Nature was never far away

Experiencing the urban forest through realms of living, moving and visiting

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Master Thesis Landscape Architecture

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Flowscapes: Urban Forest Places

Realizing that nature was never far away

Before you lies the guide 'Nature was never far away: experiencing the urban forest through realms of living, moving and visiting'. This guide gives a method for the landscape architectural design of an urban forest that helps create realms of experience in order to make people more aware of our connection to nature. It is written as a graduation thesis for the Master of Landscape Architecture at Delft University of Technology.

In April 2021 I adopted a dog and with this came a new-found experience of the world around me. At first I thought that there were more flowers in spring and mushrooms in autumn than the years before. I suddenly noticed the seagull tapping his foot to attract worms and a caterpillar eating his way through a leaf. Then I realized that nature had never been far away, but I was only able to see this when I was forced to go outside at least three times a day. Now that I'm writing this it sounds obvious but for me it was a revelation at the time.

From this I started wondering if there is another way to make people aware of our connection to nature in daily life. Is it possible to fit in nature experiences in our day to day activities without adding something extra into our already busy lives? And maybe this nature experience could help us slow down at the same time as well, because I did not only notice nature, but it also helped me decelerate. With these questions the idea for this guide was born.

I would like to thank my mentors Saskia en Suzana, because it is for their enthusiasm and involvement that the project became more and more elaborate and cohesive every time we met.

I hope you all enjoy reading the guide, I sure enjoyed developing it.

Madelief Dekker
Delft, June 15, 2022

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Introduction

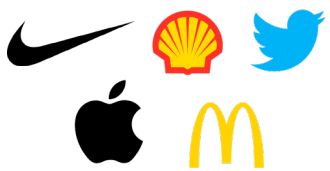
About this guide

The goal

Guidance and examples

In this guide you will find a method that can be used to design an urban forest that helps create realms of experience to make people more aware of our connection to nature.

This method can help designers and policy makers when working on projects in an urban area to give guidance and examples for new ways to introduce new nature into cities.



What's easier, recognising these logos or these leaves?

Figure 1: Nature could use some advertising (IVN Natuureducatie, 2021)

The why

Mismatch

There is a mismatch between how we live and how the natural world around us works. The widespread and normalized embrace of prosperity, consumption, waste and the continuous human expansion leads to an unsustainable way of living (Pyle, 2013) since the natural world works in a different, more cyclical way and we are disturbing the natural processes with our way of living.

Disconnected relationship with nature

This mismatch results in our disconnected relationship with nature, which is illustrated in a campaign of IVN Natuureducatie that can be seen in figure 1. In this campaign they wonder what is easier to recognise: logos of companies (which resemble our consumerism) or leaves (which resemble nature)?

Next to that a lot of people see nature that is far away as idyllic, while they see the nature that is close by as something dirty or annoying, such as dirt under their shoes and bugs in their home. If people keep seeing nature as a destination and not as something that is close by the disconnect between people and nature is maintained (Church, 2018). The notion that real nature should be untouched by humans (Turner, 1996) should become less prominent because it leads to unrealistic expectations of nature and fuels the belief that real nature is separate from daily life, which creates the feeling that caring for nature is not peoples responsibility or within their power (Clayton et. al., 2017). So, a new definition of nature is needed to change how people see nature.

Help tackle climate problems

The reconnection of people and nature is important to increase support to start tackling climate change issues, because human behaviour is the biggest cause of global climate change but it is also the only thing that can respond and adapt to it (Clayton et. al., 2015). This reconnection could be seen as a opportunity to help tackle climate problems since nature connectedness can motivate environmentally sustainable behaviour (Han & Hyun, 2016) (Zelenski et al., 2015) (Klaniecki et al., 2018), help engage with sustainability issues (Nisbet & Zelenski, 2011) and drive public concern for sustainability (de Burgh-Woodman & King, 2012). So, it's definitely worth it to look further into increasing the connection between people and nature.

Figure 2: The widespread and normalized embrace of consumption leads to an unsustainable way of living (Gursky, 2001)

Urban forests as an opportunity

The disconnect with nature is also seen in urban areas such as the Hague, where most of the daily living environment consists of brick and stones and people run around all day to get to their destinations in time. The creation of urban forests in these areas could be seen as an opportunity for a landscape architectural approach to reconnect people with nature in the Hague.

Reading guide

A layout to be able to choose what to read

The guide can be read as a whole but is also made in such a way that you can choose to read only parts of it. There are four types of information with their own layout: the method, background information, existing projects and a design example.

You can for instance choose to only read the method: then you only have to read the green pages. And if you are then wondering about how you can put a certain theme into practice you can look at the white pages with the design example. You can also do it the other way around: reading the white pages with the design example and only reading the green pages with the method when you want to know more about the substantiation of certain choices.

Compact toolboxes and a roadmap

If you want to have a quick look at the method you can also look at the toolboxes or the roadmap. Each chapter has a toolbox at the end, which is an overview of diagrams of the design principles that should be used. The roadmap is a fold out that can be found at the end of the guide which shows how the design principles of each chapter are related to each other and in which category they fit. Here you can also find the corresponding page numbers for the pages where the design principles are elaborated.

The method

The parts with the green background contain the method. Sometimes it will include steps to achieve something while other times it will contain a more general approach.

Design example

The parts with the white background contain a design example which shows how the method can be put into practice.

Background information

The parts with the green background and the dashed line around it contain background information about why a certain choice is made or why something is important.

Existing projects

The parts with the white background and the dashed line around contain existing projects that show what a certain method or theory can look like in practice.

Glossary

The guide exists within a specific context and uses certain concepts throughout so to make clear what these concepts are about they are shortly explained here.

Nature

Nature in this project

For nature the following definition is used:

'Nature contains of the elements and systems that facilitate all forms of life and encourages symbiosis.'

So with all forms of life not only flora and fauna are included, but human beings as well. And these elements and systems do not have to be things that grow by itself, it can also be a man made structure, as long as it encourages symbiosis.

Possible definitions of nature

If you ask people the question: 'What is nature?' you get a lot of different answers that can vary from something very broad: 'nature is just anything you see that is living and growing' to something narrow: 'nature is non existent, as a result of human impact on Earth as a whole' (Church, 2018).

So let us start with a narrow definition: **'nature is a place unmodified by humanity'** (Parsons, 2008). But do these places even exist or have humans impacted the Earth as a whole, as the interviewee from before stated?

Let us make the definition a bit broader then: **'nature is what takes place without the voluntary and intentional agency of humans'** (Parsons, 2008).

So then a tree would count as nature and a house would not be nature. But what if the line between nature and humans isn't that clear?

Nature is...

'just anything you see that's living and growing'

'non-human made, or specifically plants and animals'

'a spectrum of manicured to wild nature, from one's own cultivated yard to a relatively untouched wilderness'

'non existent, as a result of human impact on Earth as a whole'

'an interconnected ecosystem'

Figure 3: Nature according to interviewees (Church, 2018)

Ecosystem engineers

A concept that could explain this thin line between people and nature is that of ecosystem engineers. These are animals that create habitats and thus ecosystems for other animals. A good example of ecosystem engineers are ants. They build massive colonies with corners with different purposes and thus creating habitats for other animals like different kind of beetles that develop and evolve to be able to profit from the ants and to be able to live with them. This sounds like nature right?

But what if we look at the story of another ecosystem engineer that builds cities with different corners and habitats that other animals are able to live in? Then suddenly we are inclined to call it urban as an opposite to nature. But maybe humans are just as natural as these ants and cities are as natural as their colonies (Schilthuizen, 2018).

This way of looking at people and nature is illustrated in the following sentence:

'Reconnecting people with nature is a non-sense phrase, for people and nature are not different things, and cannot be taken apart. The problem is, we haven't yet figured that out.'
- Robert Michael Pyle (Pyle, 2013)

The fact that it is a common thought that nature and people are opposites is actually the reason why the goal of this guide is to make people more aware of this connection.

Figure 4: Humans and ants as ecosystem engineers (Spatari, 2019) (Dorling Kindersley Limited, n.d.)

Pigeon Paradox

When nature is seen as something broader then before it should also be carefully reconsidered how non-native urban species are looked at. Because are they really non-native? As in, yes the polder surrounding the Hague does not have city pigeons in their natural habitat. But the city is not the same as the polder around it, it resembles the rocky natural habitat of the rock pigeon. And this rock pigeon evolved into our city pigeons, so maybe the city is actually the natural habitat of the city pigeon and we should start seeing a city as a different ecosystem as the surrounding landscape. A city in the Netherlands is more similar to a city in Japan then to the polder landscape surrounding it.

And since human populations shift to cities, humans will primarily experience nature through contact with urban nature and people are more likely to take conservation action when they have these experiences. So city pigeons could be our way to connecting with nature in our daily life, which is why they call it the 'Pigeon Paradox' (Dunn et al., 2006).

Rock pigeons in their natural habitat

A city pigeon in its natural habitat

Figure 5: Pigeon paradox (Mallette, n.d.) (Getty Images, 2013)

New nature

Stig L. Anderson of SLA landscape architects has another way to look at urban nature and that is to see it as new nature (Anderson, 2018). And this new nature:

- Is hunderd percent man-made
- Actively uses and utilizes the properties and qualities that are built into nature
- Learns from characteristic biotopes of an area and their natural processes
- Is not about how it looks but about how it feels
- Gives a strong aesthetic feeling of nature right on your doorstep

An example of how SLA landscape architects uses this new nature in their designs can be seen on page 103.

Urban forest

Urban forest in this project

Another term that should be defined is the urban forest. And for that the following definition is used:

'An urban forest is a structure in the urban environment that is built out of elements that can be found in a forest and that brings the positive effects of a forest to the city. '

So it is about learning from forests and their natural processes to make the urban environment more resilient and to bring the strong aesthetic feeling of nature right on your doorstep.

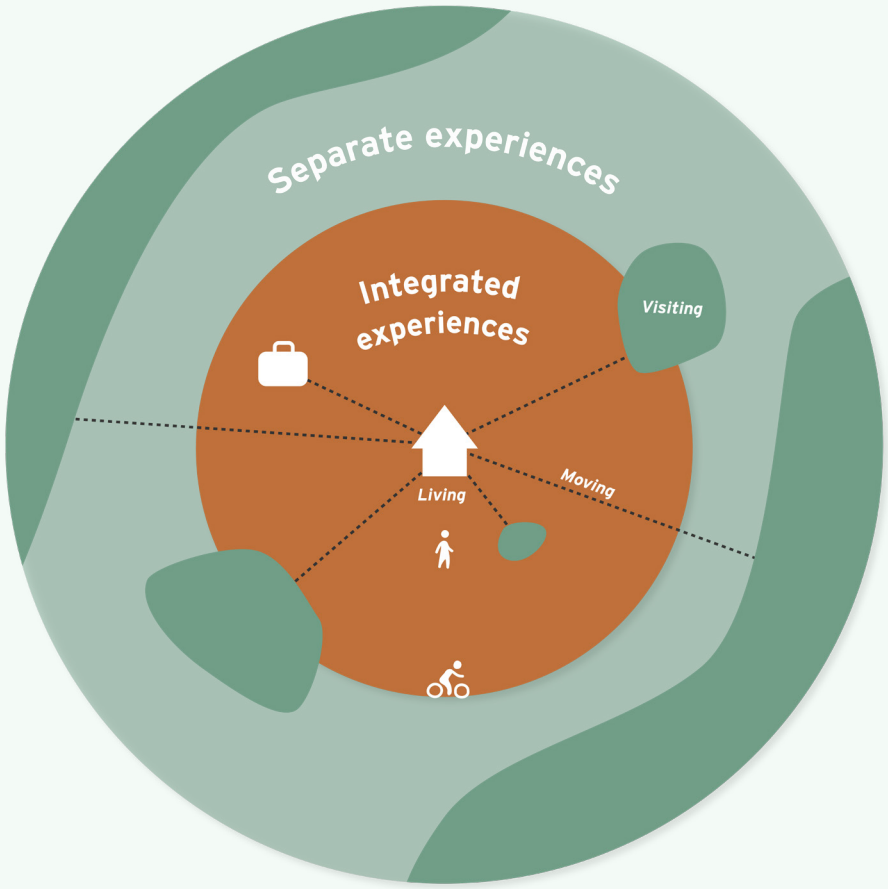


Figure 6: The realms of experience in diagram

Realms of experience

Integrated and separate experience

An urban forest can create different realms of experience through the scales which can help increase nature connectedness (Church, 2018). These realms can be divided into two categories: the integrated and the separate experience. The integrated experiences, so experiences you have on a daily basis (for instance when you cycle to work) have a great impact on habits and behavioural routines (Clayton et al., 2017).

Separate experiences are the ones you have when you travel to a place you do not come that often, so for instance when you go for a bike ride through the polder and these experiences can lead people to a new perspective (Vining & Merrick, 2012).

Within these integrated and separate experiences there are three realms:

1. **Integrated experience**

Living

The realm of living is about the residential street which has a close connection to someone's home.

Moving

The realm of moving is about the spaces someone goes through when moving by foot, bike, car or public transport.

2. **Separate experience**

Visiting

The realm of visiting is about a destination that you do not go to regularly.

The realms as tool to read and comprehend

These three realms exist within the context of the districts in the city. And since were talking about realms of experience, which is something personal, a certain place can be in three realms at once, depending on who is experiencing it. A street where one person moves, can be the living area or destination of a visit of another. But a street where you do not come often that exists of the same elements as the street where you live does not give you a separate experience of visiting because it can be comprehended from the realm of living. So the realms of experience are not only about how often you go somewhere but also about the content and how you are able to read and comprehend it.

Method

The relationship between the different aspects

The method that was used to create this guide contains of different aspects:

- The context in which everything takes place: the realms of experience
- The three analysis and design approaches:
  - Urban forest typology
  - Layer approach
  - Nature diagram
- The link with practice: the design example
- The element that guides it all: the narrative

In the figure below the relationship between the different aspects is shown and it becomes clear that it is not a linear process: the overlap between the realms of experience and the analysis form the method and from this a design example is developed.

In the middle of the figure the main content of the guide (the green pages) is highlighted: the method for the landscape architectural design of an urban forest that helps create realms of experience in order to make people more aware of our connection to nature.

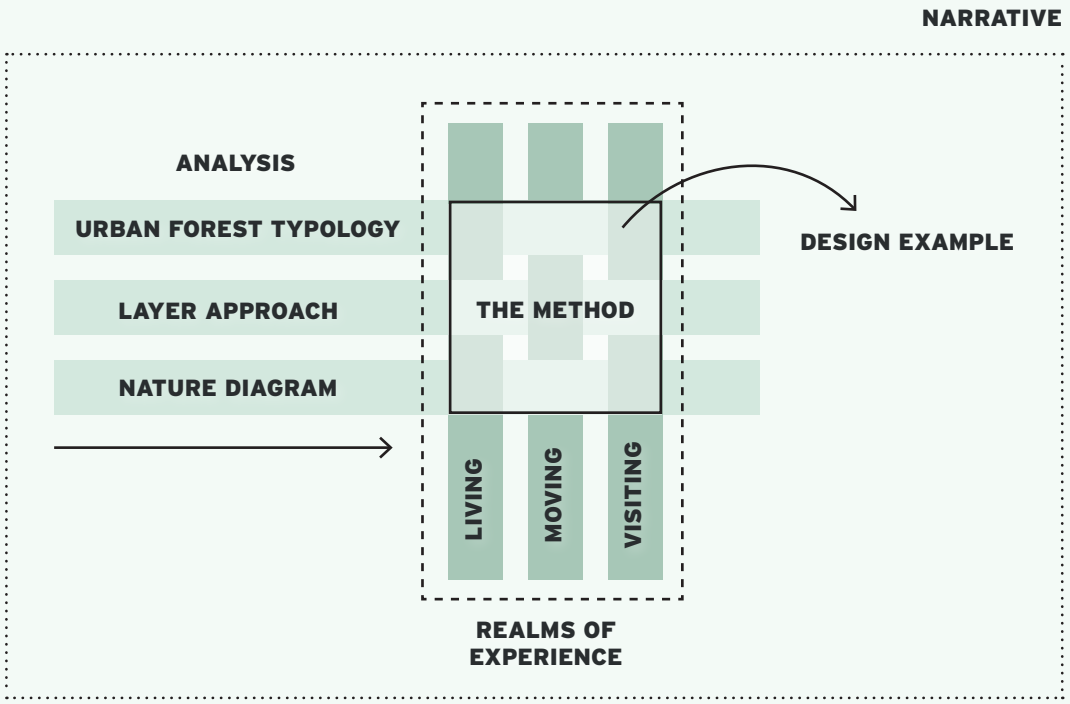


Figure 7: The method that was used to create this guide

Realms of experience

Location and level of detail

The realms of experience are used to determine the three locations of the design example:

- Living: a residential street
- Moving: a route
- Visiting: a destination

And since these realms exist within different scales they will affect the level of detail from which the locations will be approached as well:

- Living: a detailed design
- Moving: a vision with zoom ins
- Visiting: a goal illustrated with a serial view

Urban forest typology

Analysis, vision and design

The first analysis and design approach is the urban forest typology. This typology is formed by looking at different layers and their aspects:

Basic form: 'The basic form is the way in which the topography of the natural landscape or the man-made landscape is reduced, rationalised and activated in the ground plan of the design' (Nijhuis, 2015, p. 51). For the urban forest typology the basic form will consist of the tree canopy pattern and its density.

Spatial form: 'The spatial form is about the form and functioning of three-dimensional landscape space' (Nijhuis, 2015, p. 51). For the urban forest typology the spatial form will consist of the tree arrangements and building types.

Image form: 'The image form refers to the way in which iconographic and mythological images and architectonic structural forms are connected with one another and with elements from nature' (Nijhuis, 2015, p. 51). For the urban forest typology these iconographic images will be related to forests and other treed structures.

The typology is used to analyse the current situation, to form a vision and as input for the design.

Layer approach

Reaching two goals at the same time

The second analysis and design approach is the layer approach, which consists of the following layers:

- **The spatial layer**: which is about spaces and how they are experienced
- **The environmental layer**: which is about environmental aspects such as micro climate and rain water management
- **The ecological layer**: which is about ecosystems, flora and fauna
- **The social layer**: which is about activities, safety and social interaction

While the basic, spatial and image form of the urban forest typology are about form, these layers of the layer approach are about function. And even though the main goal is to make people aware of their connection to nature it is important to not loose other important potentials of the public space out of sight that can be found within these layers. Not only because they are important but also because they will indirectly influence how easy it is for people to become aware of their connection to nature as well. People that prefer to be outside with other people for instance will be easier to reach if you create spaces where they can meet people.

So by focusing on these layers two goals can be reached at the same time: improving the overall quality of the design and making it easier for people to become aware of their connection to nature.

Nature diagram

A framework

The third analysis and design and approach is the nature diagram. This diagram contains of the methods that are used in this guide to help make people aware of their connection to nature. They can be divided into two categories:

1. Giving meaning to nature

Which is the theoretical part with on one hand (re)defining nature and on the other hand ways to appreciate nature.

2. Experiencing nature

Which is the practical part which forms a gradient with on one side perceiving nature and on the other side interacting with nature. This gradient is important since giving people opportunities to engage with nature actively and passively and creating direct experiences in nature can increase nature connectedness (Church, 2018) (Chawla, 1998).

The great variety in types of input within the framework is needed in order to reach different people with different ways of living and thought frames.

The methods will be elaborated further in the guide where they will be linked to the theory behind it and they will be put to practice in the design example.

Design example

Testing and refining the method

To show how the created method can be used in practice a design example is created. This design example exists within the realms of experience and is formed by the urban forest typology, the layer approach and the nature diagram. By working on the design it became clear where the method had gaps. So by creating the design example the approaches where tested and refined.

Narrative

The function of a narrative

All steps will be guided by a fictional narrative. This narrative is about an existing street with fictional characters that live there. By following a few characters in their daily life a clear framework can be created that describes someone's actions and how these relate to their landscape. Though the focus is on one street and its inhabitants, the method and the findings can be used in other situations as well.

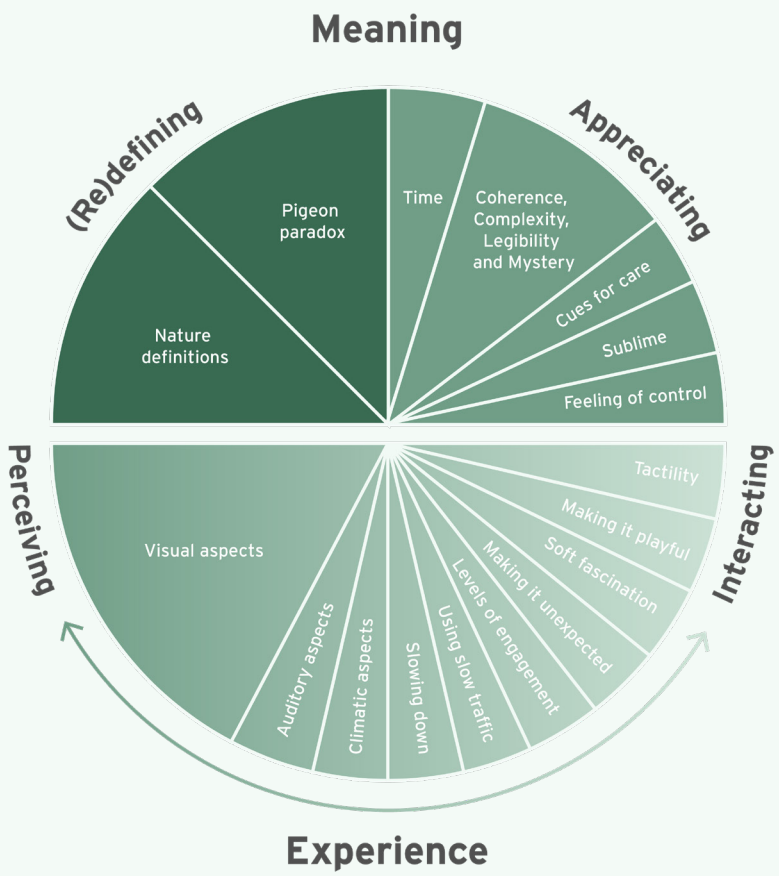


Figure 8: The framework of creating awareness for our connection to nature

The Zuigerstraat

The location of the narrative

The chosen street is the Zuigerstraat in the Hague which is located in the district of Laak which is south of the city centre and close to the border with Rijswijk and Voorburg.

In the map in figure 10 the realm of experience of the living, moving and visiting are made visible. The realm of living has one static place (the Zuigerstraat itself) while the realms of moving and visiting depend on the actions of the characters. For this example for the realm of moving a route to work of one character is chosen and for the realm of visiting one destination is chosen that all of the characters can go.

The three main characters

To touch upon the multiple ways the design can be experienced three characters with different ways of living and thought frames are followed in the narrative.

Lisa

Lisa is 25 years old and lives since a few years in the Zuigerstraat. She grew up in Scheveningen where she spent most of her childhood on the beach and in the dunes. Now that she's older and works as a clerk at the courthouse in the Hague, she feels that she has no time to spent in nature anymore. Every morning she takes her car for a 10 minute drive that she mostly spends waiting in front of the traffic lights.

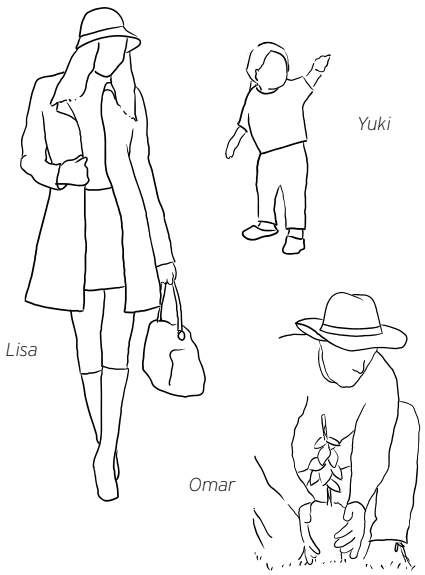


Figure 9: The three main characters

Omar

One of Lisa's neighbours is Omar and he is one of the first residents of the street so he has already lived there for almost 30 years. He's 51 years old and works part time as an administrative assistant. On his free mornings he walks to the boulder hall to meet up with his friends.

Yuki

A neighbour who does not live at the Zuigerstraat yet is Yuki, since she is not born yet. She and her moms will be introduced later in the narrative, when she is 4 years old and living in the street.

Figure 11: The Zuigerstraat

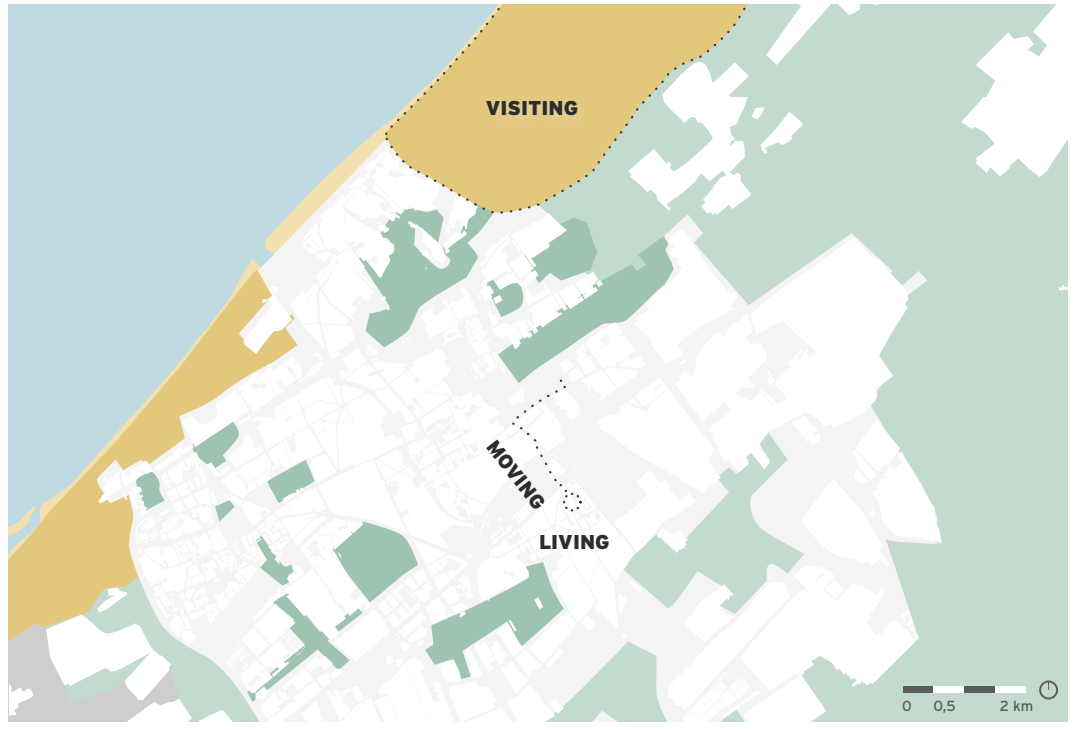


Figure 10: The chosen locations for the realms of experience

2

Districts

Finding the character

To find the existing character of the districts the basic, spatial and image form should be determined which was elaborated on page 19.

Basic form

Urban forest types

If you look at the city as a forest you can divide it into smaller patches of different urban forests types based on the canopy pattern. This method has been tested in a strip across the Hague (see Appendix, page 158) from which 8 different urban forest types have been determined:

1. **Pointed**: contains regular distributed trees creating a thin forest
2. **Scattered**: contains irregular distributed trees creating thin patches and empty clearings
3. **Framed**: contains dense treed areas that form a frame around a complete open area
4. **Ribboned**: contains irregular distributed trees creating clumps and lines that vary in density but due to its irregularity it contains a lot of clearings as well
5. **Linear**: contains regular lines of trees and occurs mostly in residential areas where these lines follow the street pattern
6. **Mosaic**: contains regular distributed wooded areas which are not really dense, but they can have some denser points in them
7. **Dissolved**: contains of irregular denser areas of trees with clearings
8. **Solid**: contains a dense treed area where only a few times a small clearing occurs

This list of urban forest types is not conclusive and if the method is used in another city more types could be found that add to the list.

Spatial form

The influence of building types

To translate the urban forest types to their spatial form they should be turned into three-dimensional images. By doing this not only the influence of the tree canopies is made visible, but the influence of the building types as well.

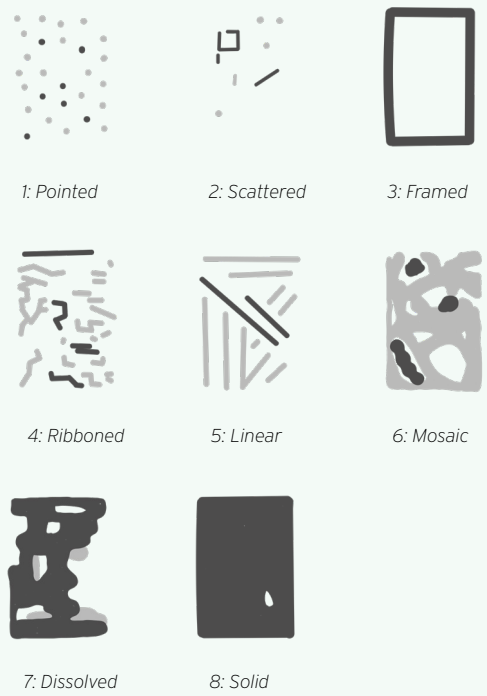


Figure 12: Urban forest types found in the Hague

The districts' characters

Basic form

Three type of urban forests

For the realm of moving Lisa's route to work will be looked at. So for this chapter the surrounding districts of this route will be considered and these districts can be seen in the figure below. Within these districts three different urban forest types can be found.

Figure 13: The urban forest types on Lisa's route to work

The scattered urban forest:

Occurs three times: in an industrial area where the clearings exist of big roads and buildings, in an area with big furniture stores where these stores create the clearings and lastly in the city centre which is a densely built area where the clearings are created by the historical buildings.

The linear urban forest:

Occurs three times as well: in residential areas where the tree lines follow the street pattern and the density of the forest varies when the the tree lines get thinner or thicker.

The ribboned urban forest:

Occurs only one time: in a residential area where the train tracks pass through, creating space for the big treed ribbons that characterize this area.

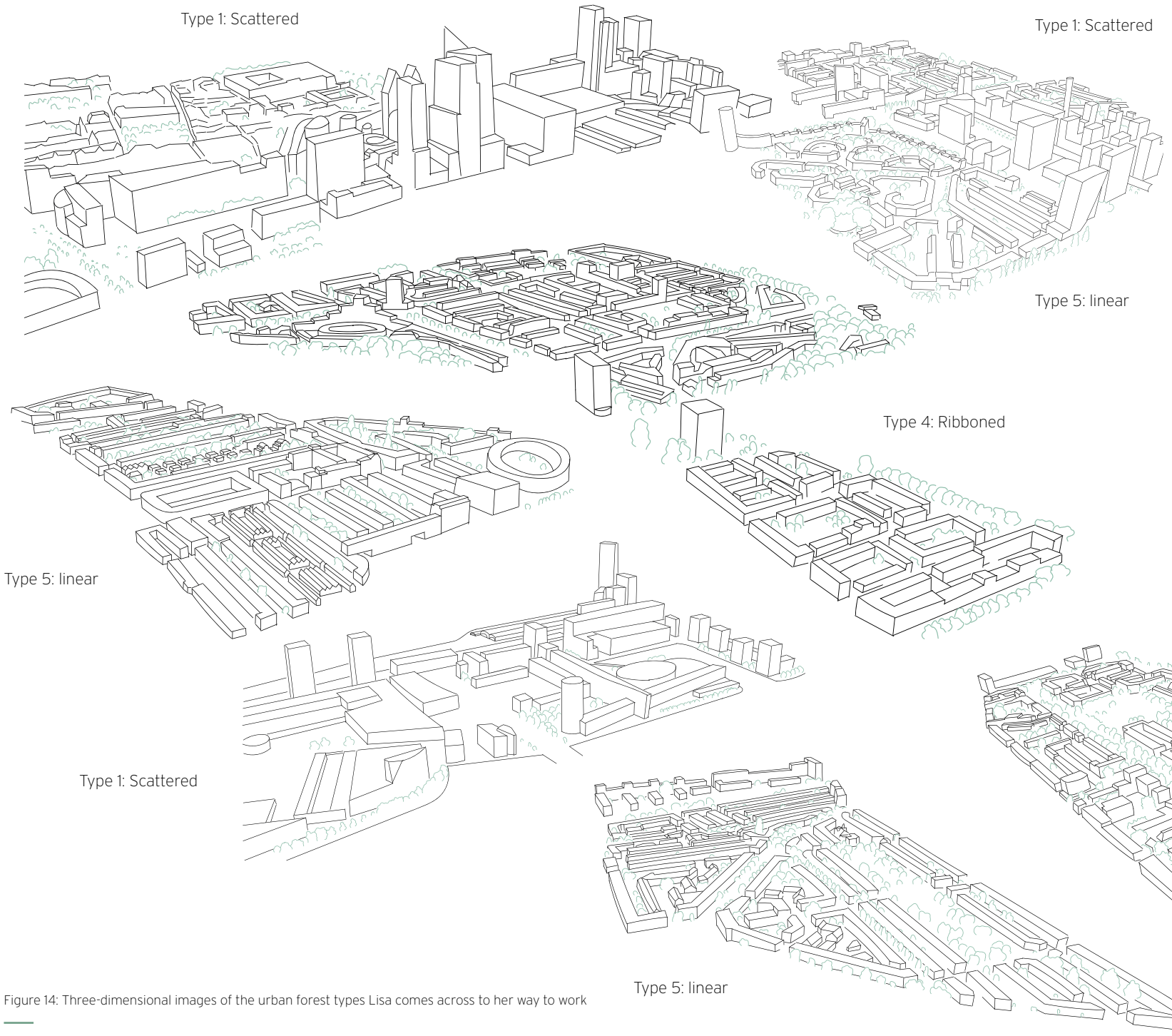


Figure 14: Three-dimensional images of the urban forest types Lisa comes across to her way to work

Spatial form

Multiple characters in one urban forest type

The seven districts that Lisa comes across to her way to work have been translated into three-dimensional images and from these it becomes clear that some urban forest types have multiple characters in them, due to a difference in building types. The district with the scattered urban forest in the north for instance has a clear division between low and high rise buildings that create a different kind of experience of the urban forest.

Image form

Subdivision into characters

To determine the different characters of the urban forest types an image form should be found, which refers to 'the way in which iconographic and mythological images and architectonic structural forms are connected with one another and with elements from nature' (Nijhuis, 2015, p. 51). For the urban forest typology these iconographic images will be related to forests and other treed structures.

The scattered urban forest can refer to two different image forms:

1. **The tree line**: which consists of high rise buildings and almost to trees occur
2. **The oasis**: which consists of mid rise buildings and has small hidden clusters of trees

The ribboned urban forest has only one image form:

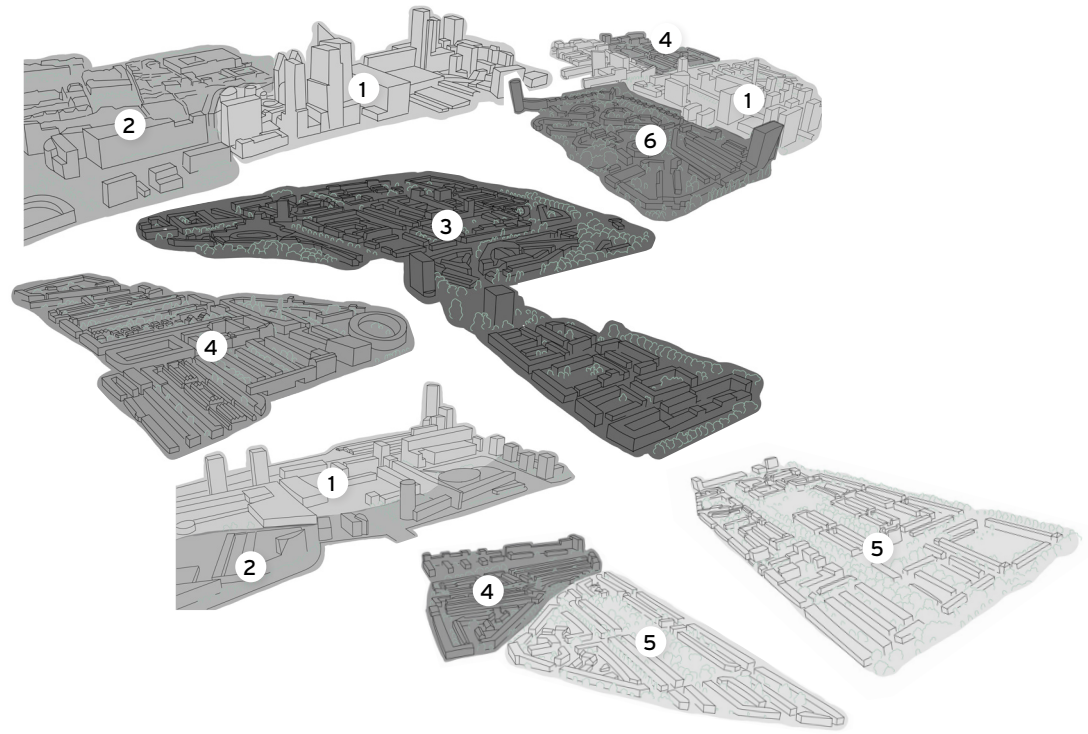
3. **The park**: which consists of low to mid rise buildings and has thick bended lines of trees

The linear urban forest has three image forms:

4. **The tree nursery**: which consists of low to mid rise buildings and has thin tree lines that are built out of small trees
5. **The production forest**: which is basically the same as the linear tree nursery but now the lines are thicker and made out of bigger trees
6. **The maze**: which stands out through its organic urban grid and consists of low rise buildings and has tree lines that follow this grid

Figure 15: The subdivision of three urban forest types into image forms
*Sources of the photos: see bibliography

Image form



Six different characters on Lisa's route to work

The seven districts that Lisa comes across on her way to work can be divided into twelve different patches of image forms. She starts in the linear production forest, then passes along small patches of the linear tree nursery, scattered oasis and scattered tree line on one side while on the other side there is a huge area of the ribboned park. After this she passes the scattered oasis and scattered tree line again and lastly moves past a linear maze and through the scattered tree line.

Figure 16: The three-dimensional images of the urban forest types Lisa comes across to her way to work with the corresponding image forms

Coherence, Complexity, Legibility and Mystery

Scoring the urban forest characters

A way to appreciate nature is to use the framework of the Kaplans, which are two professors of psychology that have specialised in environmental psychology. They created a diagram with on the vertical scale the degree of inference to extract information and on the horizontal scale two human needs: understanding and exploration. In these axes you can put four extremes:

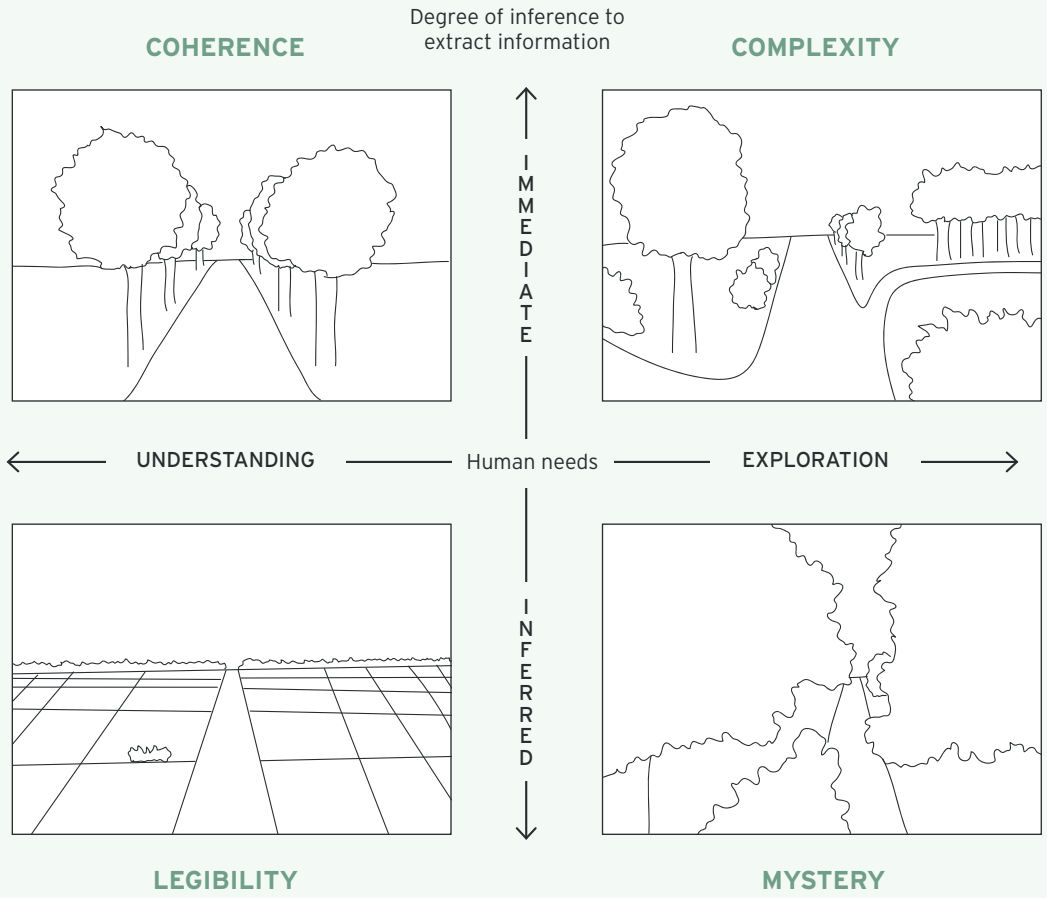


Figure 17: The diagram of coherence, complexity, legibility and mystery

Coherence: where everything is well organised and logical.

Legibility: which is well structured with distinctive elements and holds a promise to comprehend and function effectively, making it easy to find your way.

Complexity: which has a richness and a high number of visual elements, which provide content to think about.

Mystery: which involves a promise to learn more if one could walk deeper into the scene (Kaplan & Kaplan, 1989).

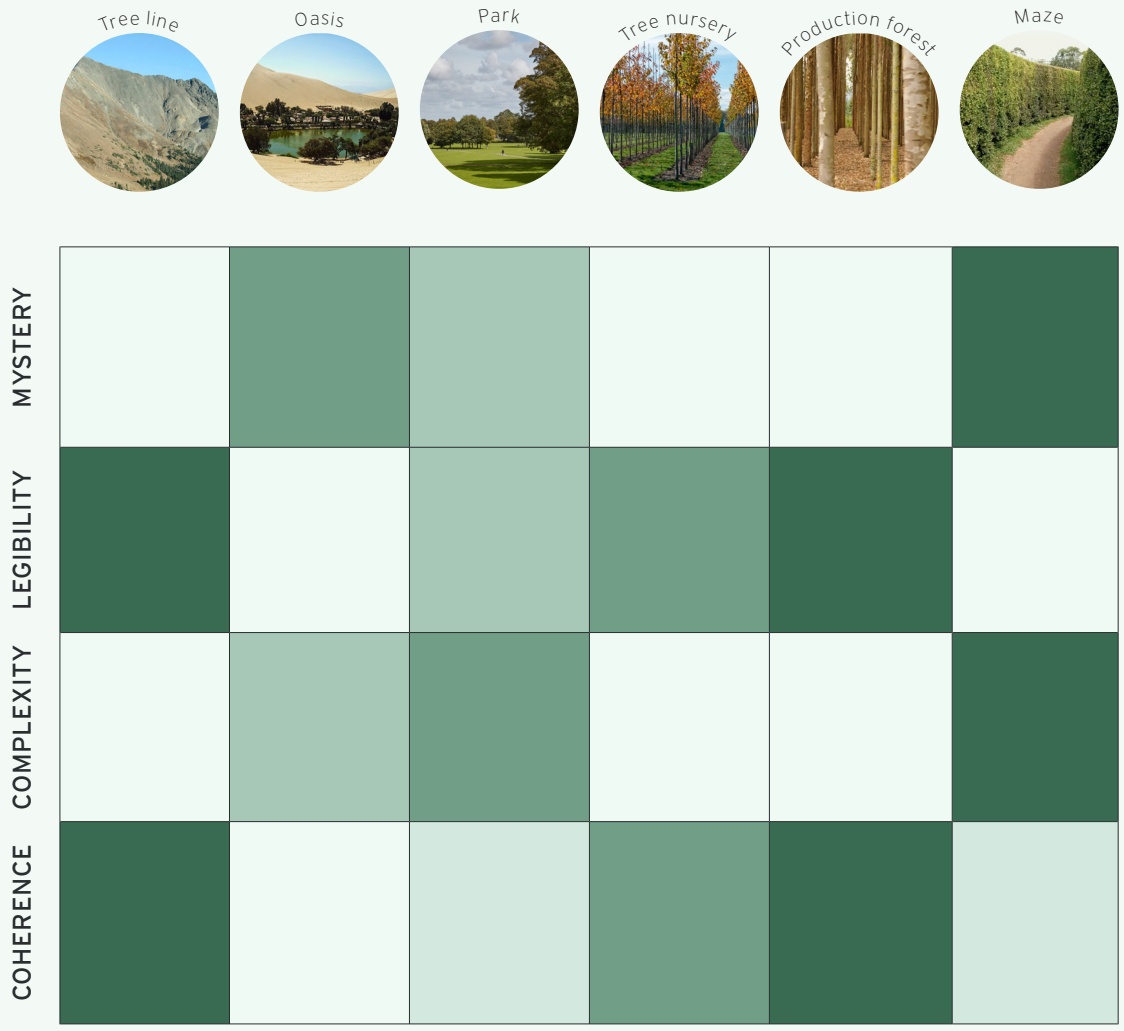


Figure 18: The amount of coherence, complexity, legibility and mystery in the urban forest characters

The darker the green the higher the amount

*Sources of the photos: see bibliography

Urban forest character

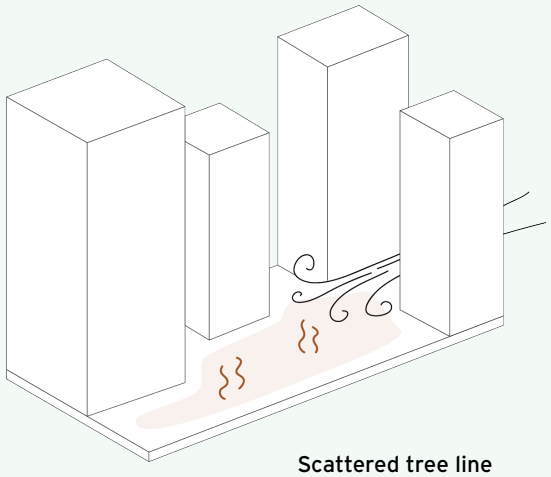
Analysis

The current situation through different layers

The basic, spatial and image form of the urban forest typology are about form, so to be able to evaluate the urban forest types on their function the current situation should be analysed through three different layers: the spatial, environmental and ecological layer.

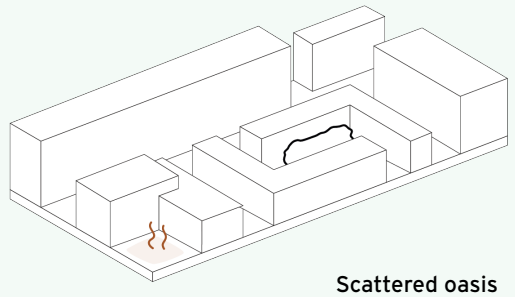
In figure 19 the results of this analysis can be found. The scattered tree line has for instance two significant aspects of the environmental layer that should be addressed: (sudden) gusts of wind and the urban heat island effect due to a lack of trees. The scattered oasis has big horizontal contrasts in its ecological layer due to the contrast between tree clusters and empty spaces. And the ribboned park has big contrasts in micro climate due to different tree sizes.

The linear tree nursery stands out in its spatial layer since it is experienced as a young forest that feels unfinished. The linear production forest and linear maze are comparable on the environmental and ecological layer but are experienced as completely the opposite in the spatial layer.



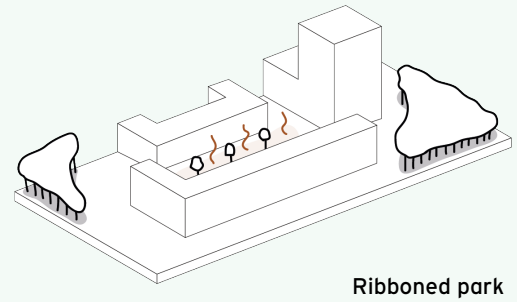
Scattered tree line

(Sudden) gusts of wind	Heat island effect
(Almost) no trees	Monotone (horizontal)
High in legibility and coherence	Low in mystery and complexity



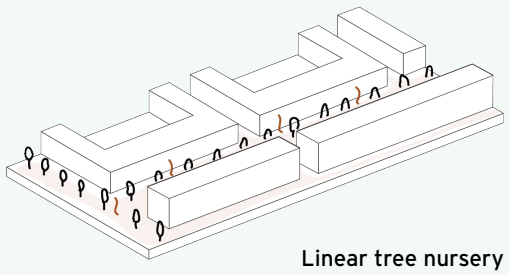
Scattered oasis

Big contrasts in micro climate	Heat island effect dessert part
Big horizontal contrasts	
Low in legibility	High in mystery



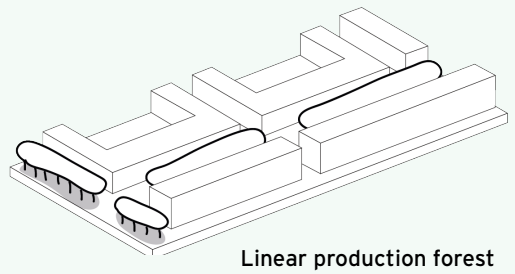
Ribboned park

Differences in micro climate	Cool corridors
Connected corridors	A bit monotone (horizontal)
Contrasts between spaces with different tree sizes	



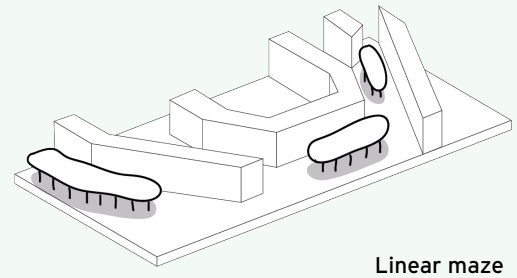
Linear tree nursery

Heat island effect, trees give almost no shadow	
Too thin lines to create a corridor	
Young forest, feels not finished yet	



Linear production forest

Trees provide shadow	Constant micro climate
Constant forest	A bit monotone
The classic street lane	High in coherence and legibility



Linear maze

Trees provide shadow	Constant micro climate
Constant forest	A bit monotone
High in mystery and complexity	

ENVIRONMENTAL
ECOLOGICAL
SPATIAL

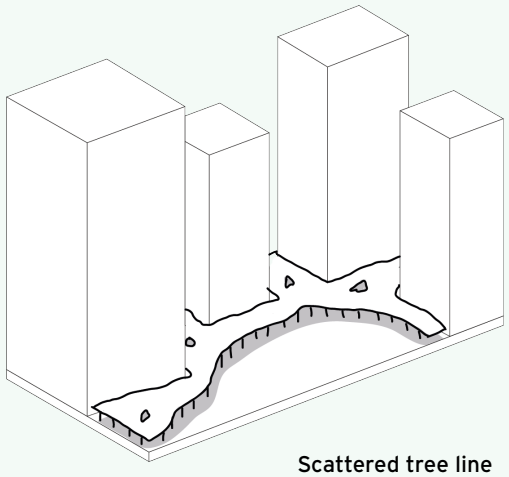
Figure 19: Analysis of the urban forest characters

Vision

Intensifying the image forms

By intensifying the image forms the strengths will become more prominent and the weaknesses will be tackled as well. So by adding lines of small trees in the streets of the scattered tree line and keeping clearings on the squares the (sudden) gusts of wind and the urban heat island effect will be decreased, while introducing a new tree arrangement to the scattered tree line as well. By increasing the amount of oases in the scattered oasis and intensifying them the contrast between the treeless spaces and the oases themselves will be in balance. For the ribboned park the tactic is almost the same: increasing the amount of ribbons and intensifying them, but also connecting some of them to create larger ribbons.

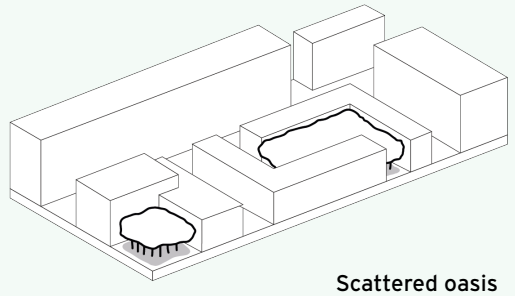
In this vision the linear tree nursery should be turned into the linear production forest since it has the same elements and structure but is a young undeveloped version. This is done with two different strategies for two different situations: if there is a lack of space smaller tree species should be planted and if there is enough space the old trees should be replaced with trees that fit these conditions so that they can grow big and healthy. And lastly the linear production forest and the linear maze have the same strategy as the ribboned park: increasing the amount of tree lines, intensifying them and connecting some of them.



Scattered tree line

Add small trees in streets

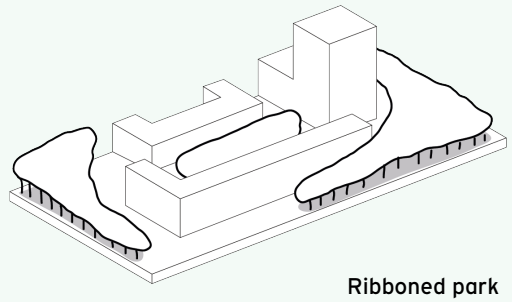
Keep clearings on squares



Scattered oasis

Increase amount of oases

Increase intensity of oases

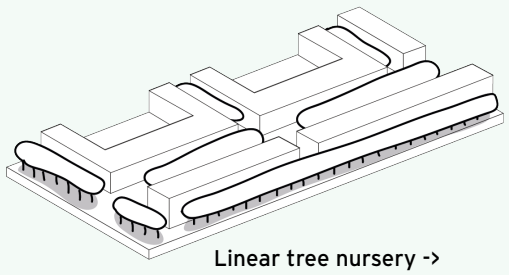


Ribboned park

Increase amount of ribbons

Increase intensity of ribbons

Connect some ribbons

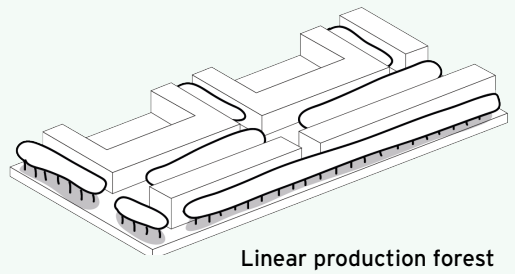


Linear tree nursery ->
Linear production forest

Turn into linear production forest

Lack of space: add smaller tree species

Enough space: add right trees for these conditions

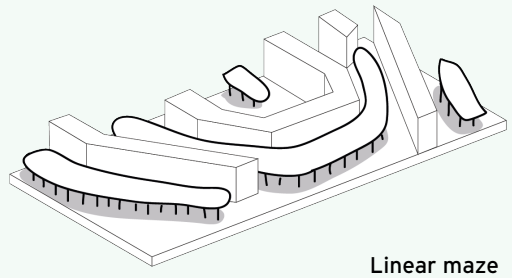


Linear production forest

Increase amount of tree lines

Increase intensity of tree lines

Connect some tree lines



Linear maze

Increase amount of tree lines

Increase intensity of tree lines

Connect some tree lines

Figure 20: Vision for the urban forest characters

Distinct districts

Implementing the vision

Figure 21 shows how the districts around Lisa's route to work could look like when the vision is implemented. It becomes clear that each district has its own kind of urban forest with its own character.

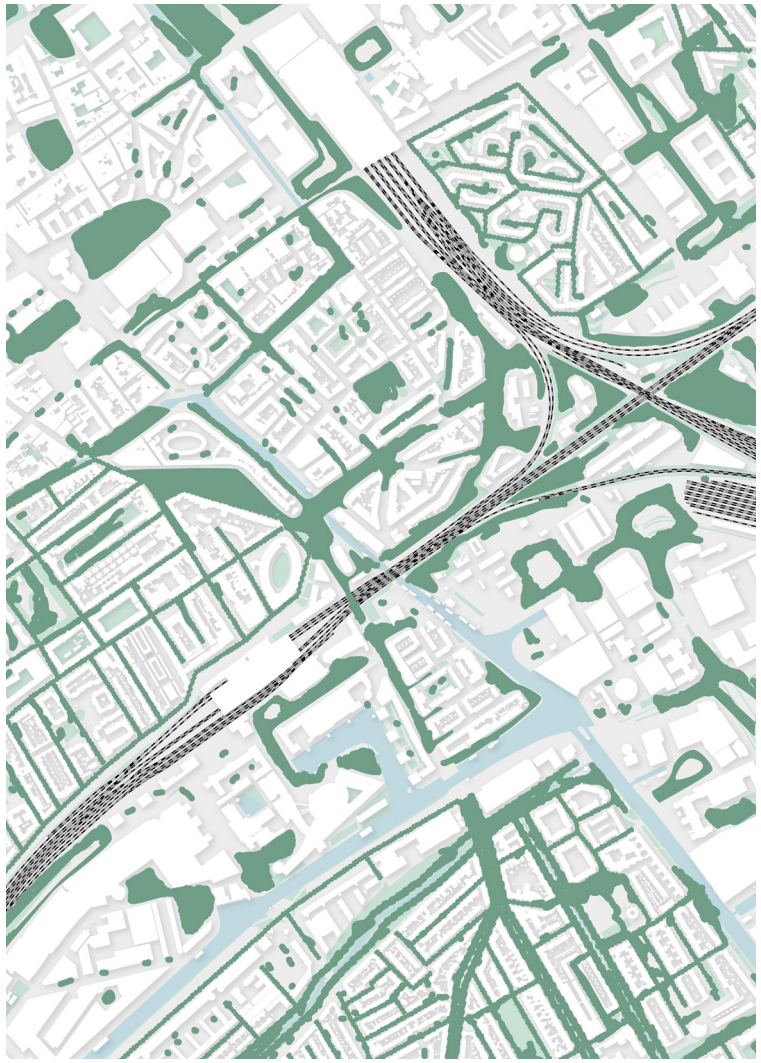


Figure 21: A schematic view of the implementation of the vision for the districts

Toolbox for districts

Design principles

The design principles that are used for the districts are summarized within a toolbox.

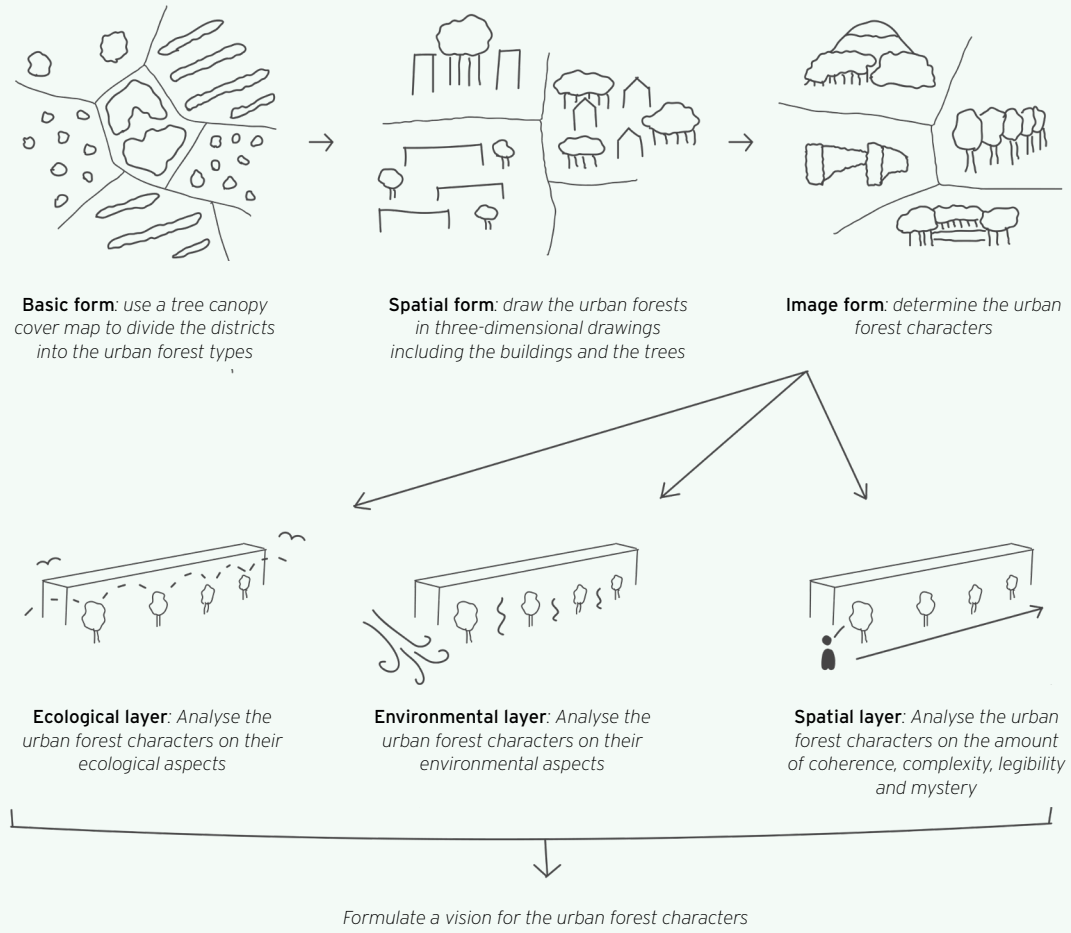


Figure 22: The toolbox for districts

3

Integrated experience: Living

Aspects of living

Working with the districts' character

Choosing a strategy

For the design of the realm of experience of living a strategy to work with the districts' character should be found. There are roughly three ways to do this:

1. Design in line with the current character
2. Design in contrast with the current character to create an exception within the district
3. Design an exaggerated version of the current character

Most of the time the first strategy should be chosen, because otherwise the character of the district will get lost. The second strategy should only be chosen if the urban grid of the location already forms an exception in the current situation. These exceptions cannot make up more than 10% of the surface area of the district. The third strategy should be chosen when there is a lot of open space and there is an opportunity to exaggerate the current character.

Methods of the nature diagram

Within the chosen strategy for the design of the urban forest in the realm of living, multiple methods to help people become aware of their connection to nature should be used. These methods are part of the nature diagram that was introduced in the introduction, but not all of the methods of the diagram apply to all three realms. In figure 23 the methods that apply for the realm of living are shown and these will be elaborated on in this chapter.

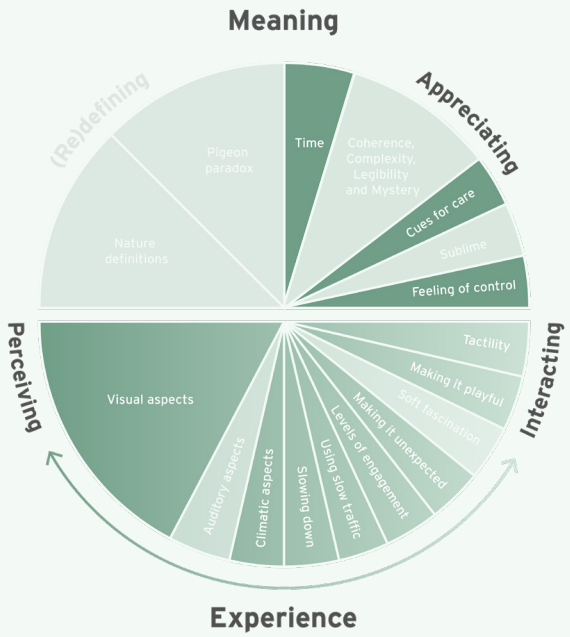


Figure 23: The methods of the nature diagram that apply to the realm of living

Designing multiple tree lines

An exaggerated version of the current character

The Zuigerstraat is located in the linear production forest, so there are three ways to design with this character:

1. Design multiple tree lines
2. Design an opposite arrangement of a straight line, such as clusters or an organic line
3. Design thick dense tree lines

The Zuigerstraat is not an exception in the urban grid and there is not a lot of open space, so the first strategy is chosen to enhance the character of the district.

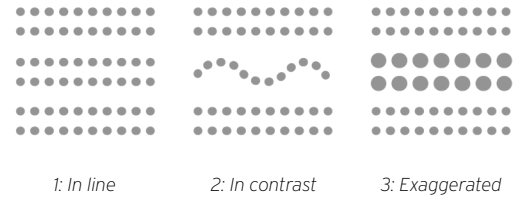


Figure 25: The three possible strategies to work with the character of the linear production forest in diagram

Figure 24: The Zuigerstraat in its surroundings (current situation)

Cues for care

Helping people adapt

People tend to dislike 'wild' nature, such as messy flowers and native plants that can be perceived as weedy and neglected. A way to help people adapt to new urban nature are cues for care (Nassauer, 1995). These cues for care can be seen as signs that show people that someone cares for the landscape, which helps people realize that messier nature can be cared for as well. These cues can be something small like a bench or a bigger structure like a wooden board walk.

Every landscape can be put somewhere on a gradient which shows the balance between the amount of care and the perceived naturalness of the site. On one hand you can have a really messy natural site and on the other hand a formal and well maintained traditional garden. If you want to make a natural landscape in which you add cues for care it will end up somewhere in the middle of the gradient and that is what people are more likely to be able to appreciate. This will differ between individuals and different cultures but it can be seen as a guideline.

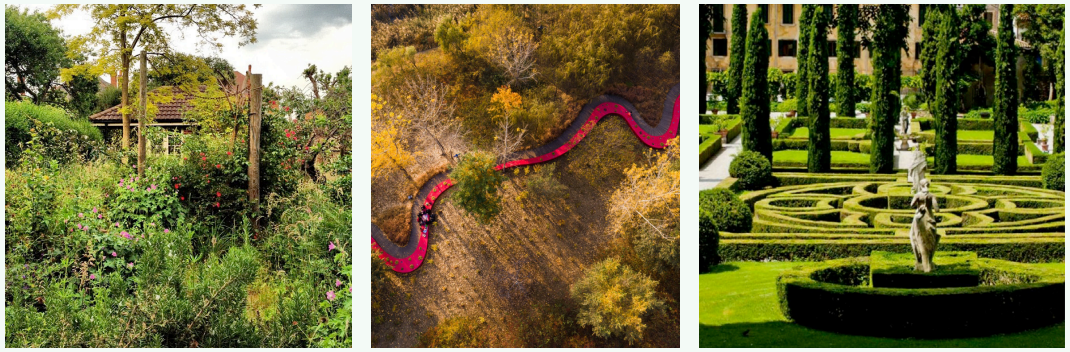


Figure 26: The gradient of the cues for care (Source unknown) (Turenscape, 2020) (Pavel, n.d.)

Red Ribbon Park

A path as cue for care

A precedent that uses a cue for care is the Red Ribbon Park in China. This used to be inaccessible wilderness with a lack of care, but when they added the formal red pathway they found a balance between the formality and the amount of care.

Figure 27: Pictures of the Red Ribbon Park (Turenscape, 2020)

Architects: Turenscape
Location: Qinhuangdao City, China
Date: 2008

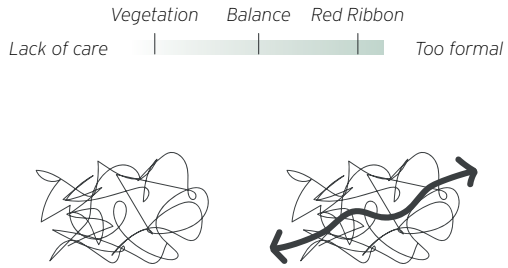


Figure 28: The cue for care of the Red Ribbon park in diagram

Estate the Tempel

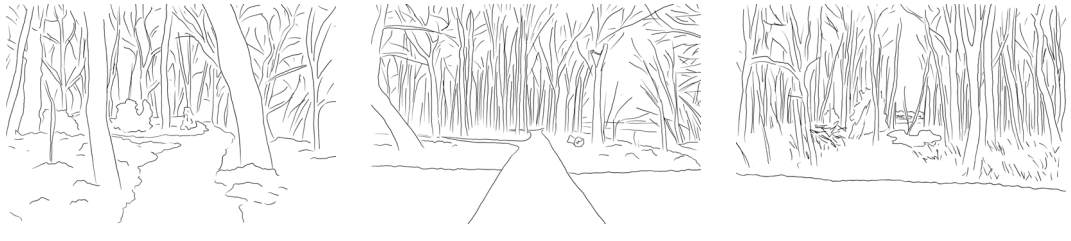
Small interventions as cues for care

Another precedent that uses cues for care is Estate the Tempel in Rotterdam. This is an old abandoned estate that has recently gotten some care by the plan of B+B landscape architects in which they designed small interventions such as bridges, fences and benches.

To show the effect of these interventions some scenes from the Estate are drawn with and without the interventions. By taking out the interventions it becomes clear how much they influence how its surroundings are perceived.

Architects: B+B landscape architects
Location: Rotterdam, the Netherlands
Date: 2015

With the cues for care



Without the cues for care

Figure 29: The path with cues for care and the path without the cues for care

Using an existing structure

A former parking grid as cue for care

Lisa's street is currently dominated by cars, due to a wide road and a high amount of parking spaces. This presence of the car gives a clear structure to the street with a rigid grid. When the street will be transformed to make people more aware of their connection to nature the grid of the parking spaces will be used to give a clear and known structure to the new developments and thus to provide a cue for care.

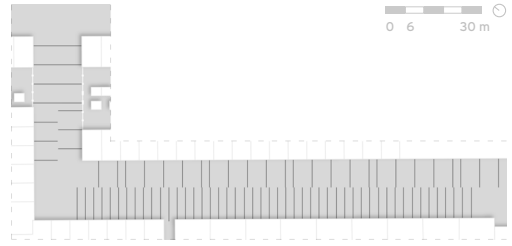


Figure 30: The grid of the current parking structure

De Nieuwe Ooster

Combining a grid with an organic path

The third phase of cemetery De Nieuwe Ooster contains of a linear grid of the scatter gardens and has an organic path that forms a contrast with this grid. By using an organic path through the grid you experience the rigidity of the grid more intense then when the road would have followed the grid.

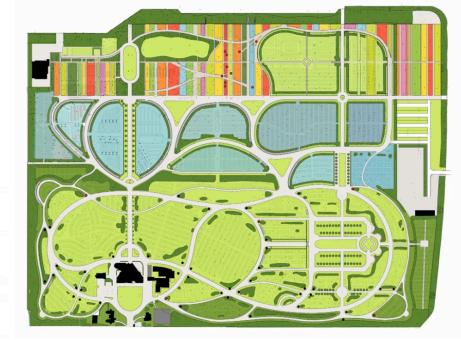


Figure 31: Plan view of De Nieuwe Ooster with the third phase as the upper part (Karres en Brands, 2005)

Architects: Karres en Brands
Location: Amsterdam, the Netherlands
Date: 2005

Figure 32: Aerial and eye level view of the grid (Rod'or, 2011)

Stimulating people to go outside

Physical and mental health benefits

To make people aware of their connection to nature they should first be stimulated to go outside. But that's not the only reason to stimulate people to go outside, it also has multiple physical health benefits such as an increase in vitamin D production, increased immunity, improved sleep quality and more exercise (Swiner, 2021). Next to these physical health benefits there are also mental health benefits: it lessens anxiety, improves focus, boosts creativity, helps improve ones self esteem and increases social interaction (Swiner, 2021).

Slowing down

Quality travel time over quantity

Currently a lot of traffic issues are looked at from a point of view of a constant need to decrease travel time. But partly due to an increase of working at home during the COVID-19 pandemic it became clear that despite the fact that there was a huge decrease in travel time this did not necessarily make people more satisfied and that they missed the time outside to clear their head, especially if this time was spent walking or on a bike (Rubin et al., 2020). So what would happen if we focus on the quality of the travel time instead of on the quantity?

One way to do this is to realize that traffic has taken over the public space and that there are other options to arrange our streets (Verkade & Brömmelstroet, 2020).

Slow traffic usage

Making the world pedestrian orientated

One way to stimulate people to go outside and to literally slow them down is to stimulate slow traffic usage, so stimulating walking and cycling instead of taking the car.

In 2019 a survey was held under the citizens of Rotterdam to get insights about walking preferences in the city. Some key results were:

Reasons to enjoy walking in specific areas:

- Space to walk
- The green surroundings
- Minimal nuisance from cars and/or other motor traffic

Reasons for areas that are less popular to walk in:

- Unpleasant proximity to cars and/or other motor traffic
- Not a pleasant location to be in
- Lack of greenery
- Poor air quality

The most frequently stated improvements were:

- Provide more or better green
- Block car access or give cars a lower priority
- Give more space or priority to pedestrians
- Give more thought to cohesion at route level and road signs
- Arrange better maintenance of pedestrian facilities and better paving
- Improve crossings

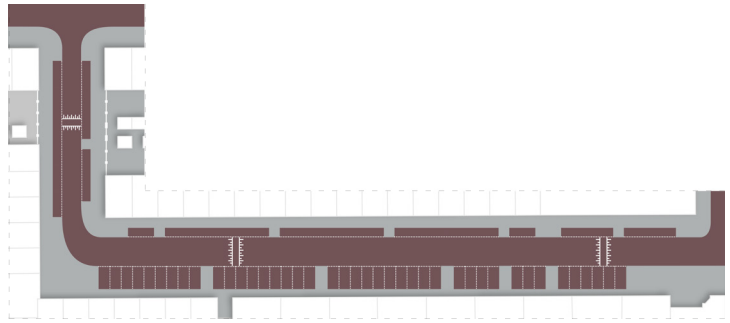
(Rotterdam Walk, 2019)

From car oriented to pedestrian oriented

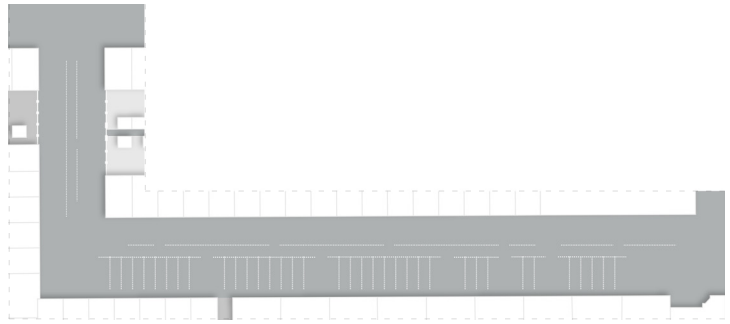
Measures

To stimulate the usage of slow traffic the street will develop from a car oriented street into an pedestrian oriented street with a few measures:

1. All of the parking spaces will be given back to the pedestrians
2. The main road will be narrowed
3. The car will become a guest
4. New residents will not get a parking permit



Current situation



New situation

Figure 33: Car and pedestrian oriented areas in the current and new situation

The feeling of control

Participation

A way to help people connect to nature is to give them personal control of space (Church, 2018), because it is a human desire to be able to control your environment and a lack of control can lead to a decrease in motivation (Beemer et al., 2019). So people are more likely to accept and be happy with changes when they have the feeling they can influence and actually choose them. So that is why participation should be a part of the design.

Creating space

A first step to facilitate participation in a design is to create a space where this is possible. A way to do this is to reserve specific spots in the design where the participation can take place.

Setting boundaries

When creating a space you set literal boundaries, but when it comes to the content of the space there are also certain boundaries needed. These can be formulated in a set of rules or guidelines that the participants should follow.

Backup plan

When incorporating participation in a design it should be realized that there is always a chance that there will be less people than you anticipated that are willing to participate. This means that there should be a backup plan in place for the space that is left and will not be used in the participation.

Parameters

To get an image of how the design can evolve during the participation process it is good to create an overview of all the parameters that influence the end result. In this way you can evaluate the plan and make changes in the guidelines if there is a possible outcome that you would like to change.

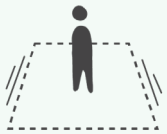


Figure 34: Create space for participation

Giving control over a part of the street

Former parking spaces for adoption

There are currently 71 parking spots in the street and to increase the participation of the residents these parking spots will be up for adoption. Residents can decide for themselves if they want to adopt a spot which can then turn into a garden. They are free to do with their spot want they want if they follow two rules:

1. The ground should stay open, so pavement can not be used
2. If there is a tree in the spot, it should be cared for

So for instance they could turn it into a small lawn to sit, they could make a kitchen garden or plant flower beds. And since not only giving people personal control helps increase nature connectedness but providing opportunities for hands on work as well (Church, 2018) the adoptable gardens are a efficient way to increase nature connectedness.

The plan for unadopted spots

There's a big chance that not all 71 spots will be adopted, so there should be a backup plan for the unadopted spots as well. This backup plan will be different for the different phases of the design, so this will be elaborated further when the phases are elaborated on page 78.

Endless outcomes

Due to the high percentage of surface area of the street that can be filled in by the residents the design can have endless outcomes. There are three parameters that will influence the end result:

1. The amount of spots that will be adopted by the residents

The street will look different if all spots are adopted or if no spot will be adopted at all.

2. The things they do in their adopted spots

The street will look different if people turn their spots into carefully mowed lawns of if they are wild and spontaneous flower fields.

3. The amount of times the adopted spots will change owners

The street will look different if the spots will never change owners and the gardens can mature or if they change owners every year and they stay young.

These parameters make the design flexible for different outcomes and make that the street will never be done developing.

The influence of light and temperature

Designing diverse micro climates

When stimulating people to go outside the influence of light and temperature should not go unmentioned. People behave differently in different micro climates but their behaviour also depends on their individual preferences. The contrast between these individual preferences can be seen clearly during summer: there is a group of people that is attracted to open spaces in the sun and there is a group that is attracted to the shady parts under the trees.

This is the reason why you cannot make specific guidelines for which condition is preferred to the other, but there is one thing that does become clear: it is a high diversity in micro climates that is needed to make a space attractive for a big target group.

Step 1: Sun analysis current situation

To be able to make a design that works with the influence of light it should first be made clear how the light works in the current situation. A way to do that is a sun analysis on multiple times throughout the day and throughout the seasons.

Step 2: Conclusion sun analysis

To be able to work with this sun analysis a conclusion map should be made. Things that could be included in this map are spots with a lot of sun, spots with very little sun, spots with morning or evening sun, spots with winter or summer sun etc.

Step 3: Implications for the design

To use the conclusion map for the design it should go one step further and show the implications for the design. Are there spots that should keep receiving sun? Or should they be blocked from the sun? Are there spots that already get no sun at all? These type of questions should be answered in this map.

Figure 35: Steps to use the influence of light and temperature in the design

Using the light to establish a design

Step 1: Sun analysis current situation

The days that are chosen for the sun analysis of the street are December 15 (winter), March 15 (spring), June 15 (summer) and September 15 (autumn). These days will be looked at on four different moments: 9:00, 12:00, 16:00 and 20:00.

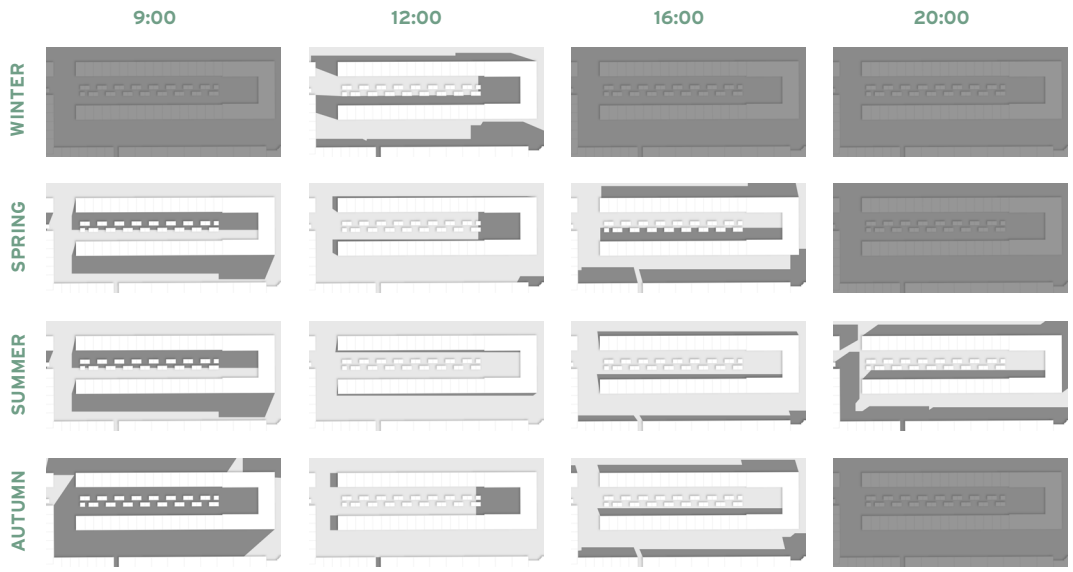


Figure 36: Sun analysis of the current situation

Step 2: Conclusion sun analysis

From the sun analysis different kind of spots can be determined:

Spots with:

- A lot of sun
- A lot of shadow
- Morning sun
- Afternoon sun

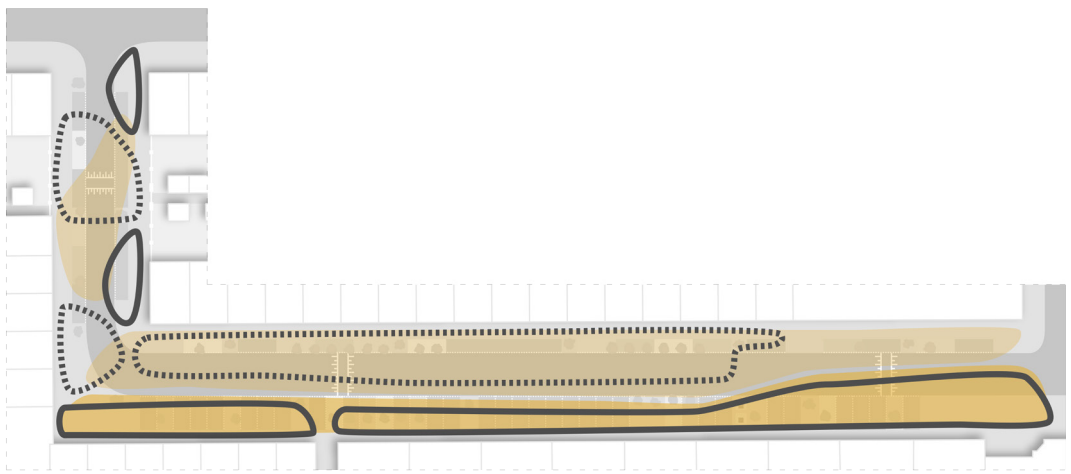


Figure 37: Conclusion sun analysis

0 3 15 m

Step 3: Implications for the design

The different spots have different implications for the design:

1. Spots with a lot of sun should (partly) stay open so that there will always be sun somewhere in the street. These spots are also ideal to stay (partly) open so that residents can choose do to something in the sun.
2. Spots with a lot of shadow do not have to stay open since they already have a lot of shadow. This means that they can for instance be planted with trees without having to worry about the light in that spot (but do not forget their influence on other spots in the design).
3. The used vegetation should be chosen based on their location, so plants that prefer the sun in the sunny spots and plants that prefer shadow in the spots with a lot of shadow.

The parts that should stay open can not be completely planted with trees, but there are still ways to add trees without taking away all the light:

1. Keep open spots between group of trees
2. Use lower trees
3. Use trees with slender canopies
4. Use trees that are leafless in winter
5. Use trees with transparent canopies

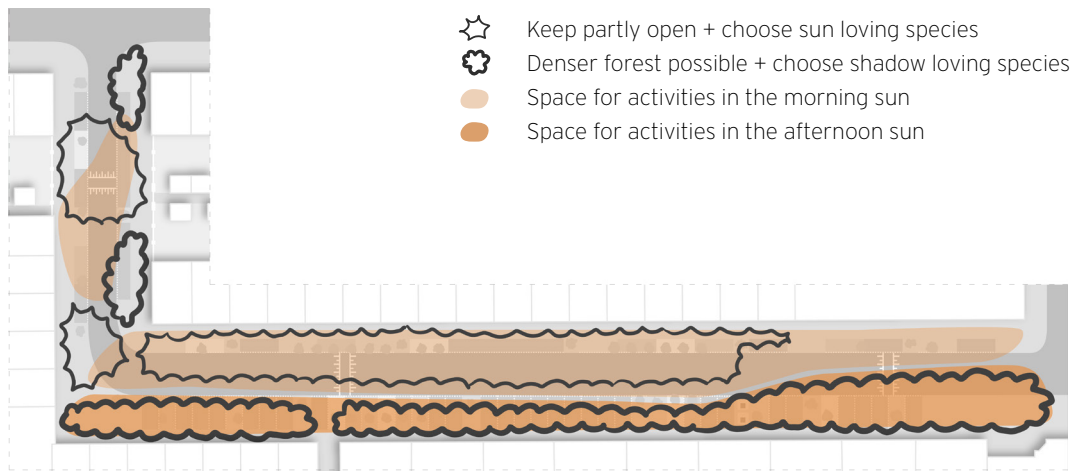


Figure 38: Implications for the design

0 3 15 m

Create a new type of street

Asking the right questions

To help people experience their daily living environment in a new way and to make it unexpected a new type of street should be created. To be able to do this it is important to think about what is needed in the street (and what is not) without being influenced by what is 'normal' or what we see every day.

Questions that should be asked are:

1. Should different users be seperated? Or can they share spaces?
2. Is a path that goes along the buildings needed? Or can it be detached from the facade as well?
3. Is a clear distinction between places to move (roads and paths) and places to stay (squares) needed? Or can the usage change through time?
4. Can spaces have multiple functions through time? Like parking spaces that can be spaces to play when they are empty?
5. Can public space become a mix of public, collective and private spaces?

By answering these questions and looking critically at how the street can reach its full potential without being blocked by known structures a more distinct and fitting design for its context will be reached.

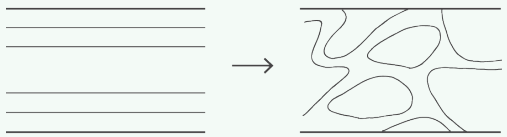


Figure 39: Create a new type of street

A new Zuigerstraat

Thinking outside known structures

By answering the questions to think outside the known structures the new design of the street is created, which can be seen in figure 40 below.

The path in the middle will be used by pedestrians, cyclist and the car (as a guest). By making the main path available for pedestrians as well the sidewalk along the buildings is not needed anymore. So instead of a linear and monotone space along the buildings there is now a path orthogonal to the front doors that connects a smaller piece of sidewalk to the main path in the middle of the street. By doing this there is more space available for the adoptable gardens and the border between the street and the buildings becomes less rigid.

All of the paved areas are made with the same permeable material, which makes the distinction between the spaces to move and the spaces to stay less definite. This means that if there is more space needed to move at a certain time this can be taken and if there is more spaced needed to stay this can be taken as well, so the street becomes adaptable to different peak moments in usage.

The squares are public spaces but can become more collective when the space will be appropriated by the residents. The adoptable gardens will be private but nonetheless they will stimulate contact between residents since the private spaces are clearly visible in the public space. So by adding private spaces the street will actually stimulate more social contact then when the street would be completely public.

High variety in outcomes

And as explained on page 51 these private gardens make the street flexible and open for different outcomes. In figure 41 on the next page the high variety between these different outcomes is illustrated.

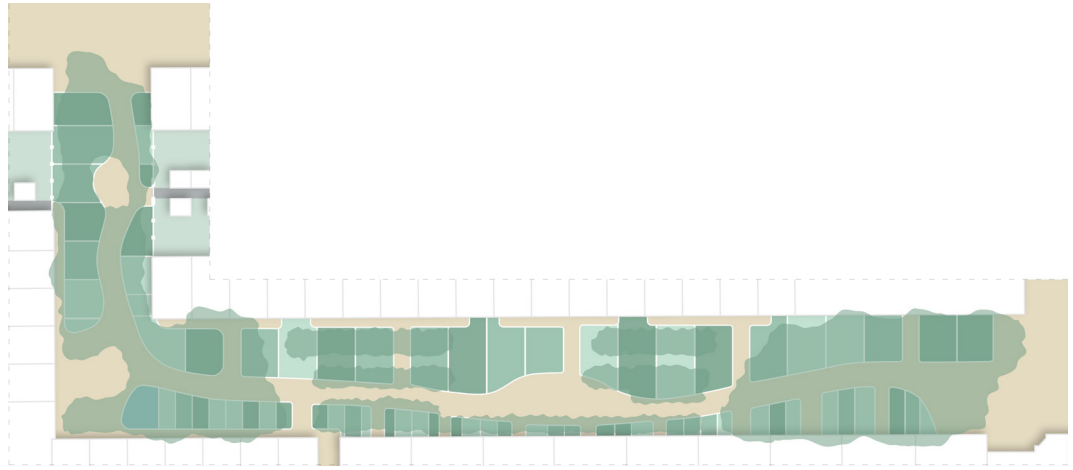


Figure 40: The new design of the street

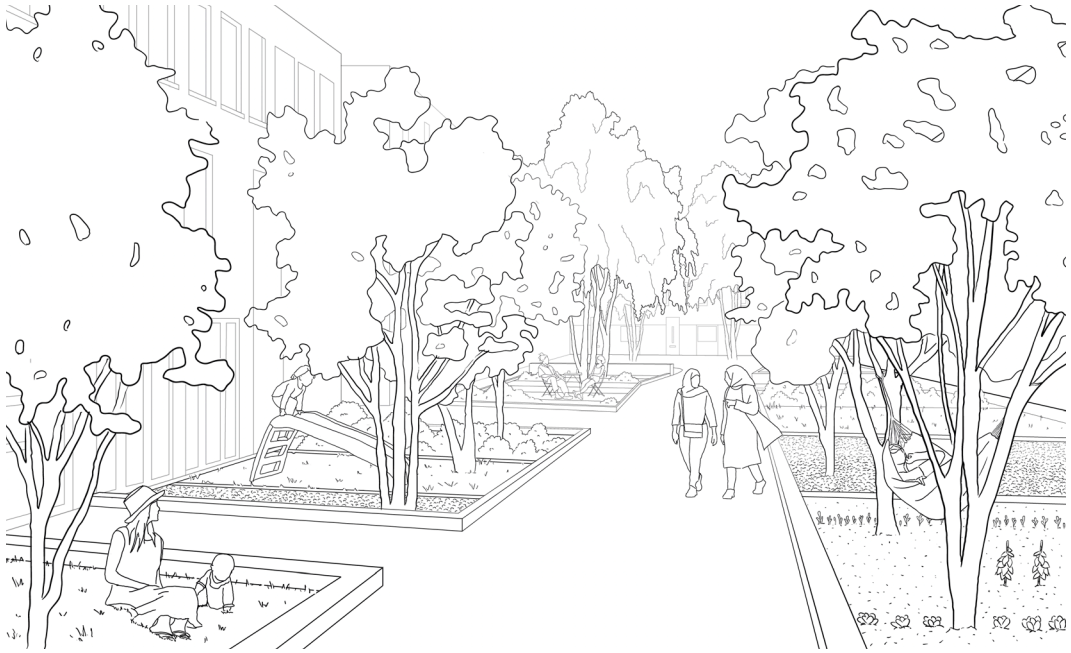


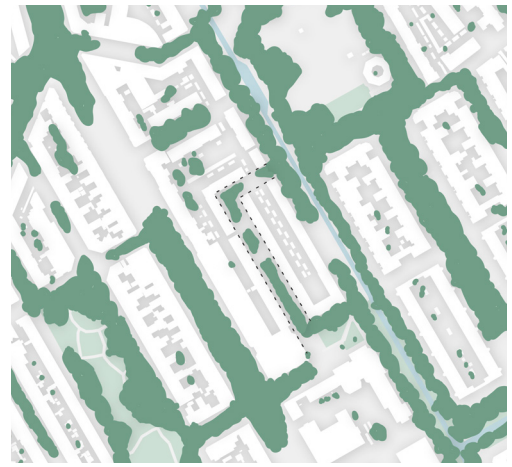
Figure 41: Two possible variations of the content of the adoptable gardens

The design in its context

A linear production forest

As mentioned before the design will be in line with the districts character of a linear production forest. In figure 42 below you can see what this looks like in the current and the new situation.

Current situation



New situation

Figure 42: The Zuigerstraat in its context of the linear production forest

0 40 160 m

Levels of engagement: making it playful

Design spots throughout a gradient

When you want to make people aware of their connection to nature it is important that you not only reach the people that are already interested in nature but that you also reach people that are not interested in nature at all. Therefore it is important to create diverse experiences to include different social groups (Clayton et al., 2017). A way to do this is to design a space that contains spots that fit within a gradient: spots that use the natural setting as backdrop on one side of the gradient and spots that use the natural setting as forefront on the other side.

Attracting more target groups

Even people with a low interest in nature will get temped to enjoy an evening in a natural setting if they can do something that they actually are interested in. So by providing space for activities that do not necessarily connect to nature (for instance: having a barbecue or doing yoga) you can make the street more accessible for different target groups and help them in their first steps of becoming more aware of their connection to nature.

Figure 43: The gradient of different ways of being in nature

The difference in space

The spots throughout this gradient have a different way of working with nature. On one end the nature will be the space around you and you will have no contact with the natural processes that are going on. So this could for instance be a small square surrounded by trees where you can sit and read a book. On the other end of the gradient nature is the thing that you interact with, so you will actually have contact with the natural processes. This could for instance be a kitchen garden where you care for your own vegetables. These different ways of being in nature will make people aware of their connection to nature in different ways and will thus reach more people within different target groups, due to its variety in means.

Multifunctional elements

Not only the spaces themselves but the elements in it should be open for interpretation too. So when you add an element like a wall it should be designed in such a way that in can be used in different ways by people, plants and animals.

Different light situations for different activities

Another aspect that influences the possibility of activities is the amount of light when the sun is down. Therefore three light situations should be created: spaces without light for animals, spaces with ground level lighting for moving and spaces with above ground level light for gathering.

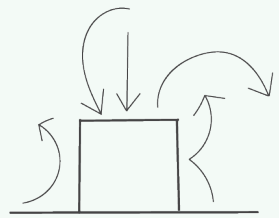


Figure 44: Make elements multifunctional

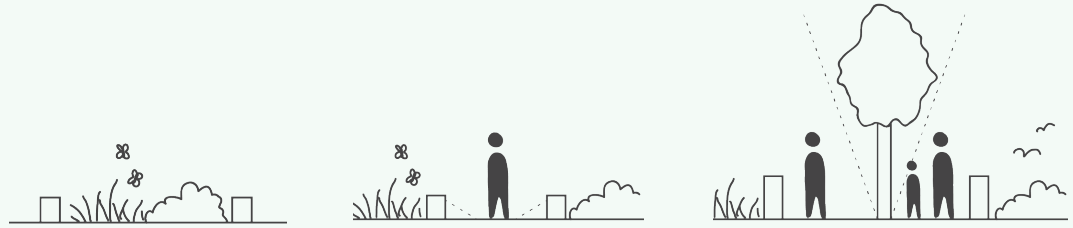


Figure 45: Different light situations for different users and activities

Making a space for everyone

Squares and adoptable gardens

For the people with a low interest in nature three squares will be created (on the spots that have been determined with the sun analysis), where they can do an activity that fits with their interests and where the (adopted) gardens will fit as natural backdrop. The adopted gardens will function as space for the people that have a higher interest in nature, where they can interact with nature by growing plants themselves and actually touching the soil.

Multiple usages

Creating spaces within a gradient for different target groups is not about separating target groups, but about providing space for different usages and thus different target groups. By keeping the design open for interpretation a separation of the groups is prevented and they will mix in daily life. Someone with a low interest in nature can also adopt a garden and keep it as a simple lawn to put a chair to sit in the sun and someone with a high interest in nature can also be on the square and talk with neighbours about their gardens. It's about making a space that provides opportunities for all target groups and that is not restricted to one usage.

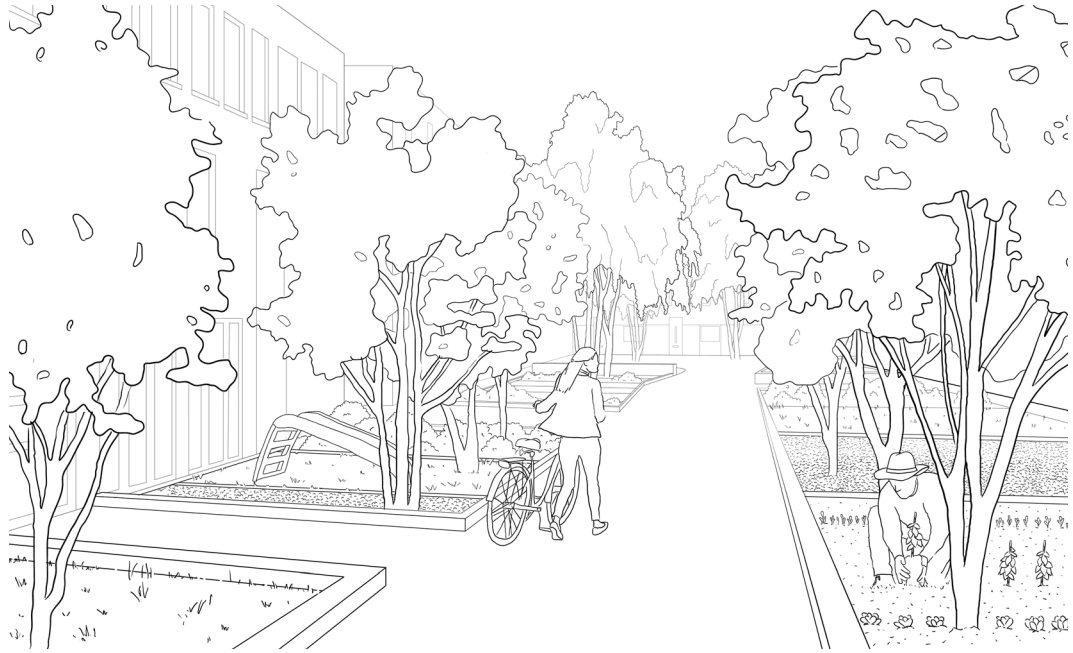


Figure 46: The adoptable gardens

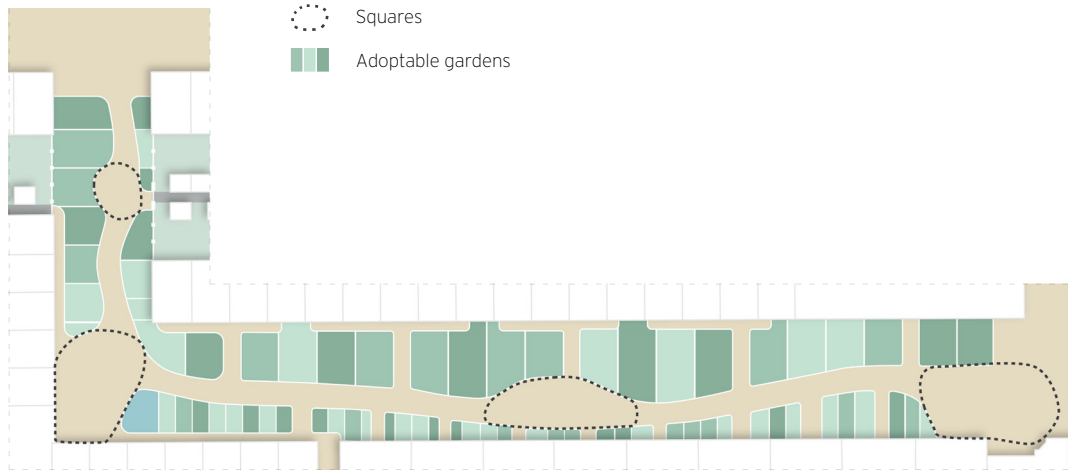


Figure 47: Location of the squares and adoptable gardens

Activities on the water square

One of the squares is a water square, which will be elaborated on more on page 88. This square can be widely interpreted so on a hot summer day you can for instance encounter the activities you can see in figure 48 below. Lisa is reading a book and talking to Omar in two garden seats they brought themselves. One of Yuki's moms is barbecuing for her friends that sit on a picnic table they bought with a few neighbours and placed on the square. Yuki herself is pumping water in a watering can to give some extra water to her favourite plants in her garden, while some other kids are playing in the water square. These activities are only one example of how the square can be used and appropriated by the residents of the street.

Guiding activities with light

To prevent light nuisance for the animals during the night only the path and the squares will be lighted up. The path will be lighted by a light strip that is incorporated in the brick wall, which can be seen on page 67. The squares will be lighted up by lights that shine from below to the tree branches and the canopies. By doing this the path is lighted up on the ground level, which will help while moving through the street and the squares are lighted up above ground level, which makes it possible to gather on the squares even when it is dark. So by using different light situations spaces for different activities and users are created: no light in the gardens for the animals, ground level light on the path for moving and above ground level light on the squares for gathering.

Figure 48: The water square

Meeting nightly visitors

These different light situations make it possible for Lisa to experience nature when the sun is down as well. One evening when she comes back from a night out she hears a noise in one of the gardens and then sees a little hedgehog running from one garden to the other. If the gardens would have been lighted up as well the chance that the hedgehog would have been there would have been much smaller, so this light situation makes it more likely to see nightly visitors which is another opportunity to feel more connected to nature.

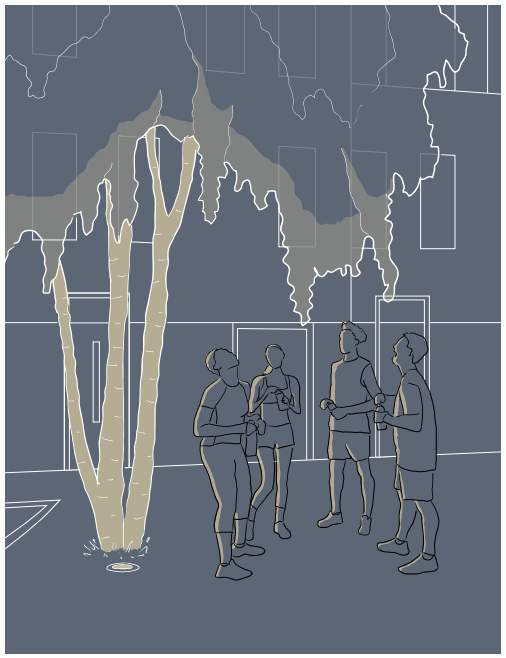


Figure 49: The lighting on the trees on the square

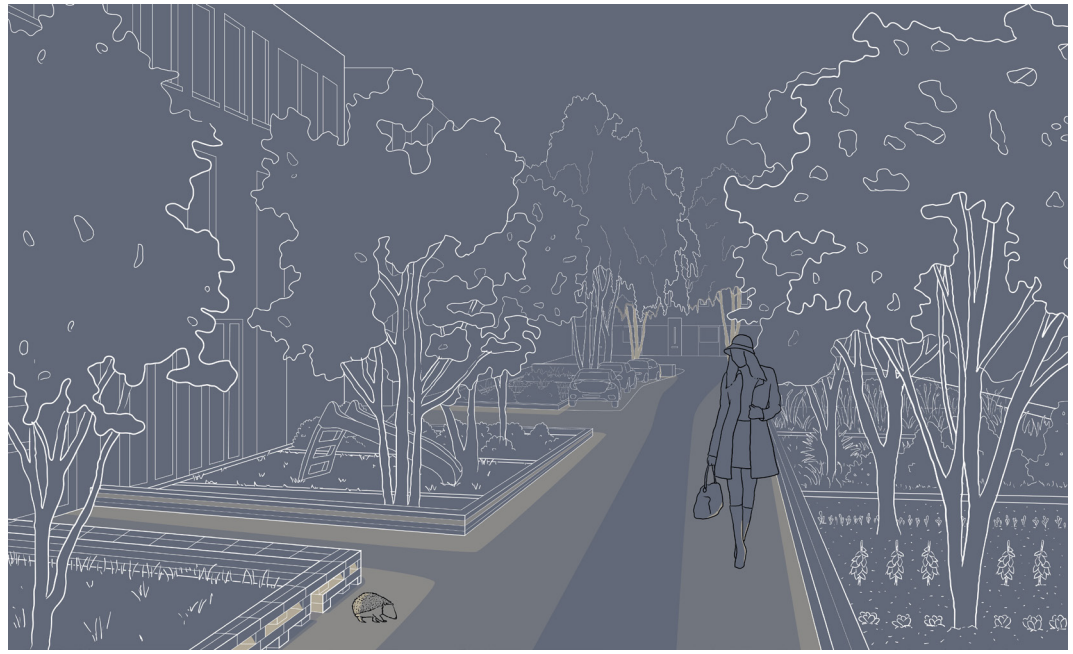


Figure 50: The lighting on the path in the front and the lighting on the trees at the square in the back

Red Ribbon Park

Architects: Turenscape
Location: Qinhuangdao City, China
Date: 2008

A minimal design with multiple usages

Even though the design of the red ribbon is minimalistic the amount of ways to use the red ribbon are diverse. Even by only looking at pictures of the project 10 different ways of usage could be extracted. This is thus a great example that a minimal intervention can sometimes achieve more and can attract a broader audience because everybody can interpret the project in their own way and use it the way it suits them.

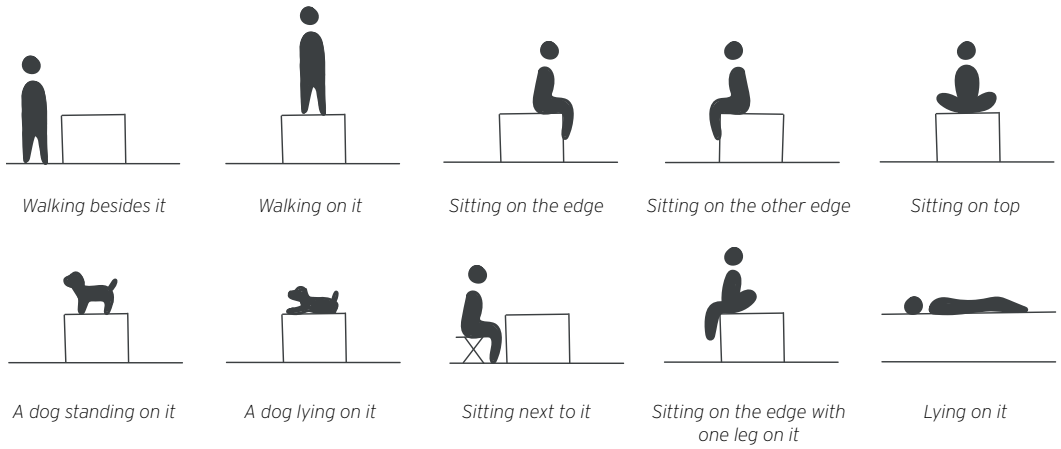


Figure 51: Different ways to use the Red Ribbon in diagrams

Figure 52: Different ways to use the Red Ribbon in pictures (Source: Turenscape)

A wall with different variations

On the boundaries of the gardens there is a threshold that comes in different variations. Some of these variations can be seen in figure 55 on the next page. The most minimalistic one is an open street gutter (type A) that is used to transport the rainwater from the houses to the water square. This open street gutter can be accompanied by a brick wall that has holes, differences in depth and is hollow. As seen in figure 53 there is a steel frame inside the wall as supporting structure.

The smallest variant of the wall is four bricks high and can be used by kids to walk on (type B). Around the squares the wall will be higher (type C) to accentuate the squares and to function as a place to sit as well. Sometimes there is also a bench attached to this wall (type D) so that people can sit in different ways on and around the wall. By keeping the wall simple and creating different variations the wall becomes multifunctional and it can be used in different ways by people, plants and animals.

Integrated light strips

The walls that border along the paths have integrated light strips in the bricks. A small edge has been milled into the bottom of these bricks so that the light strip is not visible while walking past and the light shines on the path. The lights are placed in such a way that they only shine on the spaces that are needed to move through the street in the dark and not on the gardens to prevent that the animals suffer from it.

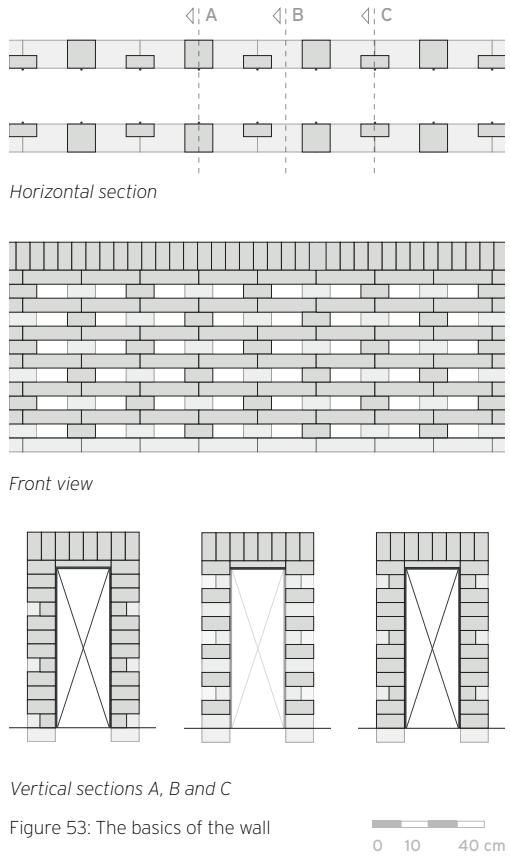


Figure 53: The basics of the wall

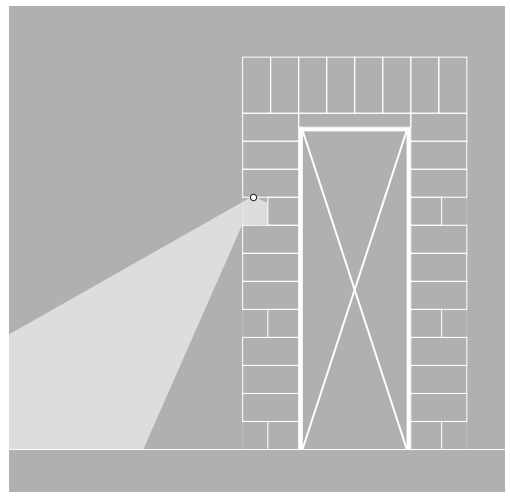
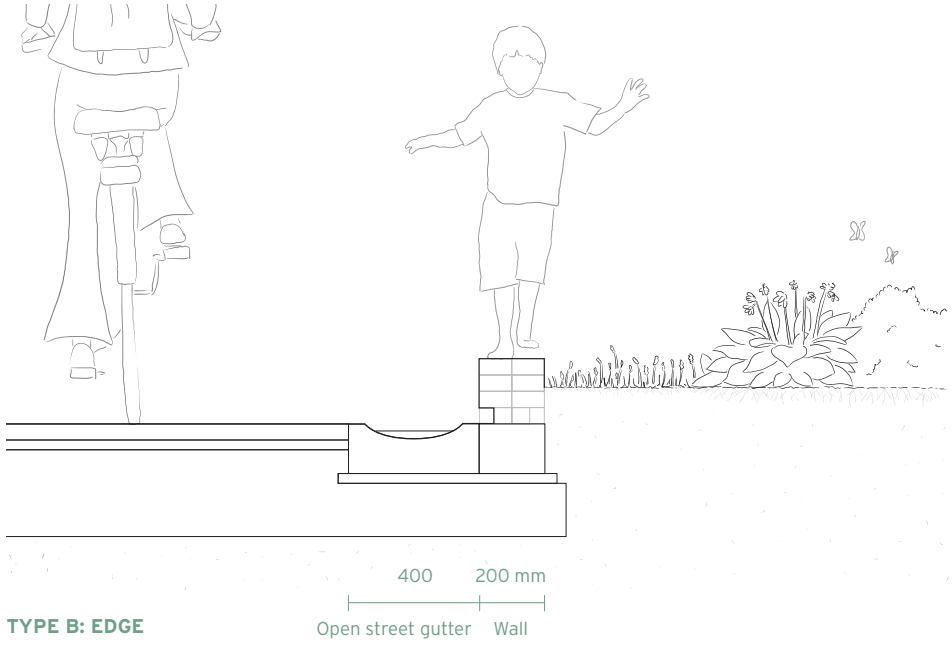


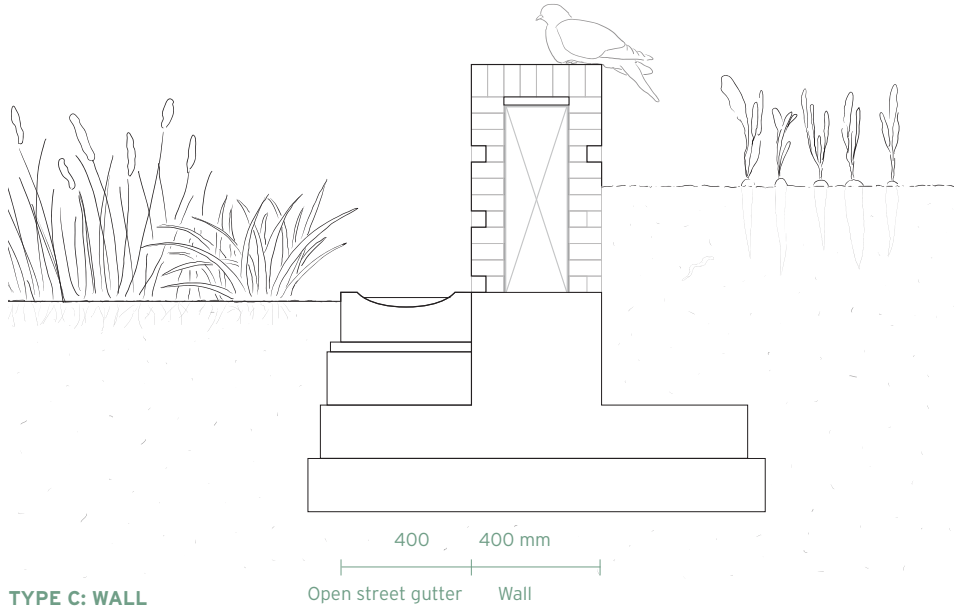
Figure 54: Integrated light strips in the wall

TYPE A: GUTTER

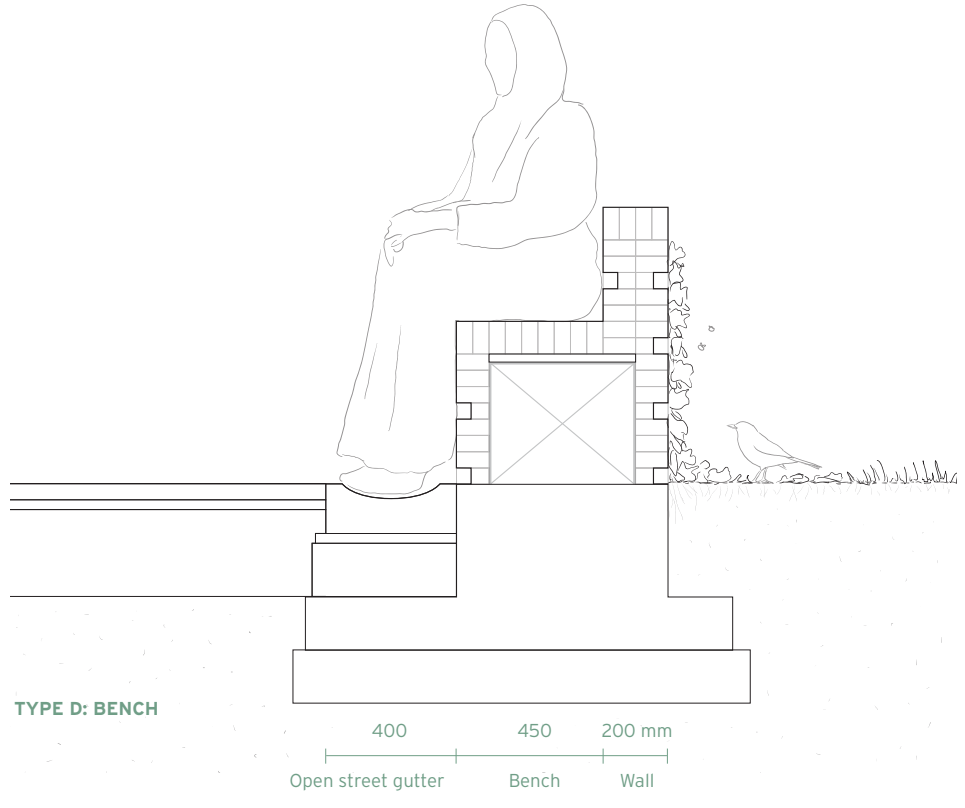


TYPE B: EDGE

Figure 55: Variations of the wall



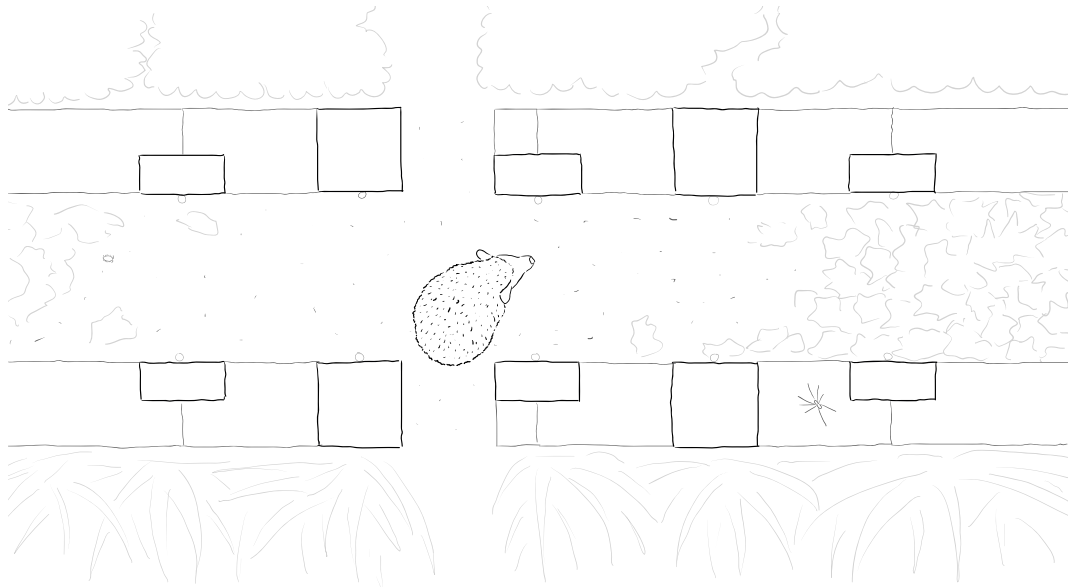
TYPE C: WALL



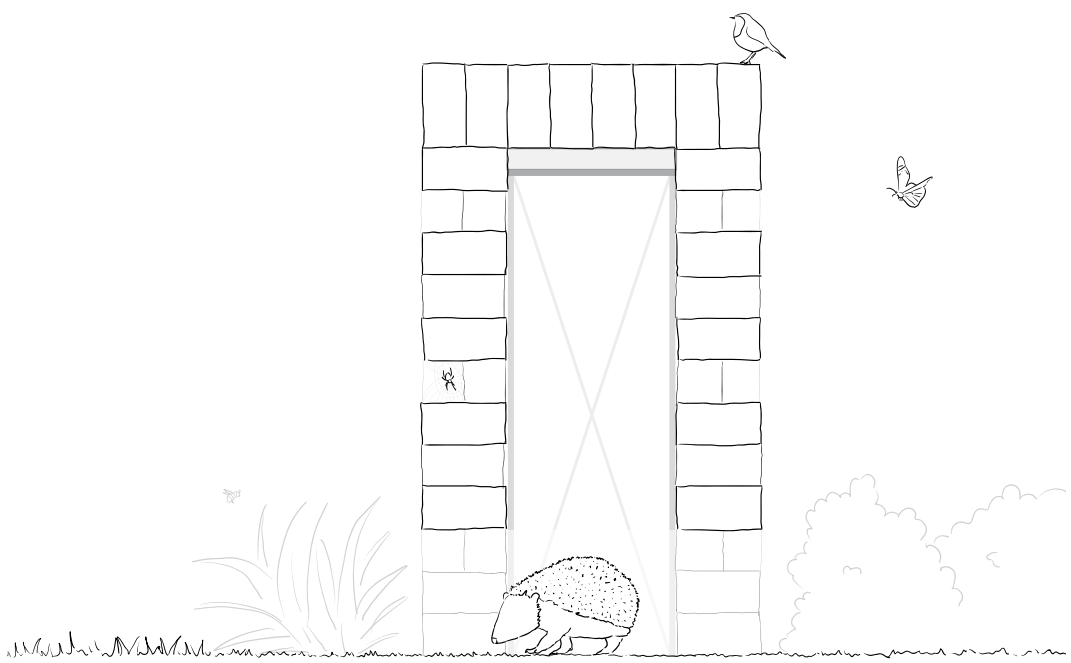
TYPE D: BENCH

Welcoming biodiversity

Due to its depth and variation the wall can be used by multiple animals as well. To show this a hedgehog is chosen as a target species because when their requirements are met, a whole pyramid of other species also benefit. So when the hedgehog feels welcome other animals will follow. To make sure that the wall does not work as a boundary for the hedgehog a small hole is created on the bottom of the wall. And since the wall is hollow the hedgehog can now enter the complete wall, so he can not only pass through it but he can also use it as a hiding place or as a place to nest. The depth of the wall creates a rich gradient of light, temperature and moisture levels which makes it an opportunity for great biodiversity.

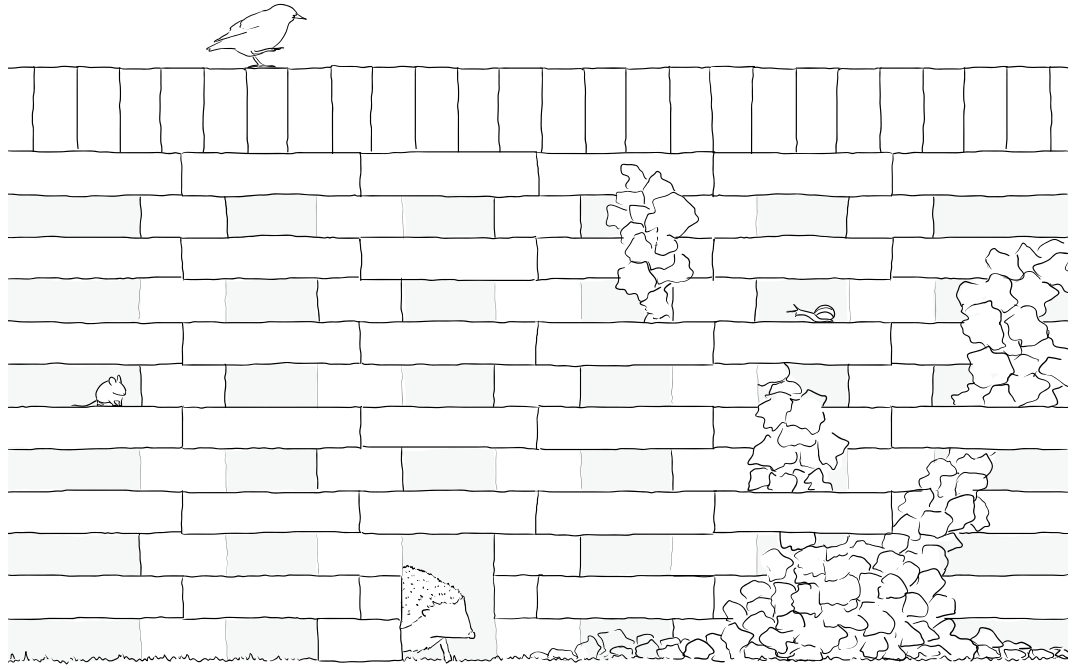


HORIZONTAL SECTION



VERTICAL SECTION

Figure 56: Animals in and around the wall



FRONT VIEW

Working with the underground

Planning around or moving the infrastructure

When you redesign an existing street you should be aware of the current underground infrastructure, this includes:

- Sewage pipes
- Water pipes
- Electricity cables
- Internet cables

These pipes and cables need regular maintenance, which means that the ground needs to be opened on these locations. During these digging activities the roots of the trees can get damaged when they are in the way. There are two ways to prevent this:

1. Plan around the existing infrastructure
2. Move the existing infrastructure

Most of the time it is the most efficient to plan around the existing infrastructure, but depending on the situation it can also be useful to move the existing infrastructure. This would be the case for instance when the infrastructure is already planned to be replaced or if the ground is already opened up due to repaving of the street.

Bundling infrastructure

When you decide to move the underground infrastructure they should be bundled in a cable box. This is a concrete box with a lid that can easily be opened. By doing this there is only one spot that has to be opened when there is maintenance needed, instead of different locations for each cable company.

Underground wall

If a tree is planted within 2 meters of the infrastructure an underground wall should be implemented to prevent the roots from growing above the infrastructure and thus preventing them from getting damaged during the maintenance.

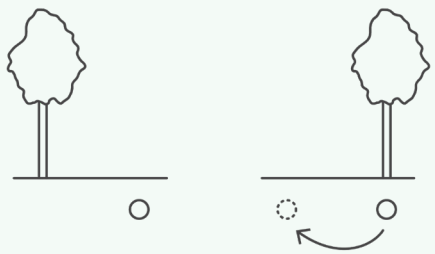
Choosing the right tree species

And lastly the right tree species should be chosen for the existing conditions. Important aspects that influence the choice of the tree are:

- Soil type
- Ground water level
- Available space above ground
- Available space underground
- Amount of light
- Amount of wind

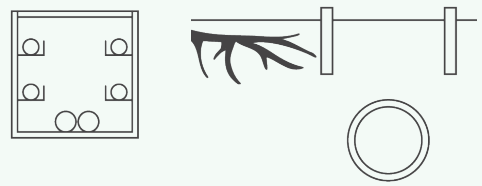
Improving soil quality

All of these measures are implemented to protect the trees and make sure that they can grow big and healthy and another important aspect to take into account to achieve this is the soil. The quality of the soil should be tested and if it is not good enough new fertile tree soil should be deposited.



1: Plan around *2: Move*

Figure 57: Strategies for underground infrastructure



Bundling infrastructure *Underground wall*

Figure 58: Protecting roots from maintenance

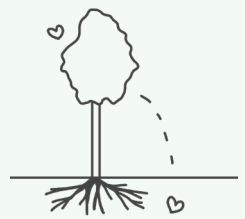
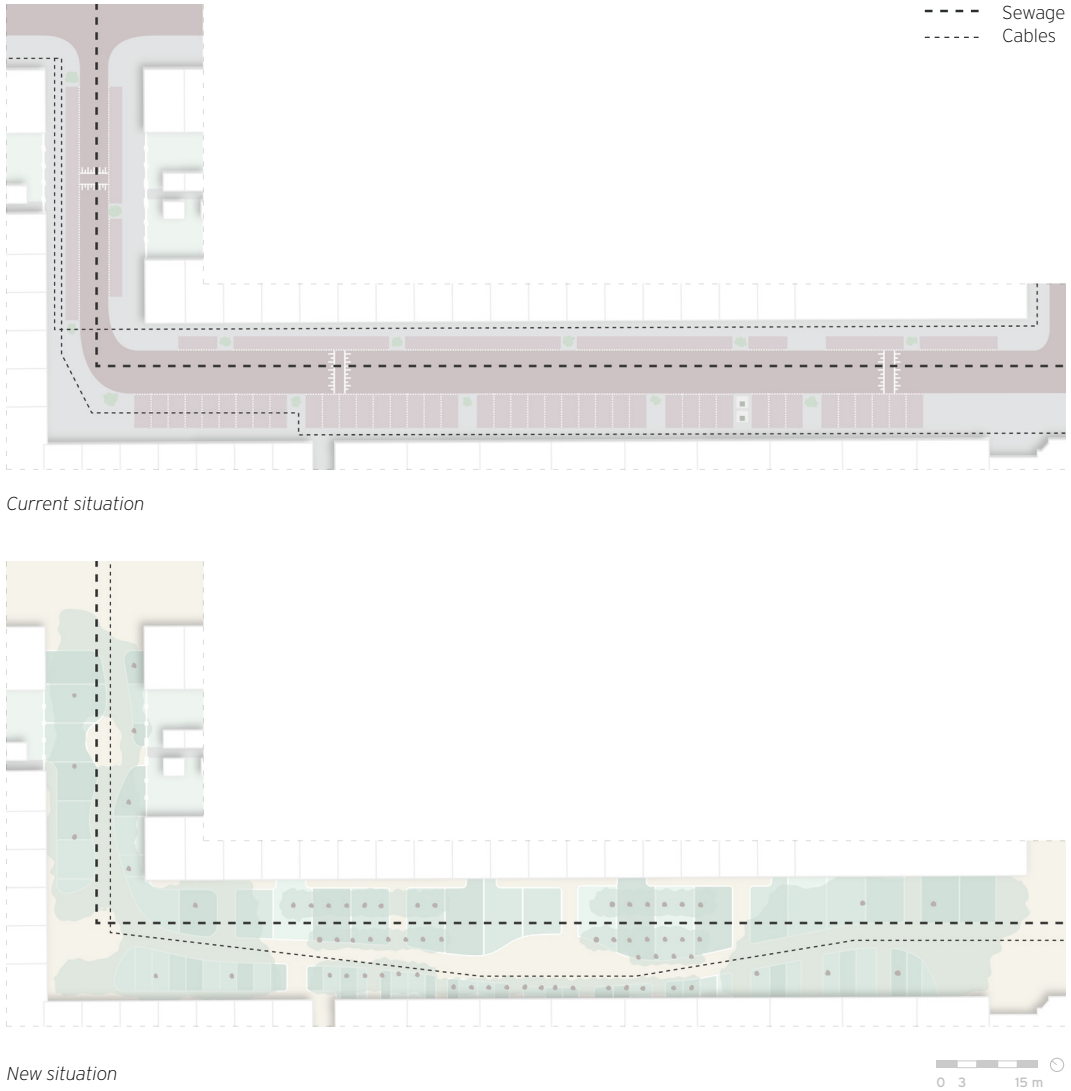


Figure 59: Choosing the right tree and improving soil quality

Working with the underground

An exception in the grid as visible connection

The sewage pipes in the Zuigerstraat have recently been replaced, so they will stay where they are and the trees will be planted around the pipes. By doing this there will be an open space in the otherwise regular grid which will make a visible link with what is happening underground.



Current situation

New situation

Figure 60: Location of the sewage pipes and cables

Cable box under the main road

When the street will be repaved the existing cables will be moved and bundled in a concrete box that follows the main road. By doing this the trees will not get damaged when there is maintenance needed for one of the cables.

An underground wall as visible connection

There are two lines of trees within 2 meters of the sewage pipe so an underground wall is implemented to prevent that the roots will get damaged during maintenance. This wall can be seen above ground which again makes a visible connection between what you can see on the ground level and what is going on beneath it. This is also helpful for gardeners to know that within these two walls the soil needs to be opened sometimes so they can keep that in mind when planting things in their garden.

Adding high quality tree soil

The current soil does not contain enough oxygen to keep the trees healthy due to compression by the high car usage in the street. Therefore the parts of the street where the trees are planted will be filled with at least 80 centimetres of tree soil.

Tree size and light preference

The part of the street with a denser grid will be planted with smaller tree species then the parts with the wider grid. And the sunny parts of the street will be planted with sun loving species and the darker parts of the street with shade loving species.

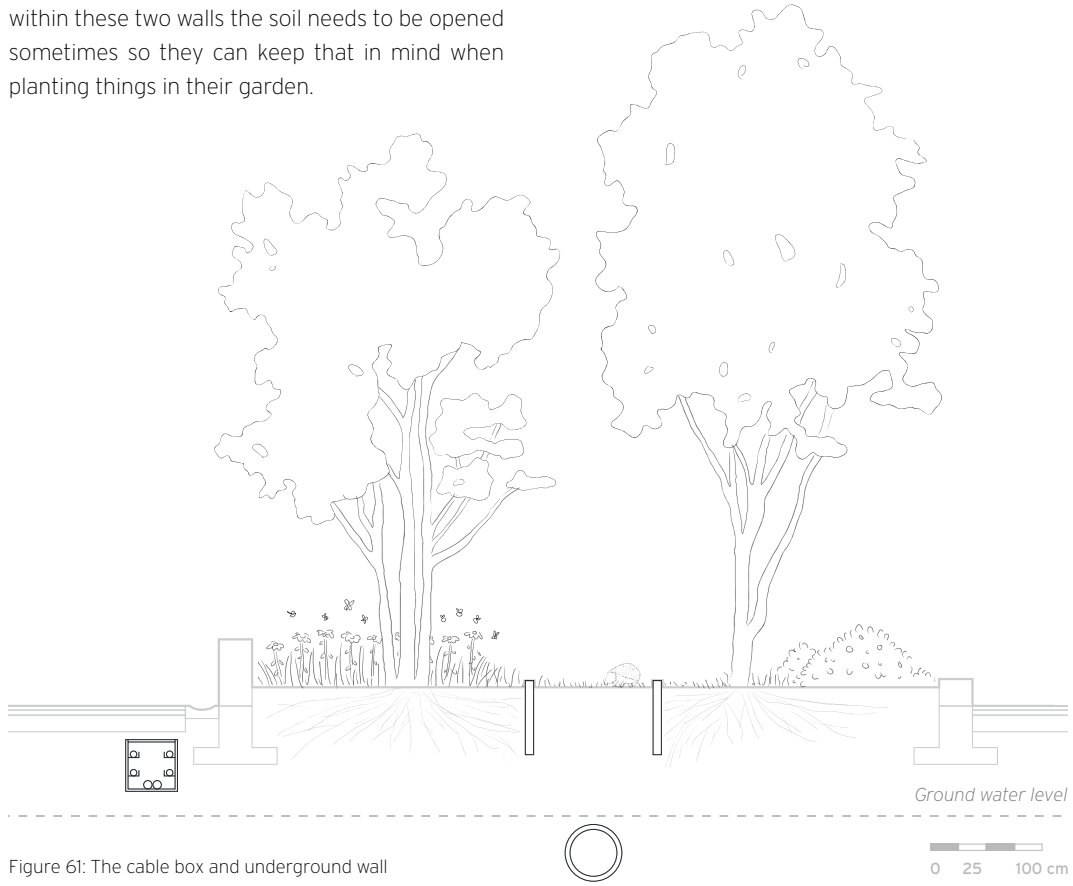


Figure 61: The cable box and underground wall

The aspect of time

Time as a tool

Since the goal is to help people become more aware of their connection to nature it is important that you do not do something that makes them feel more distanced from their environment. This is why big changes in someone's direct living environment are preferably not implemented at once but in smaller steps. During these steps it is important to look at the different processes that are going on in the design and how you can break these into smaller steps so that it is easier for people to get used to their new surroundings and there is time for them to get attached to it.

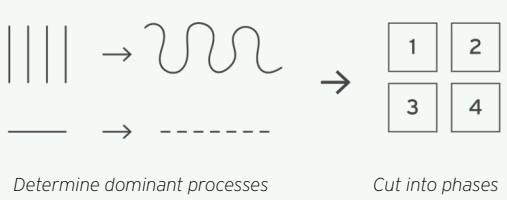


Figure 62: Using time as a tool

Dominant processes in the design

Changes in different aspects

There are multiple processes going on in the street that will influence the design:

1. A change in mobility

From a wide car oriented road with a lot of parking spots to a small pedestrian oriented road with spaces made for pedestrians.

2. A change in the amount of pavement

From a completely paved street to an open street with vegetation and semi open pavement.

3. A change in style

From a neat and rigid style with straight lines to a more spontaneous and organic style with bended roads and lush vegetation.

4. Forest succession

From grass to roughs to forests and everything in between.

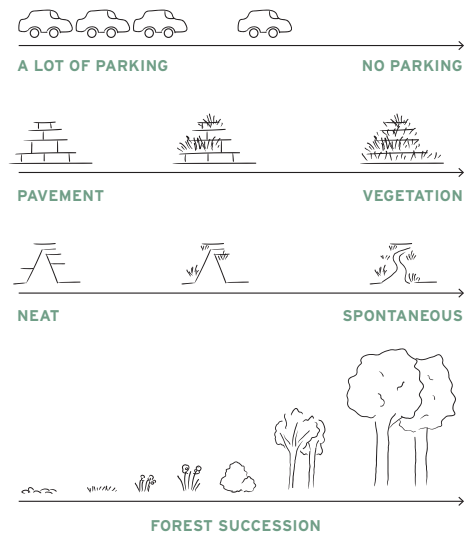
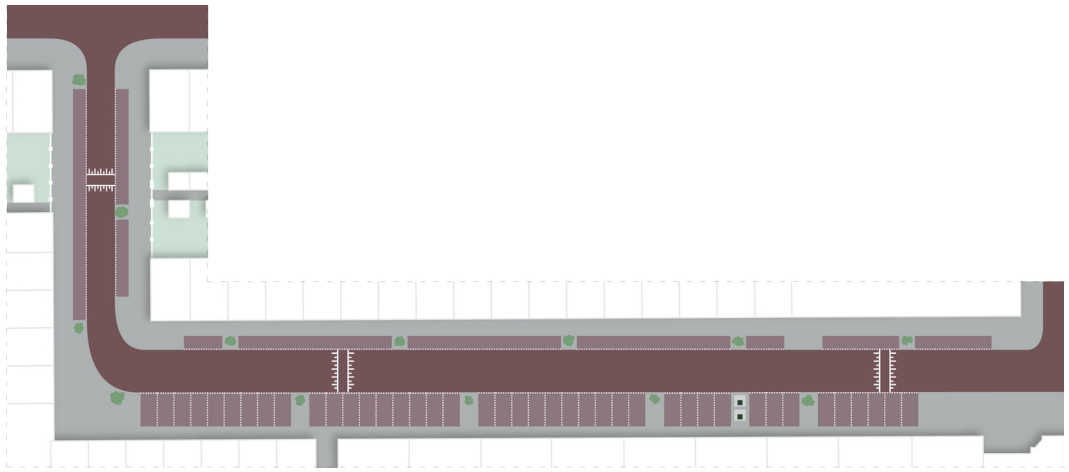


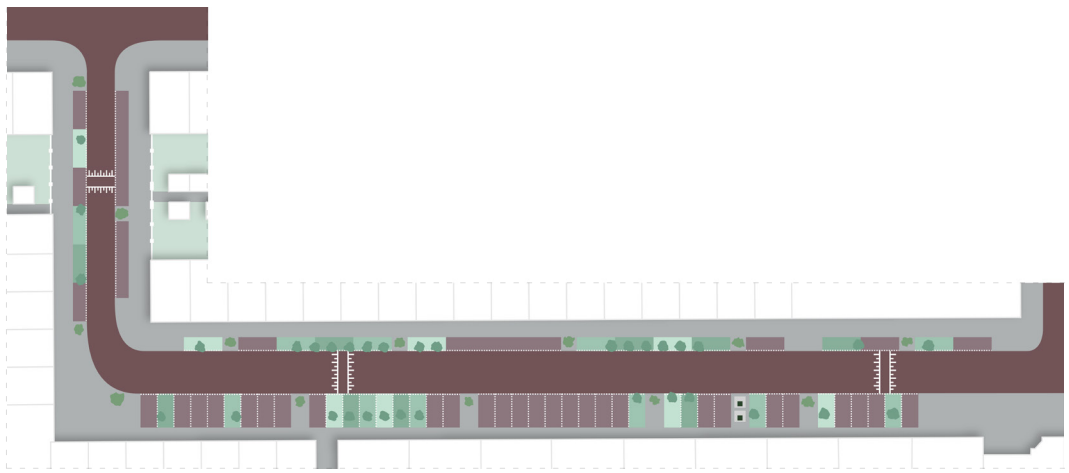
Figure 63: The dominant processes in the design

The design through time

To help people adapt to the new design it will be implemented in small steps.



Current situation



Phase 1

Figure 64: The design through time

0 3 15 m

Phase 1: Planting trees and start of adoption
Occurs when the design starts

Sixteen trees will be planted as a first start for the forest that will grow. The parking spaces where these trees will be planted will be made available for adoption. The trees are planted within a grid to fit within in the linear production forest character of the district. At this point Lisa is not interested in adopting a garden yet, but her neighbour Omar actually is, so he chooses a garden near his house and starts using it as a kitchen garden.

Backup plan for unadopted spaces: fast growing flowering fields for a fast mature looking sight

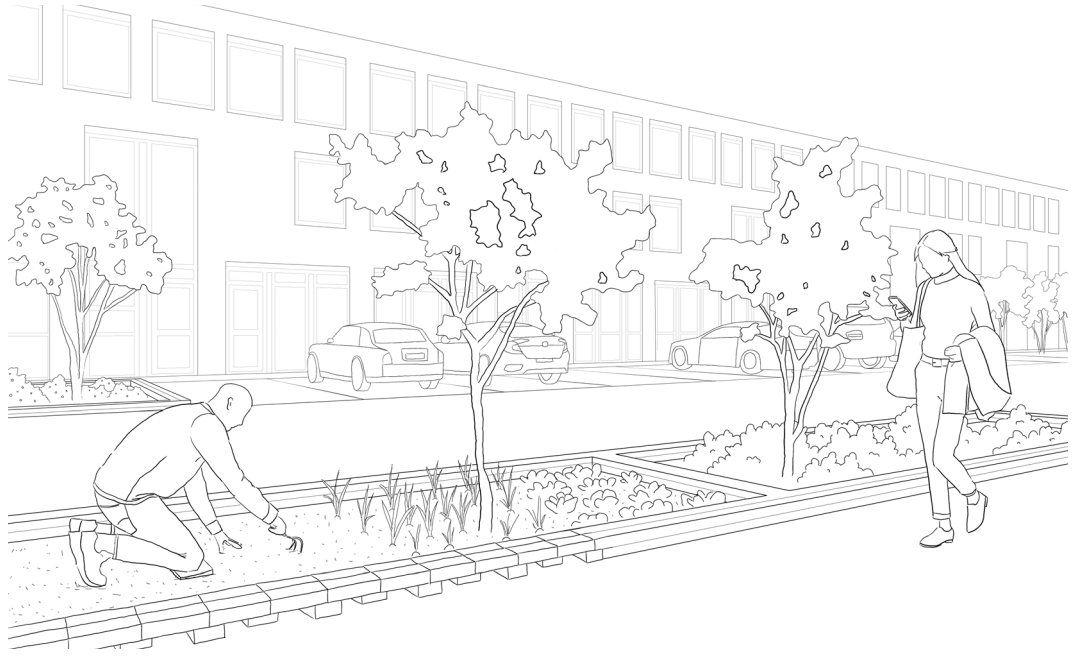
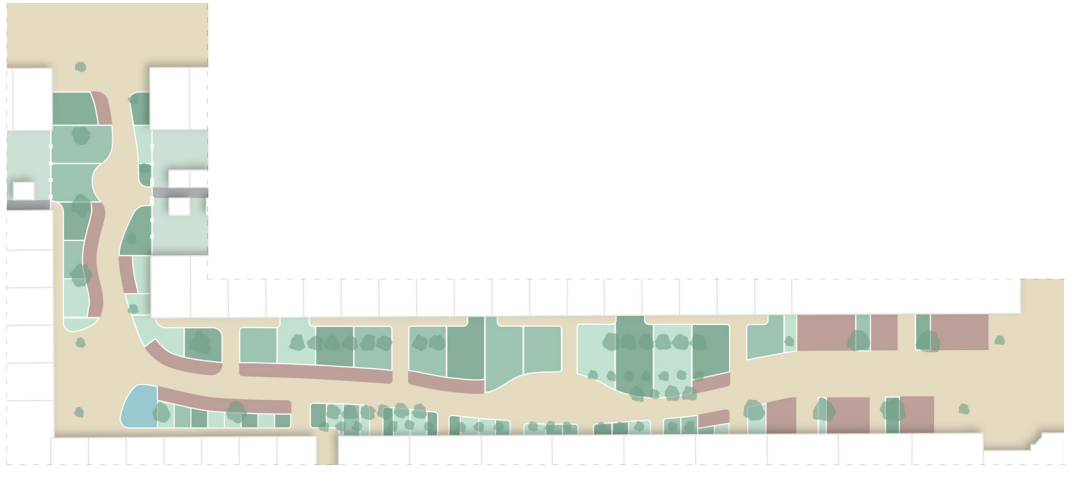
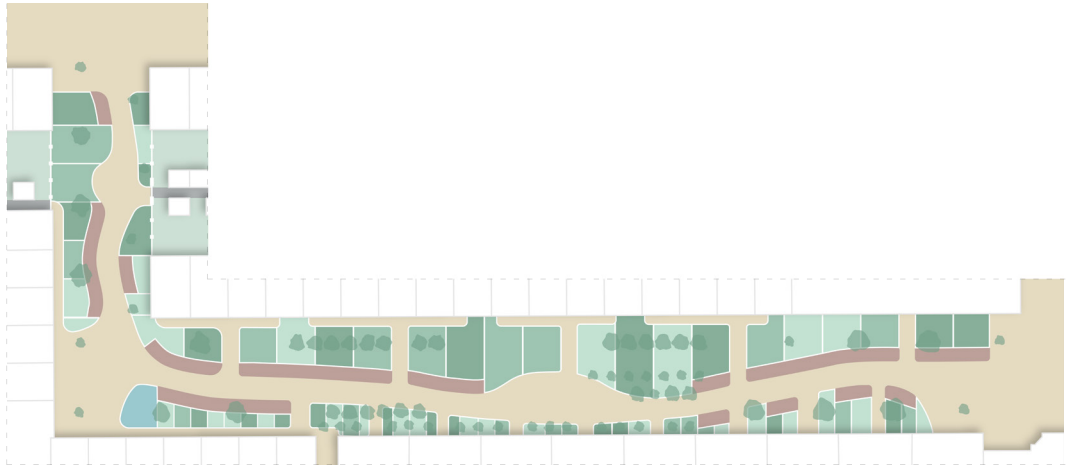


Figure 65: Omar working in his garden and Lisa passing by in phase 1



Phase 2



Phase 3

0 3 15 m

Figure 66: The design through time

Phase 2: Rearranging the street
Occurs when the street will be repaved

Due to subsidence the street has to be repaved multiple times (the next time will probably be around 2028, since the last time was in 2018) and this is a good opportunity to rearrange the main components of the street. So at this moment the main road will be narrowed and will get his organic form and the parking spots and adoptable gardens will follow the form of the street. More trees are planted and more parking spaces around the squares will become available for adoption as well.

Omar's garden has grown and while his working in the garden Lisa is reading a book on a bench on the square and they start talking.

Backup plan for unadopted spaces: depending on the amount of light: fast growing flowering fields in lighter parts and undergrowth that does well in shade in the parts with less light.

Phase 3: Transforming the south side
Occurs when only 28 parking permits are left

When there are only 28 parking permits left the parking areas on the south side of the street will transform into the adoptable gardens as well.

Backup plan for unadopted spaces: depending on the amount of light: fast growing flowering fields in lighter parts and undergrowth that does well in shade in the parts with less light.

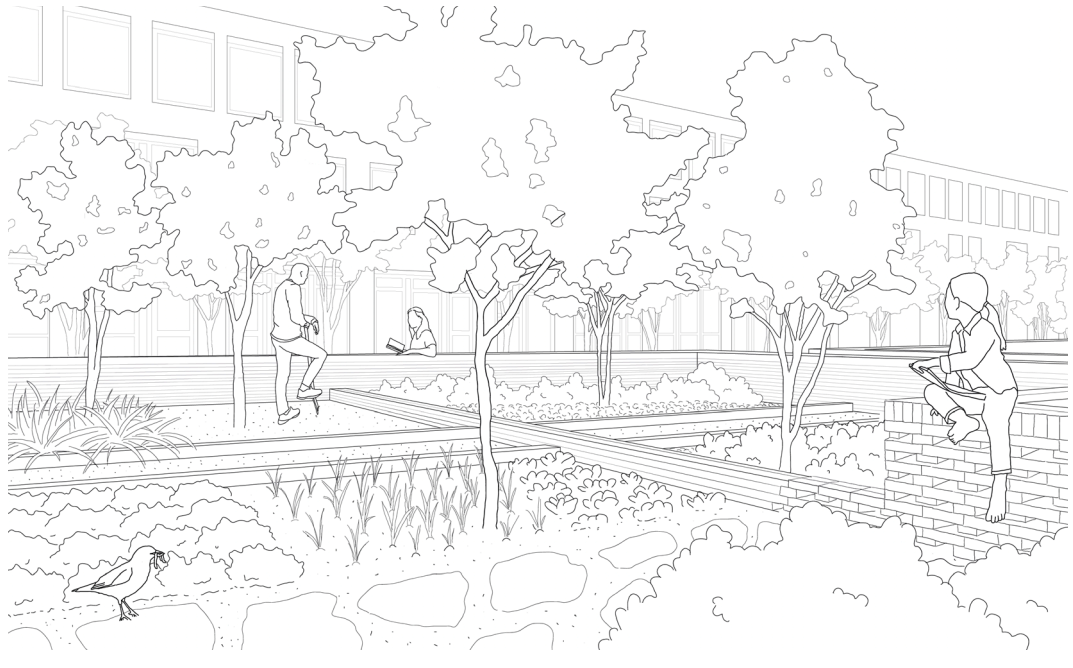
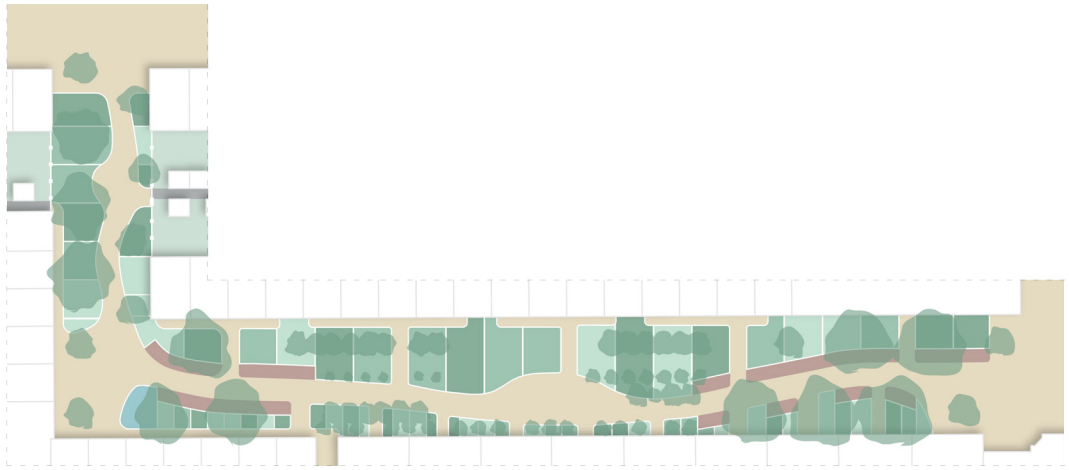


Figure 67: Omar and Lisa talking in phase 2



Phase 4

Phase 5

0 3 15 m

Figure 68: The design through time

Phase 4: Planting the last trees
Occurs when only 19 parking permits are left

When a lot of people have moved and new residents have come and there are only 19 parking permits left the last trees of the plan are planted and these parking spaces will become available for adoption as well.

One evening when Lisa comes home after a night out she notices a little hedgehog, which gave her the last little push she needed to adopt a garden as well.

Backup plan for unadopted spaces: depending on the amount of light: fast growing flowering fields in lighter parts and undergrowth that does well in shade in the parts with less light.

Phase 5: All spaces available for adoption
Occurs when there are no parking permits left

When there are no parking permits are left the last parking spaces will become available for adoption as well and the design can start to mature.

Lisa adopted a garden with two trees so that she could hang her hammock between them and she can not only use the garden as a kitchen garden, but as a place to relax in the sun as well.

Backup plan for unadopted spaces: depending on the amount of light: fast growing flowering fields in lighter parts and undergrowth that does well in shade in the parts with less light.

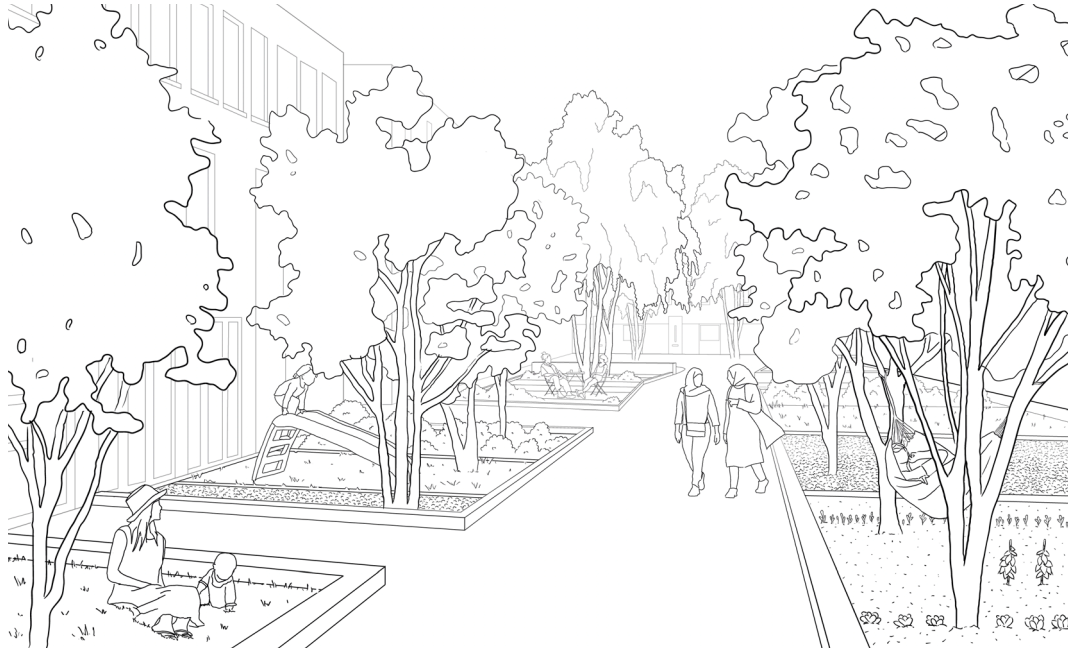


Figure 69: An overview of the street in phase 5

Layer approach

Reaching two goals at the same time

As mentioned in the introduction the layer approach can be used to react two goals at the same time: improving the overall quality of the design and making it easier for people to become aware of their connection to nature. For the realm of living this means different things for each layer.

Spatial layer

When adding elements to the street it should be kept in mind that you design spaces with these elements. So it is the negative space that you create when you add the positive space of the objects that is the space that people will experience.

Ecological layer

To create a thriving ecosystem multiple things should be done: add a vertical gradient in the vegetation, add native vegetation, prevent light nuisance and optimize the connection with the underground (see page 72).

Environmental layer

The goal for the environmental layer is to create a more sustainable way of living and creating a more pleasant micro climate along the way. This should be done by disconnecting the rain water and reusing it, adding vegetation and using permeable pavement.

Social layer

For the social layer it is important to create spaces that facilitate interaction between people, where they can share, help and inspire each other. This interaction should also be possible between people that are sitting and people that are moving.

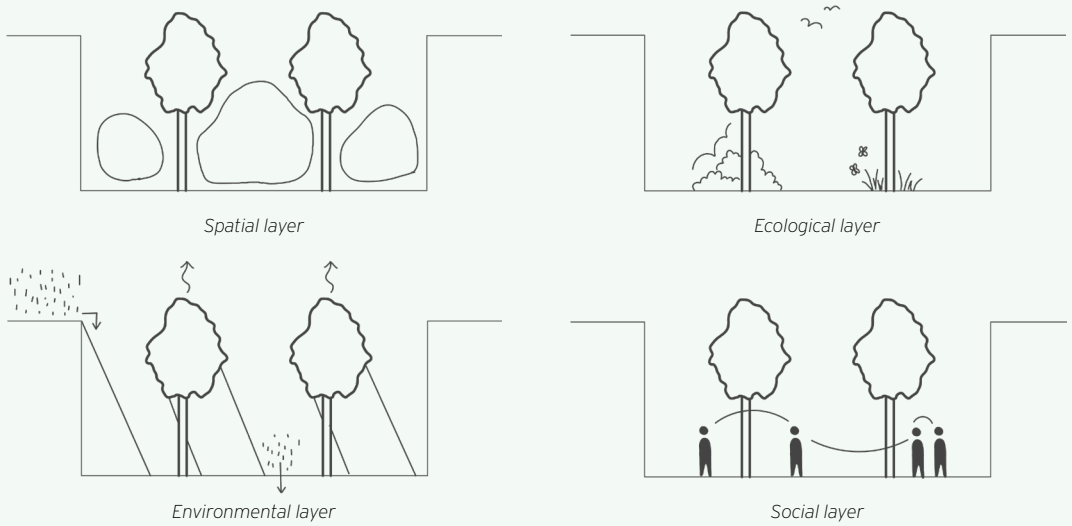


Figure 70: The four layers

Layers shown in section

To show the topics of the different layers in the design one section is taken and drawn four times to highlight the parts of the design for each layer, which can be seen in figure 71 on the next page.

Creating spaces

In this section five spaces that are formed by the design are highlighted. From left to right:

- The small strip of pavement alongside the building that can be used as an adventurous path for kids to play on
- The main street with on one side the shrubs and the tree as a boundary and on the other side the small wall
- The wall in itself forms a space as well
- The space that is created under the small trees in the garden to sit under
- The path alongside the building that has a small edge that kids can walk on

Improving micro climates

In this section the aspects that influence the environment are highlighted:

- The disconnecting of the rainwater from the sewage system
- The opportunity to use rainwater to water the gardens on the water square (which will be elaborated further on page 88)
- The permeable pavement which results in direct water filtration in the ground
- The decrease of the urban heat island effect due to an increase in shadow and evaporation by the trees

Creating a thriving ecosystem

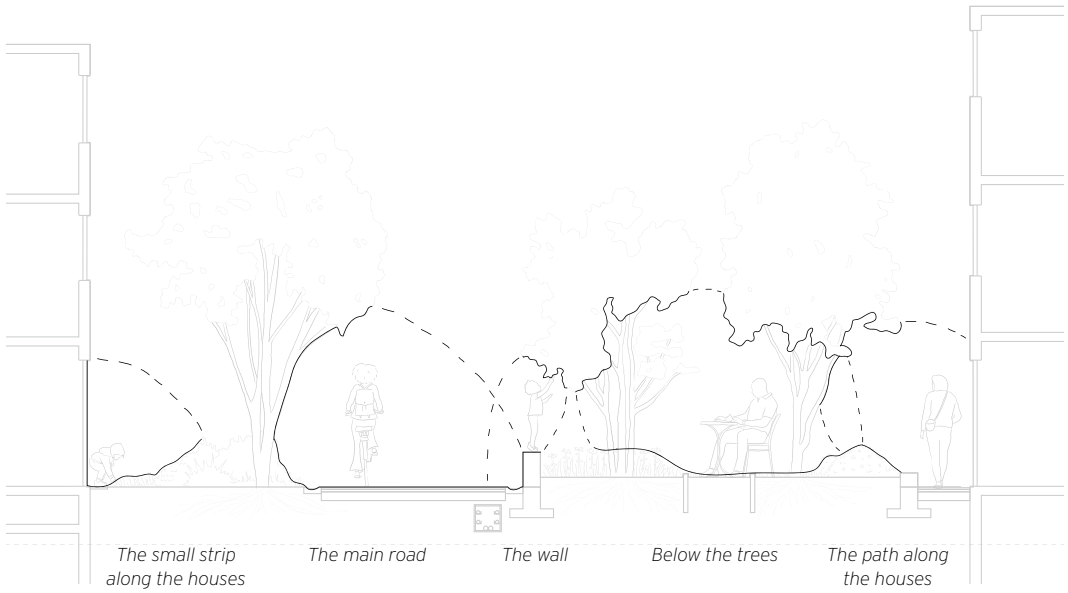
In this section the aspects that are part of the ecosystem are highlighted:

- The vertical gradient in the vegetation
- The native vegetation that attracts insects
- Birds eating fruits and berries
- The improved soil quality
- Protecting the roots of the trees during maintenance by adding a cable box and underground walls above the sewage pipes
- No lighting in the gardens

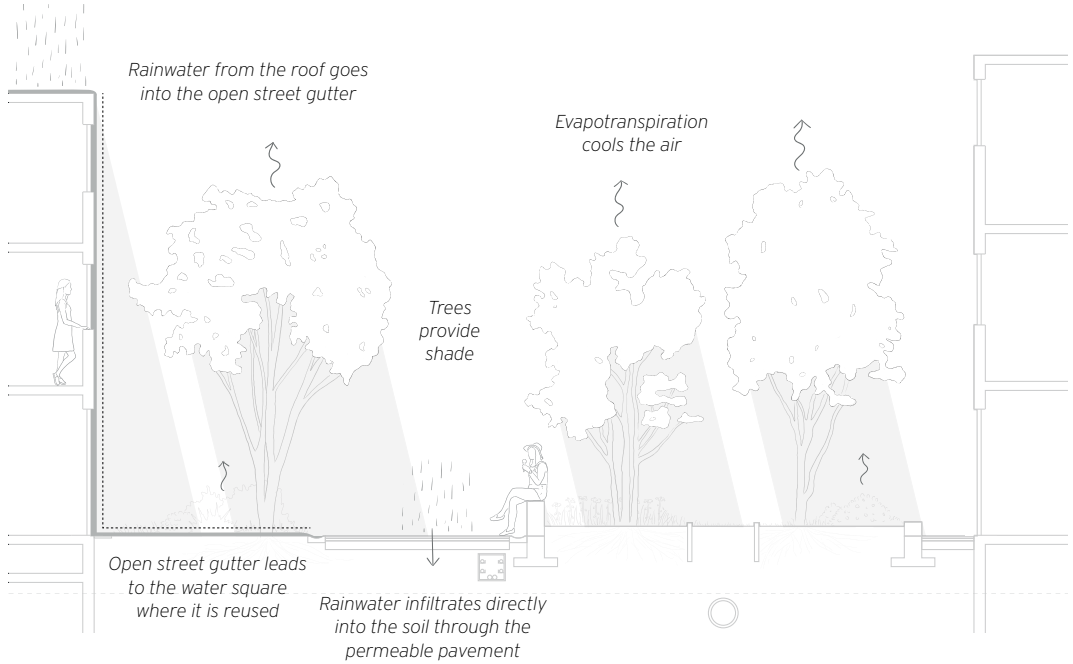
Facilitating sharing, helping and inspiring

In this section the aspects that facilitate social interaction are highlighted:

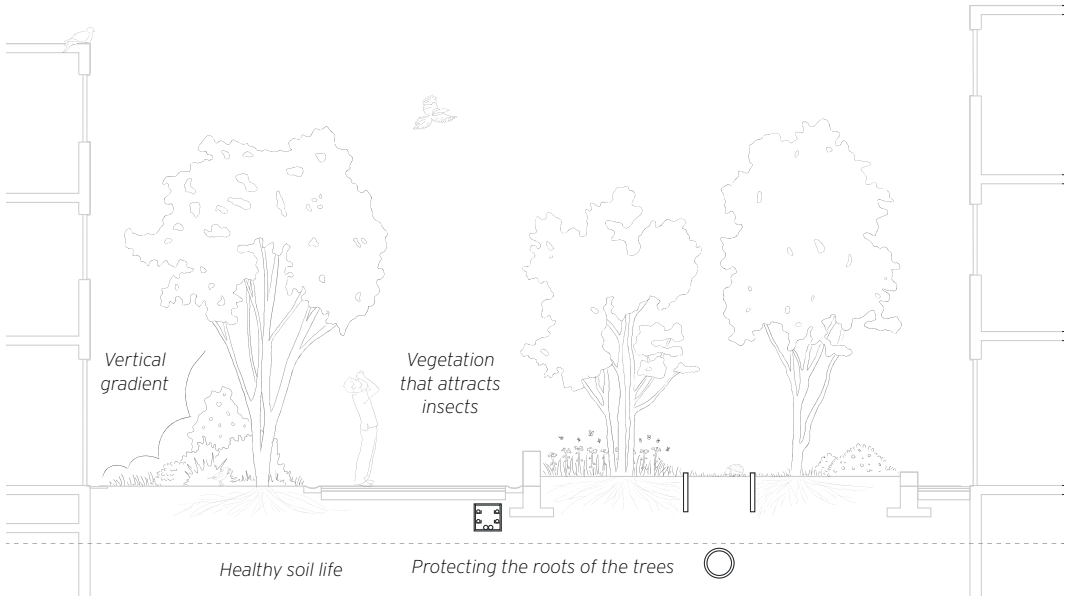
- Opportunities to share, inspire and help other (potential) gardeners
- The street where cyclists and pedestrians can interact with people sitting on the small wall or who are working in the gardens
- The sidewalk where pedestrians can interact with people in the gardens



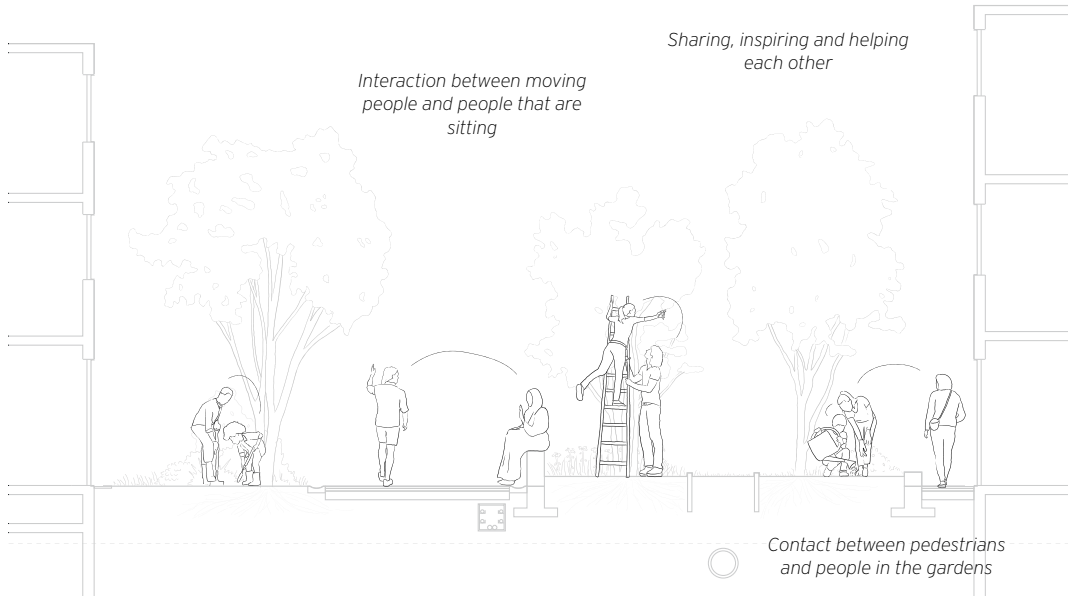
SPATIAL LAYER



ENVIRONMENTAL LAYER



ECOLOGICAL LAYER



SOCIAL LAYER

Figure 71: The spatial, environmental, ecological and social layer

0 50 200 cm

Disconnecting the rainwater

The water square

The disconnecting of the rainwater with the water square is a great example of how you can reach two goals at the same time. Because on one hand it is good for the environment to be able to reuse the rainwater and on the other hand it creates an opportunity for a space that can help people become aware of their connection with nature.

Good for the environment

The water that falls on the roofs of the buildings flows to a rain pipe that empties in the open street gutter. This gutter then transports the water to the water square which has a shallow water basin on ground level. There is a small fountain in the basin that keeps the water moving and thus improves the water quality. The basin is connected to an underground water tank under the square which stores the excess water. Above the tank there is a water pump which can be used to pump out the water to reuse it to water the gardens.

Good for the public space

By adding the water basin on ground level it creates a public space where people will gather in summer. The kids can play in the water on hot days and the adults can gather on the square to eat, drink and enjoy themselves and each other.

Figure 72: The system of the water square

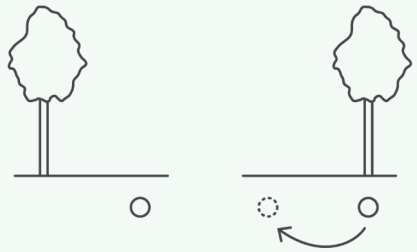
Toolbox for the realm of living

Design principles

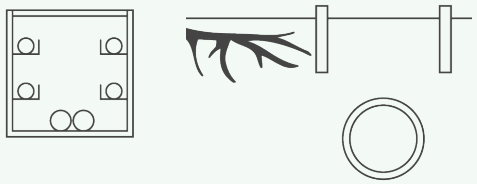
The design principles that are used in the realm of living are summarized within this toolbox.

1: In line *2: In contrast* *3: Exaggerated*

Choose an urban forest strategy

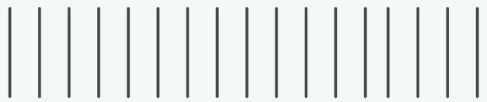


Plan around or move underground infrastructure

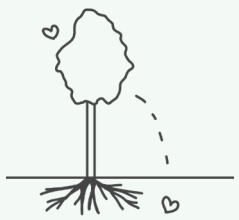


Protect roots from maintenance by bundling infrastructure and underground walls

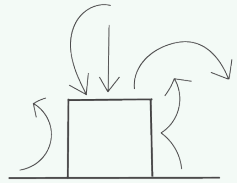
Determine dominant processes *Cut into phases*



Use an existing structure as cue for care

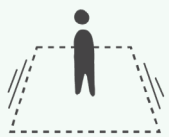


Choose the right tree and improve soil quality



Make elements multifunctional

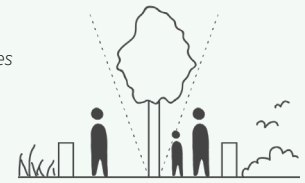
Use different light situations for different users and activities



Create space for participation

Not lighting up spaces for animals

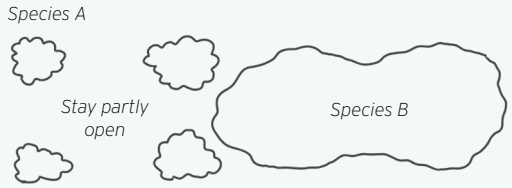
Lighting up the ground level for moving



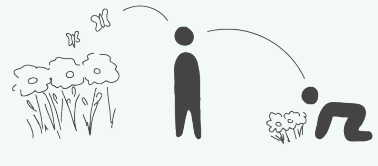
Lighting up above ground level for gathering

Figure 73: The toolbox for the realm of living

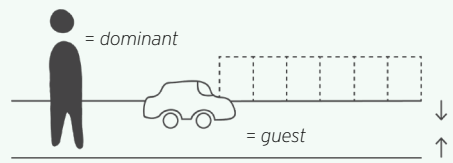
Do a sun analysis



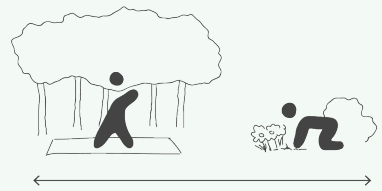
and draw implications for the design



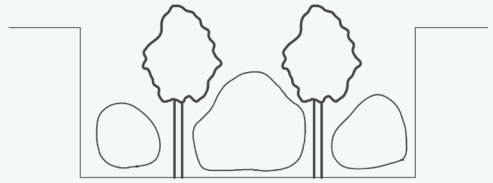
Facilitate elements and other people to get distracted by



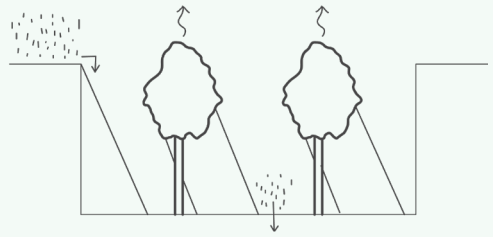
Make streets pedestrian oriented



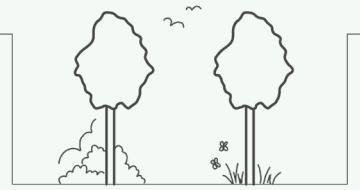
Create a gradient in interacting with nature



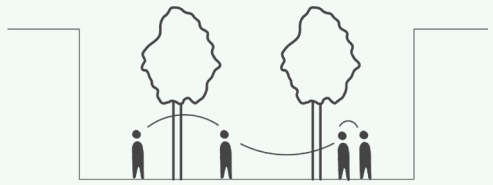
Create spaces



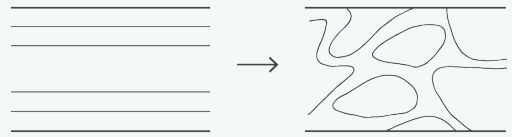
Disconnect the rain water, use permeable materials and improve micro climates



Add vertical gradients, add vegetation and trees



Facilitate sharing, helping and inspiring



Create a new kind of street by thinking outside known structures

4

Integrated experience: Moving

Aspects of moving

From current characters to vision

Methods of the nature diagram

For the realm of moving multiple methods to help people become aware of their connection to nature should be used as well. In figure 74 the methods that apply for the realm of moving are shown and these will be elaborated on in this chapter.

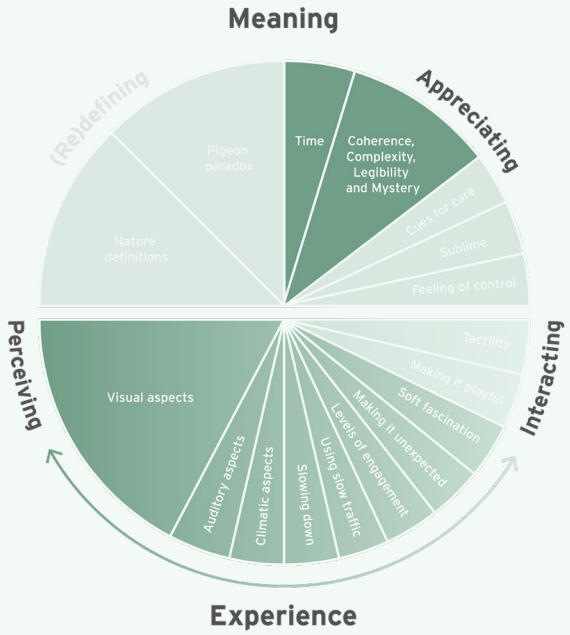


Figure 74: The methods of the nature diagram that apply to the realm of moving

Time line of a route

To be able to say something about how you experience the districts' characters on a route it should first be made clear how many characters you come across and how much time you spent in one district. So for this the map with the different characters should be transformed into a straight line which shows how many minutes you would spend in each character. It is important that this line has characters on both sides, because if you move along the border of two characters you could experience both.

To help comprehend the different kind of experiences of these districts' characters the conclusions of the coherence, complexity, legibility and mystery analysis should be added to the time line as well.

Cognitive experience map

The time line depicts the experience of the route if the districts' characters are explicit on every part of the route. In the current situation this is probably not the case, so if you want to show the actual experience of how the route is now you should use a different technique.

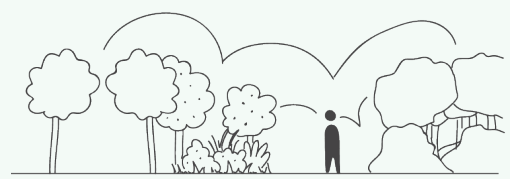
A way to do that is to follow the route yourself and make a cognitive map afterwards with the things you remembered. By doing this you will have a subjective map of how this route can be experienced. It is not a problem that the map is subjective, because something that depicts an experience will always be subjective, due to the fact that everyone will experience it in a different way. If you do not want to use your own experience as a guideline you can ask others to do the same, so that you can gather different ways that people experience the same route.

Vision

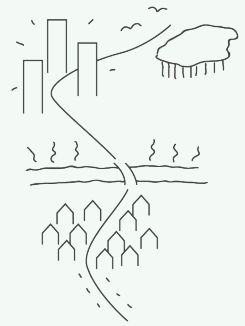
The vision for the realm of moving should exist of three aspects:

- The route should be an expression of the districts' characters
- The route should be an alternation of coherence, complexity, legibility and mystery
- The route should use potentials that are currently present to increase the nature experience

Express the current urban forest characters along the route



Alternate coherence, complexity, legibility and mystery



Use potentials that are currently present to increase the nature experience

Figure 75: The tree aspects for forming a vision

Passing the districts' characters

A dominant ribboned park

Lisa's route to work starts in the linear production forest, when she approaches the end of this district the characters on her left side start to change rapidly. The character on the right side does the opposite and stays the same for eight minutes. So when she only has the ribboned park on her right, she passes a linear tree nursery, scattered oasis, scattered tree line, ribboned park, another scattered oasis and scattered tree line on her left. This last scattered tree line stays on the left until the end and then moves to the right as well, right after she passes the linear maze.

Scoring high on coherence and legibility

Even though Lisa passes different urban forest characters she has a lot of similar experiences due to the fact that six of the nine combinations of characters she comes across score high on coherence and legibility. There are two combinations that score the exact opposite, since they have a high value of mystery and complexity which is the combination of the scattered oasis and the ribboned park. And the last combination is one that really stands out since it scores high on all aspects, which is the combination of the scattered tree line and the linear maze.

Potentials caused by water and train tracks

In the cognitive experience map potentials of the route become clear that did not occur on the time line. Two of these potentials are caused by the presence of water: a big bridge with a view over the water and a little harbour. Two other potentials are caused by the presence of the train tracks: an overpass of the trains that you have to cycle under and a overpass over the train tracks that you cycle over.

Figure 76: The time line of Lisa's route to work with the districts' characters

*Sources of the photos: see bibliography

CH = Coherence, L = Legibility,
CX = Complexity, M = Mystery

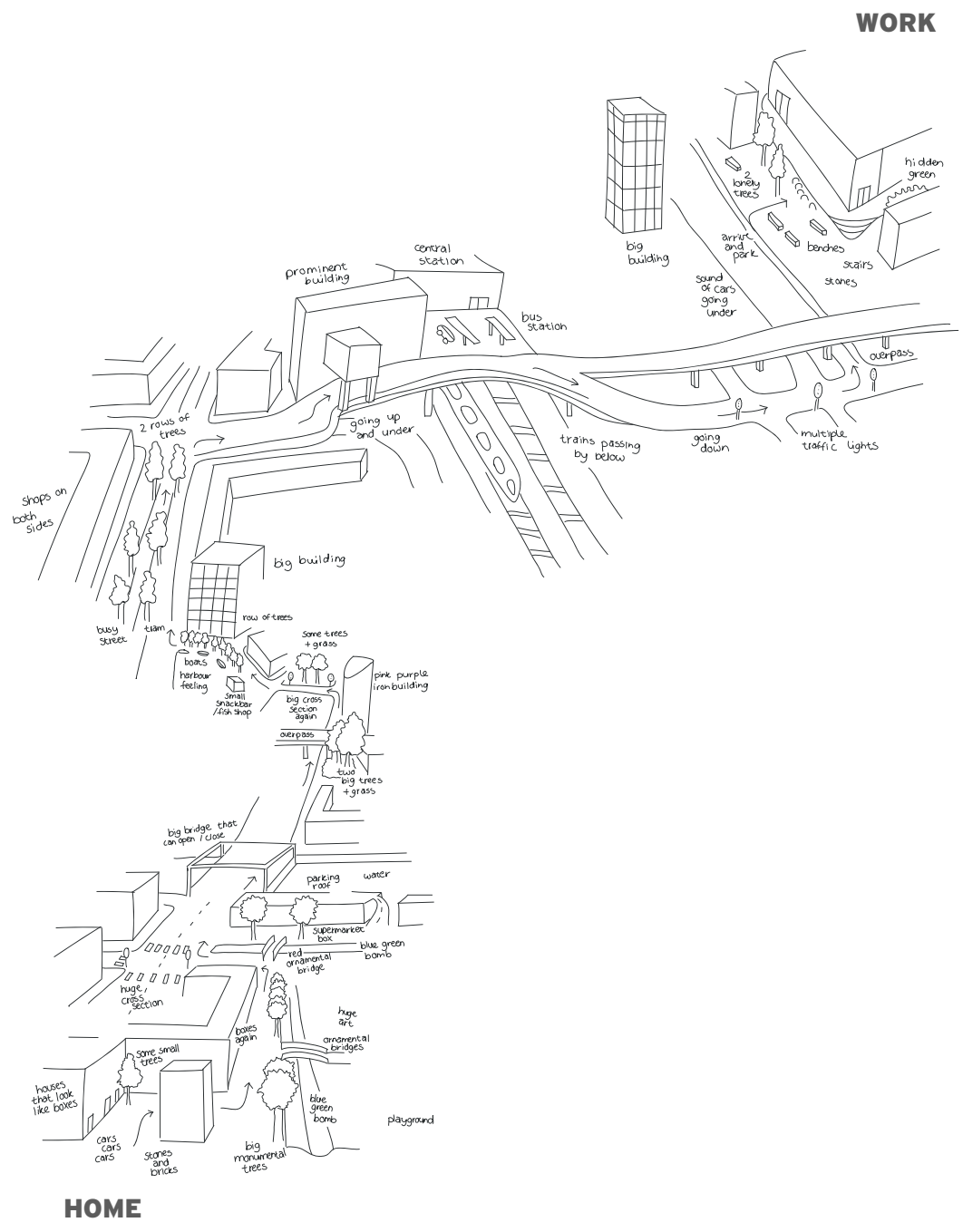


Figure 77: The cognitive experience map of Lisa's route to work

Unlocking the routes potential

A vision for Lisa's route to work

To make the route an expression of the current characters of the districts most of the characters should be enhanced and the linear tree nursery should be transformed into a linear production forest. At two points a sneak peak to an oasis in the distance should be created. To increase the alternation of coherence, complexity, legibility and mystery the amount of mystery and complexity should be increased in the areas where coherence and legibility are dominant longer than a one minute bike ride. And to use the current potentials of the route the forest should open up around the water and the height difference of the overpass should be enhanced by adding trees on the ground level that can be experienced from the overpass.

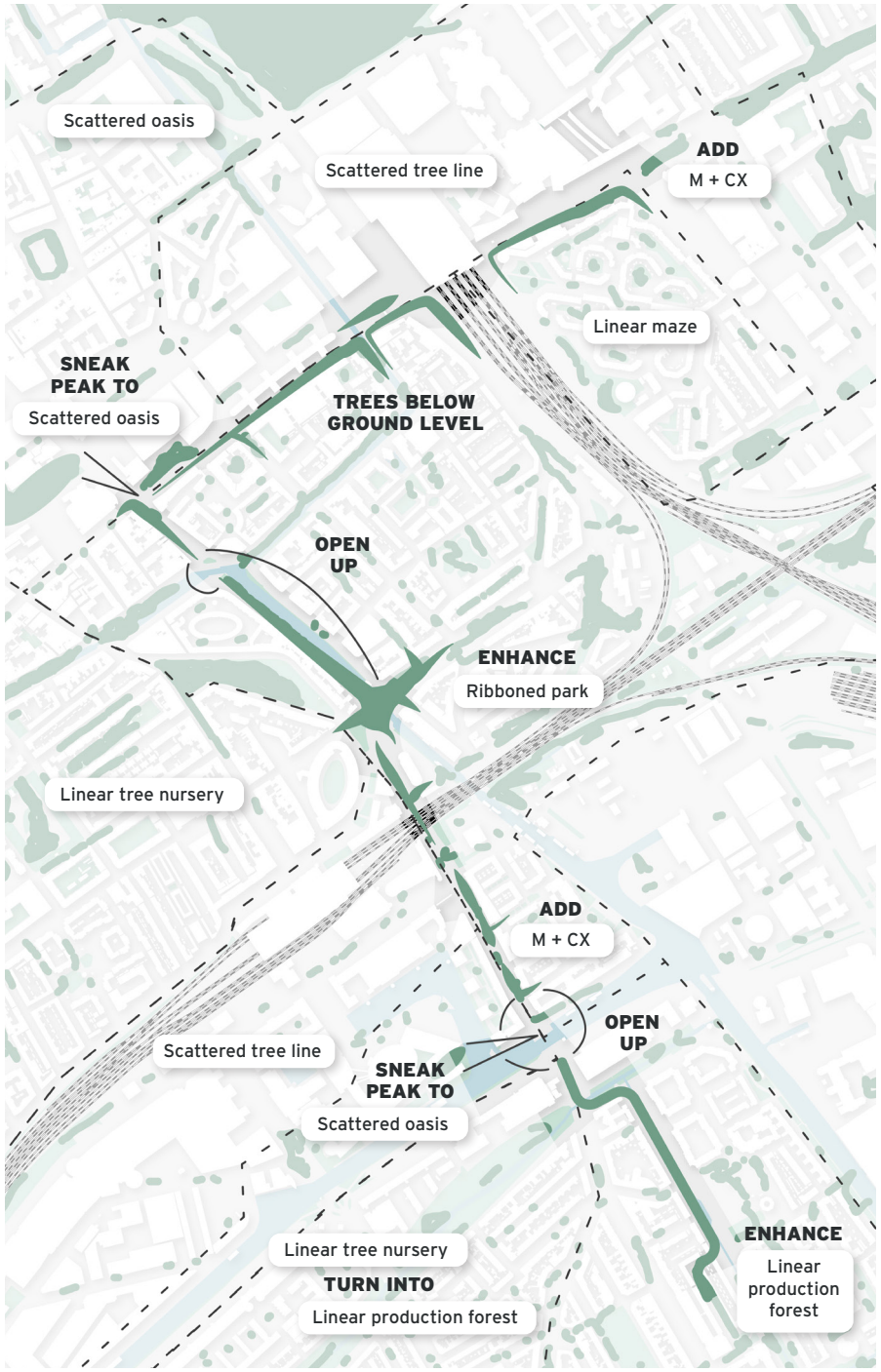


Figure 78: The vision for Lisa's route to work

Change in mobility

Changing the main road network

As mentioned in the previous chapter (page 48) a way to stimulate people to go outside and to literally slow them down is to stimulate slow traffic usage, so stimulating walking and cycling instead of taking the car. To be able to do this the current main road network should be made clear and after that a guideline to change this network should be established. This guideline should help in decrease car usage and keep all districts accessible. Such a guideline should say something about:

The speed limit

The priority rules

The maximum time spend on a certain kind of road

The location of parking spots

Slowing down

Providing places to stop

To help people slow down while moving it should be facilitated that they can stop while moving as well. This can be done by adding places to stop along the route, such as benches, view points and hidden corners.

A new type of street

Making it unexpected

Currently most streets have linear zones for different users. To help people become aware of their connection to nature this predictability should be prevented, which is why a new type of street is needed.

Sharing space

In these new kind of streets users will sometimes share space, whereby the space can be used more efficient and there is more space available for vegetation which increases the nature experience for all users.

Meandering through nature

Instead of the linear zones the streets will be mostly filled with vegetation and the users will meander through this which will add mystery and complexity to the route.

Soft fascination

Soft fascination

This meandering through nature will facilitate the possibility of the experience of soft fascination while people move through the streets. Soft fascination can moderately hold someone's attention while leaving mental space for reflection (Kaplan, 1995). This can be restorative for someone's well-being and makes moving a pleasant activity instead of a stressful one. To facilitate soft fascination it is important that pedestrians and cyclists can safely daydream, so they should have priority on intersections.

From car oriented to slow traffic oriented

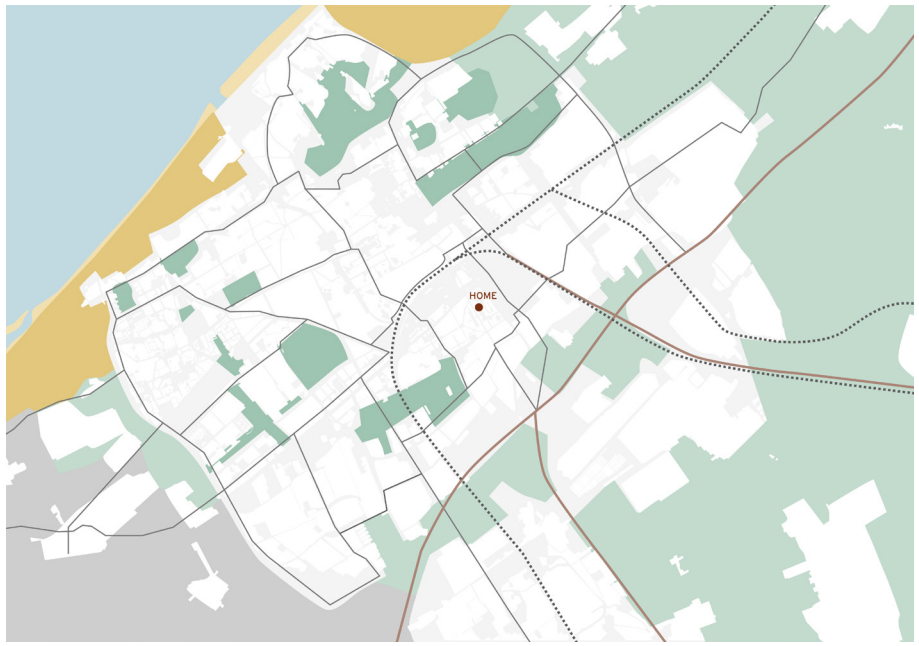
Guidelines for the main road network

The guidelines that are used for the Hague are:

1. On every road that is not included in the main road network there is a speed limit of 30 km/h
2. On every road that is not included in the main road network the car is a guest, so a pedestrian and cyclist will have priority
3. All destinations can be reached within 2,5 km (which is approximately a 5 minute drive) from the main road network
4. The biggest part of parking spots will be around the main roads

By following guideline 3 a lot of the roads that are in the current main road network can be transformed into roads where the car is a guest and the speed limit is 30 km/h, which can be seen in figure 79 on the next page.

Current situation



New situation

Figure 79: The current and new main road network

0 0,5 2 km

Sankt Kjeld's Square and Bryggervangen

Using height differences

This project in Copenhagen is an example of a car oriented area that is transformed in a pedestrian and cyclist oriented area. They changed a pavement dominant roundabout and road into a lush green area. By adding height differences they enhanced the feeling of being nature.

Architects: SLA
Location: Copenhagen, Denmark
Date: 2015-2019

Figure 80: Images of Sankt Kjeld's Square and Bryggervangen (SLA, 2019)

Experiencing the new route

Design of the route

From the vision a route is developed that contains the new type of slow traffic oriented streets that facilitate soft fascination. On the map in figure 82 an overview of the design of the route can be seen, with the locations of the chosen perspectives as well.

Lisa's experience on her way to work

Lisa starts her route to work in the linear production forest in the Zuigerstraat. She grabs her bike and starts cycling on the main road that she shares with pedestrians and where the car is a guest.

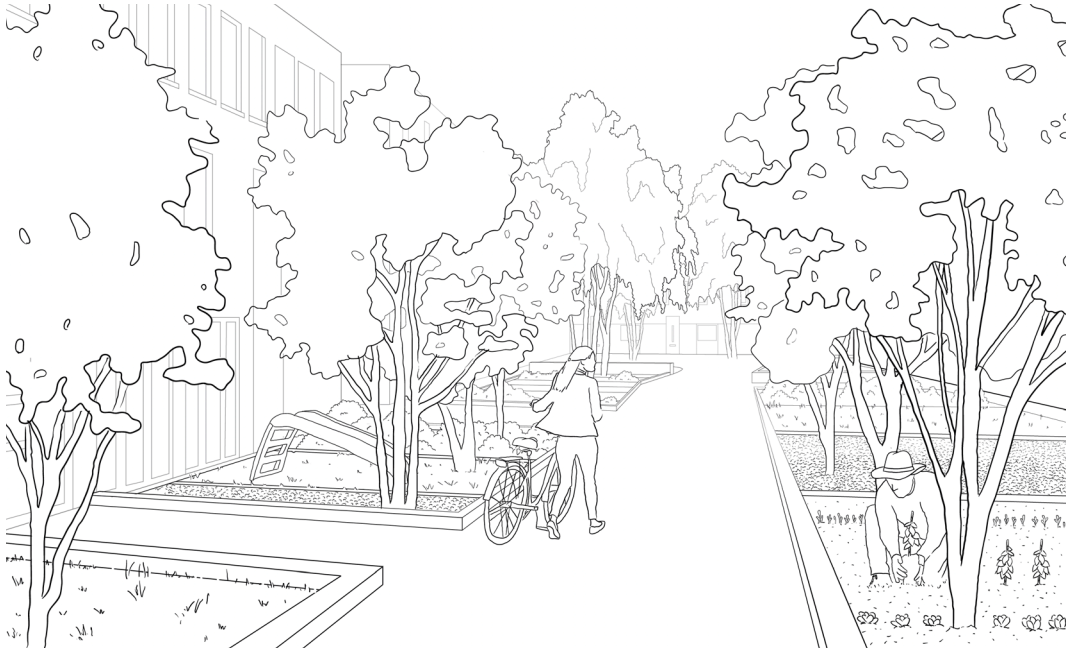
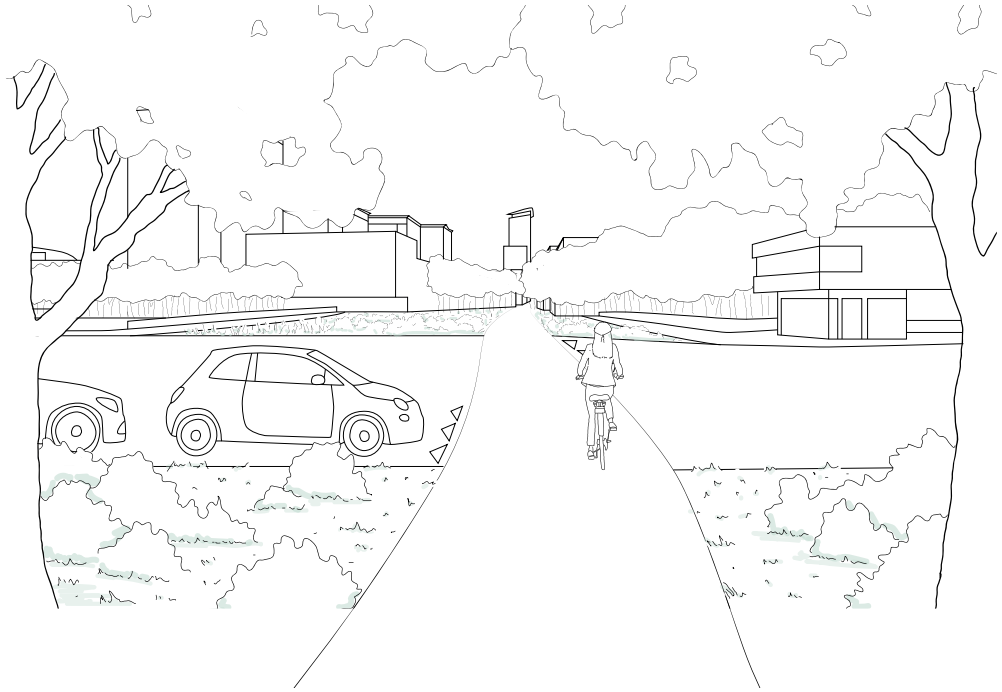


Figure 81: Lisa's experience on her way to work

Figure 82: The design of Lisa's route to work with the locations of the perspectives



She moves to a bigger street in the linear production forest where the straight tree lines along the route determine the character and she cycles under the tree canopies.

Then she leaves the linear production forest and moves from a closed space to an open space with an open view on the bridge over the water. Here she passes a road of the main road network where the cars can still drive 50 km/h. To help facilitate the experience of soft fascination the cyclists have priority over the cars on this intersection which is why Lisa will barely notice that she needs to cross a big road.

After the bridge cycles on the Rijswijkseweg where she enters a new dense forest where the tram passes through as well.

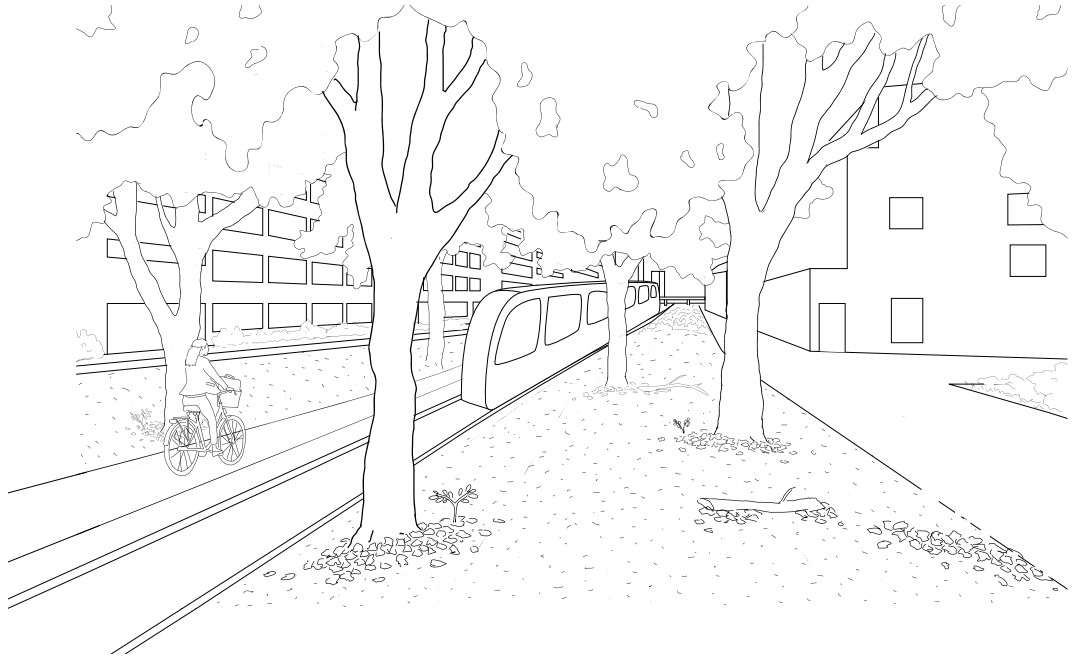


Figure 83: Lisa's experience on her way to work

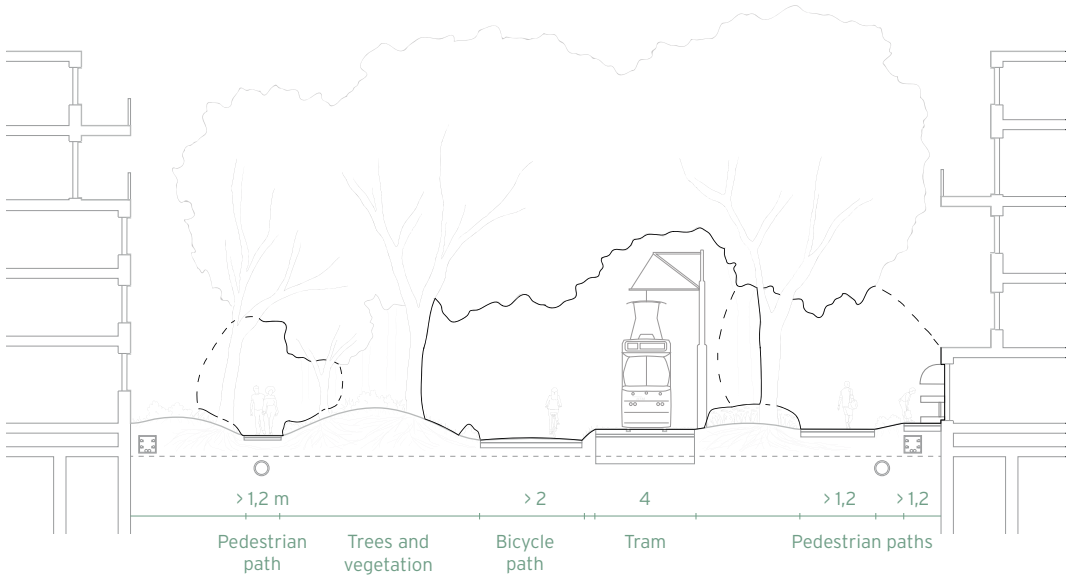


Figure 84: Spatial layer of the Rijswijkseweg

In the section of this street it becomes clear that height differences are used to increase the nature experience while cycling or walking here. The vegetated areas are raised and the paths are lowered, which makes the presence of the vegetation more prominent and you become more immersed into the experience of nature.

While Lisa cycles through the street the tram passes by and she notices Yuki. They wave to each other and while they are both in the same street they experience it in a different way. While Lisa notices the individual trees and the undergrowth, Yuki experiences the trees as one big green cover over the tram as she moves through it.

What Lisa and Yuki do not notice is that Omar is in the street as well. He is walking along the shops which gives him another perspective as well. Here the trees function as a wall on one side and the planted borders on the other side give a focus to the shopping windows.

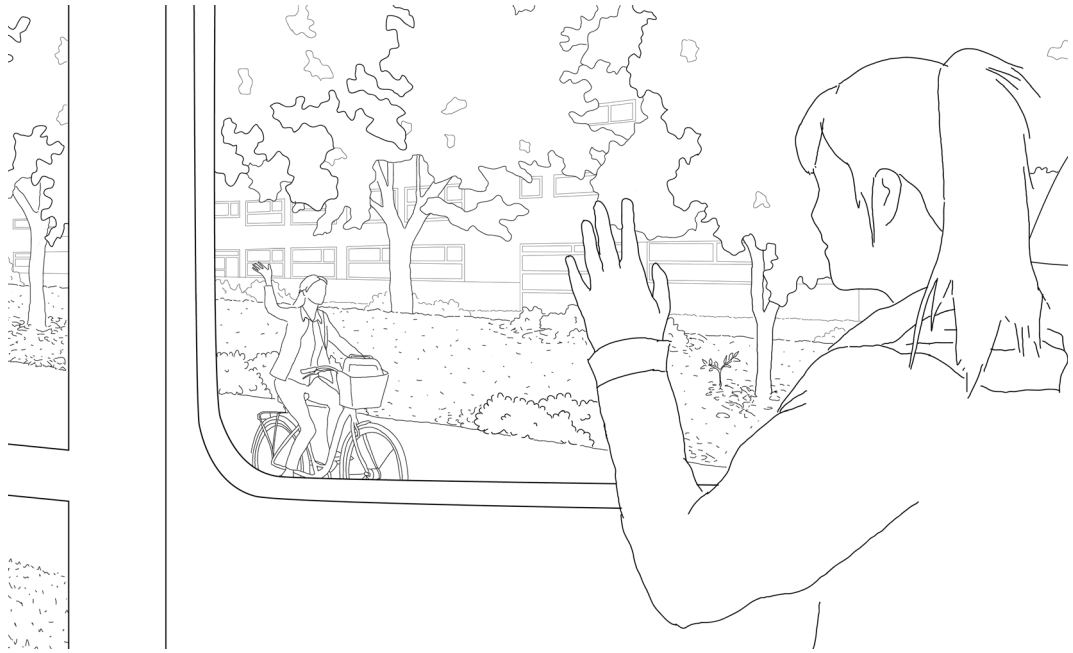


Figure 85: Yuki's view from the tram

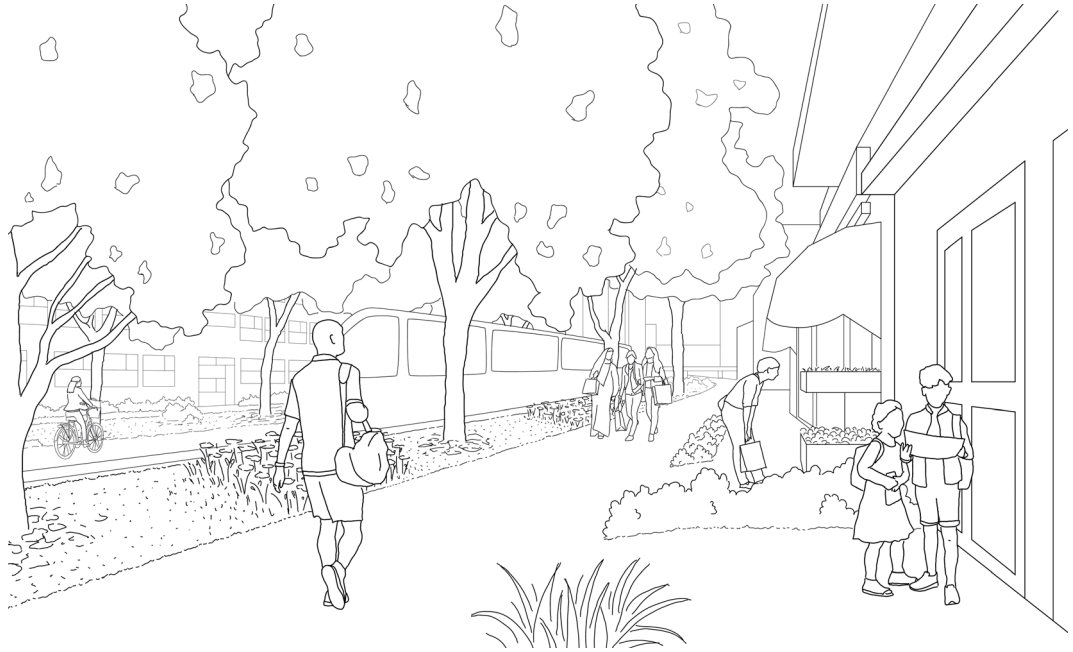
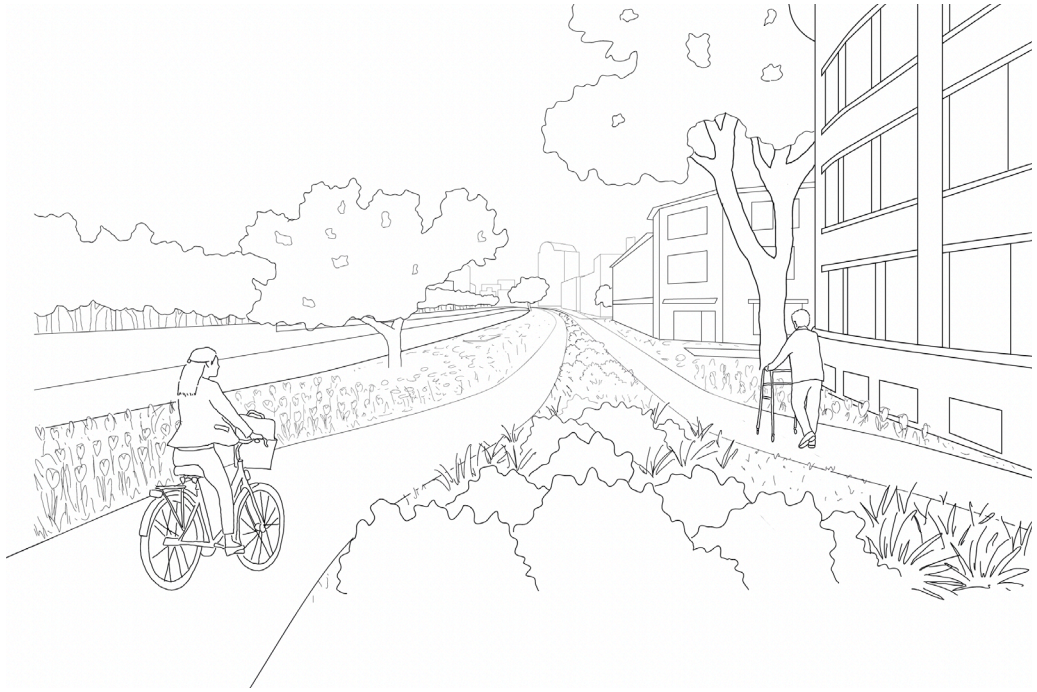


Figure 86: Omar's view while walking



After this Lisa enters a birch forest of the ribboned park which is a completely different experience with its high density and slender tree trunks.

After she passes an old intersection she enters an open space in the ribboned park where the existing monumental trees are accentuated and the ground level is filled with flowering grassland and shrubs.

This became one of Lisa's favourite parts of the route and sometimes she takes off a bit earlier so that she can have her breakfast here on this bench instead of at home. Here she can eat her sandwich while she does not have to think about her work yet and she can stare at the plants, insects and animals while her mind wanders off to even more relaxing places.

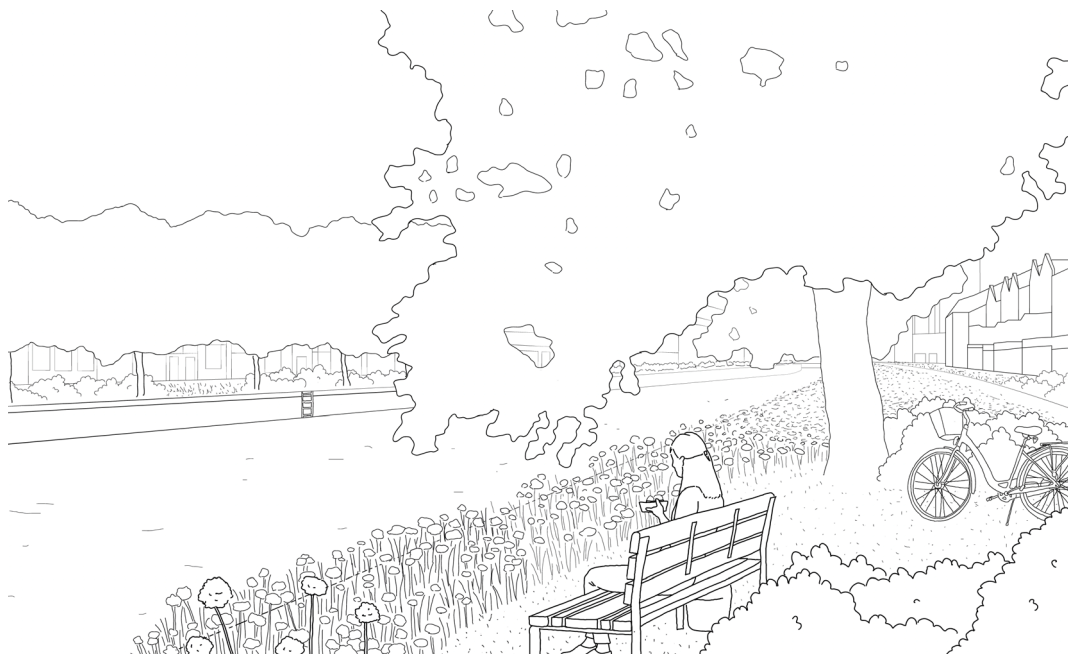


Figure 87: Lisa's experience on her way to work

Almost at the end of the route she has to cycle over an overpass where she can look right at the canopies of the trees on the ground level below her.

And lastly she arrives at the square in front of her work which is an open space with trees surrounding it and flowering grasslands around the benches.

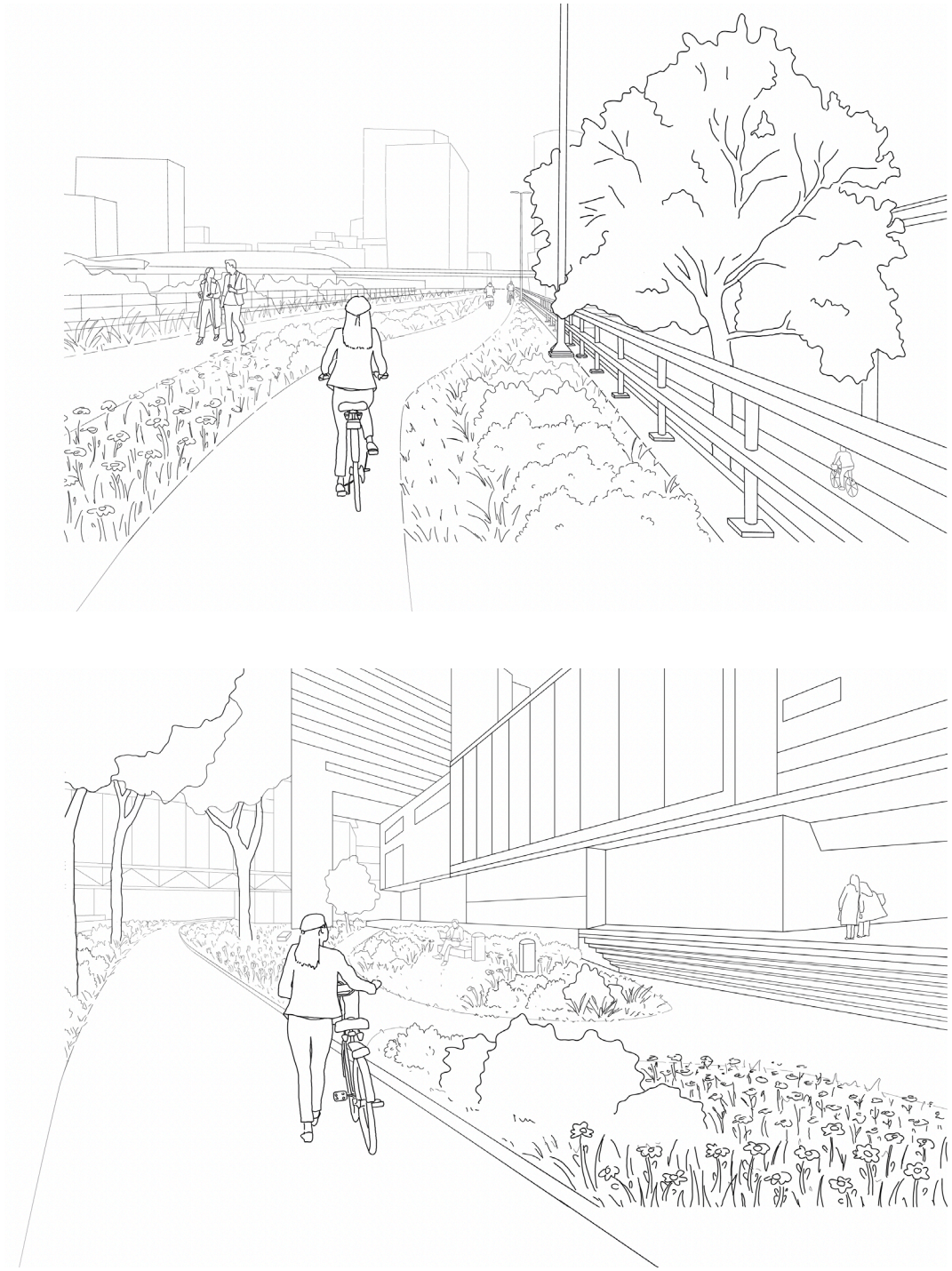


Figure 88: Lisa's experience on her way to work

Aspect of time

Fast mature looking landscape

The aspect of time is used in the realm of moving as well but in a different way then in the realm of living. For the realm of moving time should be used to make sure that people can become aware of their connection to nature within a few years and not only after 50 years when the trees are mature. To create a fast mature looking landscape the stages of forest succession should be used. In figure 89 below you can see four mature ecological stages and their process: grasslands, roughs, fast growing forest and slow growing forest.

Stages of forest succession

The first stage of grasslands can only occur on open spaces where there is enough light. In time the grasslands will develop into roughs, so if you want to keep grasslands high maintenance is needed. The roughs will develop into a forest over time, where the amount of time depends on the tree species. The trees of the fast growing forest will become more dominant than the ground level in around 10 years, while trees in the slow growing forest need around 20 years to do so. If the canopies of the trees are really dense there will be no grasslands or roughs on the ground level, but if the canopies are more transparent ground cover can occur as well.

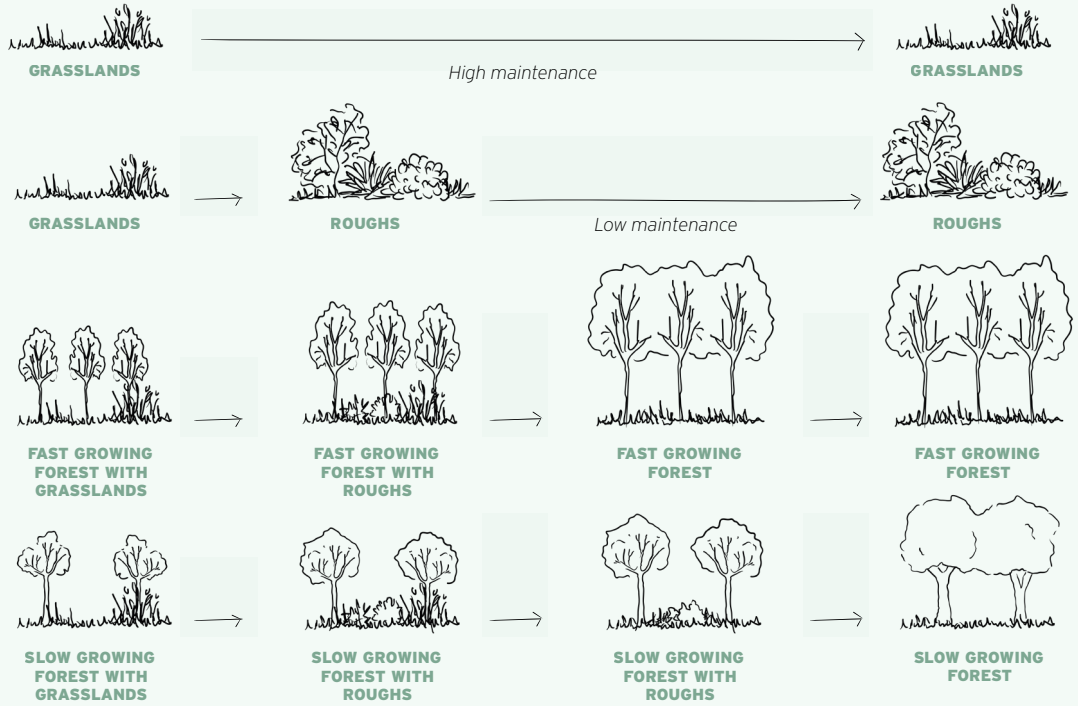
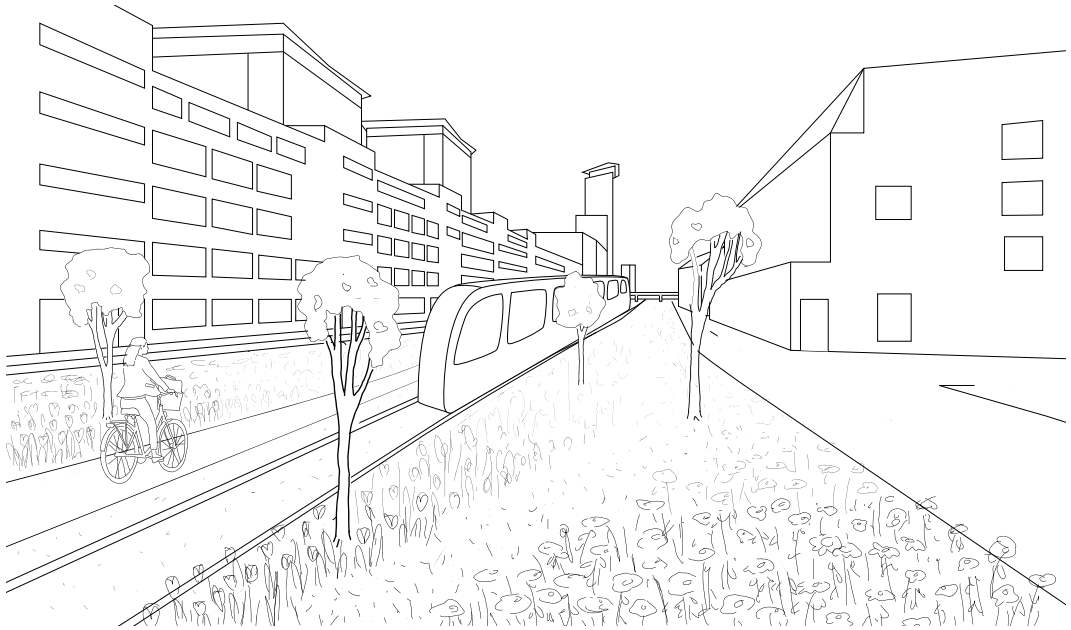


Figure 89: The stages of forest succession and their process

Experiencing the phases

A slow growing forest in the Rijswijkseweg

One of the streets that Lisa cycles through is the Rijswijkseweg, which contains a slow growing forest. This is the slowest maturing type, so here it is extra important to make sure that the stages before that are pleasant as well. In figure 90 on the next page you can see how Lisa will experience this street through the phases. In the first stage you have the grassland as the main focus point, in the second phase it is the play between the grassland and the roughs and in the mature phase the trees haven taken over and only the open spaces will have grassland or roughs due to a lack of light.



Phase 1: Grasslands

Phase 2: Grasslands and roughs

Phase 3: Slow growing forest

Phase 4: Slow growing forest

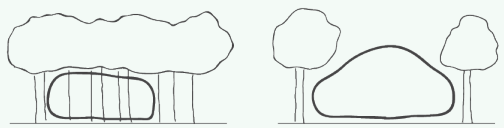
Figure 90: The phases of the Rijswijkseweg

Toolbox for the realm of moving

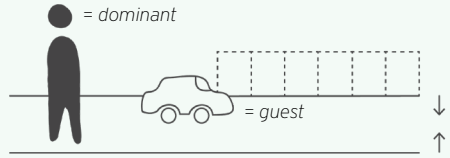
Design principles

The design principles that are used in the realm of moving are summarized within a toolbox.

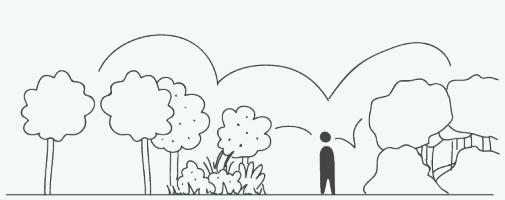
Express the current urban forest characters along the route



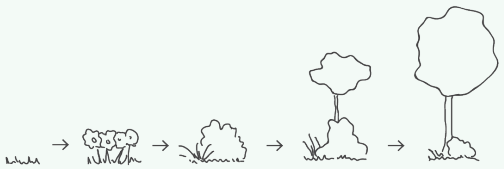
Create diversity in space



Make streets pedestrian oriented

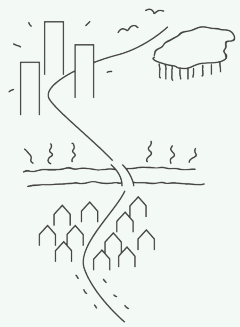


Alternate coherence, complexity, legibility and mystery

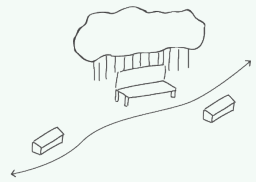


Use different ecological stages to create a fast mature looking landscape

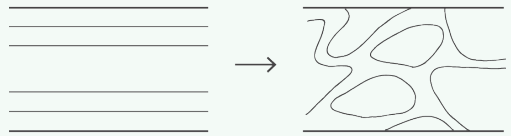
Add different ways of moving



Use potentials that are currently present to increase the nature experience



Add places to sit along the route



Create a new kind of street by thinking outside known structures

Facilitate soft fascination

Figure 91: The toolbox for the realm of moving

5

Separate experience: Visiting

Aspects of visiting

Urban Forest

Make it accessible

The most important goal for the urban forest in the realm of visiting is that the forest should be made accessible. Many areas in the urban forest in this realm can currently not be entered, which is not a problem in itself, but when you want people to be able to experience the urban forest this should be changed. Making it accessible can be as easy as adding a path or an entrance.

React to the current character

Every element that is added or removed to make the urban forest accessible should be a reaction to the current character. This reaction can be in line with the current character but can also be a contrast. For this the same guidelines as for the realm of living can be used: you design in line with the character unless there already is an exception in the basic form and there is not more than 10% that already forms an exception.

Methods of the nature diagram

For the realm of visiting again multiple methods to help people become aware of their connection to nature should be used. In figure 92 the methods that apply for the realm of visiting are shown and these will be elaborated on in this chapter.

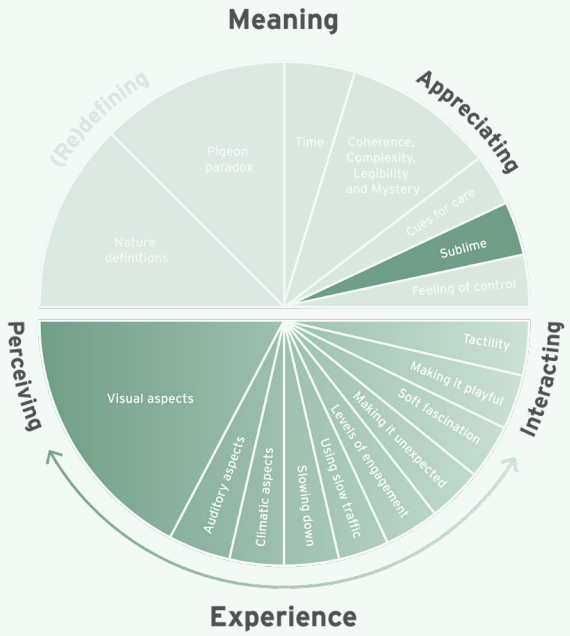


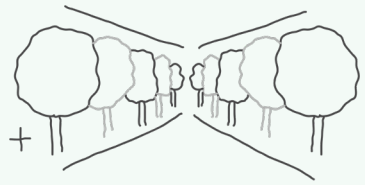
Figure 92: The methods of the nature diagram that apply to the realm of visiting

Sublime

Romantic sublime

A way to use the separate experience of visiting to lead people to a new perspective is to create an experience of the sublime. This experience can be described in different ways and has changed trough time as well. In traditional literature the sublime is part of the aesthetics triad of nature and landscape experience: the beautiful, the picturesque and the sublime (Roncken, 2018). The sublime in that context was the experience of something big and beautiful, but threatening and untameable at the same time (Slob, 2013). This is later referred to as the romantic sublime, where you would have a sublime experience of something threatening from a safe distance (Ronken, 2018).

Make the existing urban forest accessible



Emphasize the existing urban forest character

Figure 93: The design principles for the urban forest in the realm of living

A contrast experience

The question is if the romantic sublime leaves a big enough impression to create a new perspective, that is why Roncken (2018) pleads for a shift from the romantic sublime to an experience that is in contrast with daily life. To create such an experience the tradition to design an experience in every little detail must be broken and change and uncertainty should be embraced (Roncken, 2018).

The over-organized Dutch landscape is not an easy place to facilitate this uncertain sublime experience, but the fact that we live in such a controlled world makes it even more important to search for a contrast experience (Slob, 2013).

This contrast experience should be:

- Stimulating people to slow down
- Unexpected
- Facilitating soft fascination
- Playful

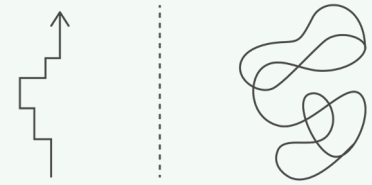


Figure 94: Create a sublime contrast experience

Slowing down

As a contrast with feeling stressed and rushed

This contrast experience is an opportunity to help people slow down as well. Many people are feeling stressed and rushed in daily life so when facilitating an experience that can stimulate people to slow down this can help peoples mental well-being and enhance the contrast experience.

Soft fascination

Helping detach from everyday struggles

The realm of visiting is ideal for facilitating soft fascination, because it is where you go for fun. The contrast experience can help with soft fascination as well because it can help you detach from your everyday life and its struggles.

Unexpected

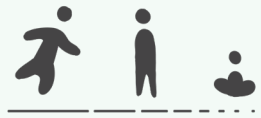
Multiple experiences

A contrast experience is unexpected since it is the opposite of daily life but also because the sublime embraces uncertainty, as mentioned before. This uncertainty is needed so that everyone will have a different experience, which makes the realm accessible for a broader target group as well.

Making it playful

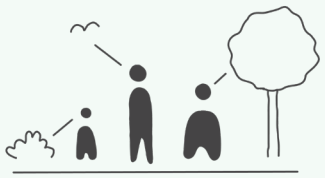
Keeping it light

And as said before the realm of visiting is where you go to in your free time, so the contrast experience should be a light and playful one.



Stimulate people to slow down

Facilitate soft fascination



Facilitate multiple experiences

Facilitate light and playful experiences

Figure 95: Design principles for a sublime contrast experience

Red Ribbon Park

Adding a simple path to make it accessible

The Qinhuangdao Red Ribbon Park is built alongside the Tanghe river and makes a former inaccessible natural terrain accessible with a minimal intervention. The red ribbon is 500 meters long and integrates seating, lighting, environmental orientation and orientation. The minimal design has a big impact on the accessibility, usability and safety of the area and thus adds so much quality that it has prevented that the area would have been demolished for urban development (Turenscape, 2020).

Architects: Turenscape
Location: Qinhuangdao City, China
Date: 2008

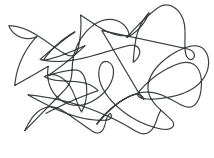


Figure 96: From inaccessible wilderness to accessible wilderness

Figure 97: Top view of the Red Ribbon Park (Source: Turenscape)

Getting lost in the dunes

The feeling of getting lost

Since we live in an over-organised world we (almost) always know where we are and how we can get back to where we came from. So a way to facilitate a contrast experience is to create a space where you could experience the feeling of getting lost again. A location where this would be possible are the dunes and especially the areas Kijfhoek and Bierlap, since they are less organised and not many people visit them at the same time.

Stimulating people to find their own way

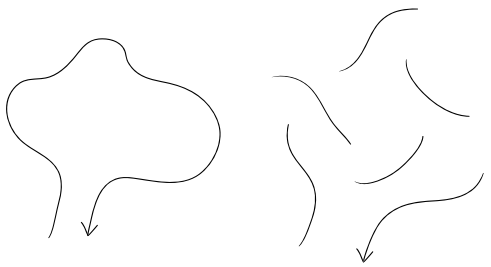
But how do you create a space where people get lost? How do you make sure they really get lost? The thing is: you do not. Since the sublime is not about an experience that is completely planned and mapped out, where everybody would have the same experience. It is actually about that uncertainty and the fact that everybody will experience it in a different way, which will make it unexpected as well. So it is about finding ways to stimulate people to find their own way instead of following a strict route.

Loosing the autopilot

The goal of this destination can be best described with a few keywords:

- Getting lost
- Roaming around
- Searching
- Exploring
- Attempting
- Doubting

By creating an experience that makes the visitors uncertain about what they should do they will not be able to function on autopilot anymore and they should really engage with their environment to find their own way. This will not only stimulate people to slow down, but the necessity to explore the environment will make it playful as well. And while wandering around the experience of soft fascination is facilitated at the same time.



Traditional way of routing: one strict route

New way of routing: no strict route

Figure 98: Traditional and new way of routing

Urban forest type: Dissolved

Figure 99: Diagram of the urban forest type of the dunes

Dissolved dunes

The basic form of the urban forest in the dunes can be seen in figure 100 below and fits into the type of the dissolved urban forest, which contains of irregular denser areas of trees with clearings. The spatial layer looks at the relation between the buildings and the trees, but there are no buildings in the dune area so this layer does not apply here. And since this urban forest is located in an archetypical natural area, the dunes, this will function as the image form, so the current urban forest character is the dissolved dunes.

Irregular dense areas of trees with clearings

And since the dissolved dunes are built out of irregular denser areas of trees with clearings, these are also the elements that should be designed with.

Figure 100: The basic form of the dunes: tree canopy layer

Stimulating people to find their own way

Methods to help someone find their own way

A way to help someone find their own path is to let them follow a way-finding cue, like a path, which suddenly stops, so that they have to find out for themselves on how they want to continue. There are three ways to do this:

1. Abruptly ending a way-finding cue

This will **force** someone to make a decision on how they continue on their way.

2. Gradually ending a way-finding cue

This will happen **unnoticed** and will cause **doubts** when it becomes clear that the path has ended and thus stimulates someone's thought process to decide on how to continue on their way.

3. Tempting someone to stop following the current way-finding cue

This will **seduce** someone to make a conscious decision to stop following the main path to make a route of their own.

By using these three methods the chance that you will reach a broader audience increases because different kind of people will react different to these three methods. There are for instance people that will never be seduced enough to decide to step outside of their current path, so by using the first method of abruptly ending the way-finding cue you can also force them to start making a decision about their route. Another person will maybe turn around if they see the path ends, but if you make the path end gradually they will not notice it until it has already happened and they will have to think about what they are doing next.

Appealing to multiple senses

For these three methods a toolbox can be created for the different means to form a way-finding cue, which can be see in figure 102. For each tool it is shown which senses you can use to follow the way-finding cue. By appealing to multiple senses you can reach a wider audience and some of the cues can even be followed in the dark.

Abruptly ending a way-finding cue

Gradually ending a way-finding cue

Tempting someone to follow an alternative way-finding cue

Figure 101: The three methods to help someone find their own way

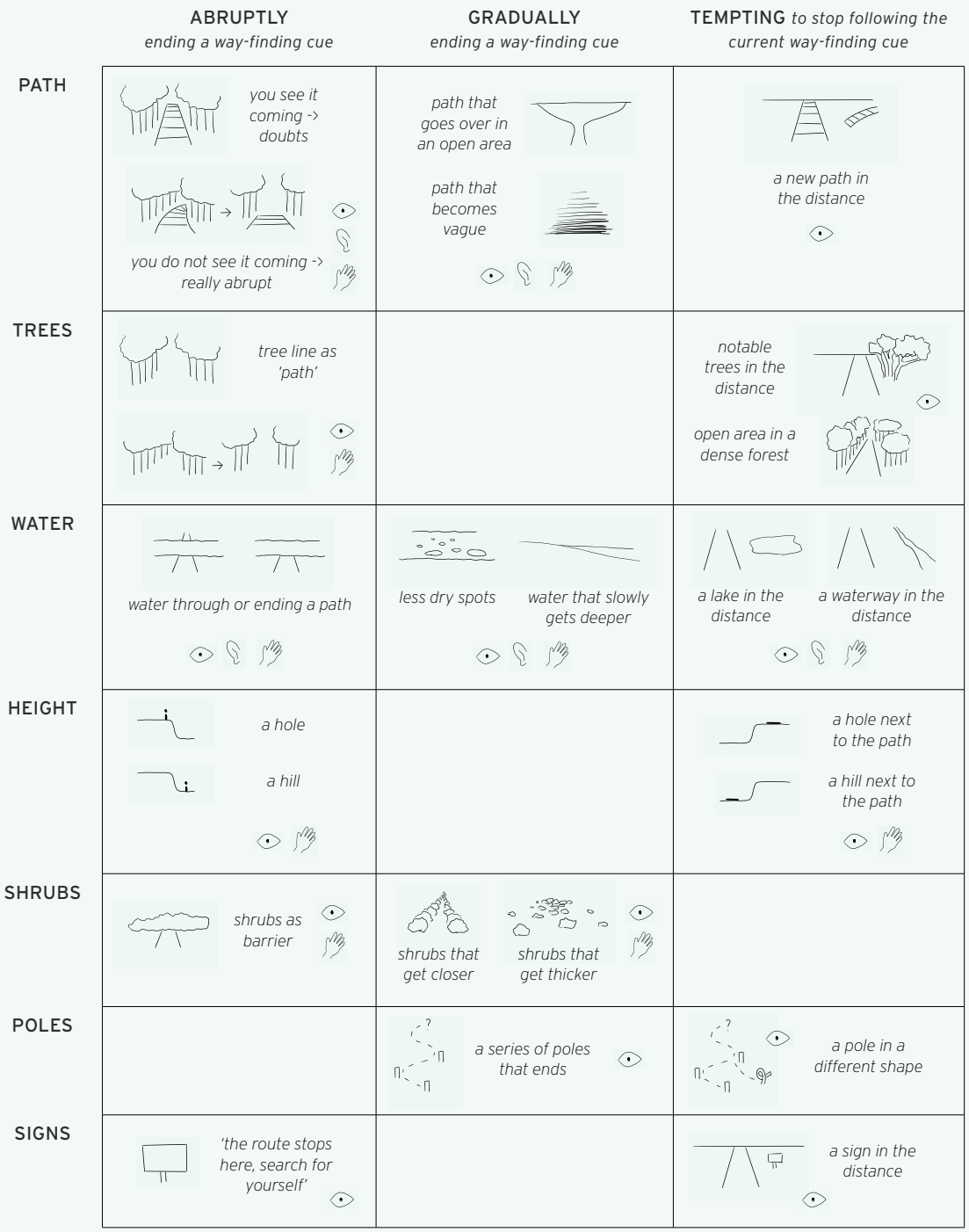


Figure 102: A toolbox to help people someone find their own way

Experiencing the sublime

Different ways to move through the landscape

To illustrate how the toolbox could be put into practice an example for all three of the methods is shown. In the schematic overview below you can see how first the method of tempting is used, then gradually ending a path and lastly abruptly ending a path and how this could influence how different people can move through the landscape.

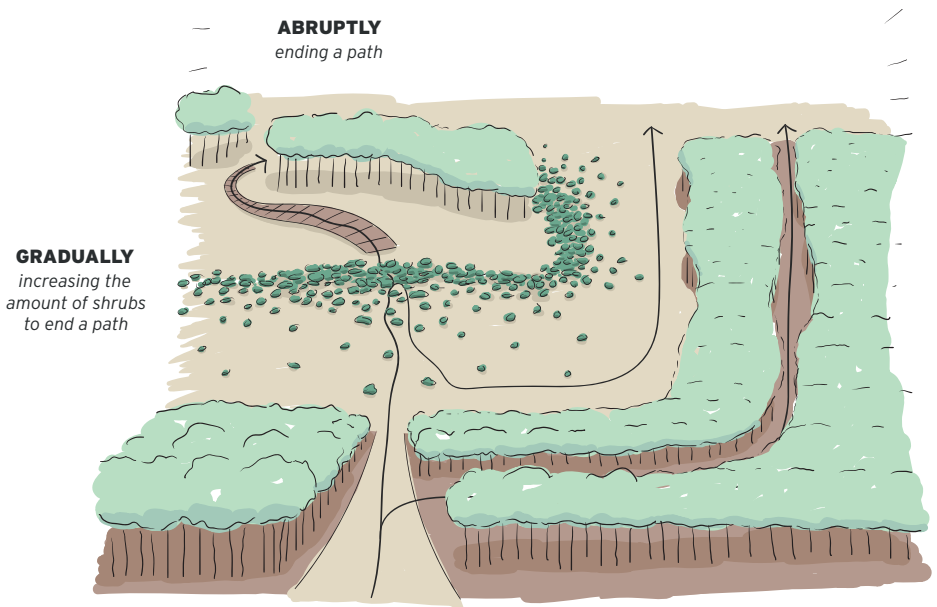


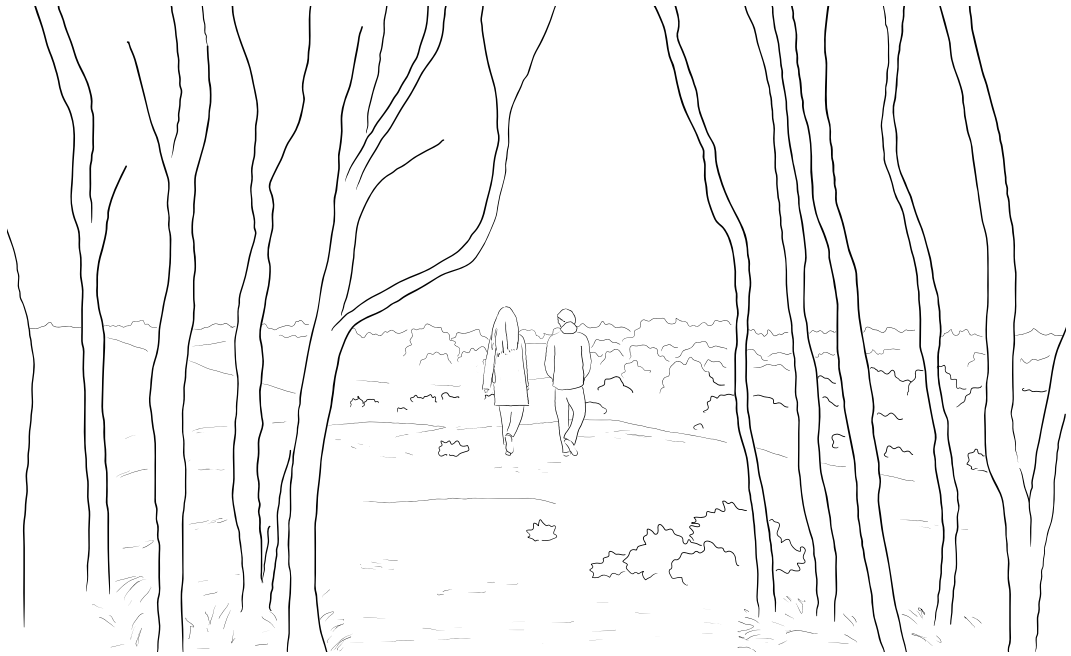
Figure 103: Schematic overview of the three methods in the example

The experience of Lisa and Jamie

So in figure 104 on the next page you can see Lisa and a her friend Jamie walking through the forest.

A bit further they encounter an open space in between the trees in the otherwise dense forest. Jamie is distracted and wants to go explore this open space, but Lisa says they can not go off the path and she persuades him to walk further on the path that they are on.

Figure 104: The experience of Lisa and Jamie



As they walk further the forest ends and the path goes over in an open space which makes Jamie happy because now they can go everywhere they want. But that is not how Lisa's mind works, she can not handle the amount of options and decides that even though there is no path they probably should go in the direction they were going and walk in a straight line until they find the rest of the path. Jamie sighs but decides to follow Lisa.

And as they are walking the shrubs become closer and closer to each other until there is almost no space to walk in between them anymore.

This of course makes Lisa doubt her plan, but she is now determined to follow it and keeps walking straight ahead with Jamie meandering behind her.

Figure 105: The experience of Lisa and Jamie

Then she spots a wooden board walk behind the trees at shouts: Ha I was right! Jamie laughs and they climb through the last shrubs and follow the board walk.

The board walk goes into a dense forest again and takes a small turn.

And then it abruptly ends in an open space. Lisa is internally going crazy and Jamie starts laughing. Lisa decides to give up and to follow Jamie from now on.

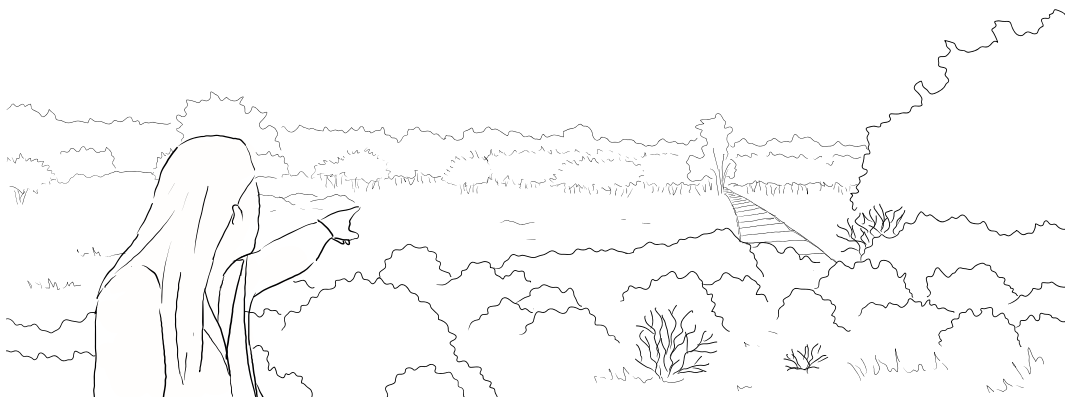
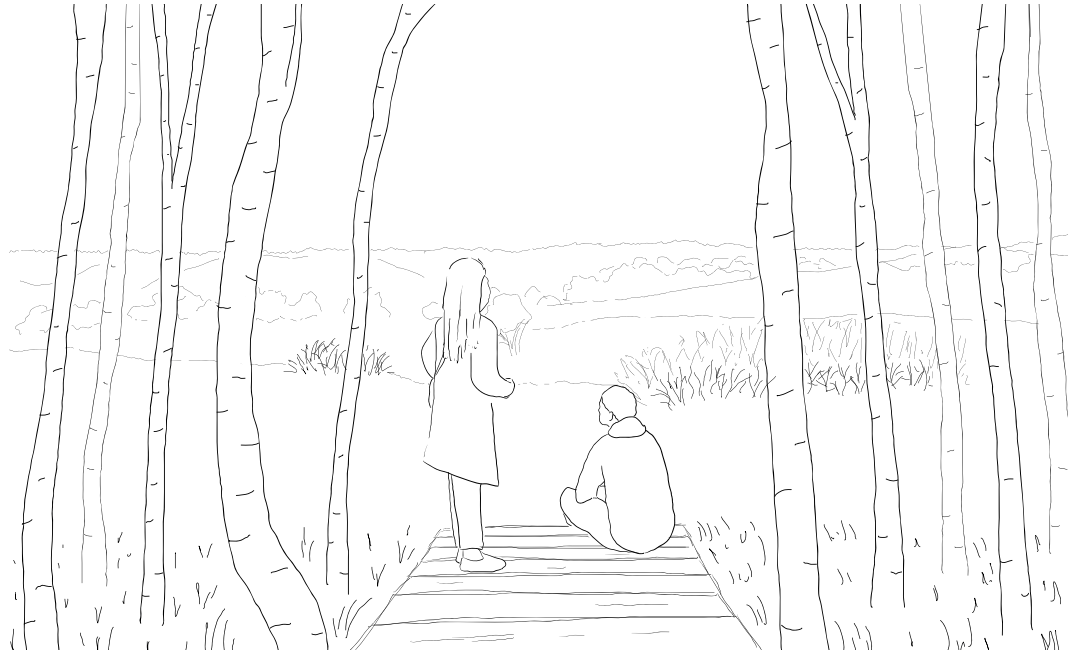


Figure 106: The experience of Lisa and Jamie



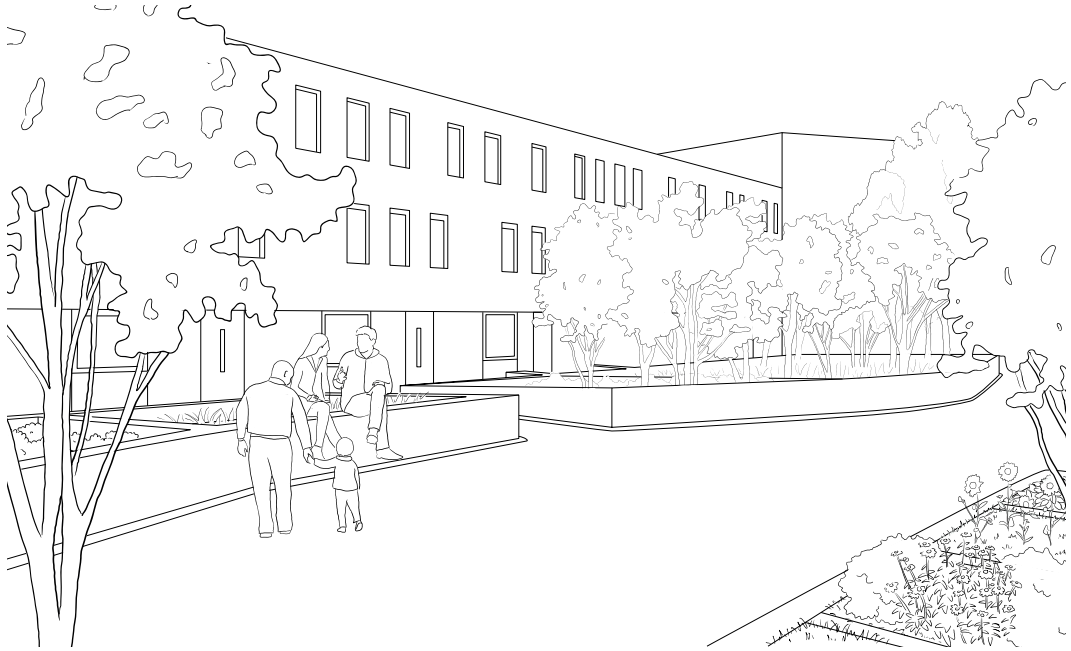


Figure 107: Jamie, Lisa, Omar and his grandchild talking in the street

The experience of Omar

When they are home and start talking to Omar about their experience, he tells them that he went to the same place a few weeks ago and that he had a completely different experience.

He started in the same dense forest, but when he saw the open space that Jamie was distracted by he actually decided to go in instead of following the path he was one.

This lead him to a quiet passage through the woods which meandered and changed in size throughout the forest.

Figure 108: The experience of Omar

Figure 109: The experience of Omar

And this forest eventually lead him to an open space as well.

And while they were talking one of Yuki's moms passes by and joins the conversation. They visited the dunes a couple of days ago and struggled to find their way as well.

The experience of Yuki and her moms

Yuki and her moms followed the same path as Lisa and Jamie, but when the shrubs became closer and closer to each other they decided to turn around.

Figure 110: Jamie, Lisa, Omar and his grandchild and one of Yuki's moms talking in the street

Figure 111: The experience of Yuki and her moms

Figure 112: The experience of Yuki and her moms

They walked back to the place where they last saw a path, which was at the end of the forest.

They decided to walk next to the border of the forest to see if a new path would occur. They did this for a long time, following the forest when it curved around.

And this made them end up in an open space as well.

And while they are talking about this in the street they start to wonder if they all ended up at the same place, even though they had a really different experience.

Toolbox for the realm of visiting

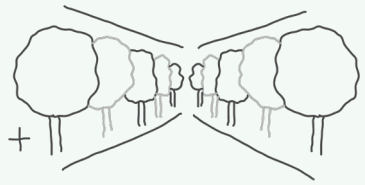
Design principles

The design principles that are used in the realm of visiting are summarized within a toolbox.

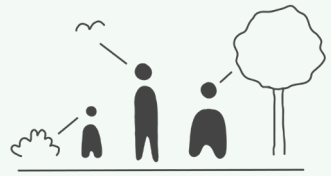
Create a toolbox to use visual, auditory and tactile means

Make the existing urban forest accessible

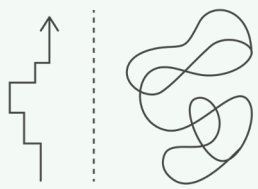
Facilitate different levels of engagement



Emphasize the existing urban forest character

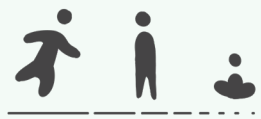


Facilitate multiple experiences



Create a sublime contrast experience

Facilitate soft fascination



Stimulate people to slow down

Facilitate light and playful experiences

Figure 113: The toolbox for the realm of visiting

6

Conclusion

Conclusion

Method of the nature diagram

The landscape architectural design of an urban forest can help create realms of experiences in order to make people more aware of our connection to nature by using the methods that are presented in the nature diagram. All three parts of (re)defining nature, appreciating nature and experiencing nature should be used to make the methods more effective since they complement each other.

(Re)defining nature

To be able to make people aware of our connection to nature (re)defining nature is needed, because if people keep seeing nature as something that is far away they can never feel the connection in their daily life. This part is on one hand important for the designers and policy makers during the design phase, because they should be aware what kind of nature they are designing for. On the other hand this part is important in the communication of the plans to the people that are actually going to live there, because they too should be aware of what is meant when the word nature is used.

Appreciating nature

The second part of appreciating nature is important to help people adapt to the new kind of living environment. Even though the methods in this quadrant vary from an abstract concept such as time to the practical approach of the cues for care they are all ways to help people appreciate the kind of urban nature that is needed to make people aware of their connection to nature.

Experiencing nature

The last part of experiencing nature is all about the way people will get in contact with nature in their daily life. Firstly this is about stimulating people to go outside to actually get in contact with nature and secondly it is about providing diverse opportunities for this contact with nature. These aspects are both needed since you need people to actually be outside to be able to experience nature and you need the diverse methods to attract a broad audience.

Realms of experiences

All parts can be used for the three realms of experiences: living, moving and visiting. However the way the methods are implemented can differ in each realm. The method of time can for instance focus on helping people slowly adapt to changes by implementing the design in steps, which is an appropriate way for the realm of living, since that realm is situated right on peoples doorstep. For the realm of moving the method of time can be used in another way: by using the processes of forest succession to gain a quick mature looking landscape to make sure that people can become aware of their connection to nature within a few years and not only after 50 years when the trees are mature.

Diversity in methods

So when using the nature diagram in its diversity in methods and through the realms of experience when designing an urban forest it can help make people more aware of their connection to nature.

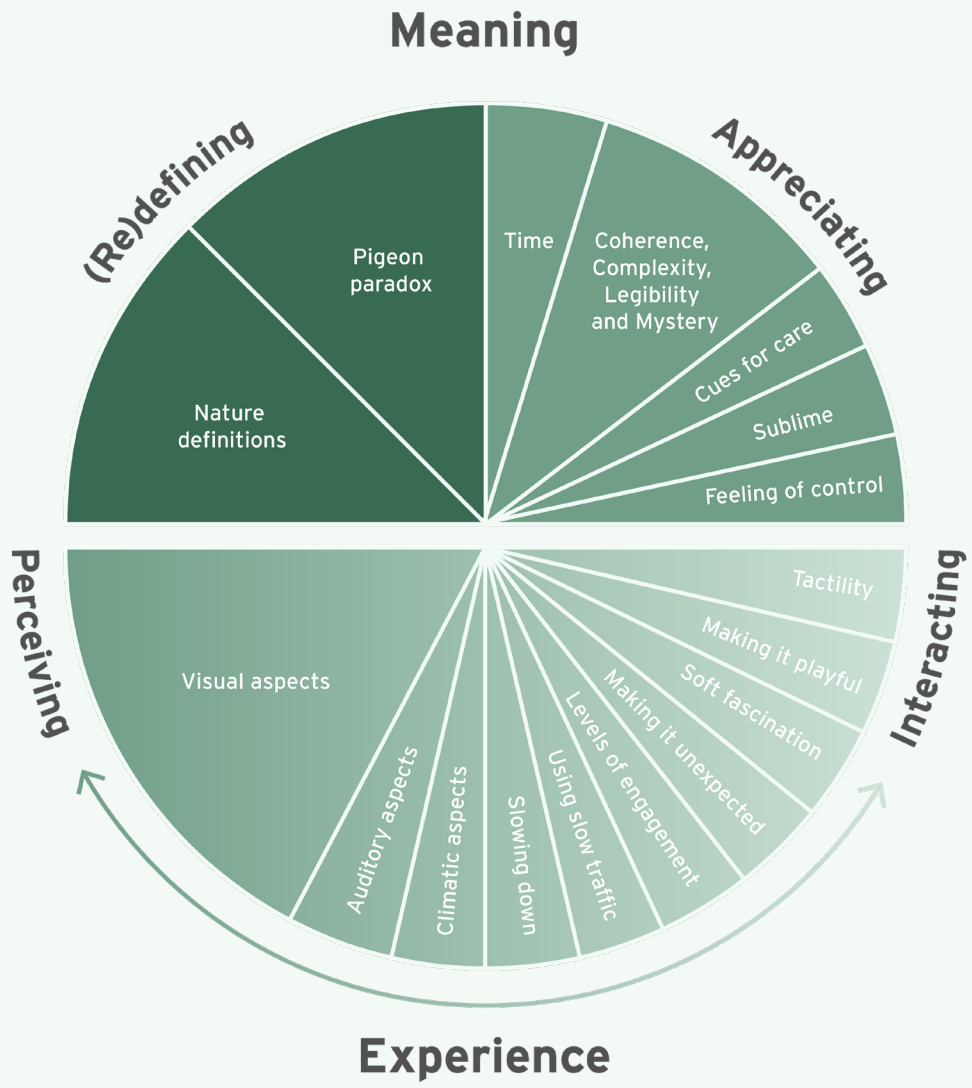


Figure 114: The nature diagram

Discussion

This goal of this project is situated on the line between landscape architecture and (environmental) psychology. This is why the first part of the goal (help create realms of experiences) can be achieved in this landscape architectural project, whereas the second part of the goal (in order to make people more aware of our connection to nature) which is a psychological question stays a hypothesis.

It is beyond the scope of this project to find out if and how people actually become more aware of their connection to nature if these methods are used. The reason that the second part of the goal is still included in the project is because it does influence the methods that are used and it gives the project a constant reminder of the reason why the goal is important.

A recommendation for further research could go both ways, firstly into the discipline of landscape architecture to gain more evidence on how the theories are put into practice since it not a topic that has been done a lot of research on. And secondly in the discipline of (environmental) psychology to get information on how these methods will actually influence peoples awareness of their connection to nature.

7

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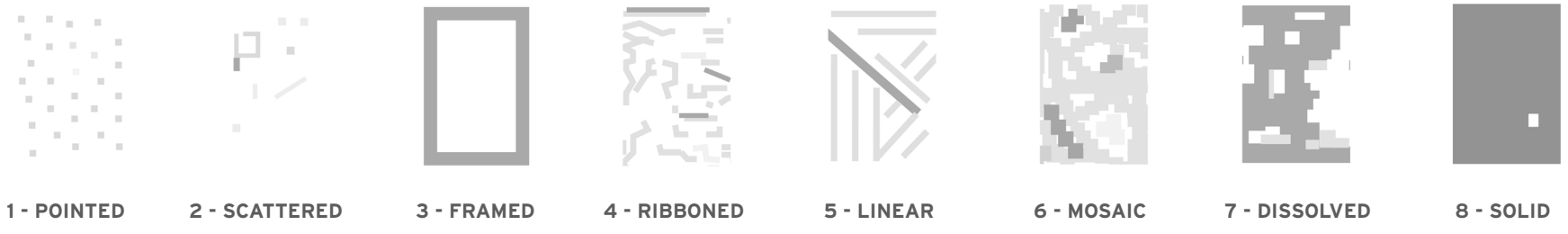
Appendix

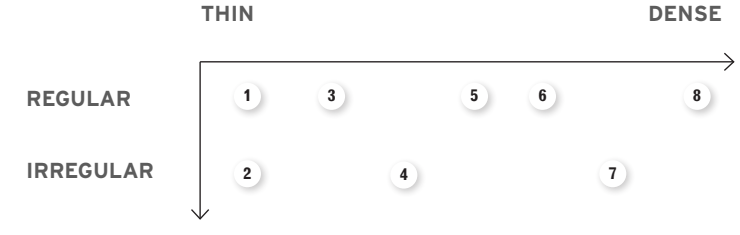
Urban forest typologies

Seeing the city as a forest

Defining typologies

The landscape of the Netherlands can be understood in its canopy density of forest and wooded areas. Here the distinction between 'nature' and 'urban' areas is blurred. In some cases, such as in the Randstad, it is the urban area that is heavily wooded as opposed to the open agricultural landscape. These urban areas are thus more than residential blocks, historic centres, transportation links and public spaces. Here the city has the opportunity to be viewed in a new light: that of a forest built up with varying densities, patterns and typologies.





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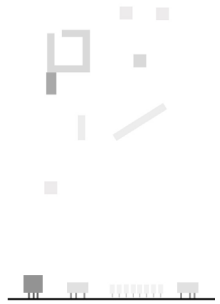
1. Pointed

The pattern of this urban forest type contains of trees that are regular distributed over the area. This makes the thinnest urban forest that can be found in The Hague. Because of its regular distribution every part of the area is experienced the same.

2. Scattered

The pattern of this urban forest type contains of trees that are irregular distributed, this makes that this area is experienced in different ways depending on where you are in the area, because a lot of it exits of only a clearing while others contain the thinnest urban forest that can be found in The Hague.



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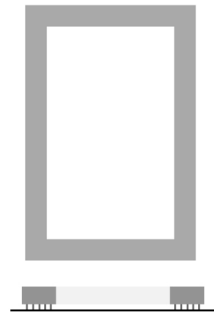
3. Framed

The pattern of this urban forest type is maybe the most unexpected one. It contains of dense treed areas that form a frame around a complete open area, a clearing.



4. Ribboned

The pattern of this urban forest type is very irregular but is denser than the scattered type. It contains of clumps and lines of trees that vary in density, but because of its irregularity it still contains a lot of clearings as well.

5. Linear

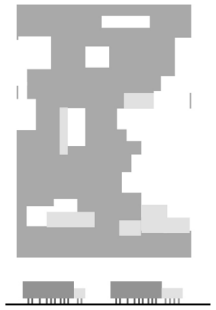
The pattern of this urban forest type contains of regular lines of trees and occurs mostly in residential areas where these lines follow the street pattern. The density of these lines vary: the higher the tree density the bigger the road.

6. Mosaic

The pattern of this urban forest type contains of regular distributed wooded areas which are not really dense, but they can have some denser points in them.

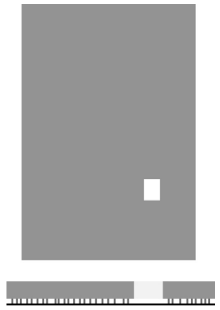
7. Dissolved

The pattern of this urban forest type is irregular and contains of denser areas of trees with clearings.



8. Solid

The pattern of this urban forest type is the most dense type that can be found in The Hague. It contains of a dense tree area where only a few times a small clearing occurs.



Created in collaboration with Rachel Bonnewel, Floris van Calmthout and SuiHui Kuo

A guide for the landscape architectural design of an urban forest that helps create realms of experience in order to make people more aware of our connection to nature.

The imbalance between how we live and how the natural world around us works leads to a disconnected relationship with nature. Because of this many people see nature that is far away as idyllic, while they see nature that is nearby as a nuisance. If people keep seeing nature as a destination it fuels the belief that real nature is separate from daily life, which creates the feeling that caring for nature is not people's responsibility or within their power. Therefore this guide contains a method for the design of an urban forest to help people experience nature in daily life. The method is illustrated by a design example through realms of living, moving and visiting in the Hague.