiential) processes that take place at the lowest scale are lacking. This explains the necessity of a follow-up study. The result of this thesis is a framework and a development strategy that makes the park work on the scale of the city, but this lowest scale is indispensable to make the design of the park a success. Interweaving the city means interweaving through all scales, from supra-regional to the smallest detail.

- This thesis did not include a real participative process, which is of course inherent to a democratic design and better if the design is aimed to be a reflection of society. Assumptions needed to be made and this brought uncertainties about the real wishes and needs and the plurality of Arnhem-South (e.g. for leisure activities and nature images). It is also difficult to define different user-groups. One can combine several activities in the park and belong to different 'user-groups'. The available literature and stakeholder reflections gave sufficient base

for a direction for this design. Also a focus was brought on the character of activities and the certainties that these activities do not interfere to bring down experiences.

- It is uncertain to know if people do what is intended. The use of the park cannot be fully predicted. Do people appropriate spaces in the park? Do entrepreneurs start developments? It can be questioned whether community building and ecological understanding will happen. Therefore this thesis stresses the need for a foundation, but it needs to be tested if such a foundation really works and what the exact role of this foundation should be.

- This thesis presents the general conclusions from the analysis of the biophysical processes at the site (e.g. goals of ecological main structure and drinking water extraction). But a thorough understanding of these ecological processes cannot be covered. On can dig much deeper into ecological processes and provide an exact inventory of flora and fauna. This thesis focused on general habitat characteristics. This gap brings uncertainty to designing with these processes. The general directions of thought have been reflected upon by the municipality of Arnhem and are sufficient.

- This thesis presents a relative small percentage of open units (8% of total surface / 7,7 hectares). It is uncertain whether this is sufficient or not. An in-depth analysis of the social needs can bring an indication of actual program and based on that analysis the design of the park might be adjusted.

10.4. The meaning of the large park as instrument for an ecological democracy

In this paragraph the meaning of the large park as instrument for an ecological democracy will be set out by answering the research questions.

10.4.1. How can the large park in the urban periphery be conceptualized?

This thesis shows that the conceptualization of the large park as complex dynamic collective entity that is part of the 'ecosystem' city seems to provide a working concept that fits with contemporary plural society. But it works only if the park is (1) fully embedded in the city so that it acts on purpose in its context; (2) if its temporal and adaptive characteristics are recognized and accepted by the people and constantly reviewed. This concept of the large park as an interwoven and dynamic part of the city requires a cultural change and is perhaps not yet ready for contemporary society. It means a change in the minds of people of what a city or a park is and how it can develop over time. But as dynamics are speeding up in society, and the old images of nature are diminishing, people become less attached to a static park. Then there are potentials for this concept of the park.

10.4.2. How can we create an inclusive large park for different cultural groups with different leisure-time profiles?

This thesis shows that large parks should be designed as inclusive environment instead of a mean for all. This park is no unified image. There is designed for a framework that expresses different spheres in the park that match with the different users. Within the framework open spaces exist that can be appropriated by user-groups. The framework functions as a buffer that prevents inference of activities. Infrastructures run through the open spaces and when they are appropriated they can become public domain. When other users go through these spaces they experience other users and exchange knowledge and values. By offering open units we can make the design of the park open and adaptive for future user-groups.

10.4.3. What strategy needs to be used to develop a large park in contemporary urban periphery?

This thesis gives directions for a development strategy that fits with the concept of having open units in the park where developments can take place. An organization has to develop the park from the bottom-up so that it becomes a reflection of society and acts with purpose in its context. In this bottom-up approach there should be room for spontaneity, flexibility and temporality. The organization constantly has to zoom in on the wishes of the users in order to develop and maintain its niche in the city. There is only a framework, no final design.

10.4.4. What aesthetical principles should be used to reach for an improved relation between man and nature?

This thesis points at using ecological aesthetics principles as they offer the potential to reach for an improved relation between man and nature. Ecological aesthetics deal with the body and the mind and build upon the concept of creativity for cognitive learning. In this thesis it becomes clear that a large park that acts with purpose in the city and with ecological processes shows inclusive unity. According to this principle the park is beautiful as it lives in the hearts of the people. If the park is part of their city and they love it, then they will care.

10.4.5. Following the landscape approach, what is the meaning of the large park as instrument for an ecological democracy?

Ecological democratic designs are a reflection of society and they are based on ecological understanding. The large park as instrument for an ecological democracy influences the cultural values of people. As an inclusive environment it can bring together different groups in society and create understanding about others. By focusing on ecological aesthetics and experiences on the body and the mind the park can create ecological understanding. The large park defines the form of the city, and as a complex dynamic collective entity the large park can become an interwoven part of the city that can have a major contribution to creating a responsible freedom of our cities.

10.5. Recommendations

10.5.1. Recommendations to the field of landscape architecture

From this thesis the following recommendations can be given for the profession of landscape architecture:

- The park of the 21st century should be seen as a complex dynamic collective entity that fits with a society that is plural, faster, more flexible, and changes quickly over time. For this park adaptability, open-endedness and change become keywords. The edges of the park described in this thesis are rather vague in contrast to the historic examples of renaissance gardens, the picturesque park, or the inner-city park. Defining the large park can be seen as an architectural approach to landscape. In a landscape approach to landscape and large park design this definition is not so relevant. The content and the role, Form (content), should be questioned and discussed, not the form (architectural). Perhaps in the 21th century the park exists no more. It's just landscape.

- A park that is interwoven with the city works with ordinary landscape processes that come from the bottom-up. Use these processes by which people appropriate spaces in the park to interweave the park with the city. The park evolves and the content and appearance of the park changes over time. Work with complexity and uncertainties by creating a solid framework that embeds the park in the city. The role of the designer (in an organization) is to create collective values, to tell a story, to create imaginations and dreams. The designer has to step back and guide developments. Designing on this park is never finished and in the ideal situation designers commit themselves to a project for a lifetime. In this way they gain increased knowledge of the context so that they can make the park fit in the city.

10.5.2. Recommendations for further research

The following questions are posed for further research:

- For this thesis the design on the lower scale is lacking. How can there be designed for ecological aesthetics in the large park on this lower scale? As nature works with fractal geometry and not with (Modern) Euclidian geometry. There needs to be researched how we can interweave nature with the city based on fractal geometry. What are the potentials of fractal geometry in this?

- Making a reflection of existing images of nature and relating principles might conflict with using ecological aesthetic principles. How can the existing images of nature in society be combined with an ecological aesthetic in a democratic way?

- If society becomes more individual and people move around quicker and are less attached to their homes and cities, then it can be questioned what is the meaning of cultural heritage in the future. Cultural heritage can constrain development and evolution of parks. How does preservation of cultural heritage relate to evolution of the park and the city?

- Directions have been given to reach for spontaneity. There needs to be focused and zoomed in on users; looked for flexibility; and collective values have to be created. But what is the best way to do this when designing the large park? What regulatory boundaries have to be adjusted and what kinds of (micro) financing strategies should be developed to help a bottom-up approach with spontaneity in the park?

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This thesis focuses on the meaning of the large park as instrument for an ecological democracy. An ecological democratic park can deal with a plural society and it can help to restore the relation between man and nature. It has its origin in a landscape approach to design. Such a park contributes to ecological understanding and is a reflection of society. This thesis includes a design for Park Immerloo in Arnhem-South, which is a park that deals with these issues.

In the past year I took the chance to think about the design of the large park in contemporary society. In order to say something about the meaning of the large park I had to understand both the park and the city, and this also means understanding society and culture. These are very broad themes and understanding them is very complicated but I integrated them in this thesis as this is important to make the design of a park a success. I think this thesis can have a contribution in defining the meaning of the large park in contemporary society.

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