(NOT) OUR FOREST

an alternative multispecies approach to forest and landscape

@Dune region and Amsterdamse Waterleidingduinen

(not) our forest
a multispecies approach to forest and landscape

MSc Thesis

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ABSTRACT

Keywords: ***forest strategy, multispecies world, Amsterdamse Waterleidingduinen, movement, hybrid, cyclical time, perception, human, nonhuman, legal rights for landscapes***

This research begins with a fascination for nonhuman activeness. This is based within a theoretical framework of multispecies world, in which nonhumans are seen as active beings that continuously disturb. Seeing nonhumans as active beings causes some policies, or interventions, to look strange. One of these policies in the Netherlands is the new forest strategy commissioned by the Dutch Ministry of Agriculture in the Netherlands: the expansion of forest by 37.000 hectares within ten years. Even though the goal of the forest strategy is to provide more biodiverse spaces, the new forest is still there because it is pleasant for us humans. The research therefore aims at an alternative to this forest strategy through researching the main question: ***How can new ways of connectedness between humans and nonhumans be generated in existing and newly constructed areas perceived as 'natural' or 'nature'?***
In order to research new types of connectedness, the theoretical framework of multispecies world is further explored. This results in design principles on human, nonhuman, and abiotic movement, hybrid as an explicit human structure where there is a condensation of movement, and landscape as being, which is a forest structure designed as if it has legal rights. After this, the dune region, with in specific Amsterdamse Waterleidingduinen is analysed in terms of movement, transitions and identity of the area, and problematic areas where a landscape as being is necessary. In terms of movement there are different movements found in the areas of the forest/savannah, the dunes, the water infiltration system, and the flower bulb fields. Transition zones are found between these areas. Hybrids are placed here in order to let make humans more aware of nonhuman movement. Problematic areas around Amsterdamse Waterleidingduinen are considered to be the Oosterkanaal, that retrieves water from the dunes, and the cultivation of flower bulbs. These elements result in a research by design that tries to generate new ways of connectedness between humans and nonhumans. Time, and materiality become very important in the design. The hybrids have a timespan in which they need to be build anew or left to decay. Therefore, every thirty years there is a reassessment of the relation that humans have to the landscape. Through the design it becomes clear that the multispecies approach taken on in the design, does not generate new connections with the presence of movement, hybrid, and landscape as being. But it does generate different ways of connectedness because of the rebuilding of hybrids that are a direct response to the landscape and its corresponding movements, and the changes that happened in the landscape. A multispecies framework therefore proposes an alternative design for the forest strategy that instead of moving towards an end goal (which the forest strategy does), mostly marks a beginning of a relation to the landscape that is revaluated through a cyclical approach to time. This approach thus does not lead to new connectedness, however it does lead to different connectedness.

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PROLOGUE

When I stir top layers of soil, I find connections I had never imagined to be there. Earthworms, bugs, centipedes panic and start to slide, run, crawl away from my brute intervening in their lives. The western jackdaw awaits at the side for me to finish, to then take a look at the buffet I have made.

Sometimes I act and by that, expose a world of connections that I had not seen before. Sometimes I visit a zoo and see goats bullying each other. I am not a missing link. I only cooperate or interfere (unintentionally).

This fascinates me. It gives a sense of respect and awe to all life forms that are noncomparable to my own. It challenges me to search for clues that can build alternative narratives – stories of bullying goats and waiting jackdaws – and by that change my perception from a passive film into an active world. This is how my project began.

INTRODUCTION

When I tend to look at my surroundings as an active world, I find many new interventions interesting yet strange. One of those interventions is the new forest strategy: the expansion of the total forest area of the Netherlands by 37.000 hectares within ten years (Ministerie van LNV, 2020). This is demanded by the Dutch Ministry of Agriculture in order to reach forest biodiversity and climate goals (2020).

Forest in the Netherlands fulfils multiple functions: the embedding of carbon, wood production, biodiversity, providing space that contributes to the mental health of humans, the cleansing of water, fresh air, and it smooths out climate extremes (Ministerie van LNV, 2020). The addition of forest in the Netherlands is an attempt to combine at the one hand, biodiversity, climate and social health goals, and at the other hand, economic developments. On top of that, the new forests have to strengthen existing landscape qualities, which asks for site specific design. The addition of forest therefore attempts to combine many different goals within the existing qualities of the landscape.

A landscape type to which newly added forest is designated within the forest strategy, are the flower bulb fields that are situated along the dunes. Therefore my attention was drawn to the dunes of Holland, on which there is now already a thin line of forest present. These dunes are part of the Natura 2000 network, and therefore have to answer to the Natura 2000 policy (Ministerie van LNV, 2008).
The positive effect of this influence is the level of care that is taken in order to keep the biodiversity within these areas as good as possible. However,

Amsterdamse Waterleidingduinen

Dune

Forest

Forest strategy

Flower bulb fields

Human

Multispecies world

Nonhuman

Schoorlse Duinen

nature policy in the Netherlands has led to a decline in biodiversity in areas that are not described within these policies (CRa, 2020). Therefore, the main goal of the dunes is to preserve biodiversity, whereas next to the dunes this exact topic is neglected. To improve these adjacent areas with forest seems as a reasonable step.

Nevertheless, a problem arises. Forest in the Netherlands, and the forest found in the named dune region often gives people a nature experience (Ministerie van LNV, 2020). This experience is present due to the possibility of recreation, which is pleasant, and contributing to the wellbeing of humans. This shows, however, still a rather anthropocentric idea of what nature should be to us: pleasant and contributing (Cocks & Simpson, 2015). It is therefore an old-fashioned idea of what our relation to nature is and could be. Thus, there is a practical need for extra forest, but there might, more importantly, also be a need for a new definition of what our human relation to these forests is.

For this, I draw from the idea of multispecies world. This concept basically acknowledges that humans and nonhumans can continuously disturb, and by that, influence others (Tsing, 2015, p.152; Haraway, 2016, p.2). It thus describes an active world. The dune areas are maintained to be mostly for nonhumans. Yet humans visit the areas in great numbers. Humans favour some parts of these areas greatly, however sometimes it is exactly this that needs to change in order to safe rare, vulnerable nonhumans. Nonhumans are not always within what we consider to be our world, but are rather living alongside us having their own agenda (Despret, 2016, p.165). It is therefore important to not only focus on establishing durable relationships between humans and nonhumans that allow change, but also on accepting the validity of nonhumans that are not obviously related to us. This means that to look at the forests as within the theoretical paradigm of a multispecies world, I might find new human relations to these forests.

New ways of Connectedness through Research by Design for Amsterdamse Waterleidingduinen

In order to research these new human relations to the forests and dune areas my main research question is: **How can new ways of connectedness between humans and nonhumans be generated in existing and newly constructed areas perceived as 'natural' or 'nature'?** With the underlying hypothesis **'We can generate new ways of connectedness through designing within the theoretical framework of multispecies world'**.
In the research, I analyse both the dune region as a connected structure, reaching from Den Helder to Hoek van Holland, and two areas: Amsterdamse Waterleidingduinen and Schoorlse Duinen. These sites are very different from one another. Therefore, the analysis of both sites helps in sharpening both the research on the two sites, and in verifying the methods that I used in the analysis. Even though the analysis considers the entire dune region, Amsterdamse Waterleidingduinen, and Schoorlse Duinen, the research by design focusses on Amsterdamse Waterleidingduinen.

The design assignment for Amsterdamse Waterleidingduinen needs to achieve two connected goals. The first is to increase the area of forest, in line with the forest strategy of the Dutch Ministry of Agriculture. This research poses a multispecies alternative to the forest strategy mentioned above. Therefore, it is important that the design relates to the addition of forest proposed by the Ministry of Agriculture. Because the 37.000 ha are 10% of the total forest area in the Netherlands, this 10% is a minimal guideline to addition of forest based on the forest area along the coast. The second goal is that the design should research whether, and how, it is possible to create new ways of connectedness between humans and nonhumans, at both existing and newly constructed areas perceived as 'natural' or 'nature'. Since the research takes on the approach of multispecies world as something that we humans have to perceive, there are two valuable goals within the design: the perception of humans in relation to a multispecies world, and nonhuman presence. Because of this, the design works on different scales, reaching from the small scale of human perception to larger regional landscape structures.

The research itself consists of four main chapters. The first chapter is a further exploration of the multispecies world paradigm, that I already mentioned. In this chapter I explore 'How can humans perceive a multispecies world, and how can we generate nonhuman presence in a multispecies world?'. In order to

Location of Amsterdamse Waterleidingduinen & Schoorlse Duinen, and 37.000 hectares

answer this question, I further explore the multispecies world paradigm. I then focus on how humans perceive 'natural' surroundings right now, and what they have to perceive in order to notice traits of a multispecies world. I then focus on landscape architectural principles that I can use in order to make humans perceive nonhuman presence, and to generate nonhuman presence within the paradigm of multispecies world. The three main principles of the design consider: movement, hybrid, and landscape as being. These relate to one another differently in scale, and in time.

The second chapter focusses on the reality of the dunes in relation to the found principles I discuss in chapter 1. In other words, I research the dune region, Amsterdamse Waterleidingduinen (and Schoorlse duinen) on site specific movement, the language of the area, and the core issues that are at stake at the site. These three correspond to the design principles on movement, hybrid, and landscape as being. By exploring the site through this lens, the design principles of the site are resolved in site specific design principles. The second chapter thus focusses on the question 'How could a site be perceived by humans as a multispecies reality, and how can nonhuman presence be generated at this site?' Two less conventional methods are used in the analysis of the site: score, and collage. Scores were famously used within the landscape architectural design discourse by Anna and Lawrence Halprin to map public space and the influence it has on movement through scores (Merriman, 2010). This way of analysing is important for my sites because it can link movements to our surroundings. Collage as an artform goes back to the art period of cubism, in which different perspectives of often the same image were juxtaposed. By this, a diverse and multi-interpretable image was constructed about an object, a person, or other living things (Ruhrberg, 2001). In cubism the collages were largely designed beforehand. However, through the course of dadism this changed, because then juxtaposing of images randomly was done in order to create new images that conveyed strong compelling messages (Ruhrberg, 2001). Collage therefore gives me the opportunity to not exactly construct the site, but to construct a multi-interpretable image of the site, that nevertheless conveys a strong message.

The third chapter then explores 'How can the needed interventions be shaped in a landscape architectural design, and does this design than result in human perception of a multispecies world?'. Chapter three thus both considers a research by design, and an analysis of the design. The design does not form an answer to the main research question, the analysis of what this design does forms the answer to the main research question. Because movement, hybrid, and landscape as being relate to one another differently in scale, and time, the design goes through multiple scales and multiple times.

The fourth chapter gives an overview of the conclusions from every chapter and by that gives a conclusion to the main research question: **How can new ways of connectedness between humans and nonhumans be generated in existing and newly constructed areas perceived as 'natural' or 'nature'?** and hypothesis. On top of that, the

fourth chapter gives a reflection on the entire research that has stretched over the course of almost a year. In the reflection I reflect on the side effects on working with the theoretical framework I took on for this research, on the use of a what if scenario, on the take I had on hybrids, the larger scale, and movement, and on methods that got a different role throughout the research.

The relation of how this research began, the main research question, and the different subquestions and how these are resolved, are diagrammetically shown on the next page.

Reading guide

I decided to present my research in 4 different parts, instead of one. There is the main body of research, and there are three external booklets. I did this for a specific reason. There is one continuous line throughout the research that considers movement, hybrid, and landscape as being. This is drawn to the site at Amsterdamse Waterleidingduinen and a design for Amsterdamse Waterleidingduinen. Parallel to the analysis of Amsterdamse Waterleidingduinen is the analysis on Schoorlse Duinen. The analysis does not lead to a design, but it does lead to different design principles. And therefore it can be interesting for the reader to compare these two sites with one another, like I found it interesting to compare the sites to one another. The design principles are mostly line drawings. But around the shaping of these design principles I have looked at several projects that helped to clarify my thoughts on what I did and did not mean with movement, hybrid, and landscape as being. I would like to have the precedents exactly the same role to the reader, as it had for me: clarification, and helping hand in understanding. Therefore, the summary of precedent research is an external booklet as well that is organised along movement, hybrid, and landscape as being. In the description of every project I refer back to a part of the research, or a design principle.
The last external booklet is the glossary. This serves as a word cloud in alphabetical order, that can be used as a dictionary of the research while reading. At the beginning of every chapter and subchapter lists the words present in the glossary that relate to that chapter.
The presentation of these four different parts leaves the reader different possibilities to move through the research. The main body of research is leading, and can be – if wanted or necessary – enriched, clarified, compared, through reading or keeping the other three booklets beside the main body of research.

Leads to the main research question

START:

Fascination: my surroundings are active, nonhumans live their own lifes

A discontinuity

Forest strategy: there should be more nature, but nature should be pleasant/beneficial to us

are related

Underlying hypothesis

theoretical framework of **multispecies world**

We can generate new connectedness through designing within the theoretical framework of multispecies world

How can new ways of connectedness between humans and nonhumans be generated in existing and newly constructed areas perceived as 'natural' or 'nature'?

END:

Results in: Chapter 4

conclusion on whether and how we can generate new ways of connectedness

Analysis of research by design

a 'what if' scenario that gives an alternative approach to the forest strategy

Chapter 1

How can humans perceive a multispecies world, and how can we generate nonhuman presence in a multispecies world?

What is 'multispecies world'?
Desktop research

What do humans need in order to perceive this?
Desktop research

What elements that consider landscape architectural design can I then use/invent, in order to make humans perceive a multispecies world and to generate nonhuman presence?
Research by design (principles) & precedents

Results in:

a set of design principles considering movement, hybrid, landscape as being

site specifically researched

Chapter 3

'How can the needed interventions be shaped in a landscape architectural design, and does this design than result in human perception of a multispecies world and therefore new ways of connectedness between humans and nonhumans?'

Research by design at Amsterdamse Waterleidingduinen

Through multiple scales reaching from 1:20.000 to 1:50 and at four different times: now, now in 20 years, now in 30 years, now in 50 years.

Chapter 2

'How could a site be perceived by humans as a multispecies reality, and how can nonhuman presence be generated at this site, while relating to the 10% forest addition of the Ministry of Agriculture?'

At the dune region

Site analysis of the dune region based on movement, areas, and additional forest

Leads to:

A strategy on a 1:100.000 scale

Results in:

a set of site specific design principles considering movement, hybrid, landscape as being

At Amsterdamse Waterleidingduinen

Site analysis of the dune region based on movement, language of the area, and additional forest as a problem solver for problematic areas.
Specific methods used for movements: score
Specific methods used for language: collage

At Schoorlse duinen

Site analysis of the dune region based on movement, language of the area, and additional forest as a problem solver for problematic areas.
Specific methods used for movements: score
Specific methods used for language: collage

used as comparison

1. HOW TO PERCEIVE A MULTISPECIES WORLD

Abiotic movement
Actor
Affordance
Attraction
Beauty
Companion species
Condensed movement
Disturbance
Explorer
Ferality
Haptic sensation
Human
Human infrastructure
Human perception
Hybrid
Invasive
Landscape as being
Maintainer
Movement
Multispecies world
Native / Non-native
Nature
Nonhuman
Nonhuman movement
Sacred landscape
Secrecy
Sublime
Time
Transition
Visitor

1.1 MULTISPECIES WORLD

This thesis is placed within the theoretical framework of 'Multispecies world' as mentioned by for instance Anna Lowenhaupt-Tsing and Donna Haraway. The term multispecies world is a word commonly used in Anthropology studies during the last decade. In a very basic sense, it means that all living beings are actors (Tsing, 2015, p.152). Both humans and nonhumans are actively shaping their worlds (Tsing, 2015, p.152). When one shapes their world, this means disturbance to some, cooperation to others (Tsing, 2015, p.152). What humans thus describe as 'human history', is therefore never a solely human history (Tsing, Deger, Saxena & Zhou, 2020).

Humans largely shape worlds, and by that opportunities for other species (Schilthuizen, 2018, p.29). This is called ecosystem engineering (Schilthuizen, 2018, p.29). However, humans do this on an incredibly large scale. The influence of humankind has gotten so vast that we are now supposedly in a new geological era caused by humans: the Anthropocene (Drenthen, Proctor & Keulartz, 2009, p.8). Even though the paradigm of multispecies world acknowledges both humans and nonhumans as active beings, it does not excuse humans from this. Research done within the paradigm of multispecies world rather advocates an awareness that every event in the Anthropocene is a more-than-human event (Tsing, Deger, Saxena & Zhou, 2020).

Landscapes and critique

Human and nonhuman events and actions together shape landscapes (Tsing, 2015, p.152). Landscapes are thus a result of multispecies disturbances and

collaborations. The landscape is therefore open ended, continuously changing. Nonhumans can be working together closely with us when it comes to the shaping of landscapes. In a positive sense, this is expressed in companion species. In this case humans and nonhumans cooperate to a large extent. Haraway for instance describes the dog as a companion species (2006). Companion species are not passive followers. This can be seen in ferality, when a nonhuman goes wild again after being domesticated. Ferality can cause extreme disturbances to our surroundings (Tsing, Deger, Saxena & Zhou, 2020). In the Netherlands famous examples of this are the fallow deer (see also chapter 2.2). Fallow deer are often kept as domesticated animals for their meat. However, they escape and once escaped frequently dominate the landscape. These effects are caused by human infrastructures – in the case of the fallow deer for instance meat industry – which have become larger throughout history (Tsing, Deger, Saxena & Zhou, 2020). These infrastructures are still often without the realisation that movements of humans can cause unexpected introductions of species, that can cause extreme effects (Tsing, Deger, Saxena & Zhou, 2020). At this point, the paradigm of multispecies world also becomes a critique. The mentioned human infrastructures are capitalist infrastructures, in which – apart from economic profits – inconsiderate moving of matter (human/nonhuman/abiotic) over large distances, is seen as highly problematic.

Human (economic) infrastructures that are seen as problematic, also influence the way we look at landscapes. The theoretical framework of multispecies world invites humans to be more aware of the presence of nonhumans. However, it also invites us to look at landscapes as a human and nonhuman collaboration, instead of a solely human commodity.

Disturbance, movement, and unforeseen nonhumans

Disturbances and collaboration originate in movement and action. To know the presence of a nonhuman is to move differently through a landscape. Tsing describes this as 'almost like a dance' (2015, p.241). This dance, is mostly found in following traces of humans and nonhumans (Tsing, 2015, p.241). It is an active way of moving through the landscape. Tsing describes this while she is researching the harvest of Matsutake mushrooms. These mushrooms are a delicacy in Japan, and only fruit on human disturbed forest soils (Tsing, 2015, p.2). It is still not possible to grow this mushroom. Therefore, the mushroom is harvested through moving through forests (Tsing, 2015, p.242). The people who harvest, know the forest and where to look for the mushroom, by heart (Tsing, 2015, p.243). Moving is done with consideration, hence the 'dance-like' way of moving (Tsing, 2015, p.243). There is an explorative aspect in this way of moving through a landscape, in which the perceptual senses are much more directly addressed.

Nevertheless, even if we would move more considerately, more explorative through a landscape, there would still a be world unseen. I compare this to the soil metaphor of the prologue, in which I take away soil and find relations that I was not aware of. In thinking that we can relate to every nonhuman, we also state that we humans have already figured out who all the important actors are, and we should be aware that this might not be the case. In changing conditions, we might disturb or influence yet undiscovered nonhumans. In the near future, we possibly have to relate to nonhumans that are not that obvious (Haraway, 2016, p.2). In intervening in a landscape, there should therefore be an openness to yet unrelated nonhumans.

Landscape Architectural Design within a multispecies world

To design within the paradigm of multispecies world is to be aware of nonhuman and human disturbances. It should be taken into consideration that the landscape is a result of human and nonhuman disturbances. The design should invite us to look at landscapes as a human and nonhuman collaboration, instead of a solely human commodity. On top of that, to design is not only to be aware of nonhumans and dynamics, but also to make others possibly aware of these.

1.2 MULTISPECIES PERCEPTION

As mentioned in the introduction, the theory of multispecies world opts for new ways of connectedness between humans and nonhumans. However, multispecies world is an observational theory. It is a way of looking at reality. The paradigm tends to emancipate nonhumans, and the landscape as a dynamic human and nonhuman collaboration. Therefore, to implement the theory in design is to do two things. The design should be considerate in itself of nonhumans and the dynamics of disturbance, and it should make humans perceive nonhuman presence and the dynamics that go with that. The latter is important, since it then opts for possibilities of truly connecting to nonhumans. As Meyer states, aesthetics or the 'performance of appearance' is with regards to sustainability not often considered (Meyer, 2008). Sustainability, she suggests, stands on three pillars: ecology, social equity and economy (2008). Sustainable practice thus mostly considers how 'the ecological operates in relationship to social justice and capitalist profit, but not aesthetics' (Meyer, 2008, p.7). She argues, however, that perception and aesthetic experience can lead to the recognition of the environment (Meyer, 2008). These statements I therefore also found important in relation to multispecies world. Therefore, in this chapter I will focus on, how humans perceive 'nature' now, and on how aesthetics can help in creating human recognition of nonhuman presence not immediately defined as nice. I then imagine how this can help in perceiving a multispecies world.

1.2.1 Human Perception of 'Nature'

Humans largely rely on visual information in perceiving their environment (Kaplan & Kaplan, 1989, p.4). Even though the other senses, such as smells, tactility and sound give us information as well, what our surroundings offer us, we verify with the eyes (Kaplan & Kaplan, 1989, p.4). According to Gibson, both humans and nonhumans perceive – visually, but also bodily – their environments in matter of affordances (1979). This means that the way that humans (and nonhumans) assess their environment is to what extent they can use it (Gibson, 1979). Humans are thus sensitive to perceiving landscapes that afford them something positive: an easier way of moving through the landscape, an overview that gives clarity and thus safety, food, encounters with other humans.

Humans often prefer 'natural' areas over urban settings (Kaplan & Kaplan, 1989, p.67). 'Natural' areas, whether they are defined as large wilderness, or nature in a nearby park, have a restorative effect on humans (Kaplan & Kaplan, 1989, p.173). Whether humans categorise a surrounding as more 'natural' depends on how many human traces we can find (Kaplan & Kaplan, 1989, p.29). Few human traces that are not very perceivable make us categorise an area as more 'natural' (Kaplan & Kaplan, 1989, p.29). Therefore a road (a human trace) in a nature reserve, does not make the experience of the reserve urban.
Not all 'natural' areas are liked equally (Kaplan & Kaplan, 1989, p.67). Areas dense in vegetation, and thus many obstructed views, or incredibly open areas, with a lack of elements that afford something, are liked less (Kaplan & Kaplan, 1989, p.67). Preferences are not completely universal. They are influenced by for instance whether humans are familiar with the landscape, or whether they are experts on the landscape (Kaplan & Kaplan, 1989, p.113). Nevertheless, there is a consistency. This is the importance of nature itself (Kaplan & Kaplan, 1989, p.114).

Old Sacred Inspiration

Another thing that humans perceive are the transition zones of a landscape. This can be seen in the remnants of heathen sacrificial places. These places were almost always found at an important transition zone (Schuyf, 2019, p.47). A transition zone is for instance where land turns into water or where a forest turns into an open field. These transitions in landscape are often also ecological transitions (Schuyf, 2019, p.47). Transition zones were used for sacrifices, worship and condemnation (Schuyf, 2019, p.47). Important ritual practices were thus strongly connected to the landscape. This has in Western society largely disappeared. However, I would argue that transition zones can still spark a sense of wonder in the perception of them by humans.

1.2.2 Perceiving Nonhuman Presence

The perception of landscape is traditionally mostly based on vision (De Wit, 2018, p.33). This, however, can lead to an experiencing of the landscape, in which the landscape becomes a spectacle (De Wit, 2018, p.33). Within this spectacle, there are many nonhumans present that are not perceived actively by humans. I already mentioned in chapter 1.1 that humans aware of certain nonhumans, move differently. The people foraging mushrooms are actively moving through the landscape. Next to the visual, and auditory, there are taste and smell, and touch. Taste, smell, and touch are very important for spatial experiences (De Wit, 2018, p.34). Touch and the awareness of our bodily movements can explicitly remind us that we are not only perceiving our surroundings, but that we are also active participants of our surroundings (De Wit, 2018, p.33). New haptic experiences can thus alter our awareness of being active participants. Through haptic experience you arrive in the present. By touch, the landscape becomes immediate and real (De Wit, 2018, p.33).
Haptic experiences can also help in the perception of specific nonhumans, as the story of humans foraging mushrooms illustrates.

Nonhuman presence is important in the design. Therefore it is also important to question which nonhumans are addressed in designing within this theoretical framework. Ecologies that arise somewhere because of humans, are still ecologies (Tsing, 2015,). In other words, if a nonhuman can live somewhere this is ecology. Therefore, the take on native species and non-native species is nuanced. We should be considerate of the human infrastructures over which species can become invasive, instead of being critical of a species simply because it moves somewhere else.

1.2.3 Human Perception of a Multispecies World

A multispecies world is thus an observational theory within anthropology studies. It focuses on the presence of nonhumans and the relation that these nonhumans have to humans. It tends to emancipate nonhumans by stating that human history is always a multispecies event. For humans to perceive this, is to be aware of the presence of nonhumans and to perceive the landscape as a result of nonhuman and human actions.

There are a couple of elements that are important to perceive in order to make humans aware of this multispecies world and to allow a landscape to be dynamic:

1. Actions of nonhumans, or traces of these actions
2. How we create disturbances and attractions to nonhumans (and vice versa is 1)
3. To relate to a nonhuman is to move differently (Tsing, 2015, p.242).
4. The landscape is the result of all actions of humans and nonhumans and is thus active and dynamic (Tsing, 2015, p.152).
5. We are not aware of all nonhuman. We might have to relate to nonhumans that we could not have imagined (Haraway, 2016, p.2).
6. The transition zones of landscapes and its changing nonhumans (Schuyf, 2018, p.47).

Aesthetics, Time, and Sacredness – Showing elements

Then the next step is to define how these six elements can be turned into experiences. 1,2, and 5 are elements that deal with notions of disturbance, attraction, and secrecy. These elements can be highlighted through aesthetic experiences. Beauty is a profound aesthetic experience that makes humans notice, and care more about their place in the world (Meyer, 2008). It considers 'the quality […] which affords keen pleasure to the other senses (e.g. hearing) or which charms the intellectual or moral faculties, through inherent grace, or fitness to a desired end' (Meyer, 2008, p.8). Beauty thus emphasises a pleasurable experience. And it is crucial for landscape architectural design that takes on new ecological functions, in order to have a significant cultural impact (Meyer, 2008). On top of that beauty is site specific (Meyer, 2008). No place can hold the same type of beauty (Meyer, 2008). Therefore, immersing in a landscape through beautiful aesthetics will also be a site specific act. And the generating of beautiful aesthetics in the design, should thus be site specific as well (Meyer, 2008). On top of that, beauty is especially lining up with the notions of attraction to humans that I mentioned in the elements to be perceived.
The traditional counterpart to beauty when it comes to aesthetics, is the sublime. The sublime experience often results in a 'sense of awe' after a fearful or threatening experience (Teunissen, 2020, p.30), instead of 'pleasure' in beauty. The sublime is not about the threat of the experience, 'but about its liberating effect on the beholder' (Teunissen, 2020, p.30). Through this, a new relation to someone's surroundings is realised (Teunissen, 2020, p.30). The sublime lines up with disturbance. Through the sublime, disturbance can be a positive, liberating experience.
To design with secrecy in a multispecies world is a more symbolic attempt to emphasise that in the end we are not aware of all present beings. Secrecy, I figured, is in this sense finding something new within the ordinary. Elements to still be discovered have to be there, without a remarkably strong experience tied to it. Both the aesthetics of the sublime and the beautiful are useful to take into consideration since both give possibilities to relate to someone's direct surroundings differently, and to perceive attractions, and disturbances. Secrecy can be found in the presence of the ordinary.

Element 4 considers the dynamics of a landscape and the continuous disturbance that happens within landscapes. Therefore, time is important.
To design with time, would be to show dynamics (Meyer, 2008). At some points in the design, the effects of time could be slowed down, speeded up, or frozen. By doing this, the design shows the true dynamics of the site (Meyer, 2008). This would also give possibilities in the dynamics of a landscape that are not always understood by humans as pleasurable or delightful. Dynamics of ecosystems are sometimes considered 'messy' or unclear (Nassauer, 1995). By making time an important element of the design, it is thus exactly these dynamics that can be seen through a different lens.

Element 3 and 6 consider humans moving through a landscape with care, and humans perceiving going from one to another landscape and finding different nonhumans along this change. Both have a sense of ritual to them. To move with consideration, like a dance, humans have to already know a nonhuman. Nevertheless, this sym-

Elements that should be perceived by humans in order to perceive a multispecies world

bolic way of moving, with heightened awareness, seems to be present in the transition zone as analysed by Schuyf (2018). Schuyf analysed different cultural heathen practices in the Netherlands, that go centuries back. As mentioned in 1.2.1 these practices were often found at transition zones in the landscape, from water to land, from open to closed. The landscape as base for metaphors, myths, and religion is also underlined by Ann Whiston Spirn (1998). According to her '[…] landscape is our native language' (Spirn, 1998, p.125). Even though this essay is a critique that humans are not capable of reading a landscape as a whole set of processes anymore, humans are still capable of e.g. identifying boundaries and territories (Spirn, 1998). Transition zones, being used as places for sacred practices, can still be read. These zones symbolised transcendence from the human realm to the realm of gods and spirits (Schuyf, 2018, p.47). The point is not to recreate a world of gods that are long gone. However, these zones can be used to highlight the moving from one landscape to another, along changing nonhumans. And by inviting humans to do so considerately, maybe also invite humans to more deeply move through different landscapes and understand their relation to one another.

Explanation of the drawing

The drawing I made was a research tool how I could translate the elements and how they can be made obvious, into a physical world. The drawing is a result of an imagination that I first made through collage (see reflection and appendix). The drawing is a new imagination of this world. It is divided in three parts that deal with different scales in scale, and different scales in time. The drawing is divided in three parts.
The upper part shows the dynamics of the landscape. It shows day and night, tides, the seasons, the dynamics of wind and weather. The sea and the tides also represent the dynamics of time over a longer period.
The middle part of the drawing represents movement of humans and nonhumans. This is represented through the lines that follow the wall and move through the forest. There is a human element - the wall - that is taken over by nonhumans. The human element is shown at a transition zone in the landscape, from dark forest to open field. By that, it resonates to the sacredness I describe above. It leads humans therefore from the one area to the other through a multispecies ritual.
The lower part of the drawing represents secrecy. I therefore drew a dancing seagull. By that the seagull finds food in the soil. This life that is present underneath our feet, is obvious to the seagull, but secret to us. Only on occasions we notice this secret world and can be startled by that. Secrecy is thus present in ordinary nonhuman movement.

The three parts link to more common landscape architectural design interventions. I explain these in chapter 1.3.

Movement

Hybrid

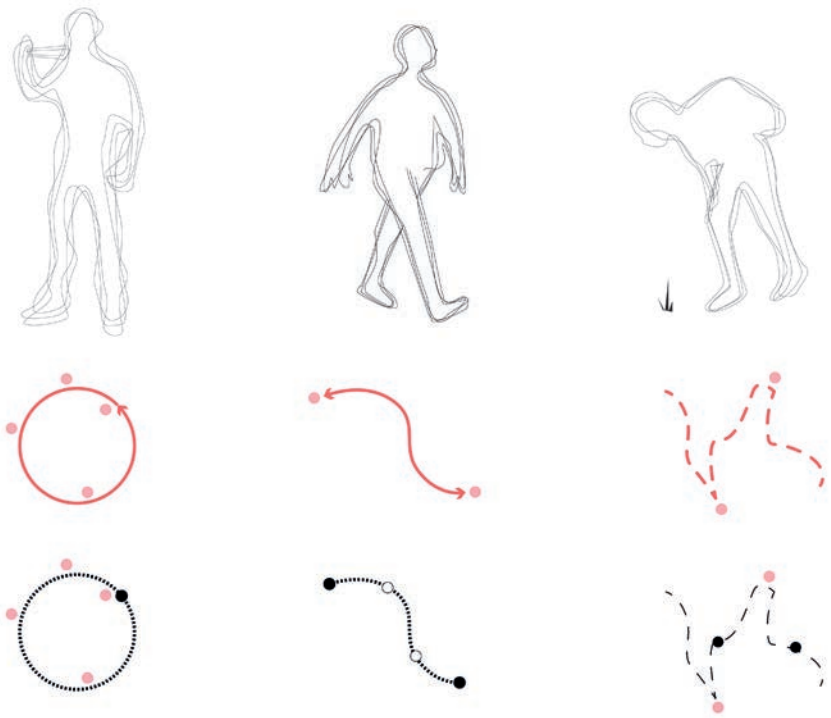
Landscape as being

1.3 HUMAN PERCEPTION OF NONHUMAN PRESENCE WITHIN A MULTISPECIES WORLD

In chapter 1.2 I discussed how humans can perceive a multispecies world and how nonhumans can be present in this multispecies world. I described six elements that are to be perceived in order to heighten human awareness on the presence of nonhumans, and the dynamics of landscape. Based on these six elements I described aesthetics, time, and sacredness . But in relation to this Multispecies world, there should be both a consideration of human perception, as well as the presence of nonhumans. To only consider aesthetics, time, and sacredness in intervening in landscape architectural design, is not increasing or clarifying nonhuman presence. Luckily, considering nonhuman presence is a normal aspect within landscape architectural design (Meyer, 2008). Therefore, I found three ways that together can improve human perception of a multispecies world and presence of nonhumans.

As stated in chapter 1.2.1 humans perceive not only through visual information, but also through haptic sensations. Walking is a way of perceiving (Schultz, 2014). And it is an act of movement (Schultz, 2014). To move is thus important in order to perceive. It is also important to perceive the movement of nonhumans. Movement is therefore one of the first three manners.

In order to perceive nonhumans and their traces more intensely, traces or the presence of nonhumans should give new aesthetic experiences (Meyer, 2008). I mentioned already that ecological processes are not always considered pleasant (Nassauer, 1995). However, in order to care about these processes, human traces are important (Nassauer, 1995). A design clearly made



Design Principle 1: Three types of human movement
From left to right: Maintainer - Visitor - Explorer
Movement of maintainer is continuous, with a goal and returning seasonally
Movement of visitor follows a certain route
Movement of explorer is lead by accidental search that is sparked through curiosity
The design is aware of these movements

NB: Of course, there are different ways of moving in between the categories as well. However, maintainers, visitors, and explorers will follow similar ways of moving and similar routes. The movements are archetypes, and not fixed categories. Explorers can sometimes become maintainers, explorers can sometimes become visitors.

by humans, but in which nonhumans also have a role, opposes dualistic worldviews e.g. culture opposed to nature (Meyer, 2008). It is therefore, to use Meyer's words, a 'hybrid' (2008). The hybrid is therefore the second of the three manners.

The last manner considers dynamics. Landscapes are dynamic and a result of the actions of present humans and nonhumans. However, these dynamics are often not at the core of the (Dutch) landscape. A way to treat entire landscapes differently, is to grant landscapes rights. This is for instance the case for the Whanganui river that has been given rights by the government of New Zealand (Berger, 2016). When considering basic rights for landscapes and nonhumans, we can think of allowing landscapes and nonhumans to be dynamic and active, and to let landscapes and nonhumans be what they intend to be (E. de Jong, lecture 3 February 2021). In order to let a landscape be dynamic, the landscape should thus be treated almost as if it is a being.
These three how they relate to one another, I will explain further in this chapter.

1.3.1 Movement

1. Different human - different movement

There are different ways of moving through a landscape. John Dixon Hunt describes three different kinds of movement in gardens and designed landscapes: the procession or ritual, the stroll, and the ramble (2003). The ritual follows a set of guidelines (Hunt, 2003). The ritual deals with specific paths and activities (Hunt, 2003). Rituals are social, and they are often aimed at 'a higher objective than the mere performance of the rite and with a wider reference than the site of the ritual itself' (Hunt, 2003). Rituals in designed landscapes can take many forms, and can even come into existence through guidebooks, as long as it considers a set of prescribed actions (Hunt, 2003). The stroll and the ramble seem to be alike. However, Hunt states that there is a difference between these movements. The stroll implies a purpose and a sense of destination within the site (Hunt, 2003). Strolling indicates moving along a defined route (Hunt, 2003). Rambling is different from this, since it implies movement that is steered through curiosity (Hunt, 2003). Rambling is a more spontaneous act that happens through impulse (Hunt, 2003). In design, this rambling often means a multiplicity of paths or space that allows to wander around (Hunt, 2003).

These types of moving are considered for the garden and designed landscapes. However, to me they were important in defining different types of movement relevant to 'natural' sites. Nature conservation areas invite three movements:

1. Maintenance
2. Visitation
3. Exploration

There are humans that maintain the site, and move through the site along seasons repeating actions every year in certain areas. Maintenance does not directly link up to the ritual that Hunt describes, nevertheless I found some similarities. Even though maintenance is a very hands on way of moving, there is often a greater good in mind, seasons indicate the movement, and

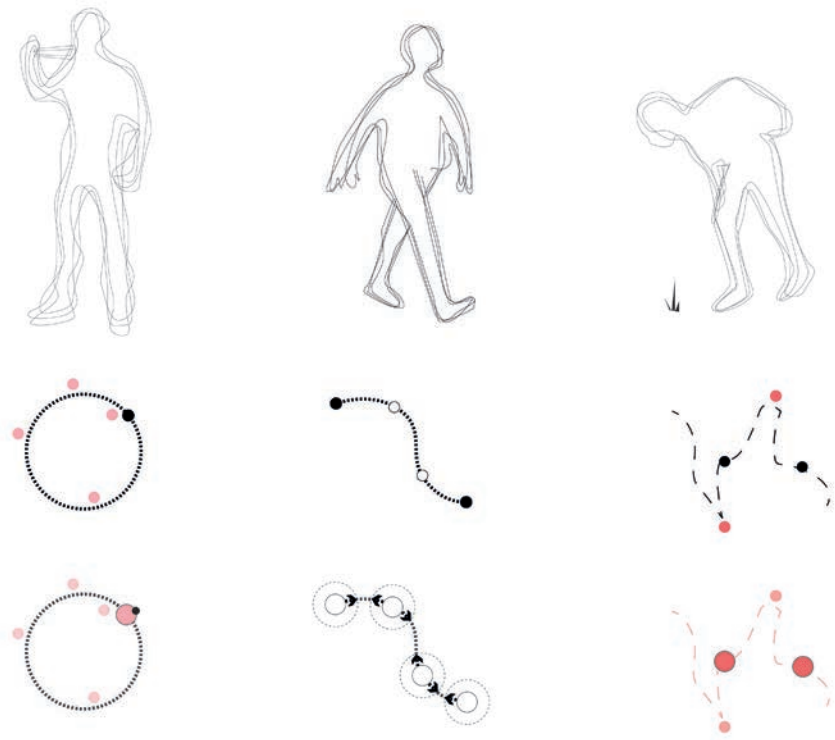
the idea behind maintenance is a sense of care. There are humans that visit the site and that move through the site along a predefined route. And there are humans that visit certain sites in order to explore (parts of) the site, and wander around moved by curiosity. There is thus movement of the human maintainer, which is somewhat similar to a ritual, there is movement of the human visitor, which is similar to strolling, and there is movement of the human explorer, which is similar to rambling. Their role and their movements within the landscape should be considered in the design.

2. Condensed human movement

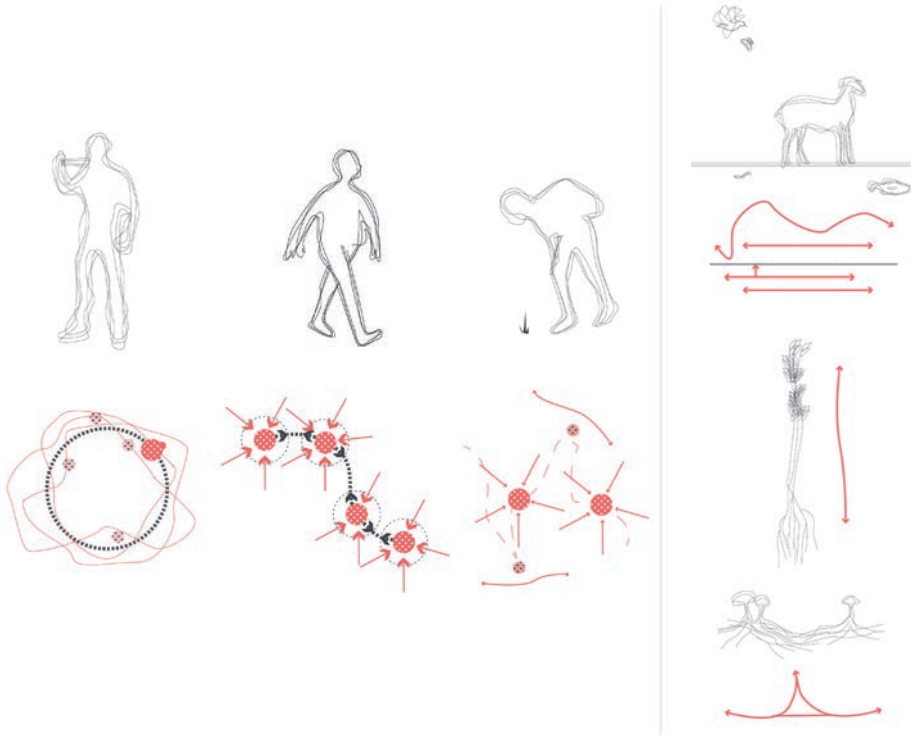
Schultz states that 'walking supports and integrates engagement […], flow […], and reflection […] (p.7, 2014). He defines three modes of walking: '1) the 'discovery mode', 2) the 'flow mode', and 3) the 'reflective mode' (Schultz, 2014, p.7).
In the first mode, walkers are open to impulses, and are continuously collecting information on the landscape (Schultz, 2014). In this mode they are intensively engaged in, and actively part of the landscape (Schultz, 2014). In the second mode, walkers become more intuitive and follow their intuition (Schultz, 2014). This mode switches with the discovery mode often (Schultz, 2014). The reflective mode creates distance in which walkers try to grasp their experience of the landscape (Schultz, 2014).

Especially the discovery mode that Schultz describes is important for the design. The other modes are of course important in understanding the landscape as well. However, the discovery mode is a mode in which humans actively participate, and by that have a role in the landscape (Schultz, 2014). The walker is thus active in this role. The discovery mode is thus a mode in which humans are very much upfront with their sensorial experiences. These sensorial experiences are sometimes actively steered upon through design. Within the last decade of the 20th century, gardens within the metropolitan landscape often make use of 'dramatised land- and water forms, and abundant plantings [that] represent the natural morphology and the processes of nature' (De Wit, 2018, p.122). Through these designs, sound, smell and tactile aspects, and taste, are experimented with (De Wit, 2018, p.122).

In the design, in order to make humans aware of nonhuman presence, occasionally steering upon these experiences, I consider important. Occasionally, since an overall abundance of sensorial experiences can result in overwhelming (Schultz, 2014). In the previous paragraph I explained the presence of three types of humans; maintainer, visitor, and explorer. They move differently through landscapes but are also there for different reasons (see design principle 2). The maintainer is there to take care of a place, the visitor to stroll, the explorer to ramble and to come across new things. This has to be taken into consideration for 'occasional abundant experience'. The maintainer can have this experience through taking care of a small spot, the visitor by being steered towards an active sensorial experience, the explorer by being steered towards the discovery of something new.



Design Principle 2: Condensed human movements
The design should steer condensed movements by responding to the specific actions/movements of maintainer, visitor, and explorer



Design Principle 3: Nonhuman movements encounter human movements
From top to bottom: animals - plants - fungi
These movements cannot be completely steered, but should be attracted or disturbed at specific spots where nonhumans and humans encounter

3. Nonhuman movement and presence to humans

What nonhumans experience is hard to describe. Jakob von Uexküll , a well-known biologist, has raised the concept of Umwelt for all living beings (Buchanan, 2008, p.1). In a basic sense he describes that all living beings can only read a part of the world, all living beings can only read whatever matters to them (Uexküll, 2008, p.1). The landscape to nonhumans can thus be an entire different landscape then the meaning that it beholds to us, depending on the basic needs that the organism has. If movement is based on basic needs, or as Gibson calls it 'affordances' (1979), then movement corresponds to what a landscape has to offer to a living being.

Nonhumans, being plants, animals, fungi, bacteria, viruses, move differently from nonhumans. In some cases mammals can walk similar distances (or longer) to humans, however they often have four legs. Birds and some insects fly and move both horizontally as well as vertical in relation to the surface humans walk on. Plants mostly move vertical, that is downward through the roots, upward through the leaves. The whole idea of a surface on which you move exists to them in a completely different way. Fungi grow below ground in a horizontal matter, but spur vertically. Seeds of plants and spores of fungi are transported horizontally by wind and animals. Nevertheless, nonhuman movement is, like human movement, site specific. In order to perceive nonhumans and their traces more intensely, it is important that the traces or the presence of nonhumans generate new aesthetic experiences (Meyer, 2008)

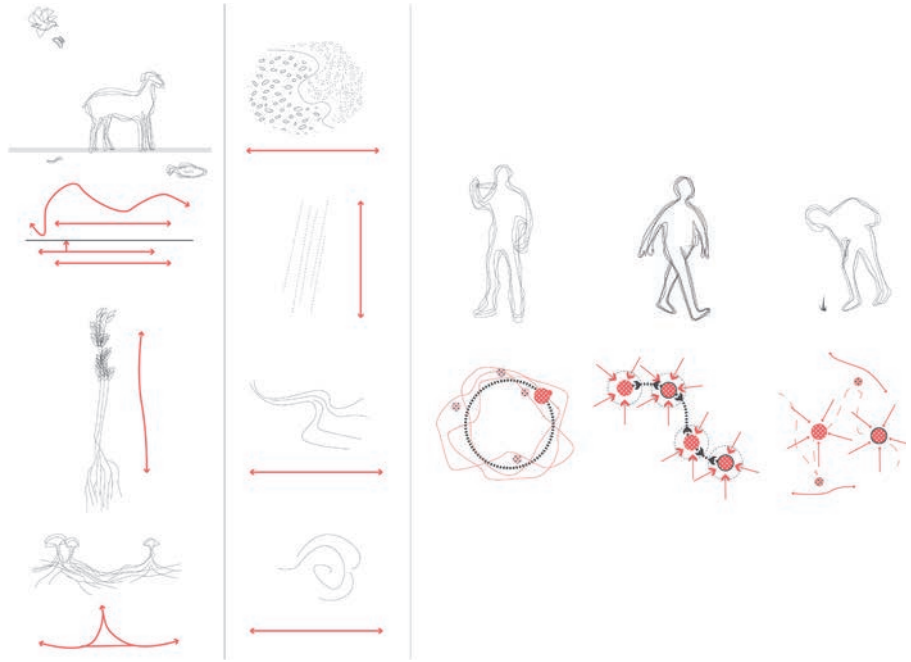
Nonhuman movement is thus often not comparable in the movement that humans have. Nevertheless, we do relate to their movement. Their movement, like human movement, changes the landscape continuously (Schultz, 2014). The presence or absence of trees and plants creates differences in light. The information that nonhumans give us, provide us with explicit or implicit information about where we are and what kind of place we are dealing with . This is best illustrated by Gillette's analysis of Alice in Wonderland (2016, p.66) (see also precedents). She mentions how Alice finds herself lost in the forest of no name, while she comes across a fawn. Both the fawn and Alice forget who they are and become friends. Once they left the woods and are out in fields, they are shocked to find their own identity and that they are each other's enemy (Gillette, 2016, p.66). The forest is something different from what the fields are, and therefore we move differently in both. Our movement thus relates to nonhuman movement, we adapt to each other.

First of all, the movements of nonhumans should be allowed. Again movements of nonhumans are site specific, which also takes away the conception of native/non-native species. If the movements of species are possible at the site, then the movements are valid. But for the design, this adaptation to one another should be made specific from time to time in order to let humans perceive the presence of nonhumans more explicitly (see design principle 3). The moments of condensed movement are, especially for the explorer and the visitor, possibility to

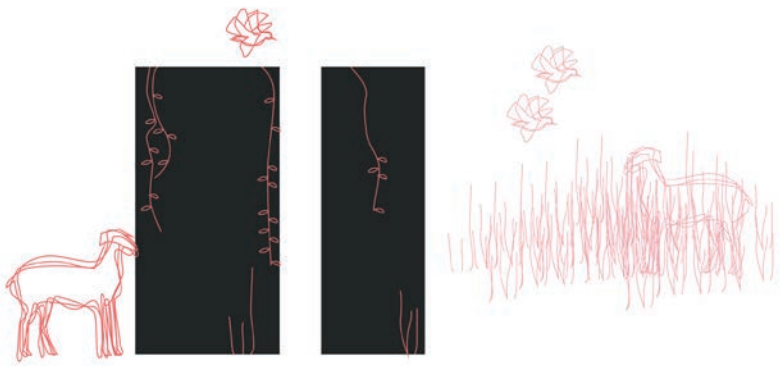
encounter one another.

4. Abiotic movement

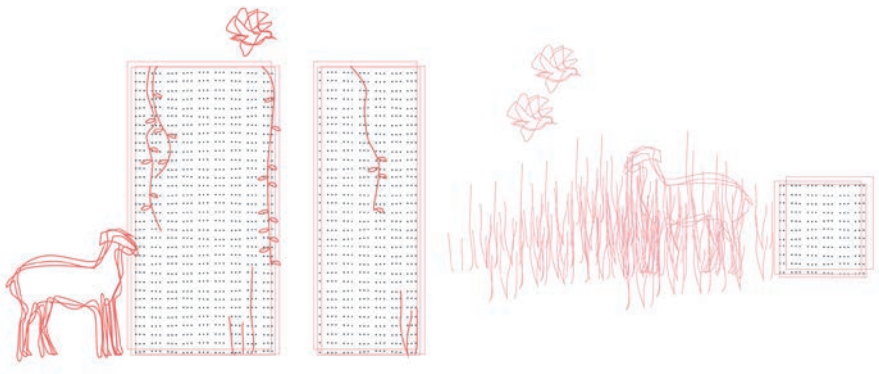
Then of course, there are the abiotic factors of the site, from which movement arises. However, these factors move as well. Rock erodes to sand. Clouds move through the sky by wind and face by the sun. Rain pours down on soil. Water always moves, above and below the surface. The core of the landscape itself is in motion (Schultz, 2014). These abiotic movements together with nonhuman movements, can make humans understand the site.
As mentioned before these abiotic movements are occasionally dramatized in landscape architectural design as well (see design principle 4).
Traces of abiotic movements are in fact often plant growth. Imagine how different soil conditions can result in different plant growth. The traces of these movements can be made perceivable to humans when framed. This framing can emphasize the presence of nonhumans. Nevertheless, in the design they should be used when they make something important about the area perceivable. For instance, when wind is important for healthy plant growth at the site, this can be highlighted through intervention that emphasizes both certain plants, and wind.



Design Principle 4: Abiotic movements meet nonhuman and human movements
Second row from top to bottom: Movements of soil - rain - water - wind
Abiotic movements can highlight the presence of nonhumans, but not all abiotic movements need to be highlighted within the design all the time.



Design Principle 5: Human intervention, invites specific nonhumans, and prepares for the larger landscape



Design Principle 6: The language of the landscape should be responded to with the hybrid

1.3.2 Hybrid

1.Human structure – nonhuman presence – larger landscape

A way to show nonhuman presence and traces of their movements is through hybridity. The power of hybridity lies in that it embraces worldviews in which humans are not separated from nature (Meyer, 2008). This has to do with a hybrid being a human intervention in the first place. By being an intervention that is taken over (partly) by nonhumans, it shows both the presence of nonhumans as well as how these can cooperate together with human changes (Meyer, 2008). This is important, since the larger landscape – especially when ecologically valuable – is not always understood as beautiful (Nassauer, 1995). This latter statement seems to underline the idea that ecologies should be pleasant to us, a paradigm I criticise in the introduction. However, human presence could perhaps create a base of acceptance for a dynamic larger landscape. It both should invite the movement of humans and nonhumans, as well as prepare humans for the greater landscape (see design principle 5).

2. Language of hybrid relates to language of landscape

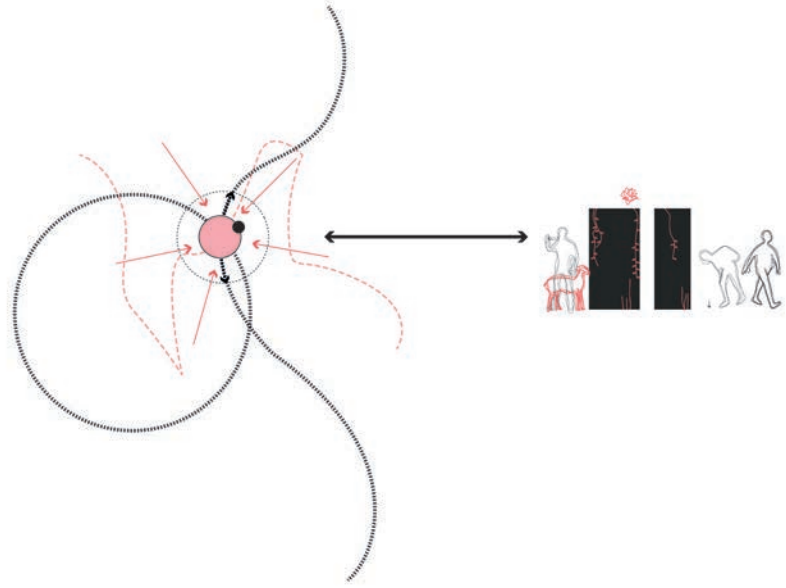
The hybrid, being site specific, should next to relating and emphasizing site specific human, nonhuman, and abiotic movements, also relate to the language of the site (see design principle 6). By this I mean, that every site in the end has characteristic human or nonhuman elements. The hybrid should relate to this, in order to be as site specific as possible.

3. Meeting moments of condensed movements

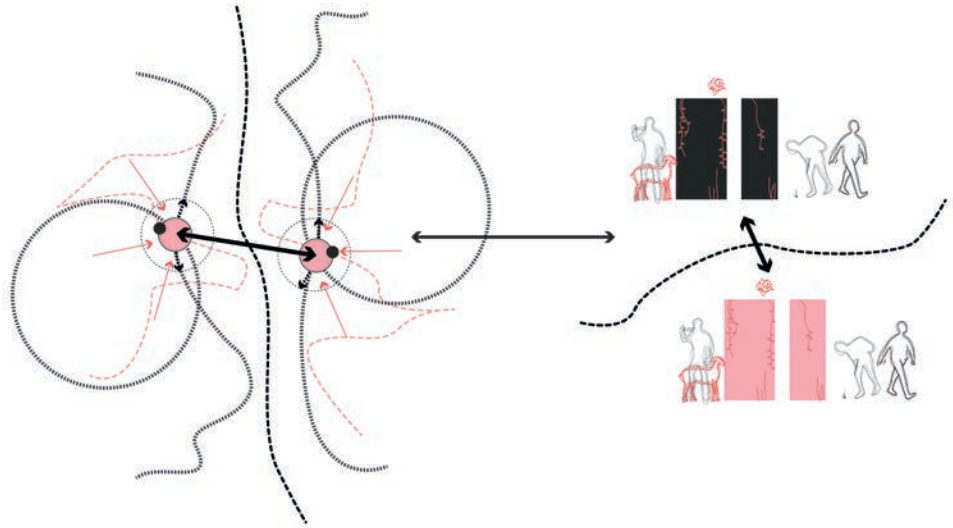
In chapter 1.3.1 I describe three different human movements that have an effect on the design. I also described how their movements relate to nonhuman movements in a certain way, and that through condensed movement humans can become aware of one another more. The hybrid, being a human – nonhuman cooperation, is a place where both humans and nonhumans come together. To perceive, humans move. Humans thus have to move along/through/within the hybrid as well. The hybrid, being a place where humans can become aware of both the dynamics of a landscape and the presence of nonhumans, should be a place of heightened awareness. The hybrid is therefore a tool to generate the condensed movements I mention in chapter 1.3.1.
Traces of maintenance show a sign of care to humans (Nassauer, 1995). I therefore decided to both let the three different human movements meet nonhuman movements and let the different human movements also meet one another at the hybrid (see design principle 7).

4. Transition zones and time

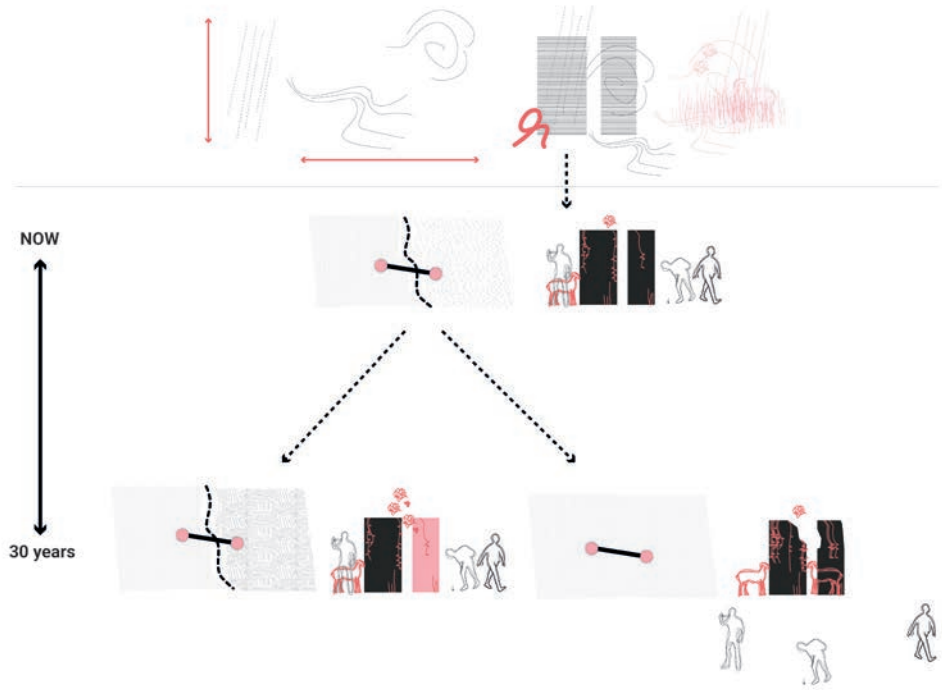
In her manifesto to use aesthetics in order to reach sustainability, Meyer argues e.g. to be site specific (2008). Beauty is particular, and in design should therefore be site specific. The aesthetics within the design should thus emerge out of its context, and at the same time differentiate from this in order to clarify the context (Meyer, 2008). The hybrid should do exactly this. The location of hybrids is therefore not random. In chapter 1.2.3 I already made a case for transition zones as an important to humans perceivable element in the landscape. The presence of sacred places used for religious practice were often at transition zones in the landscape. I therefore decided to place hybrids along those transitions.
The hybrid, as already mentioned before, should prepare for the larger landscape. If I place hybrids at transition zones, they are thus preparing for two sides that differ from one another. They are then not only becoming places that form according to the landscape they are based in. They also become a choreographed transition from the one side to the other. This means first that the hybrid would function similar to what De Wit mentions on 'garden as portal' (2018, p.341). These type of interventions 'seduce the visitor to move beyond the garden, and perceive a specific quality of the landscape' (De Wit, 2018, p.341). However, the hybrid would be a portal to two sides that are intrinsically different from one another. That means that hybrids thus both focus on the larger (two) landscapes, and on the differences between these.



Design Principle 7: Meeting moments of condensed movement
All three types of human movemt gather at the hybrid.



Design Principle 8: Meeting moments of condensed movement
All three types of human movemt gather at the hybrid.



Design Principle 9: Materiality and shape leads to showing abiotic movements, materiality leads to regenerating of hybrid every 30 years. Whether a structure is rebuild or not depends on whether the transition zone does or does not exist anymore.

5. Materials and time

Hybrids, being human interventions, are material. First, materiality is an important part of the experience of humans. Choice of material can address all senses. However, materiality can be a difficult topic within the framework of multispecies world. As Zhou argues ' […] when architects talk about climate change, they often still imagine large-scale infrastructure requiring scientific interventions to improve performance and efficiency. This is worrying because the result is a focus on the immediate achievement or solution, rather than the long-term effect' (Zhou, 2020). In other words, designers should both address immediate problems (in the case of this research finding new connections between humans and nonhumans), as well as focus on a solution that does not damage the world in the long run . This means something to materiality used within the design. Use of materials should therefore both emphasize certain landscape characteristics (e.g. tell a narrative about the landscape), and fit within this framework[1].

1 This is the first moment in which the theoretical framework of multispecies world began to make a difference in the design. This difference, however, also makes the design increasingly difficult to realise. For instance, the whole wood production sector is simply there and does not always show the prettiest use of landscapes. Of course it is possible to use wood that is safely produced, this however is more costly. Design within this worldview, becomes if realised thus higher in cost and by that more elitist, which is the exact opposite of the point of this framework. Design within this worldview therefore seems to be more useful as a way to criticise the systems we have to design in (see also chapter 4.2 Reflection).
The latter it can do either by being very pristine when it comes to materiality, or to map where these materials come from in order to raise awareness about this materiality.

Materials mean something for the timespan that a hybrid exists. If the materials are for instance wood (steamed), the timespan of the structure will be about 30 years (G. Geluk, personal communication, 3 May 2021). This at first seems a short time span. However, it can also be at the core of the design. It can be a structure that is regenerated every 30 years, or, if the transition zone disappears, is left to decay. Every 30 years the structure can then be renewed to adapt to its surroundings again. Hybrids thus focus on what happens the upcoming 30 years. This is a way to relate to Meyer's vision on how beauty changes over time. She states: 'Beauty is ephemeral; it can be a fleeting event, captured once a year in the mix of a specific light angle, a particular slope of the ground, and a short-lived drop of a carpet of brilliant yellow leaves. Or it can be created by the long processes of stump and log decay, and of regeneration, in a forest garden.' (Meyer, 2008, p.19).

This also brings the hybrid to the next elements of time, which is small sudden or recurring events. Presence of the sun, of rain, of the seasons are important for an understanding of the surroundings of the hybrid. This is the case because of the hybrid overlapping transition zones. By dramatizing the presence of these (see also chapter 1.3.1 point 4), the surrounding landscape can be related to differently. Materiality in relation to shape of the hybrid can show abiotic changes throughout day and year, and lead to a regeneration of the hybrid about every 30 years (see design principle 9).

1.3.3 Landscape as Being

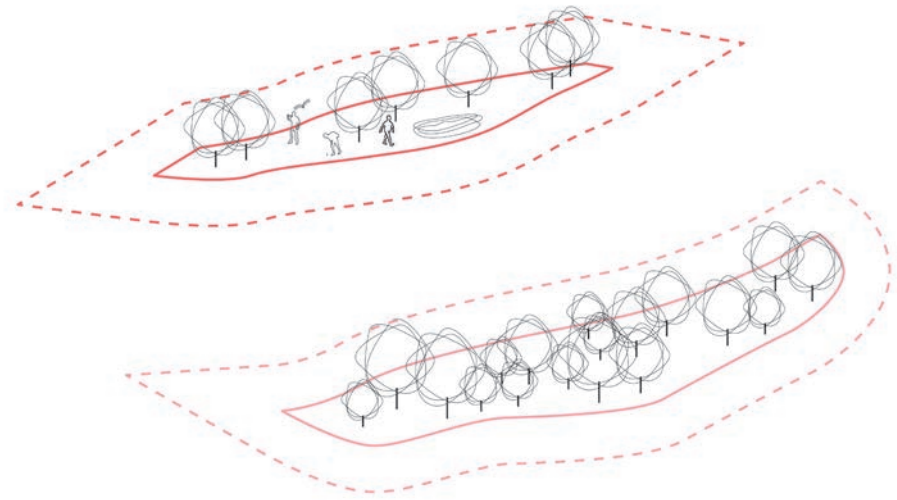
1. Legal rights for landscapes – new forest as legal being

Recently there have been movements that attempt to acknowledge nonhumans. This is for instance seen in the Parliament of Things (parliamentofthings.com, 2020), that is based in the writings of Bruno Latour. Their goal is to give nonhumans, or occasionally landscapes, a voice in order to give them rights The possibility of giving landscapes rights, is already shown in the case of the Whanganui River in New Zealand. The rights for this river go hand in hand with the emancipation of the Maori (indigenous people of New Zealand) (Berger, 2016). Now the river has rights, it is a legal person. The rights, however, are given by humans. It therefore does not really establish a new relation between humans and nonhumans, or humans and landscapes. It establishes what already was important to part of the inhabitants of New Zealand, and is now acknowledged.

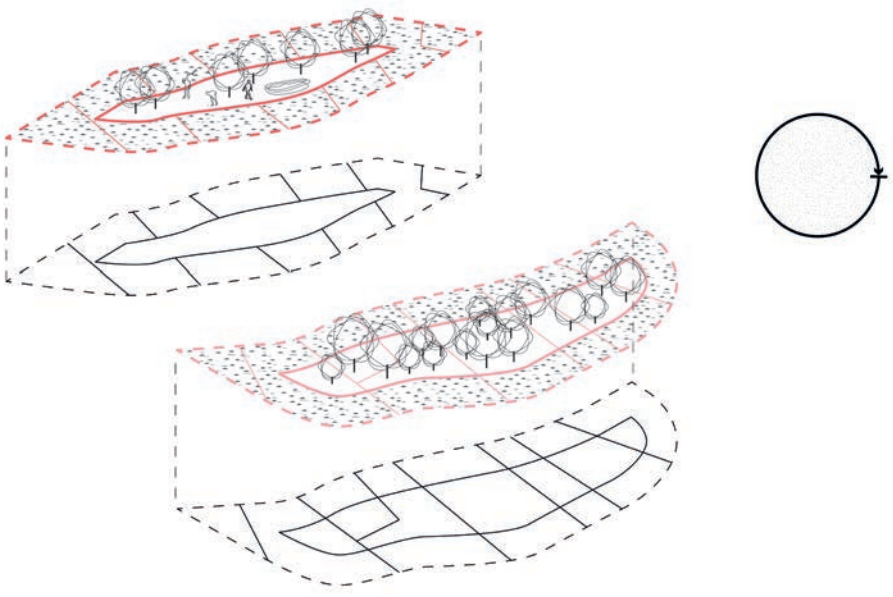
Nevertheless, rights, laws, and policies are a way to restrict ourselves. There are already laws in the Netherlands considering how to treat the environment. The Natura 2000 policies are legal policies on a European level in order to protect nature reserves and natural areas (European Commission). And these policies and laws have helped the position of the landscape to some extent. However, as argued by the Dutch College of Government Advisors, it is this type of policies (they mention the Nature Network of the Netherlands – NNN) that has lead to a decline in biodiversity in areas not protected through law and policies (CRa, 2020). Laws do thus not (yet) solve everything.

The Whanganui river is still an alluring case. In the case of the Whanganui river, it is legally decided that the river cannot be owned (Hsiao, 2012). It is a legal being in its own rights (Hsiao, 2012). This is not the case within the laws I mention above. In shape, the river is a long line throughout a part of the country of New Zealand. The line being protected through law, is a structure that also addresses land along this line. The river cannot be harmed by these lands. So in a way, the river leading through the land, can also have positive effects on the adjacent land.

There are two possibilities in treating landscapes as beings. 1) It can be based, like the Whanganui river, on the relevance it has to humans. 2) It can be aimed at landscapes that are now harmed. For the latter, the wish of forest could be in the paradigm of this thesis be a wish for beings. New forest could then become the structure in the landscape that is treated as a being. This approach provides an alternative for the forest strategy. The forest strategy is traditional in its approach to nature. As I mentioned in the introduction, the forest strategy is angled towards humans. There is no right in existence for the forest being a forest, it has a right in existence if it does something positive to us. The multispecies approach throughout this research might provide an alternative to this. What if it is exactly this forest structure that we treat as a being. If it is – like the Whanganui river – a structure that moves through the country, it can



Design Principle 10: Legal rights for landscapes that already are of cultural importance, and legal rights for landscapes that are harmed.
The upper landscape symbolizes the landscape that already has a meaning to humans. The landscape below symbolizes how new forest could become a being at locations where the landscape is harmed.
Both have a sphere of influence that extend the being.



Design Principle 11: Historical traces and different beings in the long run
The new being relates to a landscape with a history, and should therefore signify this, and not be treated as tabula rasa. The landscape around both beings should not harm the beings, and therefore is dynamic to a certain extent as well. The circle symbolizes that soil, and matter, has to stay within the being to a large extent.

change landscapes next to this structure positively as well. I design the existing important to human 'natural' structures and the addition of forest as beings (see design principle 10).

The landscape as a being does not have to be without human interference. Nevertheless, human interference should be mostly aimed at helping the landscape for the sake of the landscape and its present nonhumans.

2.Historical traces and different beings in the long run

Next to the structures I propose, there is land influencing the structure. They are changed by this structure, since the adjacent land should not have a negative effect. The structure thus has an influence on the adjacent land as well. However, these lands are something already as well. They have a history. The same is the case for the new forest structure. For both the structure and the adjacent land, the design should be considerate of the (historical) patterns found at the site.

The adjacent landscape is not within the structure that is treated as if it is a legal being. The reason why, is that the idea of a legal being might work best if it is a landscape structure that is distinctly different from us (considering something a being is acknowledging it as the other). This goes up for the forest, but it does not work for landscapes that we use as agricultural plots, or meadows. This does not mean that a multispecies world approach is impossible. But it now more implies a considerate way of agriculture, such as biological agriculture[2].

On top of that, the landscape begins with soil. In chapter 1.3.2 I mentioned how Zhou argues that designers should not only think about the short term solution, but also on the effects in the long run. Therefore, soil life conditions should not continuously be disturbed in order to get a result that humans like to have aboveground. If soil is needed for something, then soil that is present at the side is used, instead of soil being taken from somewhere else to realise this (see design principle 11).

2 It is interesting that this approach in fact seems quite similar to the ideas of first, second, and third nature. In which the first is the complete human, second the landscape we use, the third wilderness. In a way, the landscape as being thus seems to be third wilderness. Yet the choice of words makes the 'being' stand out as much closer to us, than 'third nature' does (see also chapter 4.2 Reflection).

3.Accepting growth and unpleasantness through a well-defined boundary

Even if a landscape has rights, these rights are still defined by humans. We thus decide whether a landscape has rights or not. This means that we can define wherever the boundary of the structure is. Therefore the shape of the boundary can be designed in such a way that human perceive it.

The structure itself, being a landscape designed as if it has rights, is allowed to grow. The forest structure is thus not planted. The boundary is therefore a frame for the forest structure, that will take time to grow. As mentioned before, organised/designed structures can help in accepting, or finding beauty in a dynamic landscape (Nassauer, 1995; Meyer, 2008). Between the boundaries, the landscape is thus allowed to be dynamic.

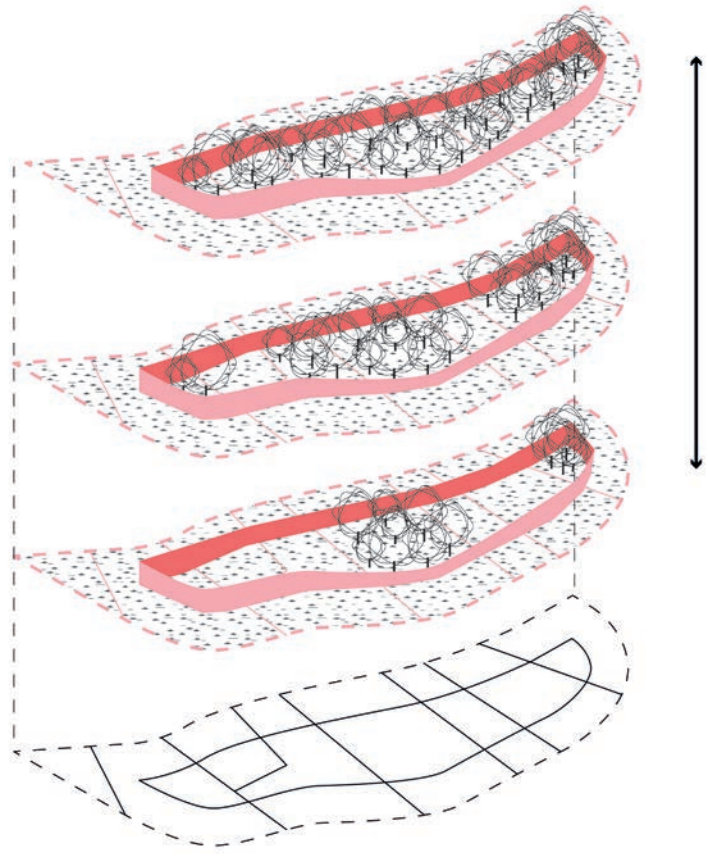
The element that can then still be designed with for the structure is time. Forest can be allowed to grow at a different moment. This way the forest structure will be a bit more diverse in age. However, this does not mean that humans are not allowed to interfere with the forest completely. If necessary humans are allowed to interfere and change the landscape (see design principle 12).

1.3.4 Relation between movement, hybrid, and landscape as being

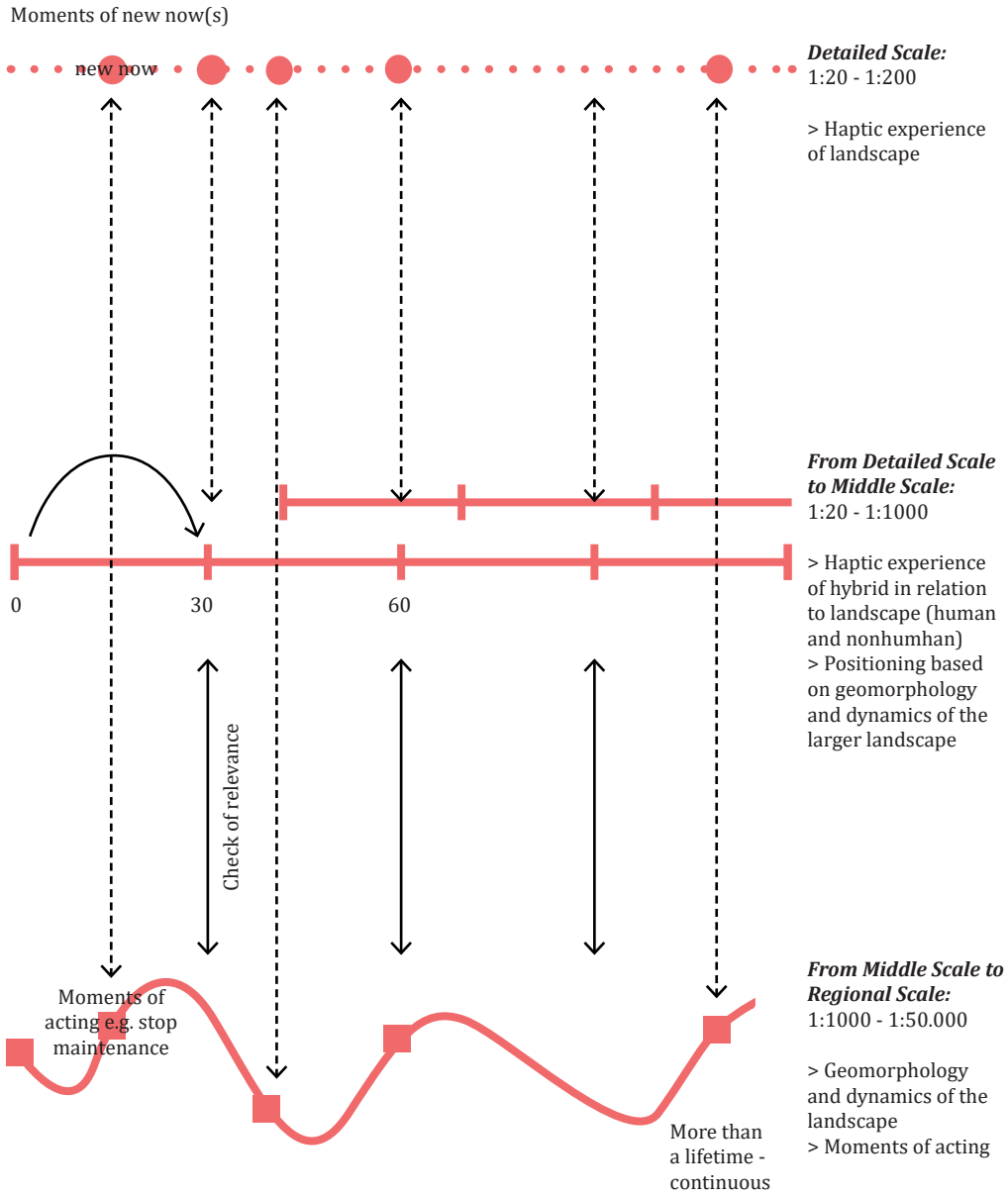
There are thus three tools necessary in order to perceive a multispecies world, and make sure that there are nonhumans present. There is movement, categorized in: 1) three types of human movements, 2) nonhuman movements, and 3) abiotic movements. Humans perceive nonhuman and abiotic movements the most direct when they are moving within discovery mode. This type of condensed movement is to be steered at in the design, and this will be therefore the point at which movements of humans, nonhumans, and abiotic factors meet one another. Movements, especially those of nonhumans, maintainers, and explorers, are site specific, and thus react on and relate to the larger landscape and on one another. Condensed movement should be site specific as well. The movements in general are to allowed, the condensed movements need to be steered through design that emphasizes the encounter of others.

These condensed movements are steered through the hybrids. This is thus the relation between movement and the hybrid. The hybrid is an explicit human structure that attracts nonhumans. All three different human movements come together at the hybrid. On top of that, the hybrid is located at transition zones in the landscape. The hybrid does therefore not only relate to movement, it also prepares humans for the larger landscape. The hybrid does thus relate to the larger landscape.

Within the landscape on the larger scale, there are landscapes that are designed as if they are beings. These beings are either at already to human relevant areas, or at parts of the landscape that are harmed greatly. This has an effect on the surrounding landscape. Both have thus to be treated differently. Nevertheless the landscape has to be considerate of



Design Principle 12: Accepting growth and unpleasantness through a well-defined boundary.
The pink wall symbolizes the boundary of the 'Landscape as being'. Within the boundary, patches of land are left without maintenance at different times, in order to create a being that is in itself diverse in age.



Timescale

Scale scale

Movement

Hybrid

Landscape as being

the underlaying (historical) patterns. The landscape as being – in the end still being a human decision – has a boundary, the infill of this landscape will be dynamic and changes over time. The boundary towards this landscape is thus also a transition. However, transitions do not directly line up with the landscape as being. The landscape as being is therefore a way to use the landscape more considerately, protect it, and realise the presence of multiple nonhumans.

There are different timescales and scales involved. Movement symbolises the now, the present, since it directly relates to its surroundings. Movement does relate to a larger landscape, but it is steered best through the small scale. The hybrid is a structure that through its materiality has a timespan of about 30 years. The regeneration of the hybrid is a recurring event. The hybrid embraces the small scale movements, but also directs, and is based on the larger scales of the landscape. The landscape as being operates on a large scale, over a long period of time. This landscape is continuously dynamic, and changes over human lifetimes. Therefore movement changes as well. There is thus an experience of different nows, that relate to the larger landscape that is dynamic and therefore changes.

1.4 CONCLUSION ON HOW TO PERCEIVE A MULTISPECIES WORLD

Multispecies world is a theoretical framework that tends to emancipate nonhumans. It sees the landscape as a dynamic whole, that is continuously changed through disturbances of humans and nonhumans. The presence of those nonhumans is, however not always perceived actively by humans. In order to perceive nonhumans, there have to be nonhumans present, but humans also have to perceive six elements: 1.) Actions of nonhumans, or traces of these actions, 2.) How we create disturbances and attractions to nonhumans (and vice versa is 1), 3.) To relate to a nonhuman is to move differently. 4.) The landscape is the result of all actions of humans and nonhumans and is thus active and dynamic. 5.) We are not aware of all nonhumans and we might have to relate to nonhumans that we could not have imagined. 6.) The transition zones of landscapes and its changing nonhumans. These elements can be perceived through aesthetics, the perception of time, and sacredness. These therefore come back in the three tools that can be used as a landscape architect in order to perceive a multispecies world, and to allow nonhumans to be present. The first tool is movement, the second is the hybrid, the third is the landscape as being. These work on different scales and timescales, but also relate to one another.

In the following chapter I will analyse the landscape within the scope of these tools in order to understand what movements are needed, where hybrids should land and what they relate to, and where the landscape as a being should be and what this means for the adjacent land.

2. MOVEMENTS, TRANSITIONS, AND PROBLEMATIC AREAS: ANALYSIS OF THE SITE

2.1 INTRODUCTION TO THE DUNES
2.2 AMSTERDAMSE WATERLEIDINGDUINEN
2.3 SCHOORLSE DUINEN (EXTERNAL)

Abiotic movement
Actor
Agriculture
Amsterdamse Waterleidingduinen
Austrian pine
Beach
Beech tree
Birch
Common oak
Corsican pine
Dune
Dune forest
Dynamic coastal management
Estates
Explorer
Fallow deer
Forest
Flower bulb fields
Heather habitat
Maintainer
Myxomatosis
Natura 2000
Nonhuman movement
North Sea
Nitrogen
Oosterkanaal
Sand low in calcium
Sand rich in calcium
Savannah
Schoorlse Duinen
Sea buckthorn habitat
Signage
Silver aspen
Transition
Visitor
Visitor centre
Water infiltration system
Wind

2.1 INTRODUCTION TO THE DUNES

Within this chapter I will look through the multispecies lens at both the regional context of the dunes, and to two sites in specific. These sites are Amsterdamse Waterleidingduinen and Schoorlse Duinen. Analysing these two sites had some advantages. In this chapter you will see that the two sites are completely different. Therefore, I could compare the two sites and by that define specifics of the site more easily. But by analysing both sites, I could also research whether the approach and methods used within the research were working.

2.1.1 History of the dunes and preferred nonhuman movement

Dunes are dynamic. The Dutch coastline has changed organically over the course of centuries. These changes in the coast line result in differences in soil around and in the deep soil layers of the dunes. The estate structure found along the dunes are placed on the old beach ridge of 2750 BC.
The coastline, being dynamic, has nevertheless stayed more or less the same since the 19th century. This is due to human intervention (Van der Valk & Arens, 2012). At that time, the dunes were moving inland, which was unwanted by the Dutch living there. The sand of the dunes was therefore captured along the coast through the use of European beachgrass (Ammophilia arenaria) and Austrian and Corsican pines (Pinus nigra subsp. nigra, Pinus nigra subsp. laricio). However, this fixation of the dunes proved to be devastating to fragile dunes ecosystems (Van der Valk & Arens, 2012). Therefore, the dunes are made

dynamic again. The coastline in fact still moves inland, which is still an unwanted movement. Therefore the dynamic coastal management strategies are only possible through sand suppletion and large inventions such as the Zandmotor (Sand Engine) (Van der Valk & Arens, 2012). This sand comes from a location: the bottom of the North Sea. There are multiple areas defined where sand can be retrieved from the bottom and transferred to land. To keep the dunes where they are, and at the same time save ecologies in the dunes, we thus change the soil conditions underwater.

The dunes reaching from Den Helder to Hoek van Holland are all part of the Natura 2000 network. This means that the dunes have to answer the Natura 2000 policy and protect fragile species and habitats (natura2000.nl). The maintenance of the dunes is thus aimed at saving the movements of endangered nonhumans. The Natura 2000 boundaries are based on 'the now', not on the potential. The boundaries are along areas already considered as 'natural'. The morphologic landscape of the dunes, however, extends these boundaries.

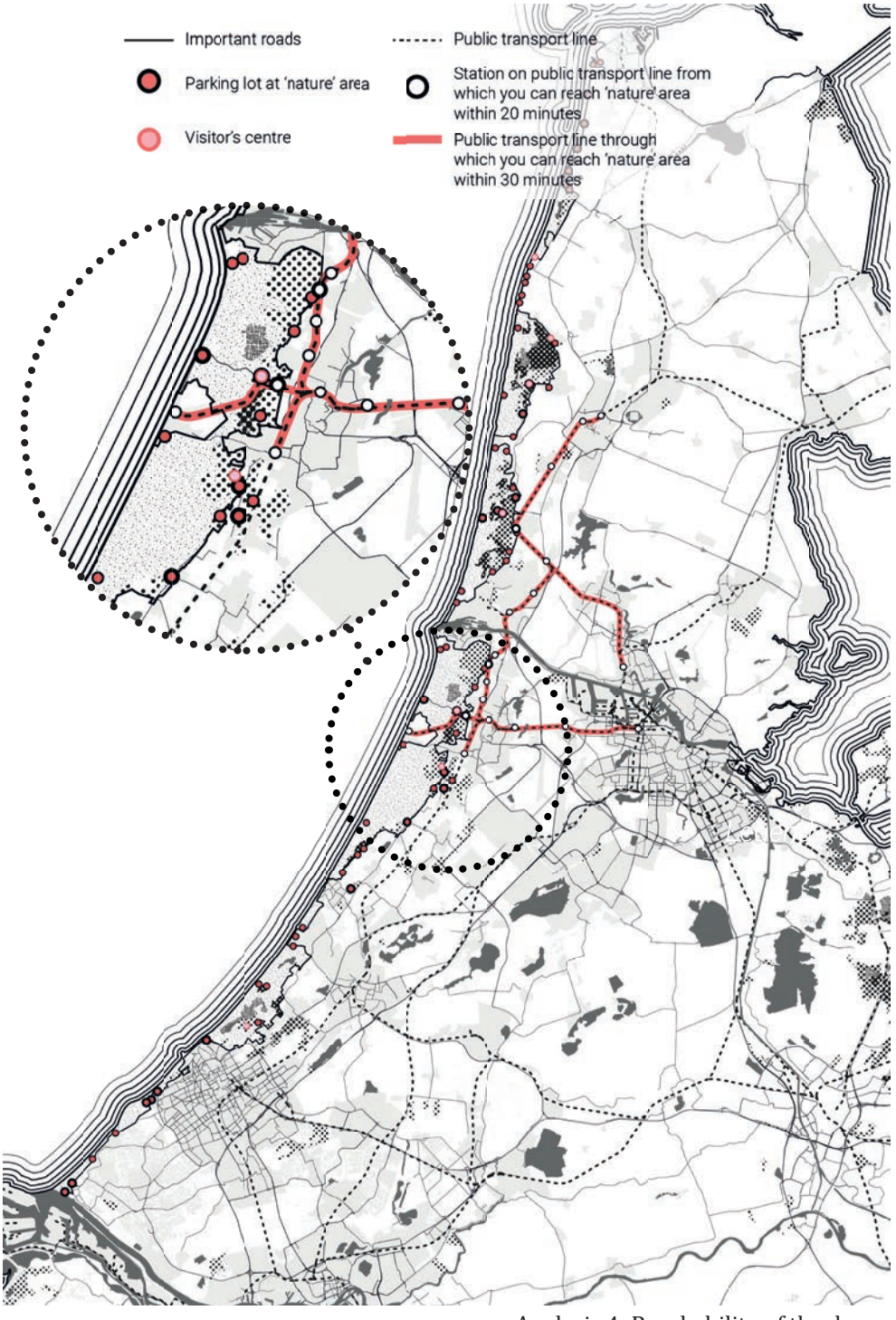
These areas are now mainly used for the cultivation of flower bulbs (see analysis 3). Parts of dunes have been flattened and smoothened in order to create the best conditions for flower bulbs (CRa, 2020). Today the fields, however, have a harsh effect on the soil conditions of the landscape itself, and on the adjacent nature areas through deposition of nutrients. Therefore, in an advice for the forest strategy the flower bulb fields are indicated as a great possibility for the addition of forest (CRa, 2020).

Multiple other structures are found

Analysis 2: Natura 2000 areas

along the dunes. The western part of the Netherlands is densely populated. There are many urbanized areas, and areas full of industrial agriculture to be found. This means that both the existence of the dunes in their present form, and the adjacent land is in fact controlled by humans.

Analysis 3: Location of flower bulb fields and forest loss



Analysis 4: Reachability of the dunes

2.1.2 Human Entering and moving through the dunes

Funnily enough, the dunes are a strip of land that is not necessarily strongly connected to human infrastructure. The dunes are relatively easy to reach when someone owns a car, but difficult to reach with public transport (see analysis 2). The dunes are not easy to reach for all humans.

If you visit the dunes, the entrances are often parking lots. At some of the entrances a visitor's centre is found. Here you can learn about the wildlife that you can find in the dunes. These often have a similar outline in the way they are positioned, and in the way they look. The buildings are often placed at a transition, at the edge of the forest, and by that emphasises the entrance into 'nature'. The buildings, apart from the buildings of the Amsterdamse Waterleidingduinen and Wassenaar, seem to have little to do with the site. They are aliens in their shape and materiality (see analysis 5).

I already mentioned that the dunes are largely controlled by humans. This means that human regulation does not stop at the edge. There are many rules. Along my site visits I encountered multiple signs that I could divide in the following categories: 1). Welcome signs, 2). Warnings, 3). Prohibitions, 4). Guidance, 5). Information, 6). Challenge (see analysis 6).

In most areas you are not allowed to leave the paths, pick plants, disturb wildlife. The experience of the area is thus largely steered through these paths and rules found along the path.

In some cases the paths are (older) utility infrastructures. Through the system of paths you are lead along some important marks in the landscapes, mostly in the form of panoramas and viewpoints. They have an imposing effect, since an area that is seen as 'natural' stretches out quite far.

In chapter 1 I mentioned that the presence of few human traces make humans read the area as a more 'natural' setting. The present human traces in the dunes have a similar effect. There are human traces, but the majority of traces is caused by nonhumans. Thus the area is read as natural. This also explains the large difference that humans perceive between the dunes and the adjacent land. The adjacent land is full of human traces: roads, planted lanes, houses, ditches. Movements within the dunes are calmer, there is no point other than walking in nature. Movements outside the dunes seem to be more functional. Both this difference and perceiving the area as 'natural' is not problematic. However there are two remarkable aspects about human movement through the dunes: 1). There is a clear entering of the dunes, which results in different movements within the dunes and outside the dunes, 2). The path system of the dunes is still a heavily orchestrated way of moving, with many signs.

Castricum

Bergen

Schoorl

Zuid-Kennemerland

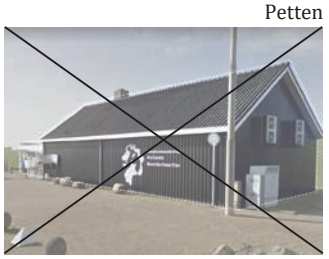
Most common visitor centre: alien at the site - at the forest edge

Wassenaar - Meijendel

Amsterdamse Waterleidingduinen

Visitor centre in historical building - deeper within the dunes

Petten

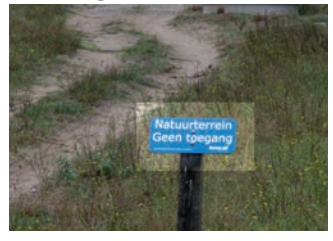


Visitor centre about the sea - next to dyke

Analysis 5: Visitor's centres along the dunes

Welcome signs

Warnings



Prohibitions

Guidance

Information

Challenges

Analysis 6: Signage within the dunes

Forest and human perception

At the inner edge of the dunes there is a thin line of forest. There are multiple different forest types along the dunes. Some are planted (see chapter 2.1.1), others naturally spur. The naturally spurring forest types are mostly deciduous, such as summer oak (Quercus robur), in some cases beech trees (Fagus sylvatica), poplars (Populus alba, Populus tremula, Populus x canescens). These different forest types contrast each other (see analysis 7). A forest of oaks is completely different from a forest of polars, and completely different from a forest of pines. They are different in smell, touch, sound, and colour.
Forest types can contrast one another, and contrast open landscapes. Forest types that contrast one another, are contrasting through atmospheres. Forest types that contrast open landscapes contrast through both atmospheres as well as contrast in openness. This is signified through the edge of the forest. Whether the edge of the forest is open, closed, windy, sheltered, with smell, without smell, with sound, silent, makes a difference in how the adjacent landscape is perceived. According to the College of Government advisors, forest structures and plantations of trees can be used in order to strengthen landscapes, both in terms of biodiversity, and in terms of perception (CRa, 2020). Forest can thus be both a place, and a tool to strengthen the perception of the adjacent place.

Analysis 7: Forest types
Upper row left to right: Oak forest - Poplar forest
Row below left to right: Pine forest - Birch forest

Analysis 8: North Sea currents and sand relations

2.1.3 Sand and humans cause differentiation

Even though the dunes form a more or less continuous structure from North to South, I found through site visits that areas differentiate quite a bit from one another. This is mostly noticeable in plant growth.

Specific characteristics at the areas are present because of several reasons. These are the type of sand that is present, the age of the dunes, and the human interventions that have happened in the dunes.

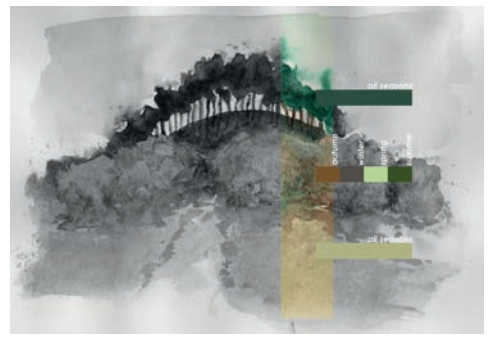
There is a clear distinction in sand north and south of Bergen (see analysis 8). The sand north of Bergen is moved by the currents of the North Sea from Northern waters (DLG & Staatsbosbeheer, 2016). This sand is low in calcium (DLG & Staatsbosbeheer, 2016). The sand south of Bergen is moved from the large rivers towards the North Sea and then flows along the coast (DLG & Staatsbosbeheer, 2016). This sand is rich in calcium (DLG & Staatsbosbeheer, 2016). The difference in sand results in different habitats. North of Bergen there are heather habitats, whereas south of Bergen there are sea buckthorn habitats.

The age of dunes also matters. The older the dune, the more calcium is flushed away by rain (Hommel, Siepel & Slings, 2010). The sand of the slightly older dunes, that are formed more inland, are therefore low in calcium as well. This type of dunes is hardly present, but can be found in the South of South-Holland at Solleveld, and at some places at Amsterdamse Waterleidingduinen.

Most importantly, I found through site visits that dunes gain their specific characteristics from human intervention that is based on the conditions of the dunes. Humans have intervened differently along the coast of the North Sea, responding on these conditions. At some points, where the dunes were wet enough, there are remnants of agricultural fields. The amount of the already mentioned Corsican and Austrian pines is largely based on how much the sand can move. On top of that, experiments of planting are done here in there. The 'Thijssebosje' (see analysis 9) is a remarkable example. It is a typical plantation of Corsican pines only found at Zuid-Kennemerland, and was an invention by Jac P. Thijsse (Ettema & Doornenbal, 2017). Thijsse was a naturalist and is most famous for his writings on nature.

These characteristics make the dunes different to human perception, but also to possibilities of nonhumans to live or not live there. They are thus not only important in generating human movements, but they can also cause certain nonhuman movements (or the absence of nonhuman movements).

NB: In the research there is often a reference to habitat types. For analysis through drawing of those, check the appendix



Analysis 9: Thijssebosje

2.1.4 Spatial concept for forestry along the dunes

The dunes are one long structure, that differentiates because of differences in soil, differences in age, and different human responses on specifics of the site. There is a generic tendency to move along the dunes as if they are a secluded structure from the adjacent land. Whereas both the dunes and adjacent polders, cities, and infrastructures are all influenced by humans. The presence of humans in the dunes is however less obvious. The relation between the dunes and adjacent land is often only one of seclusion, whereas in reality both structures actually influence one another quite a lot. To allow forest along the dunes, would therefore result in not only being considerate of the North-South connection of the dunes, but also to the East-West connection that the dunes form with the adjacent land. Therefore, addition of forest should be based both on the most harmed aspects of the landscape and become a landscape as being, and on the relation that these new forest structures will have to the existing dune forests.
This also means that the present agricultural and urban structures in their current form might have to change. The addition of forest within the multispecies paradigm does therefore consider the land along the new forest, and along the dunes, and that might need a new infill (see spatial concept 1:100.000).

Spatial Concept 1:100.000 - Forestry along the dunes based on both the land its based on and its relation to the dunes

0 2 4 6 8km

First site visit to Amsterdamse Waterleidingduinen:

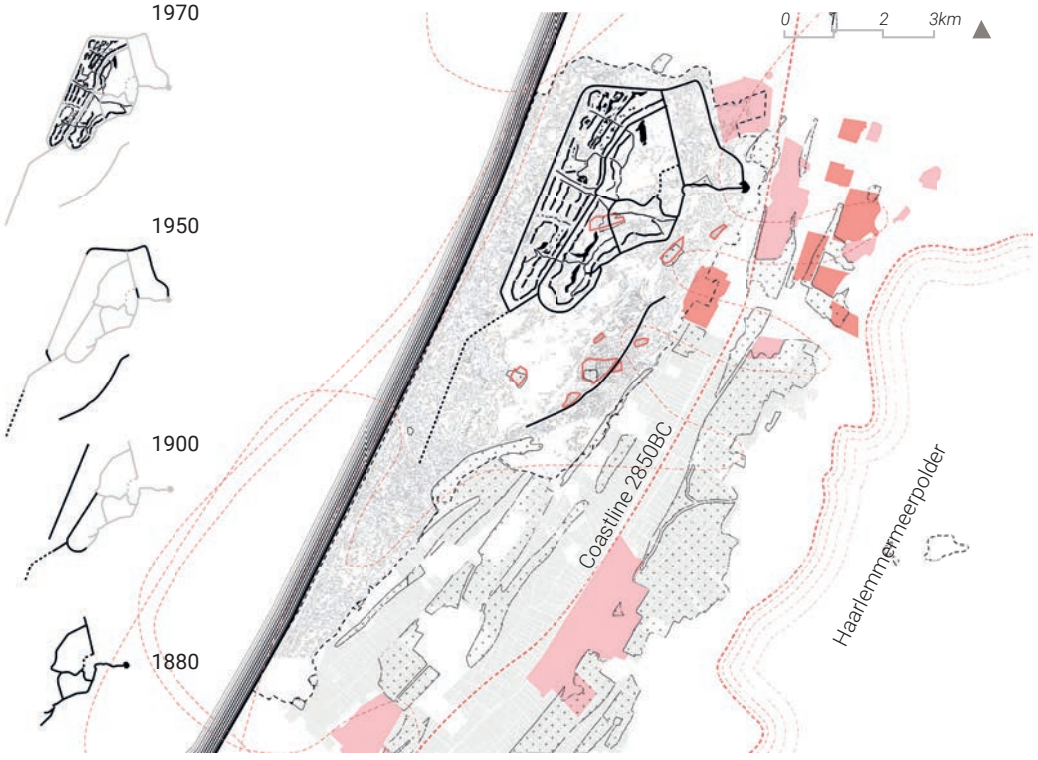
„By the end of my walk I felt ashamed to have pointed out a deer to other people at the beginning of my site visit. I think they were almost at the end of their walk, since we went opposite directions. This means that by that time, it was probably the 60th deer they had spotted".

2.2 AMSTERDAMSE WATERLEIDINGDUINEN

2.2.1 Flower bulbs, Fallow deer, water, and estates

Major historical events

Amsterdamse Waterleidingduinen is a remarkable landscape. Both the dunes and the adjacent landscape have changed radically over time by human hands. There is a line of estates – mostly from the 19th century – on the old coast line of 2850 BC. The dunes before 1852 were wet, but this changed when the Haarlemmermeer was impoldered (Groenendijk, 2017). The second large intervention that changed these wet dunes was the creation of canals to retrieve the fresh and clean dune water in 1853 (Groenendijk, 2017). This was initiated by one of the estate owners Jacob van Lennep, and invented by Christiaan Vaillant (awd.nl/geschiedenis). The canals are the reason of the name of the dunes, since the water system has provided Amsterdam with fresh water. The system was expanded multiple times. The third large intervention was the cultivation of the flower bulb fields along the dunes in the 19th and 20th century. These fields need low water levels. Parts of the dunes were dug of for these fields (Groenendijk, 2017). Up until the first half of the 20th century it was possible to farm in the dunes. But due to expansion of the watersystem, the dunes became too dry and farming became impossible. Up until the 50s water was retrieved directly from the fresh water lens that is underneath the dunes (Schellingen et al., 2006). This however caused draughts and loss of fragile ecosystems. Therefore, the water that is now filtered in the system, now



Analysis 10: Major historic events at Amsterdamse Waterleidingduinen - Water infiltration system over time - estates - agriculture - flower bulb fields

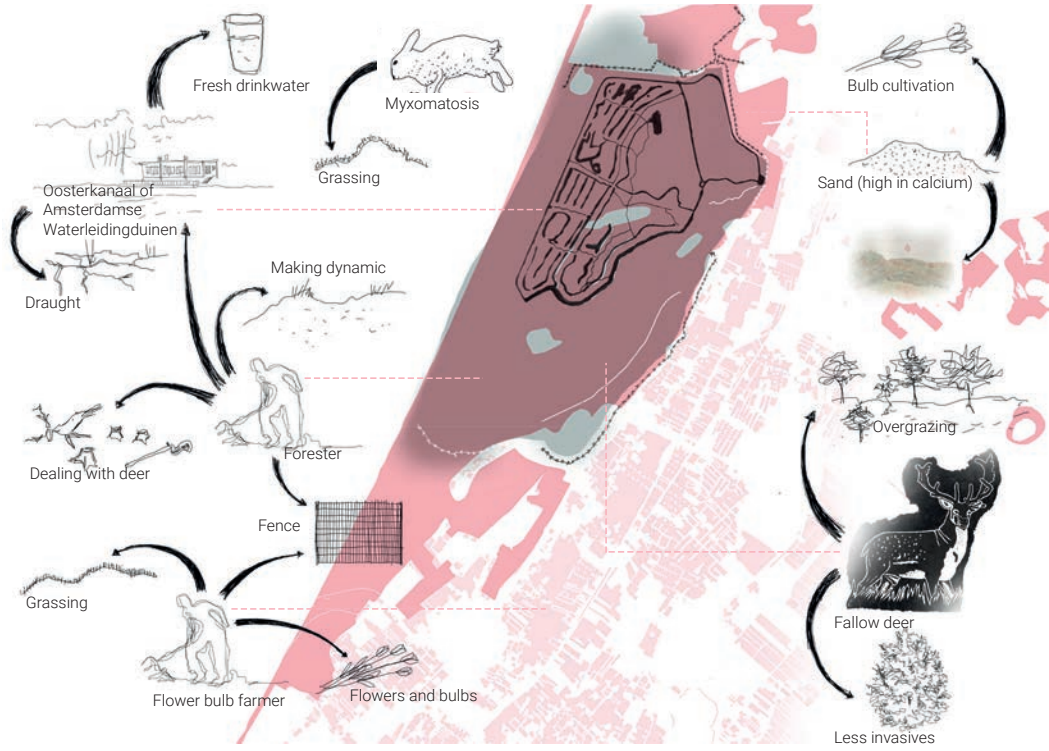
Historical estate
Estate
Old agricultural pattern
Flower bulb fields
Dune that has been dug of
Area of research
Old coastline/line land-water
Old coastline/line land-water that is still visible

comes for a large part from the larger rivers of the Netherlands (Borst, Vissers & Vliegenthart, 2016).
Water is not the only relation that the area has to Amsterdam. The area is still technically owned by the municipality of Amsterdam. This is the reason why at Amsterdamse Waterleidingduinen, you are allowed to leave the paths (L. Geelen, personal communication, 3 May 2021). This was a decision made in the 1920s in order to let people from Amsterdam use this area as 'their piece of nature' (L. Geelen, personal communication, 3 May 2021).

Key actors

These human interventions are not the only reason why the Amsterdamse Waterleidingduinen are remarkable. Even though human actions largely steer the condition that the site now has, there are other key actors at stake. Key actors are actors that have a large effect on the entire area. They create large interventions.
The most remarkable nonhuman key actor at Amsterdamse Waterleidingduinen is the fallow deer (Dama dama). The population of these has gotten out of control; there are now over 2000 deer (Faunabeheereenheid Noord-Holland, 2020). Their presence has a negative effect on flora (Faunabeheereenheid Noord-Holland, 2020; Delforterie, 2017).
The sand rich in calcium, an abiotic actor, creates the right conditions for sea buckthorn, but also provides for the right soil for flower bulb cultivation.
Humans are actors in a couple of different ways: farmer, forester, water retrieving. The farmer cultivates flower bulbs and by the deposit of nitrogen, grassing of the dunes (Groenendijk, 2017). The forester is functioning as an ecological problem solver. The forester tends to balance the major problems at the site: the deer population, grassing of the dunes (Faunabeheereenheid Noord-Holland, 2020; Groenendijk, 2017).
Water is retrieved from the dunes, which results in fresh water for Amsterdam, but also at some parts for draughts.
The last key actor is a virus called Myxomatosis. This virus has killed a large part of the rabbit population (Groenendijk, 2017). Without these rabbits, the dunes turn into grasslands much faster.

Sand is at the base of the site. But the other key actors at the site, actually are mostly imposing negative effects on the landscape, that is less nonhumans can thrive there. Both the fallow deer, the virus myxomatosis, and the human farmer make it less easy for nonhumans to move through the site. Now the virus is difficult to get rid of. But we can restrict ourselves in farming, in order to stop harming the landscape. And we can become the enemy of the fallow deer. This is now in a way already the case, since the forester shoots the deer in great numbers.
Accepting the landscape as a being, also means that we in a way have to accept for this part of the landscape and the adjacent landscape to accept what it offers. In the case of the fallow deer this already happens, since you can buy meat of the deer at certain restaurants and butchers (https://awd.waternet.nl/beheer/projecten/dossier-damherten/beheer-dieren/). But this is still very much not the case for farmers. There movements are completely steered by what we humans want from the landscape, not what the landscape offers. And the latter should be (more) the case.
This might also release us from our human forester role as an ecological problem solver. Instead, their actions become a different way of using the landscape.



Analysis 11: Key actors at Amsterdamse Waterleidingduinen
Fallow deer - Forester/Maintainer - Farmer - Sand - Myxomatosis

Area of Population of Fallow deer
Oosterkanaal
Sand relatively rich in calcium
Flower bulb fields
Fence of fallow deer

2.2.2 Human and Nonhuman Movements at Amsterdamse Waterleidingduinen

1.The notation of a walk through Amsterdamse Waterleidingduinen

I researched the site not only through mapping, but also through making a score of a walk. With this, I begin chapter 2.2.2. It shows the fleeting moments of experience, as well as the fleeting moments of encountering during a walk. I set out the route based on important elements found at the dunes, such as the Oranjekom , the forest, the savannah, part of the water infiltration system. I noted as much as I could. I noted nonhuman encounters, human encounters, I noted how the landscape affected my walking, what I noticed most, what made my stop, speed up, climb. It is thus a walk that – like any walk – relates to nonhuman presence, abiotic movements, as well as topography of the site.

Walking the site shows how sometimes, as a visitor, you enter a discovery mode through nonhumans, abiotic factors, or extraordinary elements. These moments are fleeting. Every walk is a recording of fleeting moments that only exist in the walk. The same walk cannot be made twice. The presence of nonhumans can be encouraged through the design, but their movements are to be hoped for, and not promises. Humans can only encounter nonhumans through accidentality. My bodily movement changed through the presence of them, but I was not yet changed through detailed site specific movements. Only in the forest I noticed the woodpecker, but at the rest of the site, my movements were altered through the presence of nonhumans that were everywhere at the site (such as the fallow deer). Within the paradigm of this thesis it would be interesting to see whether it is possible to also relate to incredibly site specific nonhumans, and the effects of abiotic movements. For the latter: think for instance when I mention the path that has gotten wet in the agricultural plot. This in a way tells the logic of the location of the agricultural plot (not too dry).
In order to define what these movements should be, I now look in greater detail to the subsequent areas in the entire landscape.

NOTATION OF A WALK

My walk began at the Oranjekom[3]. The building in front of the water made me pause. I walked one of the pumping buildings and noticed the first deer and a bird. It made me search the environment for a while. I moved further through a densely planted lane, that might have been a hedge before. I moved higher up on a side path, being incredibly active at the beginning of my walk. I came back to the path and followed the Betonsloot [4]. I followed the curved water body and ended up at the waterfall. I stopped. I watched. I investigated. I was not the only one who stopped. Many humans did the same thing. I moved on and encountered an old summer oak. I did notice it, yet there were many humans around the tree already so I decided to move on. I then decided to not follow the route for a second and move deeper into the forest. I was rewarded with the sound of a woodpecker. I was enthusiastic to hear it and searched a while to spot it.

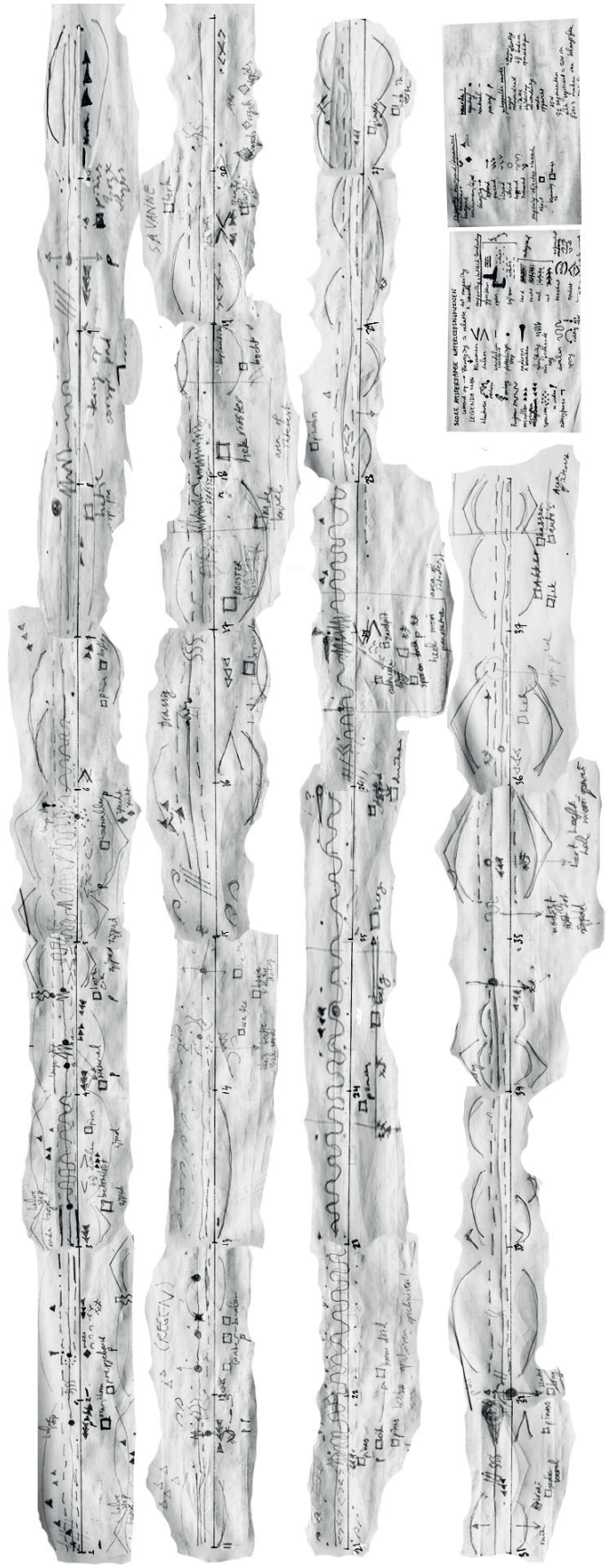
I did encounter it, but I remember the search more than the actual spotting of the bird. Apparently the search was a nicer immersion than the finding. I then moved further and speeded up a little. I walked towards the edge of the forest and then followed the edge. I became a bit busy with orienting. How could I go back to my route. So I walked along the edge around the corner and spotted an element that I discovered previously on my site visits. A little human shelter where one could sit and watch. Some humans took a pause there. I moved back on my route and watched the immense waterbodies. There is a clump of pine trees standing next to this. I then moved on along a boring path. It was boring in materiality (concrete brick) and outlook (enclosed by a hedge). I spotted some humans nearby along the path that took a pause, and noticed what they were looking at. There was a very imposing fallow deer standing next to the path. It had beautiful antlers. An immense dark cloud came my way while I moved of the brick path into a short grassland area. Before I reached the waterbody in the distance, it started to rain. What was before a pleasant walk became incredibly uncomfortable in a short span of time. The wind blew wildly, and I sheltered next to a thicket in order to keep my back dry. The rain did not stop, and I decided to accept my faith of drowning in the weather and moved on. At this moment, the pages and notations became wet, my hands froze of. The elements proved to be quite harsh in winter. The water bodies were quite beautiful, but the weather and the open landscape made me pay little attention. I noted only what I noticed, and that was not much. Fortunately

3 The Oranjekom is where both an old and the new pumping station of the Waterleidingduinen is located. The water that arrives here is cleansed in the infiltration system located closer to the sea. After this point the clean water first is pumped to the Leyduin, where it is cleaned further before it is moved to Amsterdam (awd.net)
4 The name Betonsloot can be translated to concrete ditch, which is exactly what it is. Water is moved here towards the infiltration fields. It is a rather spectacular elements, since the ditch disappears underground by a small waterfall that adds oxygen to the water (awd.net).

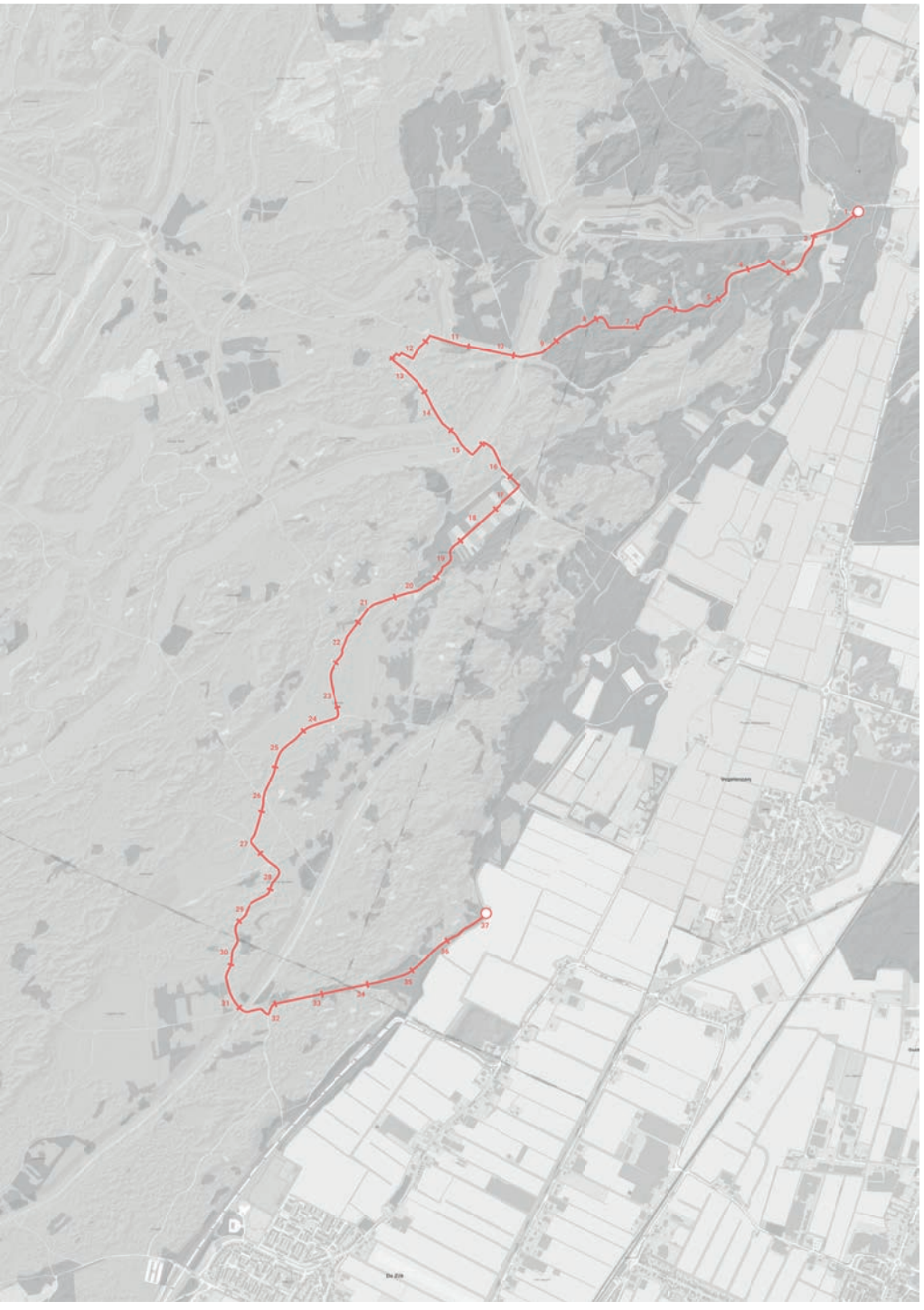
my route led my back to the forest. The ground was wet and I had to jump over some puddles caused by the rain. I crossed a cattle grid and entered an enclosed area with definitely planted structures. No fallow deer allowed here. By the end of what surely is an agricultural plot where I sometimes had to jump to the side of the path in order to keep my feet dry, there was another cattle grid. I entered the domain of the deer again. Both the landscape as well as the sky opened up in front of me. I arrived at the savannah [5]. I was not the only one who noticed the opening of the sky, I heard birds all around me. The savannah was a clear landscape, that invited to somewhat wander around. The paths here really turned into a suggestion to follow, and there were clues in the landscape enough to wander around. I noticed groups of deer. Some trees really stood out. At one side, the savannah was enclosed by somewhat higher dunes. One stood out as if it was a mountain. I hesitated, but decided to climb it. The walk towards it was longer then I expected, I found a sand pit and more deer, and a deer trail. I managed to climb up finally and found a panorama. I climbed down and then for some reason unconsciously decided to move on. I noticed some deer, some special trees, a crow. I spotted more old agricultural fields. I moved along the bridge over the Oosterkanaal, but I only stopped briefly to watch both sides. I entered the forest again. I walked along the path and followed a lane. A fallow deer also followed the lane for a while.

I stopped half hearted for one more deer, but only because the antlers were beautiful. I encountered the fence that stopped fallow deer from moving on the agricultural plots. The plots were completely deserted, only bare soil could be seen. In the distance I noticed some cars. I ended my route at the edge, and looked over the lower agricultural fields. There was little to be seen at this moment. The route ended.

5 The savannah (see also chapter 2.2.2 point 2.) is not actually a savannah. It resembles the outlook of a savannah since it is an open grassland with singular trees growing. On top of that the landscape is rather flat.



Score 1: Amsterdamse Waterleidingduinen



Score on map - Walked route. Every segment is approximately 200m





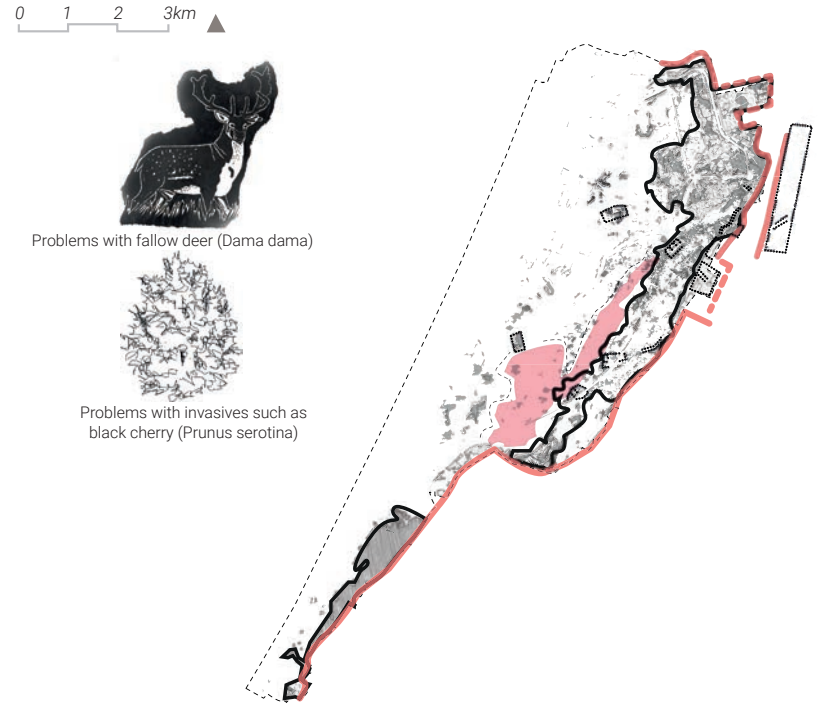



A selection of photos from left to right, top to bottom: Densely planted lane, beautiful water, the woodpecker, the deer, bad weather, savannah, the dune, the deer

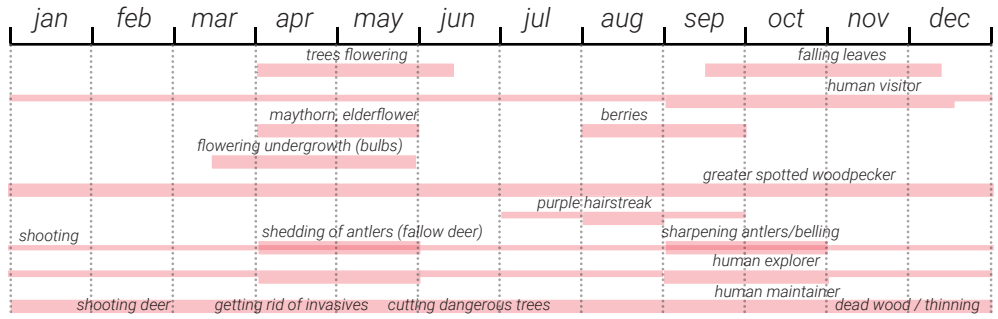
2. The Forest

The forest structure is, as called by natura 2000, dry dune forest. It is about 700 ha (Delforterie, 2017). The dryness of this forest has partly to do with the height of the land, which is a couple of meters above the adjacent polders. Along the entire edge of the dunes, the forest mostly consists of summer oaks (Quercus robur) and beech trees (Fagus sylvatica) (Delforterie, 2017). But also grey poplar (Populus x canescens) and sycamore (Acer pseudoplatanus) were planted and have spread throughout the area (Delforterie, 2017). There are multiple lanes, hedges that have now grown to full-grown trees, that relate to the estates and agriculture that was once present at the dunes. There are multiple plantations of Austrian and Corsican pine (Pinus nigra subsp. nigra/laricio). These plantations are now, however, thinned. These parts of the forest are therefore turning into mostly sycamore forests (Acer pseudoplatanus) (Hommel, Siepel & Slings, 2010). The forest at the dune edge is more dense. Next to this dense structure, the Savannah structure can be found. This is a landscape of mostly maythorn trees (Crataegus monogyna) that are far apart. There is hardly any undergrowth present in all parts of the forest. This has to do with the population of fallow deer (Dama dama) that moves through the forest to find food. Only certain ferns stand a chance. These nonhuman movements are not the only ones, birds such as the greater spotted woodpecker (Dendrocopos major) move through the forest. On one of my site visits I found mice running through the leaves on the floor. One of the by natura 2000 highlighted species is a butterfly; the purple hairstreak (Flavionus quercus). These nonhuman movements change through the seasons. Human movements move along these nonhuman movements in the forest. Visitors tend to visit forests more in autumn, explorers do the same and might go on mushroom hunts. The forester returns to the site at similar moments every year, to cut trees.
I have specified the movement design principle of nonhuman, and abiotic movement, in relation to human movement. The nonhumans noted here, thus have to be attracted, or made perceivable through the design.

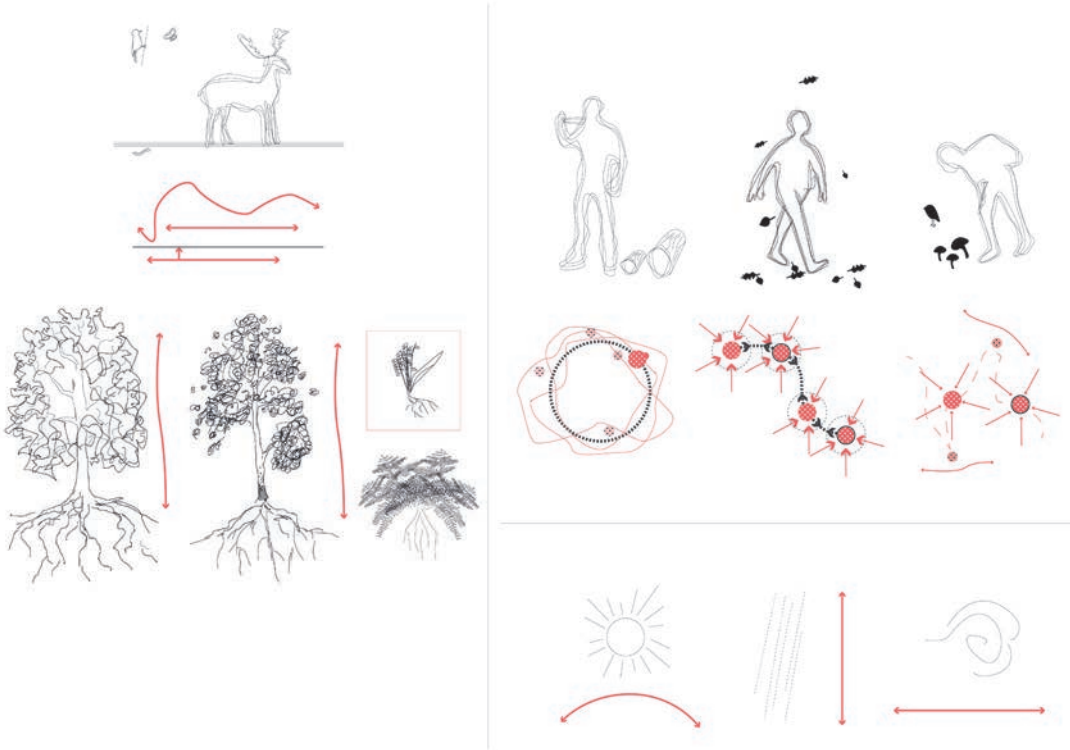
NB: In the research there is often a reference to habitat types. For analysis through drawing of those, check the appendix



Analysis 12: Forest at Amsterdamse Waterleidingduinen



Analysis 13: Human and Nonhuman Movement at Forest



Design Principle 13: Nonhuman, and abiotic movement in relation to condensed human movement in the forest.

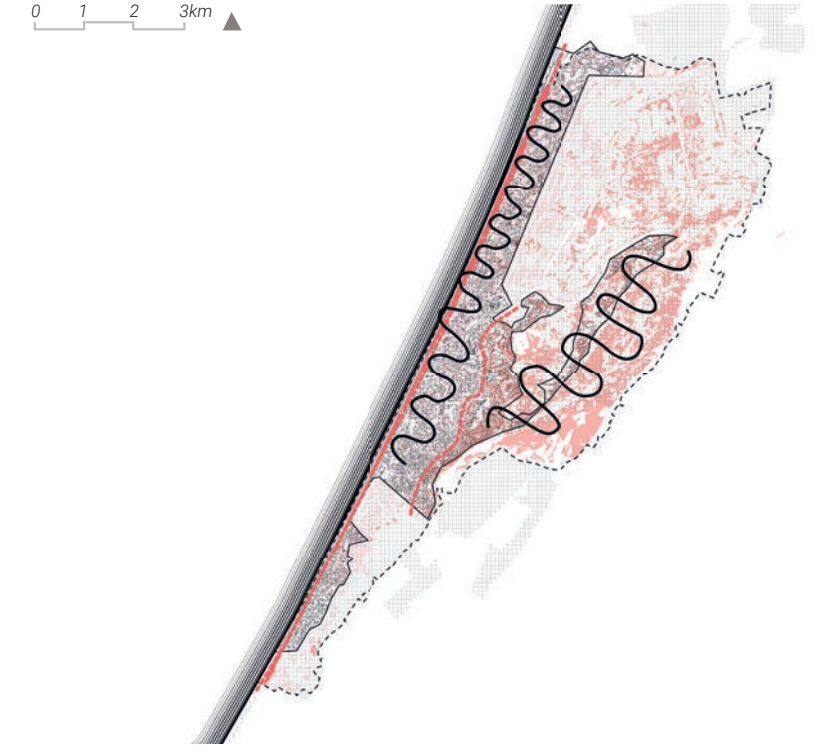
Nonhuman horizontal movement at upper left corner: fallow deer (Dama dama) - greater spotted woodpecker (Dendrocopos major) - purple hairstreak (Flavionus quercus)
Nonhuman vertical movement middle row left: summer oak (Quercus robur) - white poplar (Populus alba) - Lily of the valley (Convallaria majalis) - eagle fern (Pteridium aquilinum)
Human maintainer: Cutting of wood
Human visitor: walking through fall
Human explorer: spotting of mushrooms and birds
Abiotic movements: presence of light (in relation to leaves), presence of rain (sound on leaves), presence of wind (sound of leaves)

Condensed human movements should be originated in nonhuman and abiotic movement. The nonhumans and abiotic movements are shown in the diagram (see design principle 13[6]). It is therefore important that within the design, these nonhuman movements should be attracted to moments of condensed human movement. In the case of the forest, abiotic movements can be used in order to clarify the movements of nonhumans. However, they do have a modest role in the design of condensed movements, since this is the case for the forest now as well.
The species portrayed here are specific for the denser forest. The contrast between the savannah and the dense forest is thus highlighted by movements of the dense forest. However, nonhuman movements partly continue at the savannah. This is for instance the case for the fallow deer (Dama dama), and the greater spotted woodpecker (Dendrocopos major).

6 The design principle is a variation of design principle 4. The principle thus shows the nonhuman, and abiotic movements on which human movement should respond. It is therefore not a conclusion, but input for the design.

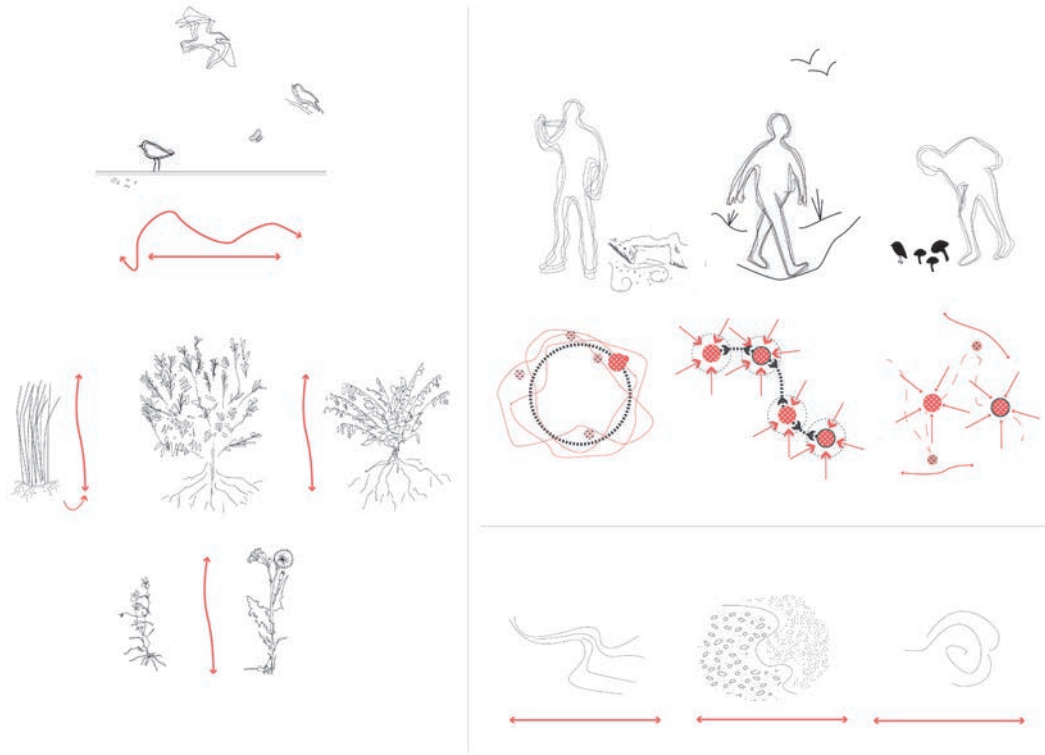
3. Dunes and the Sea

In natura 2000 policies, there are three habitat types that are specifically called dunes. These are embryonal dunes, white dunes, and grey dunes (Ministerie van LNV, 2008). Embryonal dunes are found in the sea strip (Ministerie van LNV, 2008). This is the most dynamic habitat type that can be found in the entire coastal landscape. It is hardly present at the Amsterdamse Waterleidingduinen. The area cannot become too dynamic because of the large water system, that is relatively close to the coast. Behind these dunes, there is a small strip of white dunes, and eastward there are the grey dunes. White dunes – still being very dynamic – are not preferred on a large scale (Groenendijk, 2017). The largest area of the Amsterdamse Waterleidingduinen consists of what is called grey dunes. These can be either high in calcium, or low in calcium. Towards the east, the dunes are low in calcium. Calcium has been washed out over time here (Ministerie van LNV, 2008). These soil conditions grant opportunities for specific habitats. The most noticeable plant present is probably European beachgrass (Ammophila arenaria). The leeward side of the dunes are often overgrown by the habitat type which consists mostly of sea buckthorn (Hippophae rhamnoides), and e.g. Spindle (Euonymus europaeus) (Groenendijk, 2017). The dune types suffer a lot from the deposit of nitrogen (Beheeradvies AWD). There is therefore a grassing of the dunes. This is tackled in maintenance by creating small scale dynamicness, through for instance sodding (Groenendijk, 2017). Abiotic movement: wind, does the rest in creating dynamicness. It transports the sand through the dunes. Within the dunes there are actually specific mushrooms that grow, as well as multiple butterflies e.g. the silver-spotted skipper (Hesperia comma) and Niobe frittilary (Argynnis Niobe) (Ministerie van LNV, 2008). The dunes are also home to many different birds, such as the Kentish plover (Charadrius alexandrines) at the beach and the embryonal dunes, the Nightingale (Luscinia megarhynchos) at the thickets of sea buckthorn (vogelbescherming.nl). Nevertheless, the most obvious bird are seagulls. Again human movements responds on the presence of certain nonhumans. However, for the dunes there is an important aspect in movement, which is the topography of the dunes.
Grey dunes are in fact all along the entire Amsterdamse Waterleidingduinen, yet I found on my site visits that the presence of differences in height makes them dunes to humans. This I imagine to be mostly the case for the human visitor and the human explorer. For maintainers this is different, they know the habitats and species quite well.



Analysis 14: Dunes and the sea at Amsterdamse Waterleidingduinen

Analysis 15: Human and nonhuman movements at dunes and the sea



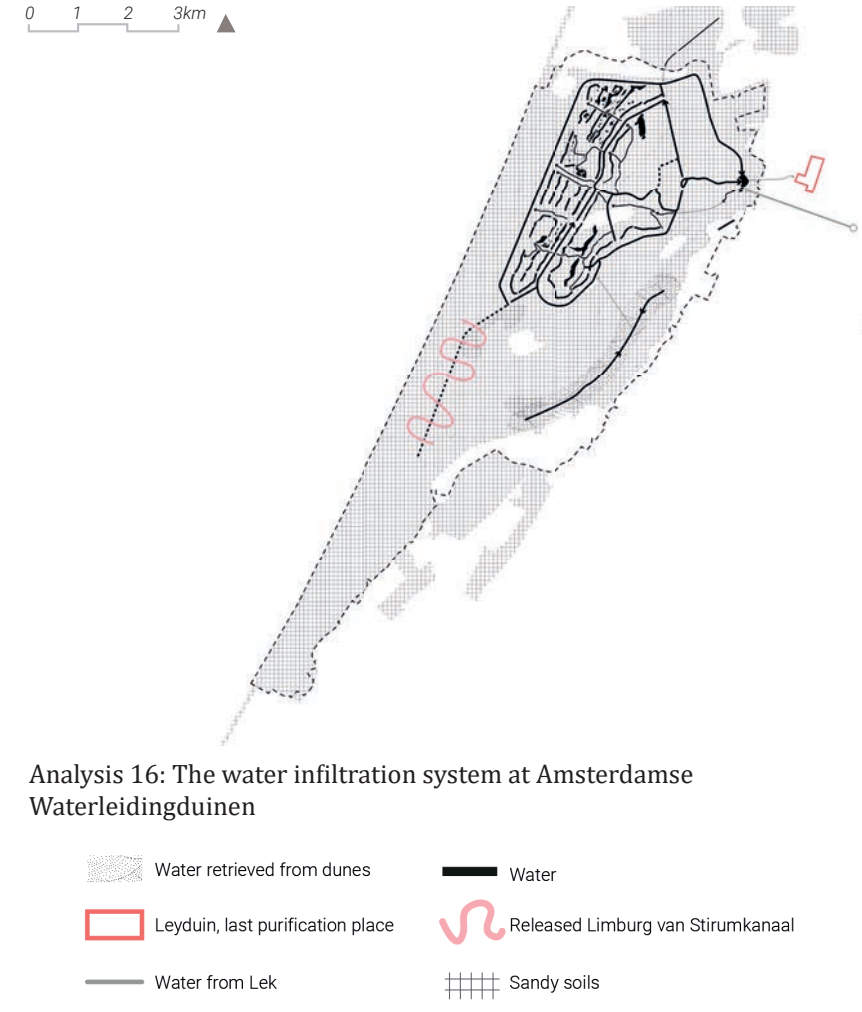
Design Principle 14: Nonhuman, and abiotic movement in relation to condensed human movement at the dunes and sea.

Nonhuman horizontal movement at upper left corner: european herring gull (Larus argentatus) - kentish plover (Charadrius alexandrinus) - nightingale (Luscinia megarhynchos) - silver-spotted skipper (Hesperia comma)
Nonhuman vertical movement middle row left: European beachgrass (Ammophila arenaria) - sea buckthorn (Hippophae rhamnoides) - spindle (Euonymus europaeus) - dune pansy (Viola tricolor subsp. curtisii) - field milk distle (Sonchus arvensis)
Human maintainer: Sodding to create dynamics
Human visitor: Walking through strong topographic landscape
Human explorer: spotting of mushrooms and birds
Abiotic movements: tidal movements (in relation to sand and dunes), movemt of sand (dynamic dunes), presence of wind (creates movement of sand)

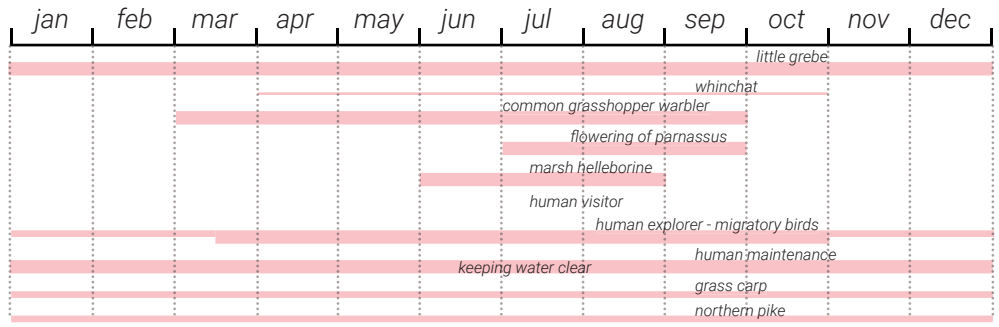
The named dune habitat types are an urgent area to maintainers. The grassing caused by the deposition of nitrogen is the opposite of the wanted small scale dynamics of the dunes. Abiotic movements are incredibly important. This is the case for maintainers, but also for nonhumans that relate to these areas. Without dynamics, they will not thrive. To other humans, the topography of the dunes is important in understanding these. Topography is thus important in understanding that you are in fact at a dune area, but also a possibility in understanding nonhuman presence and abiotic movements in the dunes. The dunes also have a possibility in understanding the larger landscape, because of the height differences. Condensed movements should thus focus on important points in the surrounding landscape, as well as considering topography, abiotic movements and nonhumans. Abiotic movements are thus very important in the design. The specific nonhumans and abiotics are named in the diagram (see design principle 14).

4. The water infiltration system

As mentioned in chapter 2.2.1, the water system in the Amsterdamse Waterleidingduinen expanded greatly over time. The retraction of water from the groundwater of the dunes caused draught. Therefore, most of the water that is now within the system is actually transferred from two other places: Nieuwegein and the Lek, all the way to Amsterdamse Waterleidingduinen (Borst, Vissers & Vliegenthart, 2014). The water is cleaned before it is led into the infiltration system (Borst, Vissers & Vliegenthart, 2014). That way, the water does not cause pollution in the dunes. The water is then further cleaned by the dune sand, gravity, and time (Borst, Vissers & Vliegenthart, 2014). About three months, the water stays in the system (Borst, Vissers & Vliegenthart, 2014). After that, the water is moved through drainage and waterbodies to the Oranjekom and to the adjacent Leyduin where the water is cleaned once more before it is moved to Amsterdam (Borst, Vissers & Vliegenthart, 2014). Only at one spot there is still a retraction of water from the dunes: The Oosterkanaal (L. Geelen, personal communication, 3 May 2021).
At this part of the site, there is thus a lot of horizontal and vertical abiotic movement in the shape of water. Sometimes this is visible, sometimes it is secret.
There are multiple nonhumans attracted by this system. The system is even valuable as habitattype in the natura 2000 evaluation (Groenendijk, 2017) Different kind of orchids, such as the fen orchid (Liparis loeselii), marsh helleborine (Epipactis palustris) can grow here. One of the most remarkable plants here is the grass-of-Parnassus (Parnassia palustris).
There is a remarkable fish found in the Amsterdamse Waterleidingduinen: the grass carp (Ctenopharyngodon Idella), which is put there by humans to maintain plants in the canals.
The presence of water also provides certain birds such as the little grebe (Tachybaptus ruficollis).
Human movements are along or crossing the waterbodies. Human maintenance is aimed here at keeping the water clean and thus measuring water conditions from time to time. Explorers tend to move towards places with many birds.

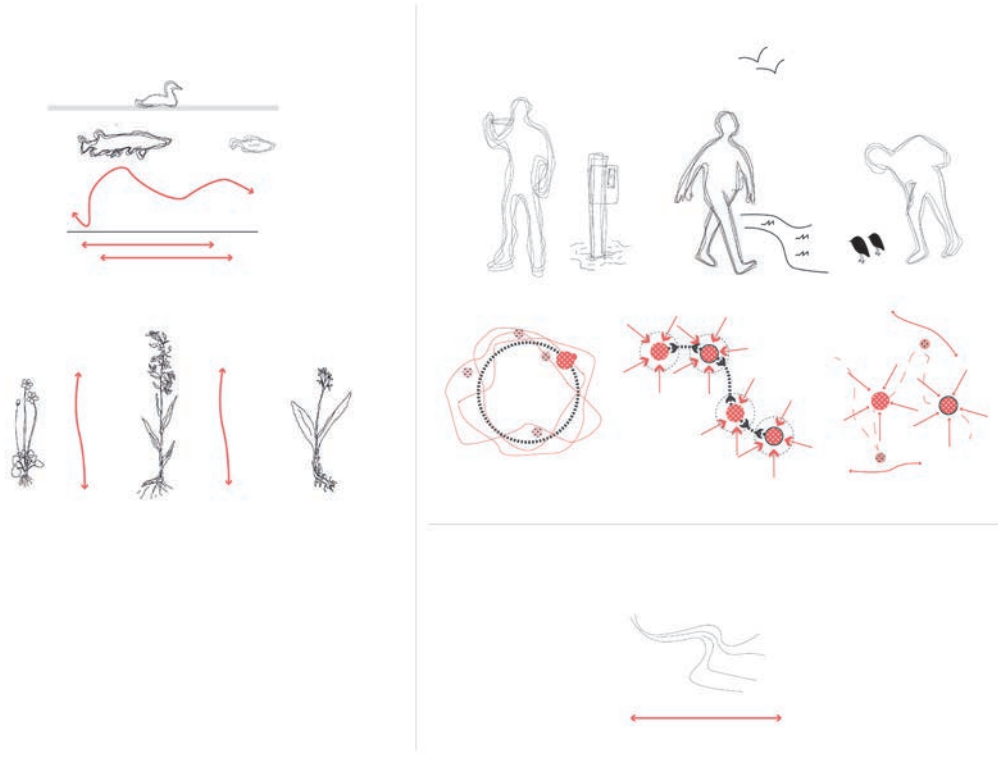


Analysis 16: The water infiltration system at Amsterdamse Waterleidingduinen



Analysis 17: Human and nonhuman movements at the water infiltration system

At the water system, there is the direction of water that is moving through this area of the site. There are already some crossings over which humans move through different spots. These crossings are possibly where all movements, abiotic, nonhuman, and the three types of human can come together. Nonhumans and abiotic movements that should be more visible are shown in the diagram (see design principle 15).



Design Principle 15: Nonhuman, and abiotic movement in relation to condensed human movement at the water infiltration system.

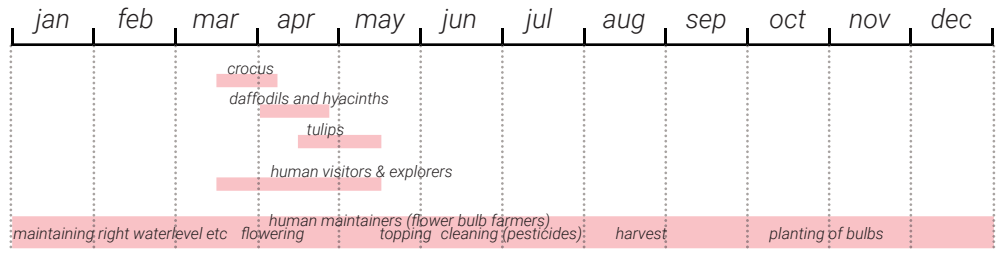
Nonhuman horizontal movement at upper left corner: northen pike (Esox lucius) - grass carp (Ctenopharyngodon idella) - little grebe (Tachybaptus ruficollis)
Nonhuman vertical movement middle row left: marsh grass of Parnassus (Parnassia palustris) - marsh helleborine (Epipactis palustris) - fen orchid (Liparis loeselii)
Human maintainer: Controlling water quality
Human visitor: Walking along water
Human explorer: spotting of birds
Abiotic movements: direction of water

5. Flower bulb fields and the Amsterdamse Waterleidingduinen

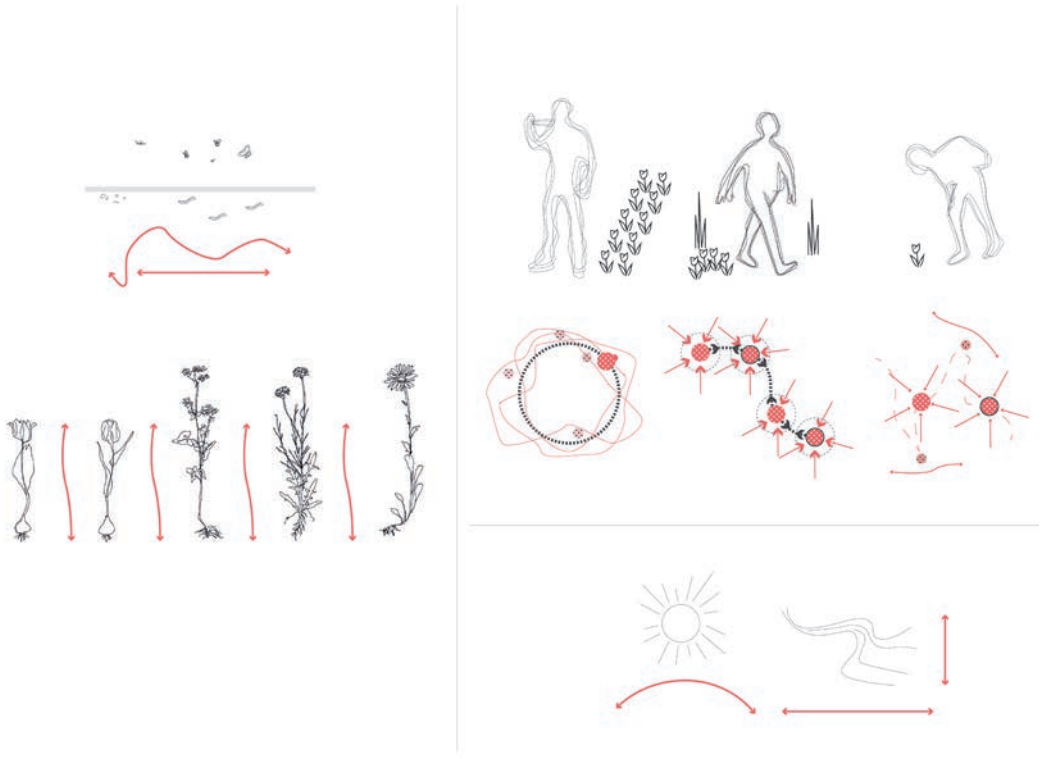
The large effect of the cultivation of flower bulb fields on the Amsterdamse Waterleidingduinen has been mentioned already. The soil conditions are useful for the production of flower bulbs (Schellingen et al., 2006). Even though, the cultivation of flower bulbs goes back to the 17th century, during the end of the last century this type of agriculture has scaled up radically (Schellingen et al., 2006). In order to cultivate bulbs, sand ridges were dug of and equalized up until the last century (Schellingen et al., 2006). It is likely that, like other areas along the coast, this sand was used to create sand-lime bricks.
The water level of the ditches is maintained with a difference of only 5cm in level between winter (-0,64 NAP) and summer (-0,61 NAP) (rijnland.maps.arcgis.com). This way the bulbs will not rot. On top of that, pesticides are used in order to keep cultivation of bulbs free of fungi and mold. The quality of water is therefore rather poor, which means that there are many algae that can live there. The bulbs flower shortly, from mid-March to May. The fields are visited by many humans. The maintainer here is not the forester, but the farmer. Maintenance here is aimed at profit.
On top of that, there are grassland polders along the north of the Amsterdamse Waterleidingduinen. These polders are on slightly different soil, and at a slightly higher level. There is thus an incredible amount of human movement present through these fields, which has to do with the many urban settlements, and infrastructures found at the site.

These movements are mostly disconnected from the Amsterdamse Waterleidingduinen dune area.

Analysis 18: Flowerbulb fields and estates along the Amsterdamse Waterleidingduinen



Analysis 19: Human and nonhuman movements at the flower bulb fields



Design Principle 16: Nonhuman, and abiotic movement in relation to condensed human movement at the (biological) flowerbulb fields

Nonhuman horizontal movement at upper left corner: bees, insects, and butterflies
Nonhuman vertical movement middle row left: lily-flowered tulip (Tulipa) - single tulip (Tulipa) - buckwheat (Fagopyrum esculentum) - yarrow (Achillea millefolium) - cornflower (Centaurea cyanus)
Human maintainer: cultivating tulips
Human visitor: visiting tulip fields
Human explorer: spotting of particular tulip
Abiotic movements: movement of sun and waterlevels

Movements at and through the flower bulb fields are now mostly human. There is little presence of nonhumans at the site. Abiotic movements are kept to the bare minimum. Whereas at the other areas, nonhuman movements are often already present, at this part of the site the land is rather deserted when it comes to nonhumans. It is thus first important to make sure that there are nonhumans present, before condensed movement is steered through the design. The presence of nonhumans would namely result in different movements at the site. Therefore the flower bulb fields that will stay (in chapter 2.2.4 I discuss the Landscape as being at this area), have to be considerate of nonhumans, such as insects, bees. The movements thus depicted, are movements at flower bulb fields in a more ideal situation (see design principle 16).

2.2.3 Transitions and language of Amsterdamse Waterleidingduinen

1. Different transition zones and important points

Different movements belong to different areas. These movements can change over the course of a transition in the landscape. The areas I described in chapter 2.2.2 are different from one another and are therefore all having slightly different movements. As described in chapter 1.3.2, the hybrid is a design intervention of controlled condensed movement at a transition zone. This means that the hybrid is crossing an edge. Since the areas are different in enclosure, topography, and pattern (such as ditches) the transitions consider at least one of these topics.

In the previous chapter I described 4 different areas: the forest, the dunes and the sea, the water infiltration area, the flower bulb fields including human infrastructure and settlements. Within these areas there were sometimes different contrasting areas found as well. In the forest there was the dense forest at the edge, and the savannah. The dunes are a continuous area of grey dunes, however at the sea side the dunes change towards white dunes, and the beach. The water infiltration area is a bit ambiguous since it consists of a network of waterways. Within the area of flower bulb fields there are urban settlements, and different polders such as the grassland polder in the north. In the end I thus identified the following areas:

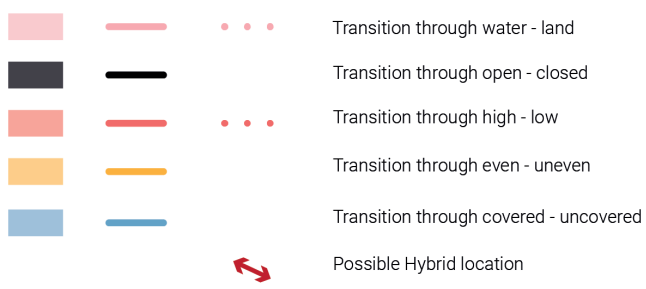
1) Forest at the edge
2) Savannah
3) Grey dunes
4) White dunes, beach, sea
5) The water infiltration network
6) Flower bulb fields
7) Grassland polders
8) Urban settlements

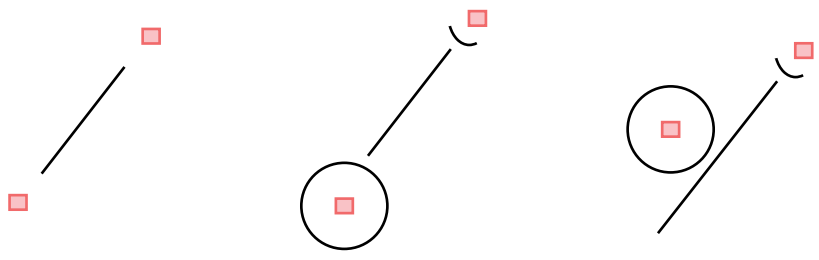
These all relate differently to each other. The transition from the one to the other is defined by contrast between two areas. I identified the following transitions: open – enclosed, even – uneven, high – low, wet – dry, covered – uncovered. Some transitions regard multiple themes. These transitions can be either obvious, or unconscious. I mentioned in chapter 1.3.2 that hybrids cross transitions from the introvert to the extrovert. This is the case for the 'open – enclosed', and often 'even – uneven'. However, there are subtle differences in how introvert or extrovert a transition is, which is mostly defined by the contrast between the two areas. Even – uneven can be going from introvert to extrovert, however whereas the even or uneven landscape is introvert or extrovert depends on the relation that the two areas have to one another. Another difference is that high to low is for instance a transition that often goes from super introvert to super extrovert, because of their contrast. Then there are the transitions from wet to dry, and covered to uncovered, that are clear changes, however they do not fit the introvert – extrovert paradigm. This is a crossing.

There are already important paths that cross these transitions. These points are therefore possibilities of condensed movement at both sites.

Analysis 20: Found transitions at Amsterdamse Waterleidingen, based on the in chapter 2.2.2 described areas.

Design Principle 17: Locations of hybrid based on transition zone





Design Principle 18: Shape of hybrid in relation to transition
From left to right: Crossing - Introvert/Extrovert - Introvert/Super extrovert

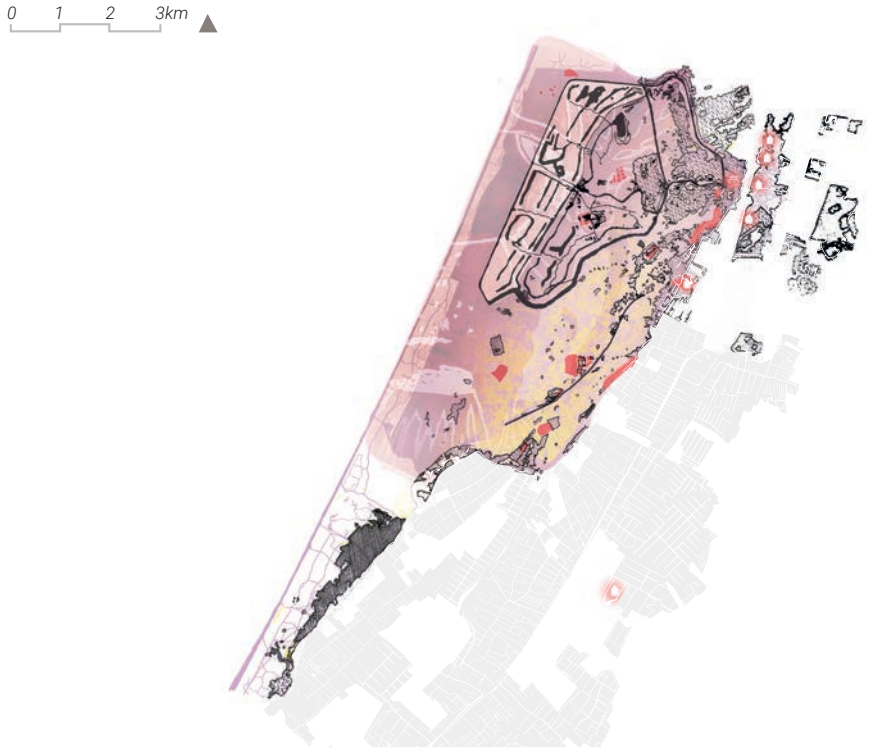
The hybrids should be placed on the transition zones, relating to paths that are already there identified (see design principle 17). That way, they highlight the transition from the one area into the other. The type of transition that is identified is leading in the shape of the hybrid.

As mentioned transitions are for instance, from an open to closed space, from high to low, from land to water. The hybrid is at both sides present. This should be resembled in form and shape. I identified the following three types of transitions:
1) Crossings
2) Introvert – Extrovert
3) Introvert – Super extrovert
These three types have a different shape in order to symbolize the type of transition (see design principle 18). At the same time the shapes are similar, in order to show a similarity in hybrids throughout the entire area.
Crossings are symbolized by a line.
From introvert to extrovert is symbolized by an introvert circle (pointing to middle) and an extrovert opening (moving outward). To emphasise the difference, similar objects are placed at both sides. Humans move over the transition following the straight line also found at the crossing.
The super introvert to super extrovert does use the same shapes. However, the circle here is in the form of a panorama (pointing outward) and thus super extrovert. The introvert is here symbolized with the opening. Again the line ties the shapes together. However, the circle is along the line, not at the end of the line. The super extrovert I found in moments (dune tops) and not in an entire landscape. This is why the transition here is from introvert to super extrovert, and not from super introvert to super extrovert. This would only symboloze a moment in the landscape, not a difference between two areas.

2. Language of Amsterdamse Waterleidingduinen

As mentioned in chapter 1.3.2, hybrids should not only respond to the shapes of different introvert and extrovert transitions. They should also be incredibly site specific. It should thus respond to the site specific movements of different areas I mentioned in chapter 2.2.2. However, the infill of their shape should also respond to the language found at the site. By the language of the site, I mean the elements, patterns, nonhuman actions, and human actions through history, that make the site different from other sites. In the case of the Amsterdamse Waterleidingduinen this is found in the presence of key actors, outstanding areas, and remarkable human intervention.
The fallow deer is at the moment a remarkable key actor that defines a large part of the experience of Amsterdamse Waterleidingduinen, since they are simply everywhere.

Another remarkable aspect, are the subtle human-nonhuman traces. There are quite some old lanes, and old agricultural settings to be found at the dunes (Groenendijk, 2017). The water system is, in its size large, and therefore present. On top of that, around and at the dunes there are old estates and traces of estates. In areas, especially the savannah landscape pops out.
Then there is one more temporal key element, which is the cultivation of flower bulbs. This element is only present for a couple of months. However, it is a crucial element for the humans living at the area.



Analysis 21: Key elements at the Amsterdamse Waterleidingduinen: water infiltration system, fallow deer, savannah, estates, agricultural plots, flower bulb fields

Analysis 22: Synthesis of Amsterdamse Waterleidingduinen in language and atmosphere

The elements together in one image is what the collage shows. It shows a distillation of the area. It shows history through a 19th century painting in the lower left corner. It shows the savannah at the bottom. You are lured in at the site through the curved waterbody of the Betonsloot that leads to greater waters. The deer is built up from its habitat, and the scale of the deer is of. By that it becomes a monstrous creature. Even though it is not harmless to humans, it is now harmful to many nonhumans. At the top of the collage the old pumping station stands in front of the lake, with in the background the forest edge. The reflection in the water shows Stourhead, since the sites reflects many picturesque elements in the shape of lakes, and curved waterbodies and lanes.

Hybrids should be based on both the transitions, the movements of the area, as well as the specific elements of the site, in order to be site specific (see design principle 19). Therefore, two elements that are important are water (image 2), and planted structures (image 3).

Image 2: Dramatic water at the Betonsloot

Image 3: Planted lane of trees

Design Principle 19: Hybrid should relate to language and atmosphere of Amsterdamse Waterleidingduinen

2.2.4 Harmed landscapes at Amsterdamse Waterleidingduinen

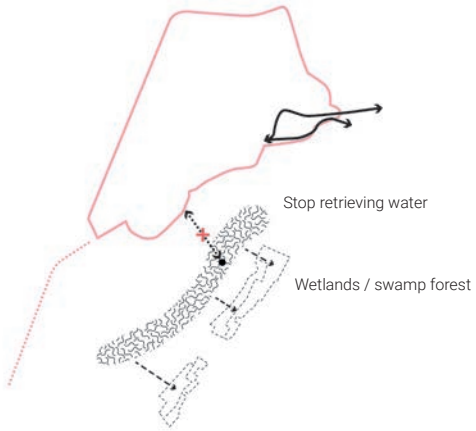
In order to define where the landscape as being has to be formed, it is important to define which human actions are more than disturbances (changes), and by that harmful actions (ruining). For the Amsterdamse Waterleidingduinen I found two problematic areas that I will further explain here.

1. Oosterkanaal

The first is the Oosterkanaal (see repetition of analysis 16). As mentioned in chapter 2.2.2, this is the only canal of which water is still retrieved from the dunes itself. At this canal, 3,5 million m3 water is pumped every year (L. Geelen, personal communication, 3 May 2021). The Limburg van Stirum kanaal used to be a canal that did this as well, but this canal has been filled recently.
The Oosterkanaal, however, is also a buffer for the adjacent flower bulb fields (L. Geelen, personal communication, 3 May 2021). As mentioned in 2.2.2, the water level of the flower bulb fields have to remain stable and rather dry. Therefore, the water pressure that comes from the Amsterdamse Waterleidingduinen is unwanted. To use the canal as a buffer, also affects the grassland polder that is at slightly higher grounds. These areas suffer from draught in summer, which results in that occasionally water has to be pumped into the polders.

The logic solution, in relation to the landscape as being, is to stop pumping the Oosterkanaal. This would result in less draught at the dunes, and likely more wet dune valleys (L. Geelen, personal communication, 3 May 2021). On op of that, it would result on water pressure and the rise in water levels at the fields adjacent to the dunes. The cultivation of flower bulbs would become impossible here.
The landscape as being can thus partly be here. For this area it is, within the principles I put up in chapter 1.3.3 not of any use to dig of soil. The soil here, however, is incredibly high in nutrients. Which will result in a vegetation of e.g. nettles (Urtica dioica, Urtica urens).
Another thing is important to keep in mind. Humans decide the boundary of the forest. Therefore, as a designer, I keep a gap between the currently present dune edge, that is imposing and incredibly strong (see analysis of transitions in 2.2.3). The forest boundary follows the polder pattern (see design principle 20).

Repetition of Analysis 16: The water infiltration system at Amsterdamse Waterleidingduinen



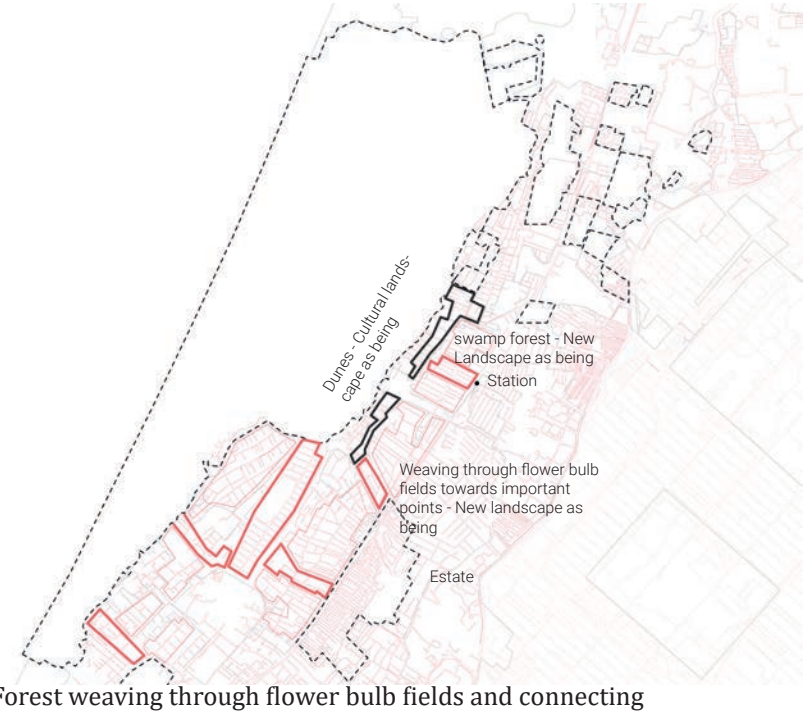
Design Principle 20: Oosterkanaal leading to wetland and forest along the Amsterdamse Waterleidingduinen boundary.

2. Flower bulb fields

The next harmful structure is the entire body of flower bulb fields. As mentioned in 2.2.1 and 2.2.2 the cultivation of bulbs leads to pollution in the dunes. Especially the more dynamic parts of the dunes suffer from this. On top of that, the industry is quite harmful for the land itself (see repetition of Analysis 18).

Therefore, the forest structure should not only be along the previously mentioned area that deals with the Oosterkanaal. It should also weave through the rest of the flower bulb field landscape. In that sense, the adjacent land of the new forest should be taken care of much more, in order to treat the landscape as a being.
At the other hand, I mentioned already that the flower bulb fields are of great cultural value. It is therefore not clever, and not necessary to wipe out the entire industry. Along these strips of new forest, I therefore propose biological flower bulb fields.
The forest connects to points that are important to humans, such as estates, and the station of Hillegom. This way, nonhuman presence might not only become obvious at the Amsterdamse Waterleidingduinen, but also throughout the adjacent land.
Again the boundary of the forest follows the pattern of polders that is found at the site (see design principle 21).

Repetition of Analysis 18: Flower bulb fields at Amsterdamse Waterleidingduinen



Design Principle 21: Forest weaving through flower bulb fields and connecting to important areas

Analysis 23: Existing transitions and new transitions combined

Transition through water - land

Transition through open - closed

Transition through high - low

Transition through even - uneven

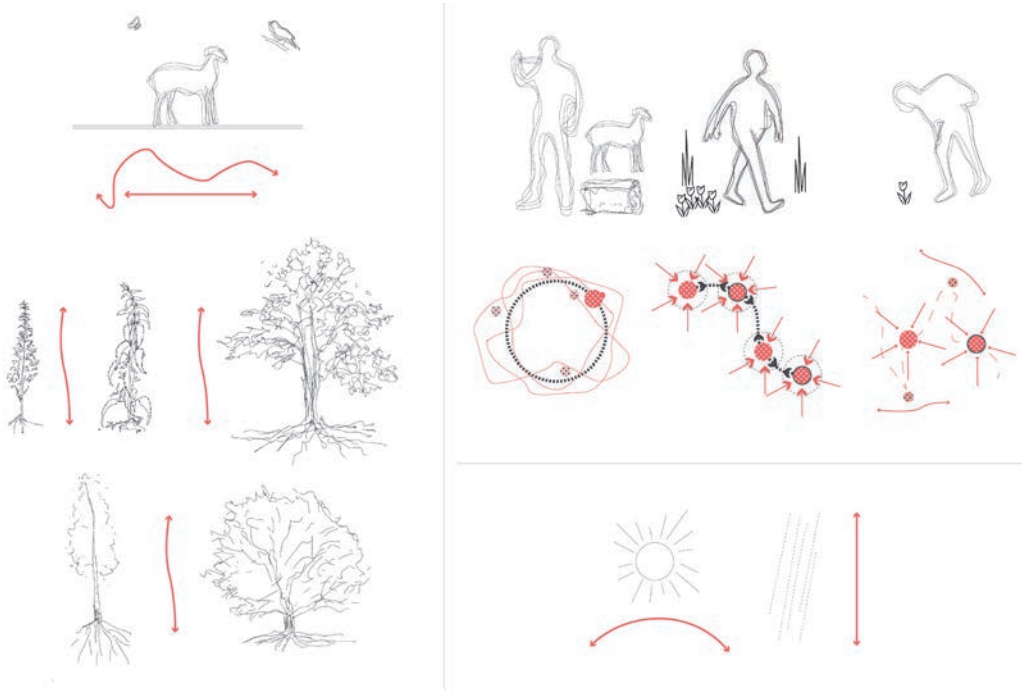
Transition through covered - uncovered

Possible Hybrid location

Design Principle 22: Location of hybrids at existing and new transitions combined

3. New movements, New transition zones and new hybrids

By this structure, there will therefore become (in the future) new transition zones. This means that also new hybrids are needed. The moments of condensed movement relate to, like the boundaries are based on the historical pattern, the historical (or present) movements of infrastructure.
On top of that, in chapter 1.3.3 I set up rules on how to deal with the landscape as being. Therefore, there will be no soil dug of. It is therefore likely that for quite some time, the land will be taken over by plants often described as weeds. For instance, the stingy nettle (Urtica dioica, Urtica urens) will likely grow here (S. Janssen, personal communication, 3 May 2021). The forest will probably have species such as willow (Salix caprea), and black alder (Alnus glutinosa).



Design Principle 23: Nonhuman, and abiotic movement in relation to condensed human movement at the new landscapes

Nonhuman horizontal movement at upper left corner: European peacock (Aglais io), sheep (Ovis orientalis aries), and nightingale (Luscinia megarhynchos)
Nonhuman vertical movement middle row left: small nettle (Urtica urens) - common nettle (Urtica dioica) - black alder (Alnus glutinosa) - soft birch (Betula pubescens) - goat willow (Salix caprea)
Human maintainer: mowing and grazing of fields
Human visitor: moving through wet open land
Human explorer: spotting particular flowers
Abiotic movements: movement of sun and the effects of rain

2.2.5 Deriving from movements, locating hybrids, treating harmed landscapes at Amsterdamse Waterleidingduinen

The experience of the now, and the making of the new now(s)

The hybrids respond on human, nonhuman, and abiotic movements of the different areas. They symbolize the transition between these areas in shape. They are the locations of condensed movement. Within the areas, condensed movement can exist – like when I scored my walk – by accident. The landscape as being is introduced to treat the harmed landscape of the flower bulb fields by stopping the pumps at the Oosterkanaal, and using it to connect Amsterdamse Waterleidingduinen in an east to west direction. This would in return ideally lead to less grassing of the dunes.
This spatial plan, however, does not yet include times of making, and thus times of experiencing the new now(s). I defined 4 different times of 'making'.

The first considers the tackling problems at the site:
- the Oosterkanaal & the needed planting of the boundary for the landscape as being – and the corresponding hybrids (and if not there yet, paths)
- The dynamics of the dunes – and the corresponding hybrids
- Fallow deer overpopulation
- Shifting to biological bulbs

The second considers the time after 20 years
- Hybrids are over their half lifespan – relation to landscape starts to change
- The crossing is starting to become something else
- Second part of forests are let go

The third considers the time after 30 years
- Renewing of the hybrids
- Crossing is now introvert – extrovert hybrid
- Third part of forests are let go

The fourth considers the time after 60 years
- Renewing of the hybrids
- The somewhat mature forest – wet and dry

These four times I will explain through the design in the chapter 3.

2.3 SCHOORLSE DUINEN

Second site visit to Schoorlse Duinen:

„Walking at Schoorlse Duinen begins with climbing and ends - to some - in running, rolling, falling down".

2.3 Schoorlse Duinen is part of the research:

(not) our forest
a multispecies approach to forest and landscape

MSc Thesis

Lotte Oppenhuis

Supervisors:
1st mentor: Saskia de Wit
2nd mentor: Luisa Calabrese

External examinator: Marietta Haffner

Analysis 10b: Major historic events at Schoorlse Duinen - Pinus nigra subsp. nigra/laricio plantations - Hondsbossche zeewering - sand and coast - Kerf - fire

Forest 1890
Forest 1950
Forest 1990
Estates
Fire damage to forest 2007
Places related to sand excavation
Route of sand
Breakthrough
Old coastline
Old coastline still visible

2.3.1 Pinus nigra, heights, and draughts

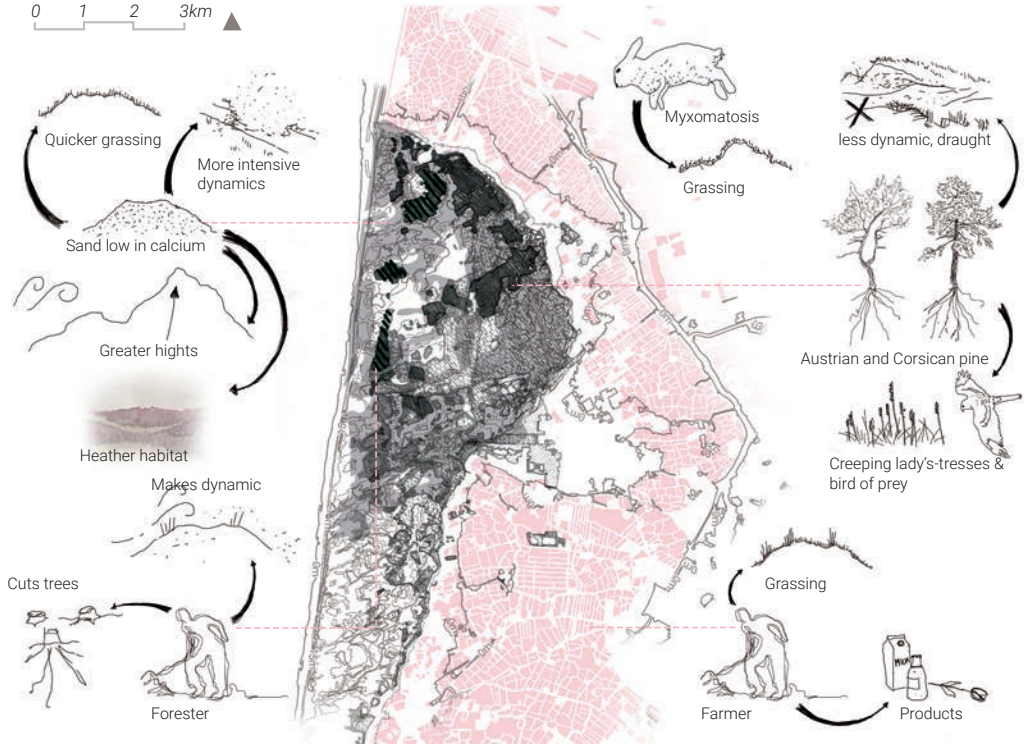
Major historical events

The topography of Schoorlse Duinen is extreme for Dutch standards. The dunes are the highest of the Nether-lands (DLG & Staatsbosbeheer, 2016). This has to do with the small grain of sand low in calcium that washes upon the shores. The sand is therefore more easily caught by the wind and moved to greater heights (DLG & Staatsbosbeheer, 2016). The sand has been of both nuisance and use to humans. Sand excavation was a common practice in Schoorl up until the 60s (DLG & Staatsbosbeheer, 2016). This can still be seen in places such as Hargergat, and the Pirolavallei. But also the 'Klimduin'
But the sand drifted, and stormed over the villages of Schoorl and Bergen. Therefore humans started to plant trees in the 19th and 20th century (DLG & Staatsbosbeheer, 2016). The most successful were the plantations of Austrian and Corsican pines (Pinus nigra subsp. nigra/laricio).
These plantations now cause ecological trouble. They take up too much water and stop the dunes too much from drifting (DLG & Staatsbosbeheer, 2016). On top of that, these trees were the only trees that spread fire during the fire in 2007 (Van Roon et al., 2013). The trees caused to spread the fire, and are, with currently more draughts, dangerous (Van Roon et al., 2013). Therefore the trees are cut. This causes the outrage of certain humans living next to the dunes, to the extent that there are parliamentary questions about the cutting of trees at Schoorlse Duinen (Ministerie van LNV, 2020).
One more thing to notice about the landscape, are the old polderstructures adjacent to the dunes. This landscape is protected (PDOK.nl). It is a very open landscape, that is mostly used as grasslands. There are still some tree plantings, such as pollard willow, and some woodwalls present.

Key actors

The first relevant key actor is already mentioned: sand low in calcium. This is moved to the site by the sea and then moved over the site by wind. The absence of calcium means that the soils are poor in nutrients. The sand in combination with the wind makes up for the large heights at Schoorlse Duinen. The sand also makes up for specific habitattypes such as heather (DLG & Staatsbosbeheer, 2016). The dunes used to be very dynamic. However, this is currently not really the case because of three other key actors.
The first are the also already mentioned Austrian and Corsican pine (Pinus nigra subsp. nigra/laricio). These trees cause draught and fixates the dunes. This is what this nonhuman was planted for, but it is doing its job too well. Nevertheless, the trees also make new possibilities for other nonhumans such as the Creeping lady's-tresses (Goodyera repens) and bird of prey (Roos, 2009).
The second is – like at Amsterdamse Waterleidingduinen – the virus Myxomatosis. The rabbit population of Schoorlse Duinen has also largely died out because of the virus myxomatosis (DLG & Staatsbosbeheer, 2016). This causes grassing of the dunes.
The third are the agricultural fields. The grasslands are used for dairy production. To maintain the grasslands, fertilizer is used. This causes a nitrogen deposit that leads to grassing of the dunes (DLG & Staatsbosbeheer, 2016).
This process of grassing goes even faster at Schoorlse Duinen. Because of the nutrient poor soil, the addition of nutrients has a larger effect than on soil types already rich in nutrients (DLG & Staatsbosbeheer, 2016).
The last actor is the forester. The forester makes the dunes dynamic, maintains species and special areas, and cuts trees.

Like at Amsterdamse Waterleidingduinen, there are many key actors that pose negative effects on the presence of nonhumans at the dunes. The forester tends to solve this within the boundaries of the dunes. However, this does not change the deposit of nitrogen from the agricultural fields along the dunes. This negative aspect of agriculture should be dealt with as well.
In terms of the negative aspect of the pine trees, a difficult decision is to be made. The pines have a to humans remarkable atmosphere (see also chapter 2.1.2). This is something to consider. Intelligently keeping pines can actually contrast the atmosphere of (not yet existing) deciduous forest.
On top of that, sand is very relevant to the site, and yet it is not that noticeable. The presence of sand, and the abiotic movements that correspond to these are incredibly relevant for what the site has become, and could therefore be made more evident.



Analysis 11b: Key actors at Schoorlse Duinen
Sand - Forester/Maintainer - Farmer - Pinus nigra subsp. nigra/laricio - Myxomatosis

Agricultural fields

Plantations solely with Austrian and Corsican pine

Sand low in calcium

2.3.2 Human and Nonhuman Movements at Schoorlse Duinen

1. A notation of a walk through Schoorlse Duinen

Like at Amsterdamse Waterleidingduinen, I made a walk at Schoorlse Duinen. The walk at Schoorlse Duinen was slightly longer, about 10km instead of 7km. I had drawn out the route based on relevant elements, and areas.

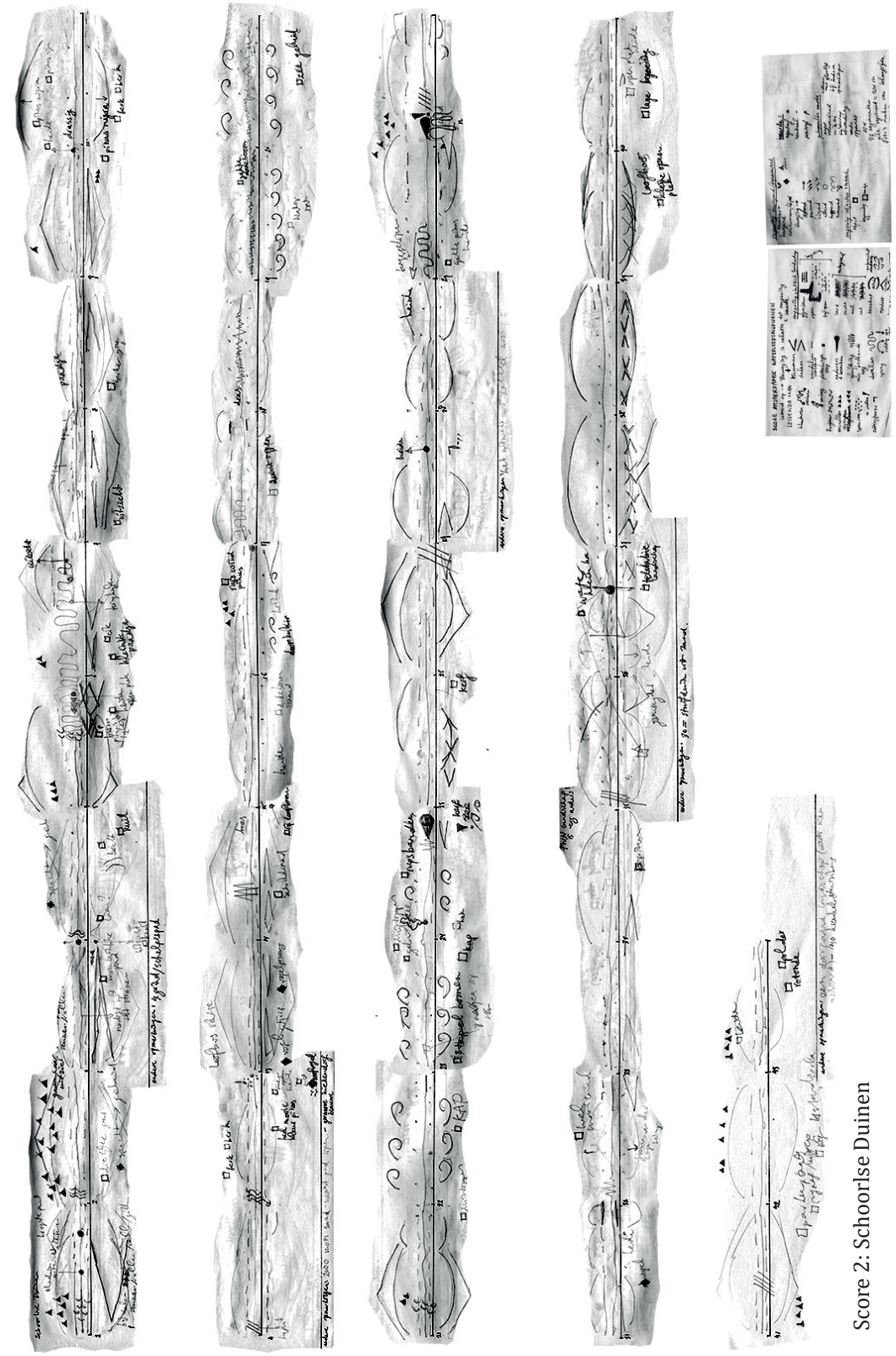
At Schoorlse Duinen, movement is mostly initiated by topography and other humans. There is little movement that occurred at the walk due to the movement of other nonhumans. Walking at Schoorl was like a meditative experience, instead of an investigative experience. This has advantages. It felt refreshing to have walked at Schoorl. The downside of this is that it is difficult to connect to nonhumans.

NOTATION OF A WALK

My walk began at the 'Klimduin'. Many people were climbing up and running down. Children were tumbling of the high slope, laughing. This is a challenging beginning. When I was up at the dune, all the noises from the villages seemed to fall away. Immediately I was surrounded by trees. And humans. Still there were many humans at the path. I followed my route along the pines. There was a short moment where I smelled an animal, and then I heard a woodpecker. I walked by an open spot in the forest, that I could look out over. Once most humans were taking other routes, the forest became very quiet. The weather was rather calm. It was very cold. But the sun was shining. The path was descending and ascending most times. I came across another open spot, that was in fact much deeper than the path. Heather was growing here. Among the large amount of pines, a summer oak stood out. I then entered an open spot. The path up until this time was made of shells. Here I was walking on sand again. The sand was still frozen, which made walking on it bumpy and slightly awkward. I climbed up and looked over the sand pit. I returned to the path. The forest again turned into pines. Deciduous trees stood out greatly. The light, the ground covered by multiple plants. It contrasted the pines. I then came upon another open spot. Many humans were taking a rest here. There was heather. The sun shone right into the open spot. Many people turned their face towards the sun. I continued the path and found a cycling path there. A lot of cyclists went by on a high speed. Many humans were following a route. I however set up my own route and walked into a rather unknown path. Pines again, but here the pines that were planted were not the Austrian or Corsican. These were Scots pine (Pinus sylvestris), since their bark turned a copperish red in the sun. Two large bird of prey flew over. And then for the first time that day I noticed the sound chirping of birds. I moved on and then encountered an electric fence at the edge of the forest. I had to walk along the electric fence until I found an opening that I could cross. This was a mountain bike path, so bikes went downhill on full speed. I had to pay attention to what other humans were doing. I exited the forest and abruptly ended up in the dunes. It was windy here. I noticed patches of heather. The dunes had sharp mountain tops. I walked along a forest edge and came at a point where clearly heavy machinery had been driving. I walked seaward. The dunes all were very steep. When I got very close to the sea, I entered a last patch of forest. A lot of trees were cut here. The machinery had made a topography of mud and patterns of large tires. I moved along the patterns and then found 'de Kerf' [1]. I climbed up the stairs to watch a panorama over the breakthrough. I walked down, walked across many other mountain bikers and cyclists. I walked along the path back into the forest. Again there was an

1 'De Kerf' is a manmade breakthrough of the dunes

open spot with heather. I almost got lost here by taking the wrong turn. I moved back into the forest and then all of a sudden I did not understand what I was seeing. From a distance it looked like a white sky, but closer I realised that it was sand. A large steep hill of sand was taking over the cycling path. Cyclists had to get of their bike.
I moved further along a now concrete path. It made me move faster. In general, from this point onward I tended to speed up, since the walk became very long and sturdy. I moved along small remnants of a water infiltration system. I moved up and moved along a plain that was empty. I then entered the forest again. This forest was completely different from the forests I had seen so far. It was quite low to the ground. The trees looked sturdy. The trees were all deciduous. I moved through this forest and arrived at the entrance, where many people were walking towards their car.
I walked a bit further, crossed the road and walked along it, to end up at the roundabout and find a glimpse of the adjacent grasslands.



Score 2: Schoorlse Duinen

Score on map - Walked route. Every segment is approximately 200m







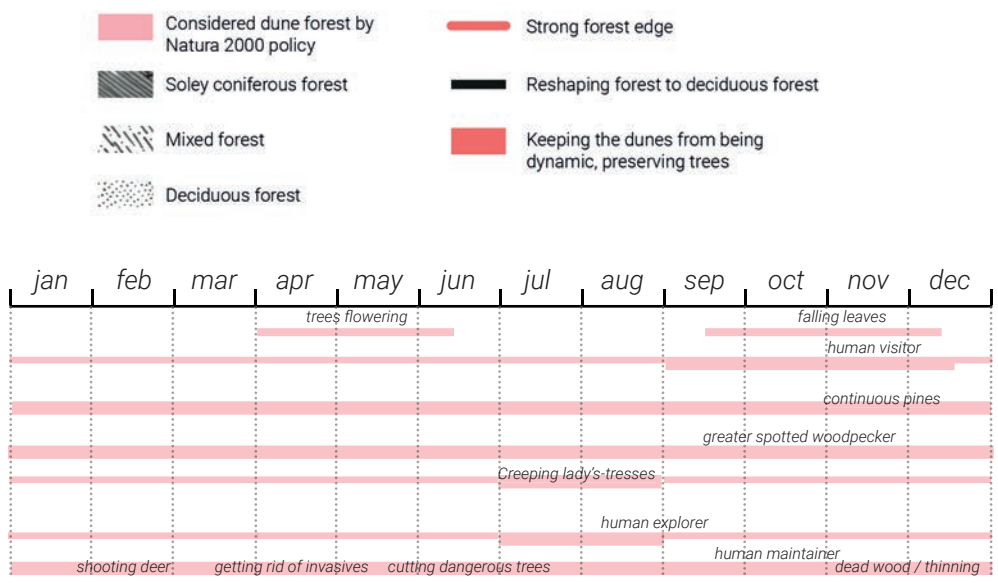

A selection of photos from left to right, top to bottom: Klimduin, first sand pit, the pines, heather field, the edge, the dunes, cutting trees, SAND

2. Forest

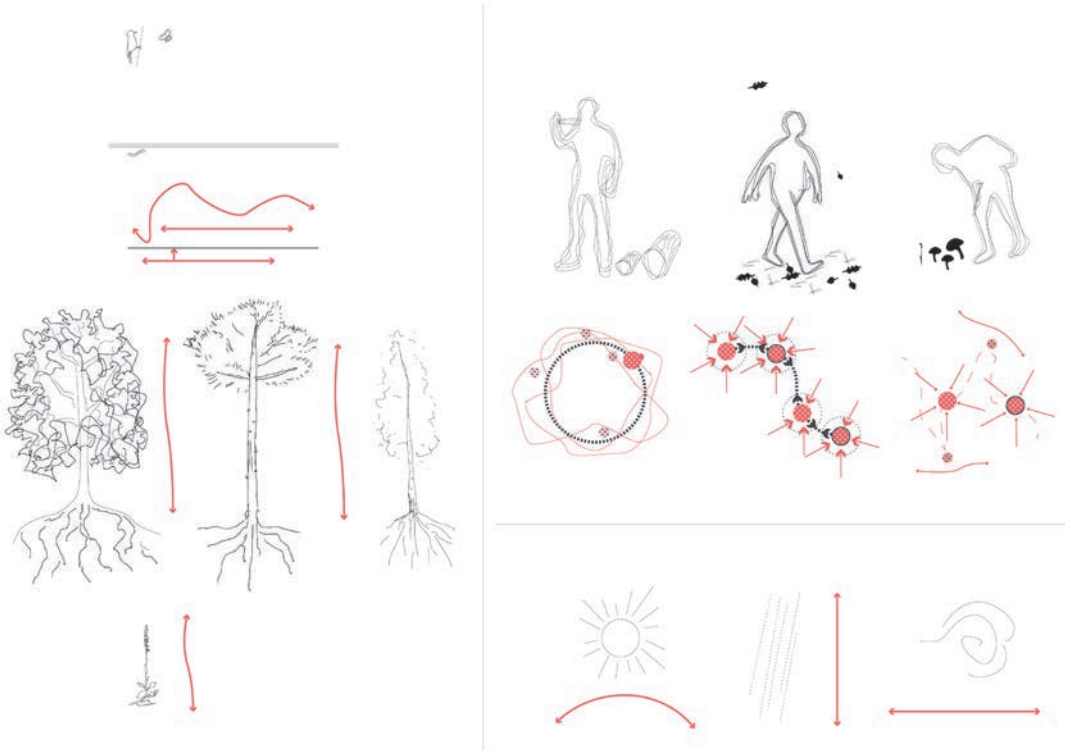
The forest structure of the Schoorlse Duinen mostly consists of the Austrian and Corsican pines (Pinus nigra subsp. nigra/laricio). As mentioned in the previous chapter, these trees were most succesful in capturing the fine grain of sand that is present in Schoorl. The trees are loved by people living nearby, yet they are/will be cut by human maintainers in order to let other nonhumans thrive. The pine trees, are planned to be cut in large numbers, in order to increase dynamic at the dunes and restore groundwater levels (DLG & Staatsbosbeheer, 2016). The forests that are turned into deciduous forest would likely turn into sycamore forest (acer pseudoplatanus) (Hommel, Siepel & Slings, 2010). This future has to be taken into consideration. The forest has, because of the large presence of pines, an alpine feel, in sound, colour, and smell. Even though there are human elements present within the forest (let us not forget that the pines are planted by humans), the elements are not visible as such.
There are also Scots pine (Pinus sylvestris) present at the forest. Unlike the Austrian and Corsican pine, these pines are allowed to stay, since they cause less trouble (DLG & Staatsbosbeheer, 2016). Their trunk is more reddish then the Austrian and Corsican pine (Janssen, 2013). The needles of the tree are shorter. Nevertheless, the tree is hard to tell apart from the Austrian and Corsican pine to lay people. Most nonhuman movements in the forest are found either large vertical movement (the trees) or small vertical movement (creeping lady's-tresses: Goodyera repens). There are many human visitor movements at the forest. This can make it difficult to perceive nonhumans. Through my site visits to Schoorl I continuously felt the presence of the sea, even at the edge of the dunes in the forest. This has to do with the sound of the pines. The rustling of needles resembles the sound of the North Sea.

2.3 SCHOORLSE DUINEN

Analysis 12b: Forest at Schoorlse Duinen



Analysis 13b: Human and Nonhuman Movement at Forest



Design Principle 13b: Nonhuman, and abiotic movement in relation to condensed human movement in the forest.

Nonhuman horizontal movement at upper left corner: greater spotted woodpecker (Dendrocopos major) - purple hairstreak (Flavionus quercus)
Nonhuman vertical movement middle row left: summer oak (Quercus robur) - Austrian and Corsican pines (Pinus nigra subsp. nigra/laricio) - birch (Betula pendula) - creeping lady's-tresses (Goodyera repens)
Human maintainer: Cutting of wood
Human visitor: walking through fall
Human explorer: spotting of orchid
Abiotic movements: presence of light (in relation to leaves), presence of rain (sound on leaves), presence of wind (rustle of needles)

Human movements in the forest, like human movement at the dunes is for both the visitor and the explorer not necessarily steered by the presence of nonhumans. The nonhumans present are not always visible to the human visitor and human explorer. To the human maintainer this is different. Their work is done in order to invite more nonhuman movements at the site. Even though part of the Austrian and Corsican pine trees are taken away, the patches that can stay should not be based only on safety and ecology. Human perception matters here and it can transfer sea sounds all the way to the dune edge.

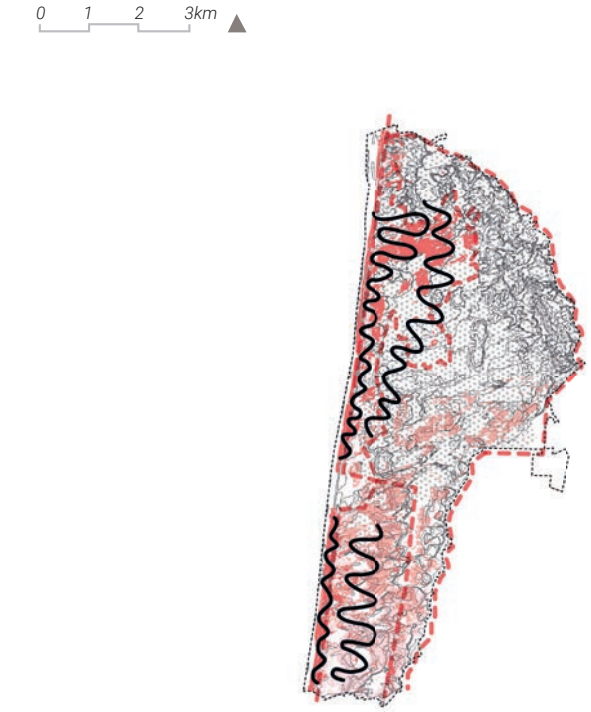
3. Dunes and Sea

perceive to humans.

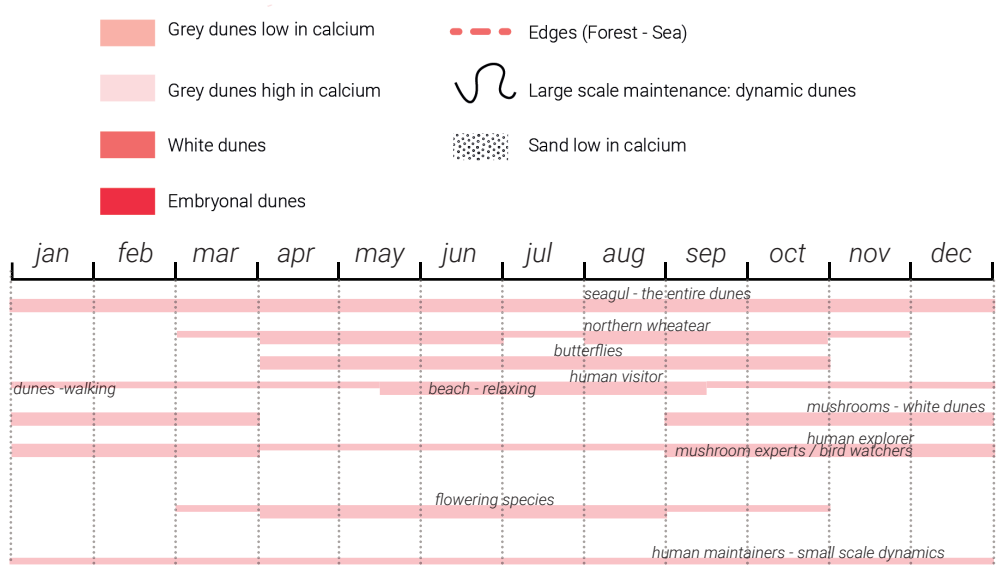
Human visitor and human explorer

It is impossible to forget that you are a dune area at Schoorlse Duinen. The main entrances all deal with a height difference to some extent, and at most of these entrances there is sand. The 'klimduin' (climbing dune), is the best example for this. Climbing the dune, brings you into the forest of the inner dune edge. The height levels and sand help in immersing in the area, since it is so radically different from the village down below. There is a large amount of white dunes at Schoorlse Duinen (DLG & Staatsbosbeheer, 2016), which is partly because of the maintenance policies of Staatsbosbeheer . Staatsbosbeheer does many interventions in order to make the dunes more dynamic, such as chopping heather fields, cutting pines, even breaking through the sea strip (DLG & Staatsbosbeheer, 2016)
There are chances for the grey dunes to be made more dynamic as well (DLG & Staatsbosbeheer, 2016). This would help against grassing of the dunes. The sand and the dunes make up a very strong experience. Abiotic movements are at the core of the site. Wind and the North Sea transport sand. But this is not the only movement that I found interesting in relation to the sand. The sand low in calcium, is close to white. This means that sunlight in relation to time of the day, changes the colour of the sand quite a lot. In the morning, the sand is full of blue hues. Whereas in the afternoon, the sand turns yellow to orange in colour. However, nonhuman movements are difficult to notice.
Even though there are quite some nonhumans operating at these areas, many of them similar to Amsterdamse Waterleidingduinen, this is hard to

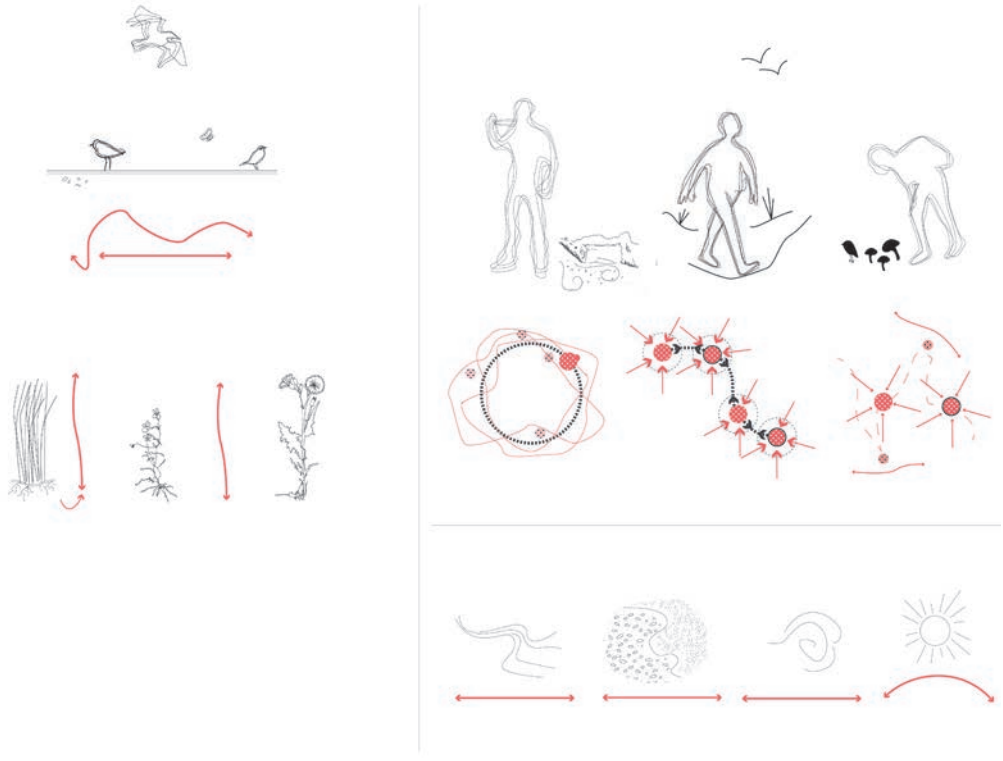
2.3 SCHOORLSE DUINEN



Analysis 14b: Dunes and the sea at Schoorlse Duinen



Analysis 15b: Human and nonhuman movements at dunes and the sea



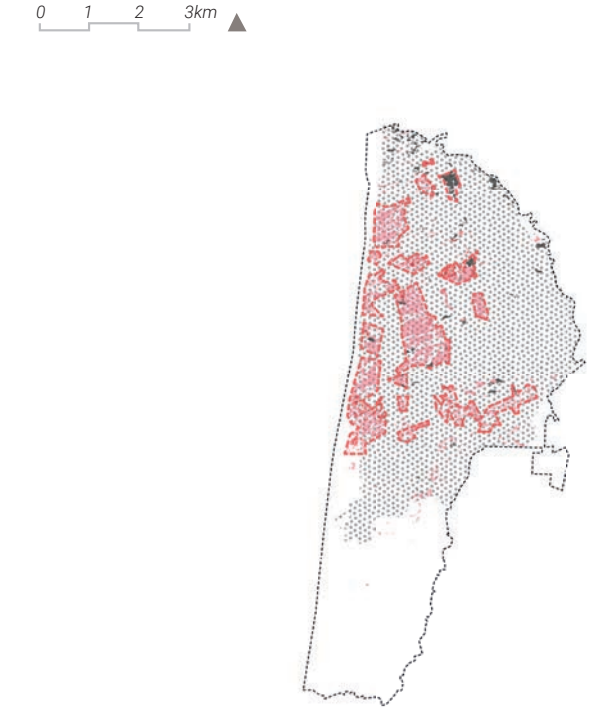
Design Principle 14b: Nonhuman, and abiotic movement in relation to condensed human movement at the dunes and sea.

Nonhuman horizontal movement at upper left corner: european herring gull (Larus argentatus) - kentish plover (Charadrius alexandrinus) - nightingale (Luscinia megarhynchos) - silver-spotted skipper (Hesperia comma)
Nonhuman vertical movement middle row left: European beachgrass (Ammophila arenaria) - dune pansy (Viola tricolor subsp. curtisii) - field milk distle (Sonchus arvensis)
Human maintainer: Sodding to create dynamics
Human visitor: Walking through strong topographic landscape
Human explorer: spotting of mushrooms and birds
Abiotic movements: tidal movements (in relation to sand and dunes), movemt of sand (dynamic dunes), presence of wind (creates movement of sand), changing colour of sunlight (can highlight colour of sand)

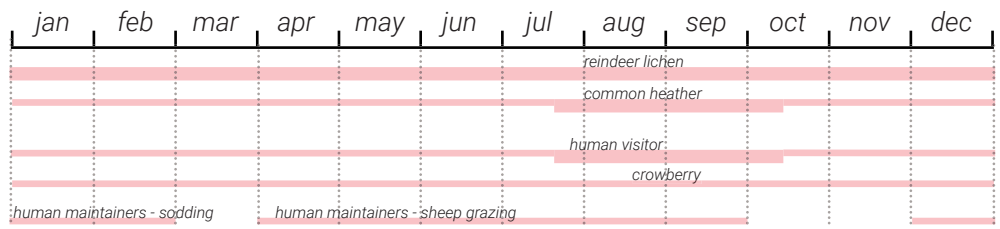
movement at the dunes, and condensed human movement at the dunes should – within the framework of multispecies world – meet with nonhuman movement. Even though humans might meet nonhumans, this is not that obvious. Human movement at the dunes should thus be steered in such a way that not only abiotic movements and the topography is noticed, but also the presence of nonhuman movements. Abiotic movements can in fact help in clarifying the presence of nonhumans. Human maintainer movements are currently in fact actually responding to possible nonhuman movement, instead of actual nonhuman movement.

4. Rooms of heather

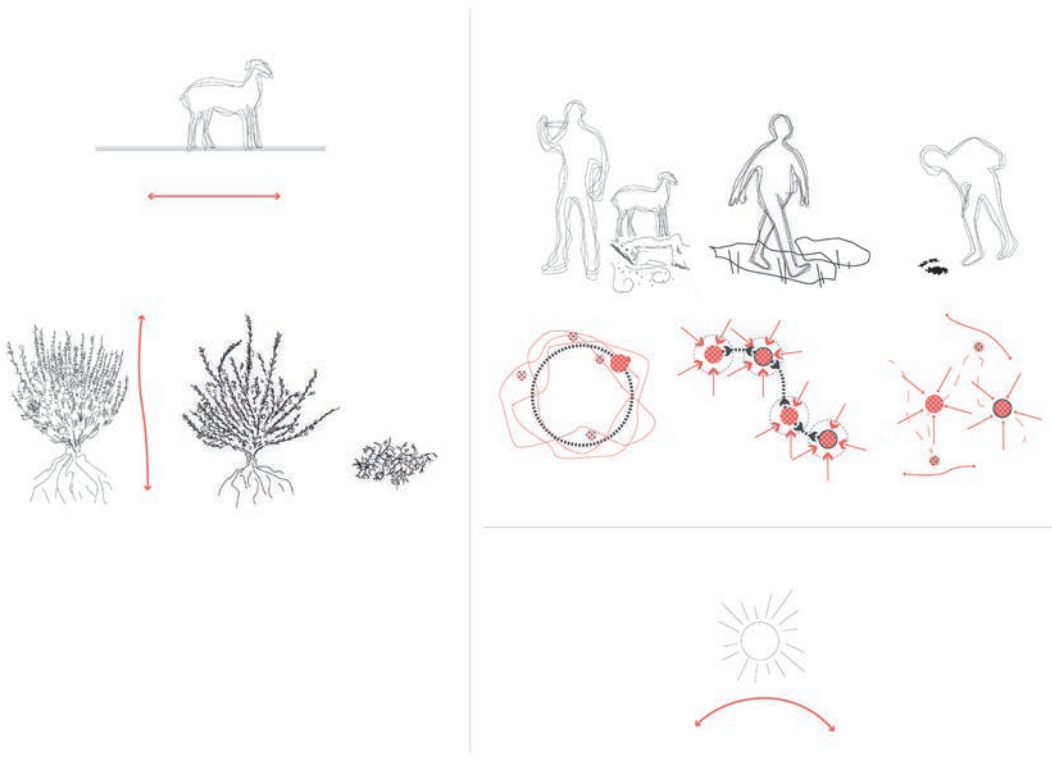
At the leeward side of the dunes at Amsterdamse Waterleidingduinen, sea buckthorn (Hippophae rhamnoides) flourishes. This plant hardly grows at Schoorlse Duinen, which has to do with the sand being low in calcium. This leads to other habitat types, since it makes it possible for multiple types of heather to grow here. There are three habitat types to be found at Schoorlse Duinen. The first two, H2140A and B, are mainly consisting of crowberry (Empetrum nigrum) (Ministerie van LNV, 2008). Type A is found at wetter dune valleys, B at drier grounds (Ministerie van LNV, 2008). H2150 is the habitat type with the distinctive common heather (Calluna vulgaris) (Ministerie van LNV, 2008). This type of heather is also found within habitat types H2140 A and B. However, as soon as crowberry grows between common heather, it is classified as habitat type H2140 A or B (Ministerie van LNV, 2008). Common heather is the type of heather that causes the extraordinary purple heather fields, when they are flowering from June to November. The presence of this plant changes human movement of the visitor and explorer quite a bit. Movement of the maintainer is more directed to sometimes sodding of heather fields in order to create more dynamics at the dunes. At the same time, vegetation here occasionally needs to be thinned in order to keep healthy heather habitats (Ministerie van LNV, 2008).
Heather seems to settle mostly in valleys. Because of that, the fields are often slightly surrounded by either trees or higher dune ridges. By that the heather fields form special rooms, which can invite moments of pause in the otherwise sturdy landscape.



Analysis 16b: Heather in dune valleys at Schoorlse Duinen



Analysis 17b: Human and nonhuman movements at the heather fields

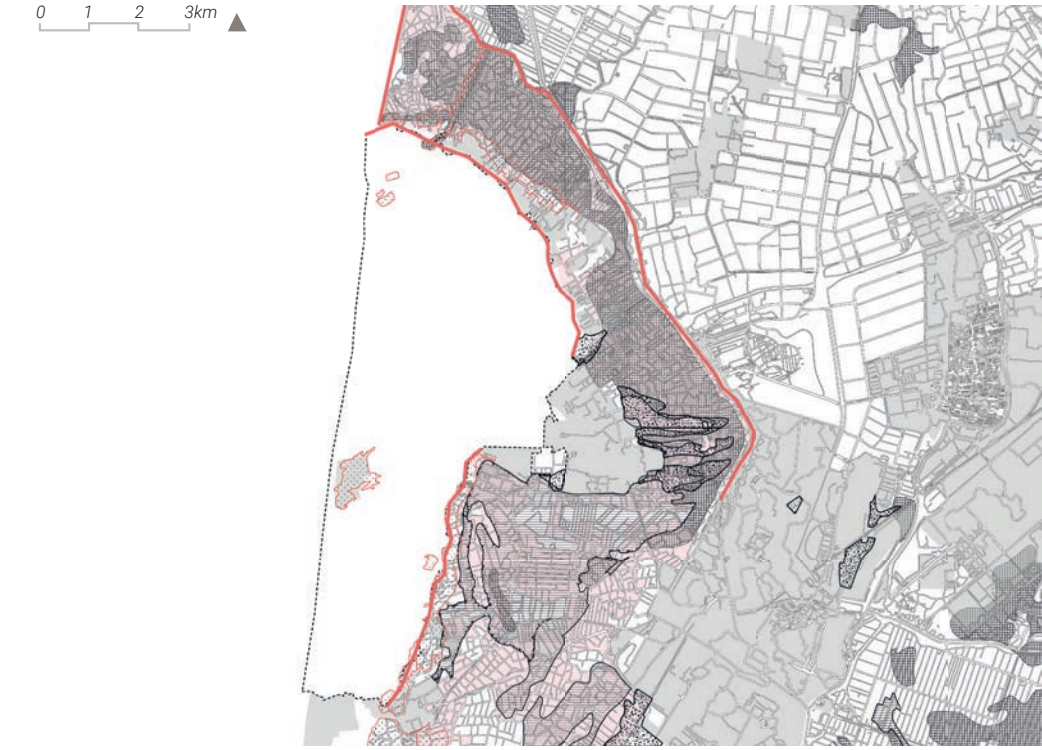


Design Principle 15b: Nonhuman, and abiotic movement in relation to condensed human movement at the heather fields.
Nonhuman horizontal movement at upper left corner: sheep (Ovis orientalis aries)
Nonhuman vertical movement middle row left: common heather (Calluna vulgaris) - crowberry (Empetrum nigrum) - reindeer lichen (Cladina portentosa)
Human maintainer: Controlling vegetation quality through sodding and grazing
Human visitor: Walking along heatherfields as pause
Human explorer: spotting lichen
Abiotic movements: sunlight (shows colours of present sand and contrast with heather)

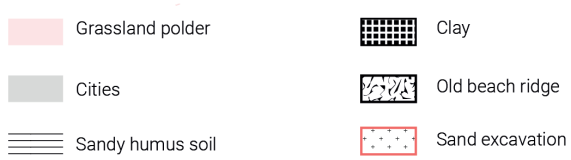
The enclosed heather fields atmosphere, provides an interesting contrast between the dynamic dunescape with its strong topography. The surrounded space, and vibrant colour, cause an interesting contrast to the surrounding landscape. The presence of nonhuman heather does change human movement of the explorer and the visitor. The moment of pause that the room invites for is quite interesting because it can make humans move fresh into the dune landscape again.

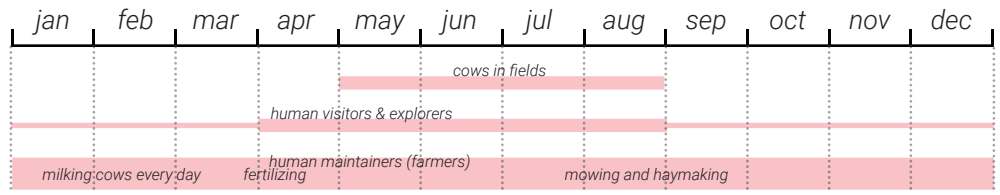
5. Grassland polder

The adjacent polder is mostly grassland. Especially in the north were the soil consists mostly of clay, grasslands are found (PDOK.nl). South of Bergen, where sand is high in calcium, soil is to some extent sandy and with humus (PDOK.nl). This also results that at some places South of Bergen there are flower bulb fields. However, most of the area is filled with grasslands (PDOK.nl). There are quite some evident nonhuman movements here. There is the growth of grass (mostly perennial ryegrass: Lolium perenne), and the movement of companion species (dairy cows). The human maintainer here – like at Amsterdamse Waterleidingduinen – is the farmer. Maintenance at these lands are profit driven. Human explorers and visitors can to some extent wander around here. This is done more by bike than through walking, since most human movements go by roads.
The polder structure has a rather small, and seemingly old, pattern. Within the area there are few urban settlements, and infrastructure. This changes when the North Sea canal is crossed. This is thus a boundary within the area. The same counts for the city of Alkmaar. The landscape is open, but there are small woodland structures, such as woodwalls and rows of pollard willow. The most openness is found at the northern side. The Hondsbossche zeewering creates a strict boundary between the polderland and the sea. Hondsbossche zeewering is a dyke that has been turned into a dune (ecoshape.org). Right next to the Hondsbossche zeewering, is a nature development for bird habitats.

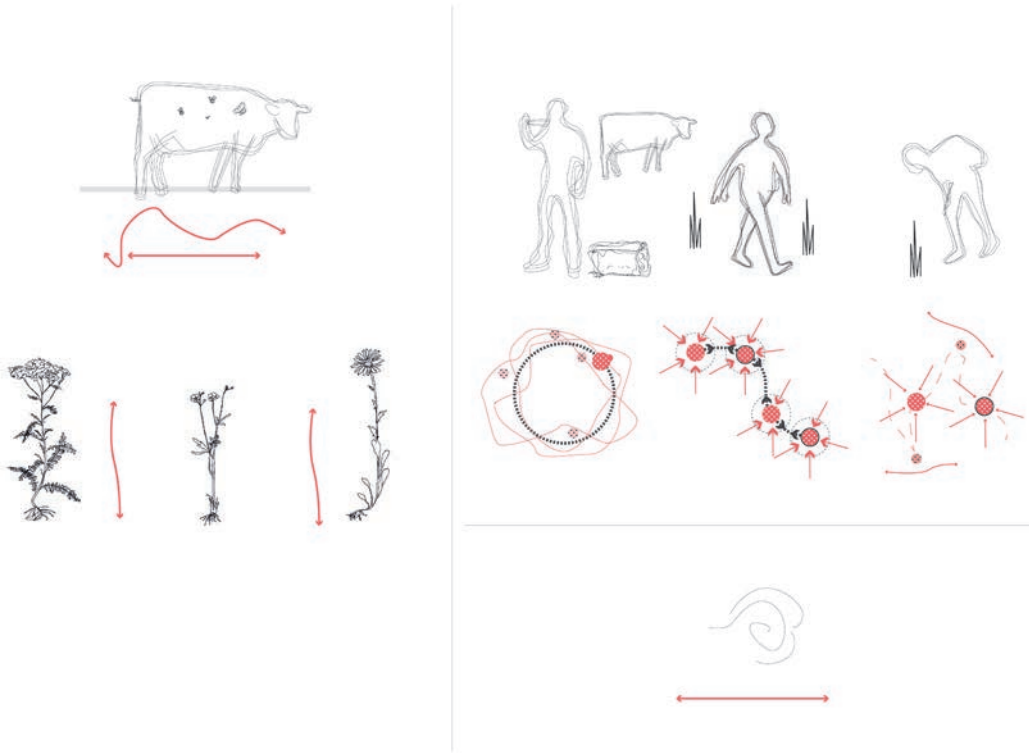


Analysis 18b: Grasslands along Schoorlse Duinen





Analysis 19b: Human and nonhuman movements at the grasslands



Design Principle 16b: Nonhuman, and abiotic movement in relation to condensed human movement at the grassland polders.
Nonhuman horizontal movement at upper left corner: cow (Bos taurus)
Nonhuman vertical movement middle row left: yarrow (Achillea millefolium) - tall buttercup (Ranunculus acris) - oxeye daisy (Leucanthemum vulgare)
Human maintainer: Milking cows, mowing, grazing
Human visitor: Walking through meadows
Human explorer: spotting special plants
Abiotic movements: wind (emphasizes openness of landscape)

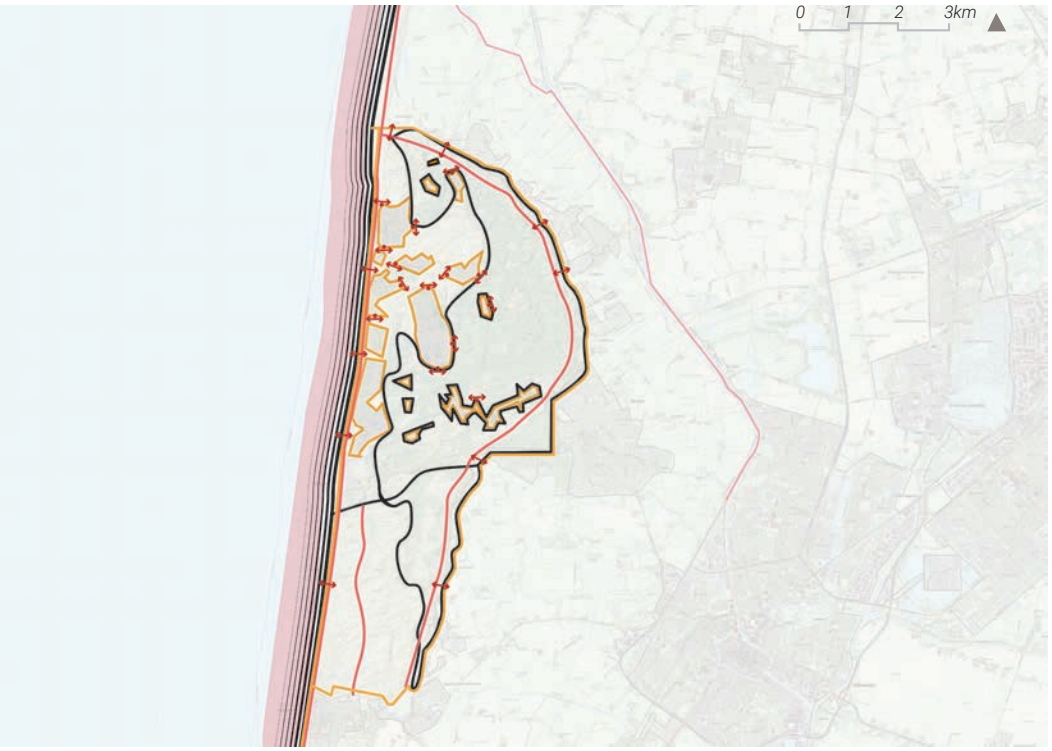
The openness of the polder is a strength, yet human movements do not often truly encounter or get close to nonhuman movements. The landscape is, like the dune landscape of Schoorlse Duinen, quite vast. This means that human movements are continuous, and without a break. Moments of pause, like the heather structures, could be helpful in generating condensed movement. Like for the design principle of the flower bulb fields, the shown nonhuman movements are the idealized movements of nonhumans, that can be shown.

2.3.3 Transitions and language of Schoorlse Duinen

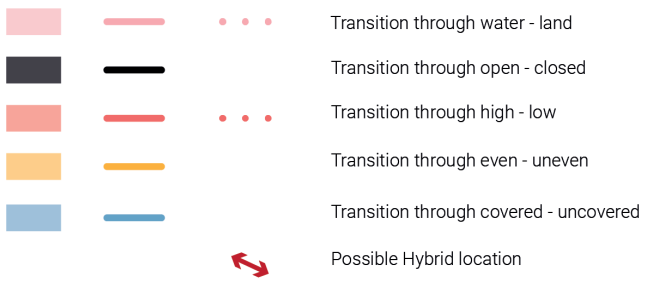
1. Transitioning and rooms

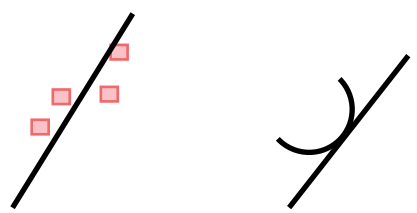
There are two very strong transition zones. The first is between the forest and the open polder land. The second is formed by land to sea. Transitioning from the one to the other considers a topographical challenge at Schoorlse Duinen. Walking the dunes in itself is a long transition. This can be very challenging, and therefore the rooms of heather, the open places in the forest, and other relatively small, contrasting, areas can be very helpful in creating the condensed movements.

Analysis 20b: Found transitions at Schoorlse Duinen, based on the in chapter 2.3.2 described areas.



Design Principle 17b: Locations of hybrid based on transition zone





Design Principle 18: Shape of hybrid in relation to transition
From left to right: strong transition from one landscape to other - pause at room

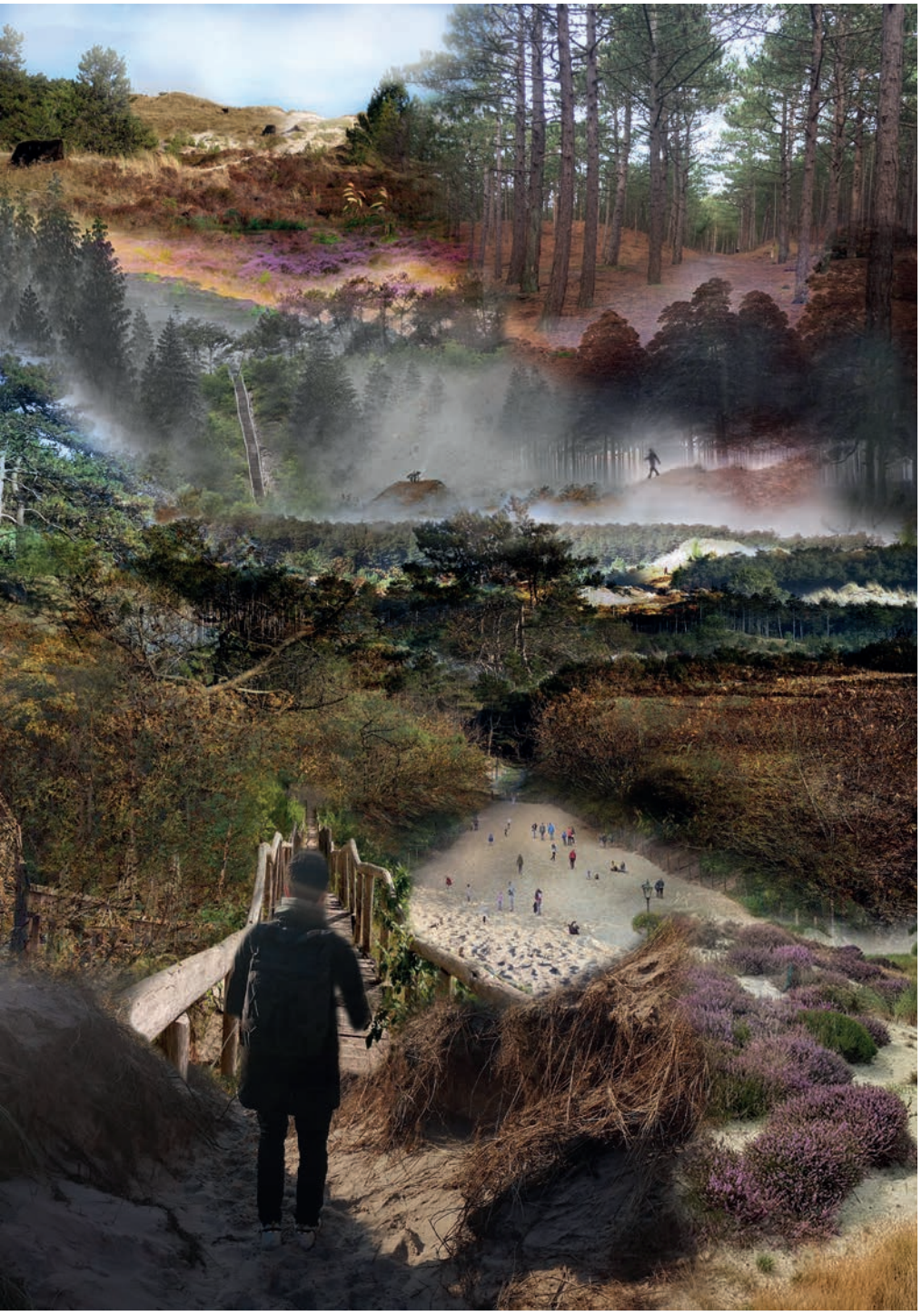
2.3 SCHOORLSE DUINEN

Most hybrids relate to a room, and to a continuous landscape. They therefore have the same shape. This shape is there to give extra shelter in the room, and to make the presence of nonhumans at the other side, more prevalent. I therefore decided to give most hybrids at Schoorl the following shape (see design principle 18b, right shape)
The strong transition moments are symbolised by a line. This way there is a strong emphasis on the transition from one to another landscape.

2. Language of Schoorlse Duinen

Schoorlse Duinen is perceived not only through walking, but also through cycling, and horseriding. This results in many human encounters. Whereas for the condensed movement, I want to analyse the nonhuman, and abiotic movements as well. In this analysis of key elements and language, I thus largely focus on these.
As already mentioned the Austrian and Corsican pines make up a large part of the experience in Schoorl. This is also the case for the height difference, which you simply cannot forget when you walk at Schoorlse Duinen. The heather and sand are important. Both are important because of their colour: grey white (DLG & Staatsbosbeheer, 2016), and purple. Sand can show abiotic movements, such as wind, and the sun. These abiotic movements are, however, considered often as a nuisance. There are for instance complaints about the moving dune, that I mentioned in 'A notation of a walk through Schoorlse Duinen' (Bergen in het Nieuws, 2021).

Analysis 21: Key elements at the Schoorlse Duinen: sand, heights, heather, Austrian and Corsican pines, grasspolder pattern



Analysis 22b: Synthesis of Schoorlse Duinen in language and atmosphere

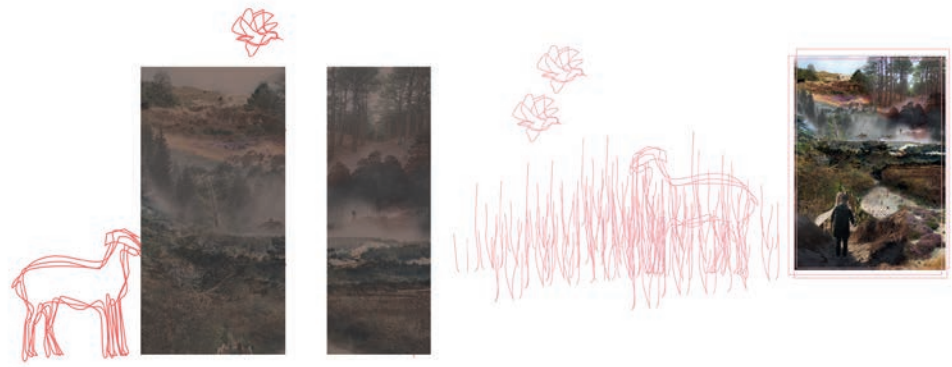
2.3 SCHOORLSE DUINEN

Like at Amsterdamse Waterleidingduinen, I made a collage of Schoorl based on these characteristics. What you then get is a sublime landscape, which I tried to underline with the use of paintings by Caspar David Friedrich[2]. The heights result in tricks of scale, one can feel very small or very large. The contrasting colours of pines and heather make for an intense experience. These tricks of scale I symbolize by showing humans sometimes too small, sometimes too large. The emphasis is on looking over and looking onto the walk that you will make.

This all contrasts greatly with the adjacent polder. And that is fine. The landscapes are radically different and therefore would also need different hybrids.

The hybrids within the dune area, respond to the language I described. This means that the hybrids here relate to heights and sublime experiences. In the adjacent landscape, this is not the case. Hybrids here should respond to the flatness of the polder.

2 Caspar David Friedrich was a German painter and maker of one of the most wellknown paintings in arthistory 'Der Wanderer über dem Nebelmeer'. His paintings are in a romantic painting style and often depict (German) pine forests and the underlying idea of nature as where God is found

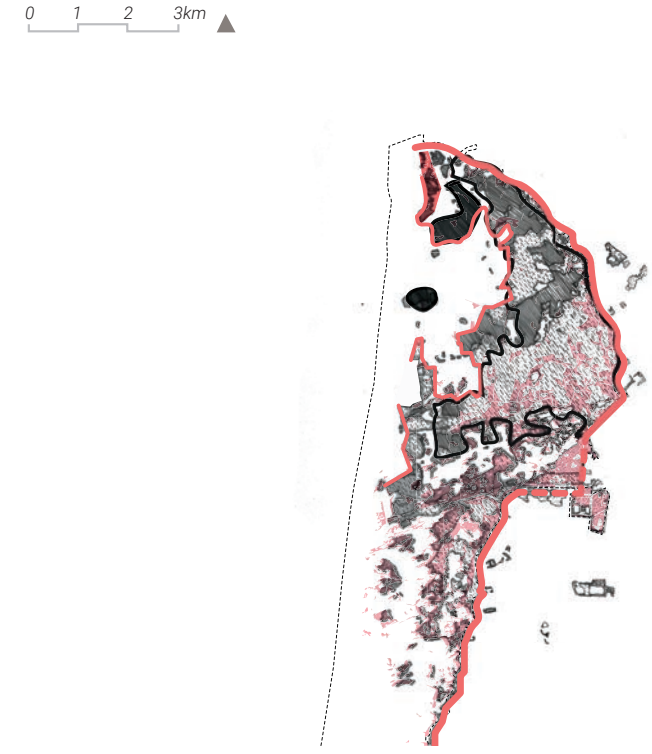


Design Principle 19: Hybrid should relate to language and atmosphere of Schoorlse Duinen

2.3.4 Harmed landscapes at Schoorlse Duinen

1. The forest

One part of a landscape that has been harmed by humans from the 19th century towards the 20th century, is the landscape that is planted with the plantations of Austrian and Corsican pines (Pinus nigra subsp. nigra/laricio). The trees, as mentioned before, cause draught and resulted in the loss of many ecologies. Now problematic with the forest, is that the trees are actually nonhumans. But like the fallow deer at Amsterdamse Waterleidingduinen, the problem actually originates in human action. The trees cannot help this, however, the fallow deer neither. To deal with the problem, is to cut a significant amount of the trees. However, within the multispecies theoretical framework of this research, it is important to then use the wood of the trees, preferably at the site or linked to the site. On top of that, through the clever shaping of boundaries through the forest, the experience of the pines could actually become more intense.



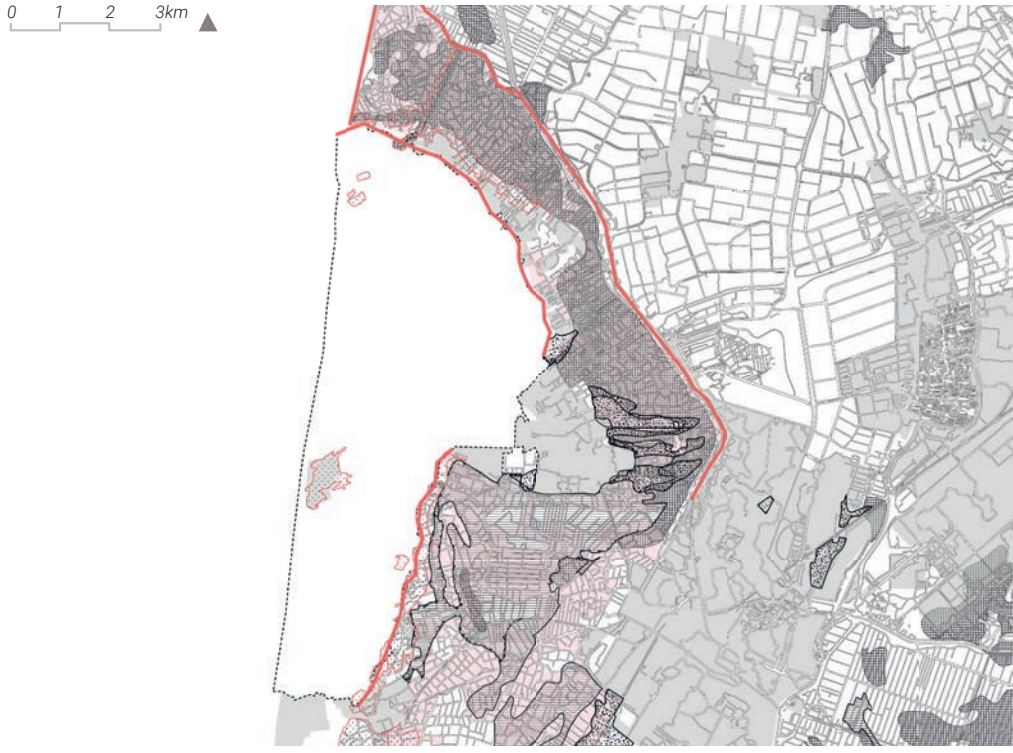
Repetition of Analysis 16b: Forest at Schoorlse Duinen

Design Principle 20b: Keeping the forest boundary, keeping strong defined pine rooms, transforming the rest

2. Agriculture

The second problematic landscape, are the agriculture based grassland polders. These landscapes are used for profit. This results in deposit of nitrogen. Therefore, it is important to also get the landscape as being here. However, the strong qualities of the open landscape, and the old polder pattern make it difficult to locate the boundaries of one singular being. I therefore chose to create a pattern of small 'forest rooms', like there are rooms of heather in the dunes. This means a network of small landscape beings. The landscape around it then has to transform into biological

2.3 SCHOORLSE DUINEN



Analysis 18b: Grasslands along Schoorlse Duinen

Design Principle 21b: Multiple small beings in the otherwise open landscape

Analysis 23b: Existing transitions and new transitions combined

Transition through water - land

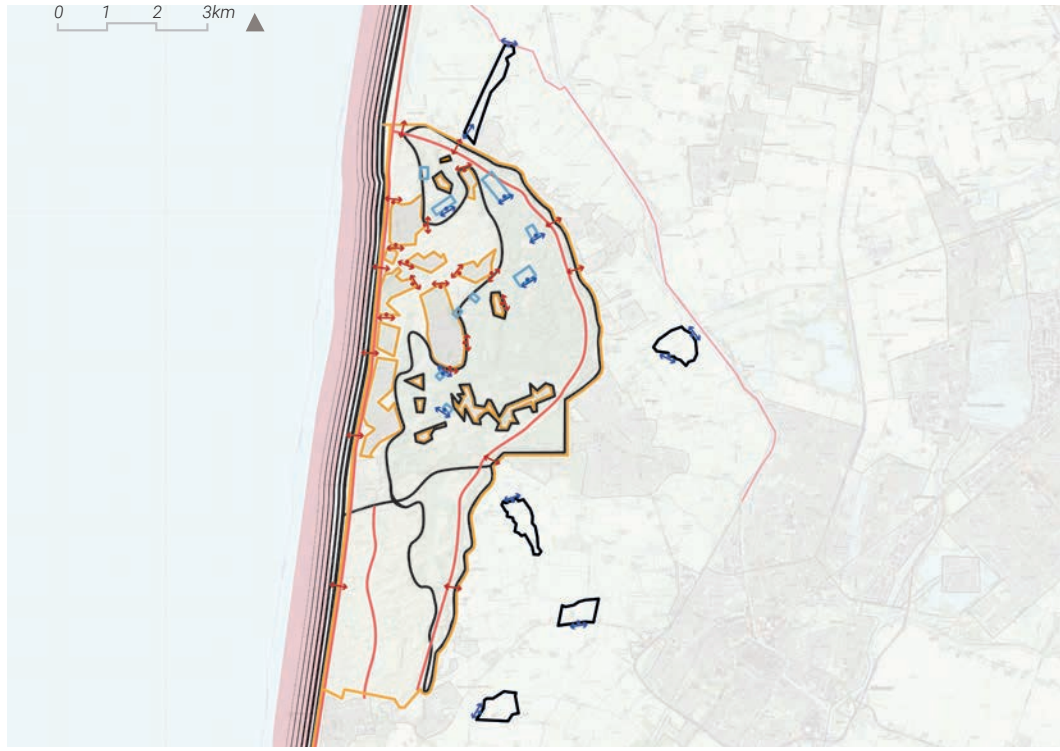
Transition through open - closed

Transition through high - low

Transition through even - uneven

Transition through covered - uncovered

Possible Hybrid location

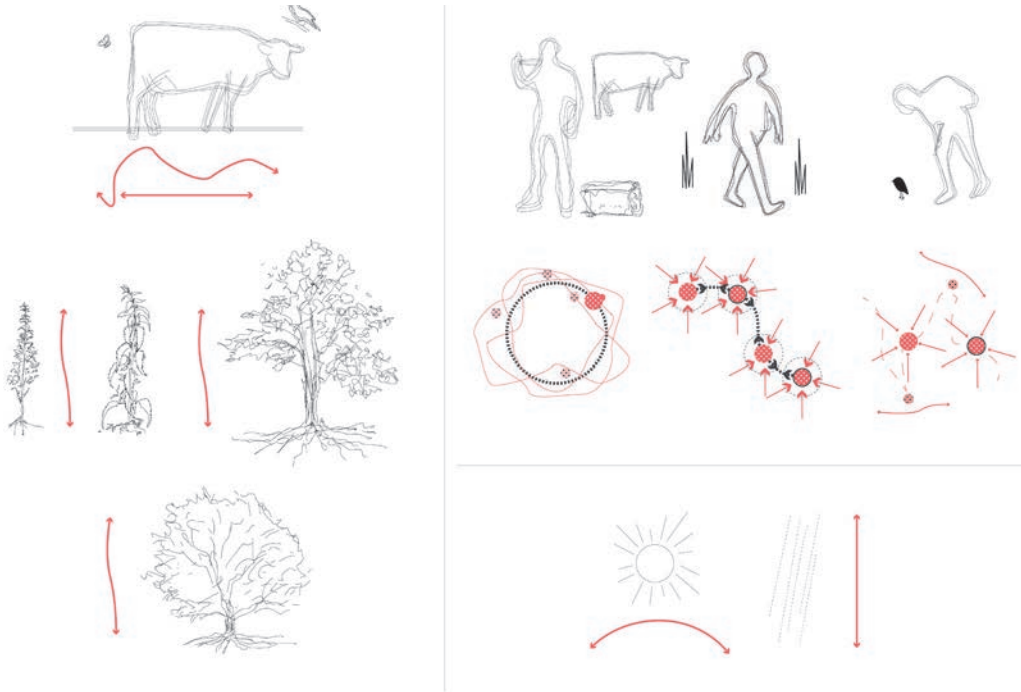


Design Principle 22b: Location of hybrids at existing and new transitions combined

3. New transitions, new hybrids, new movements

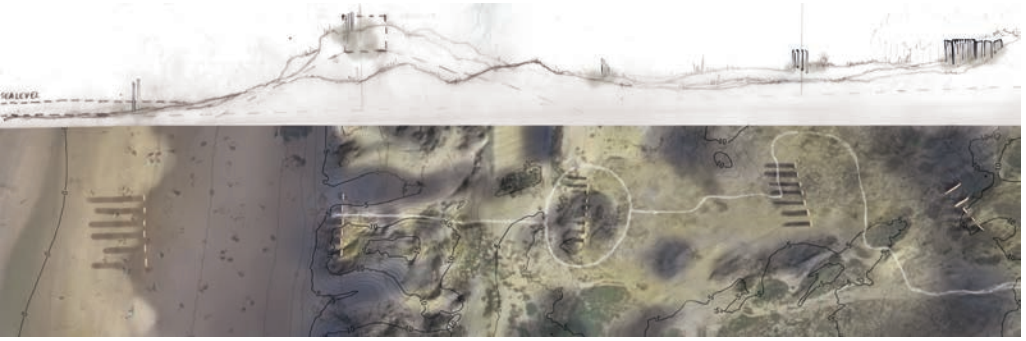
Like at Amsterdamse Waterleidingduinen, the interventions within the landscape lead to new transition zones. Therefore, hybrids have to be placed at these transition zones as well. Even though the hybrids can resemble to the hybrids at Schoorlse Duinen, the language of the hybrids has to be different. The open polder landscape contrasts the dunes both in openness, topography, and soil. Therefore the hybrids of the polder landscape should have a similar contrast with the hybrids at the dunes.

The new hybrids are located based on infrastructures now present in the polder.
On top of that, like at Amsterdamse Waterleidingduinen, new nonhuman, and abiotic movements should be made perceivable. These movements are shown in design principle 23b.

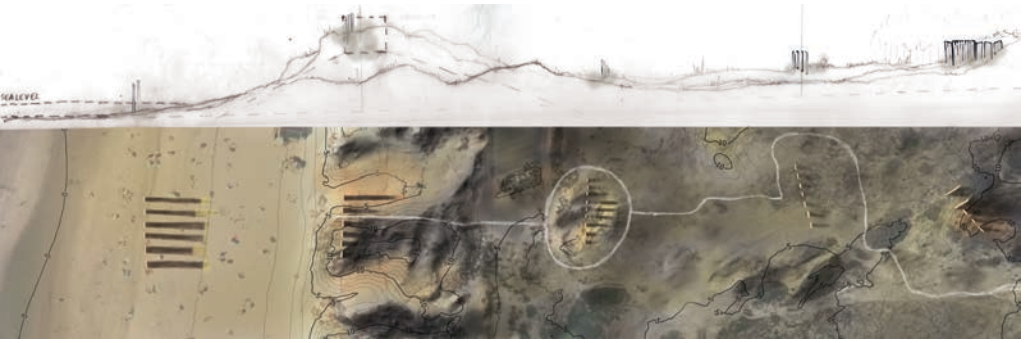


Design Principle 23b: Nonhuman, and abiotic movement in relation to condensed human movement at the new landscapes

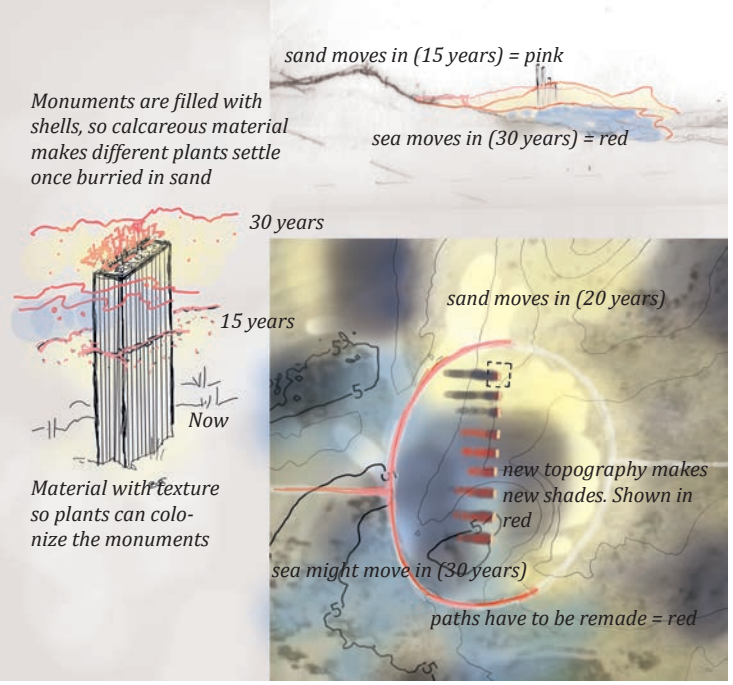
Nonhuman horizontal movement at upper left corner: European peacock (Aglais io), cow (Bos taurus), and nightingale (Luscinia megarhynchos)
Nonhuman vertical movement middle row left: small nettle (Urtica urens) - common nettle (Urtica dioica) - black alder (Alnus glutinosa) - goat willow (Salix caprea)
Human maintainer: milking cows, mowing and grazing of fields
Human visitor: moving through open land, sheltering at being
Human explorer: spotting particular birds
Abiotic movements: movement of sun and the effects of rain



Linear hybrid - Showing sunrise and colour of sand



Linear hybrid - Showing sunset and colour of sand



Part of hybrid over 30 years of time

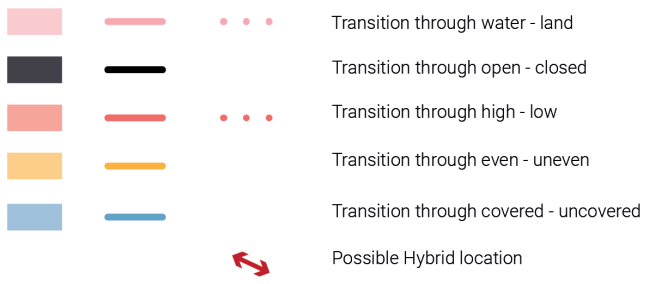
2.3.5 Deriving from movements, placing hybrids, treating harmed landscapes at Schoorlse Duinen

Like at Amsterdamse Waterleidingduinen, together the placement of hybrids, and treatment of harmed landscapes form a spatial framework. Similarly, it shows only where what can be situated, and not when what will be made.
The timeline of when what will happen I leave open. I only give an imagination of a hybrid that deals with sand, time, and nonhuman and human movement.

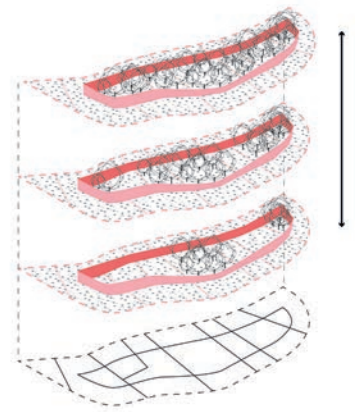
3. FOUR MOMENTS OF NOW: A MULTISPECIES RESEARCH BY DESIGN AT AMSTERDAMSE WATERLEIDINGDUINEN

Abiotic movement
Agriculture
Amsterdamse Waterleidingduinen
Alder swamp forest
Bald cypress
Birch
Common oak
Common nettle
Companion species
Condensed movement
Decay
Dune
Dune forest
Explorer
Fallow deer
Forest
Forest strategy
Flower bulb fields
Human
Hybrid
Landscape as being
Mature forest
Maintainer
Molinia meadows
Movement
Nonhuman
Nonhuman movement
Oosterkanaal
Secrecy
Silver aspen
Small nettle
Small-leaved linden
Succession
Time
Transition
Unpleasant landscape
Visitor
Water infiltration system
Young forest

Design Principle 22: Location of hybrids at existing and new transitions combined



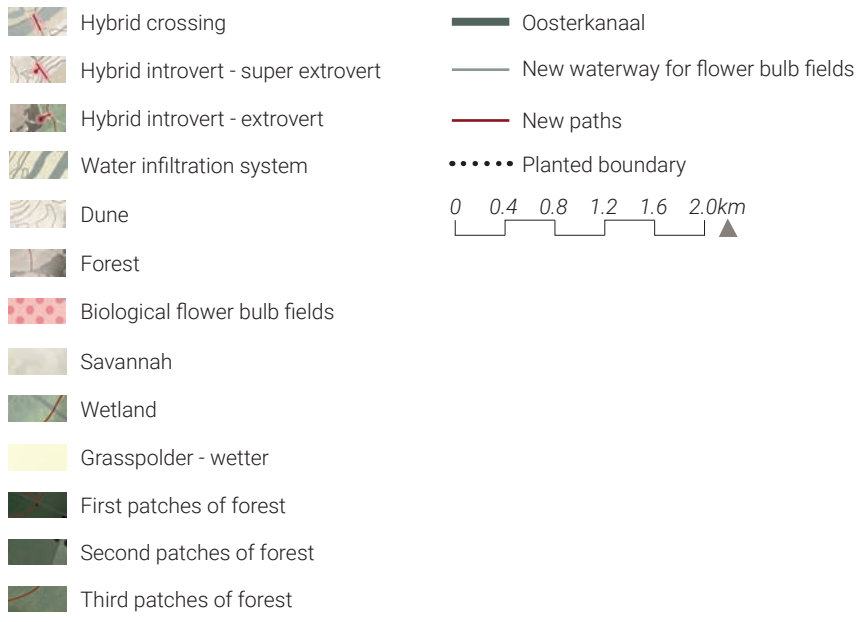
The analysis leads to the concept of hybrids placed at transition zones, and the two landscape as beings 'Amsterdamse Waterleidingduinen' and the new proposed forest structure. If I were to let grow the entire proposed forest structure at the 1:50.000 scale, the design would realise about 300 hectares of forest that weaves through the landscape.
However, the analysis of Amsterdamse Waterleidingduinen strongly directs to the Oosterkanaal, and the immediate adjacent land. These structures together, are of a bad quality. This I consider most relevant in relation to the new landscape as being. And therefore, I focus at this area in particular. This area in total would be about 93 hectares of forest. This is already more than the 10% of forest of Amsterdamse Waterleidingduinen, since the total forest area there is about 700 hectares. The landscape as being would thus fulfill its goals.



Repetition of Design Principle 12: Accepting growth and unpleasantness through a well- defined boundary.

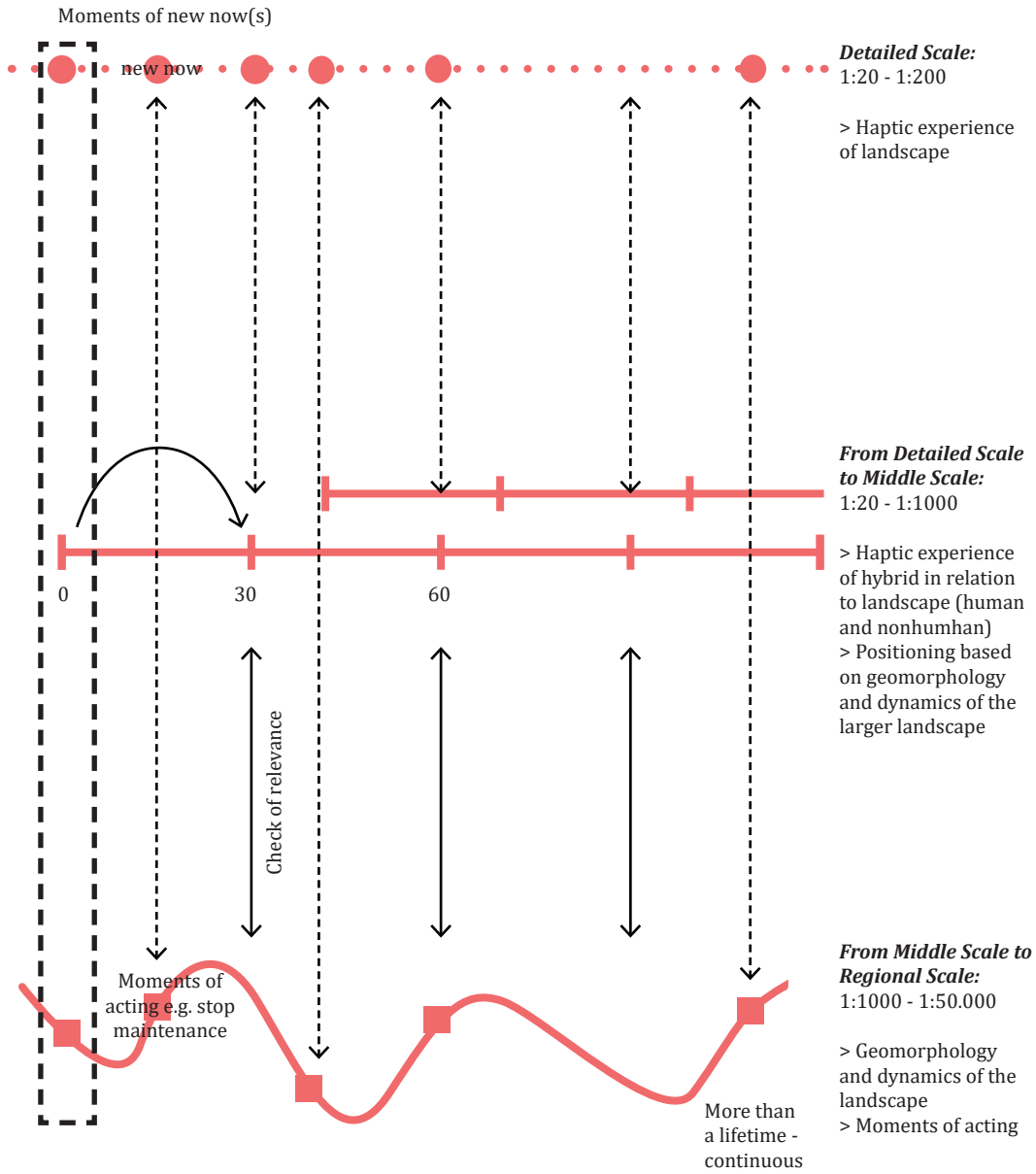
The map shown at the 1:20.000 (see design drawing 1 next page) scale shows how the hybrids are placed at the transitions. The transitions I identified result in different shapes of the hybrids. Water is not pumped at the Oosterkanaal any longer. This results in the rewetting of the adjacent field. The forest is placed along the Amsterdamse Waterleidingduinen. Therefore, it spatially does two things: 1) it emphasizes the polder pattern along the Amsterdamse Waterleidingduinen, since it follows the existing pattern, 2) It resembles the old agricultural patterns that are found at the Amsterdamse Waterleidingduinen (see analysis 21), however on a completely different scale.

Design drawing 1 - 1:20.000: a timeless map with possible locations of hybrids and urgent interventions



The forest exists of a boundary and of a pattern of development that happens over time. Every 20 years, a different set of patches is let go into forest. I mentioned this in the design principles of the landscape as being already (see repetition of design principle 12). The forest grown over time, becomes diverse in age, which is important to the health of the forest.
The forest has a positive sphere of influence. There is the positive influence on the flower bulb fields, that are turned into biological fields. And the wetlands between the Amsterdamse Waterleidingduinen and the new forest. At these wetlands, flower bulb cultivation becomes impossible due to high and fluctuating water levels. However, whatever grows on the field, especially later in time when the fields get poorer in nutrients, can be used for compost, that is in return used at the biological flower bulb fields. This way of cultivating bulbs already exists at some points along the dunes. 'Huiberts biologische bloembollen' was an enlightening example for this. This flower bulb farmer uses the clippings of natural area 'Zwanenwater' for its compost in order to be fully biological (huibertsbloembollen.nl/bodem).

The shown map is, however, timeless. There is no indication of time. Whereas, as suggested at chapter 2.2.5, changes in the landscape happen at different times. This has an effect on movement. On top of that, as I described in chapter 1.3, hybrids are not timeless. Hybrids exist for about 30 years due to their materiality. This presence of decay, also changes the perception in the now. Therefore, in chapter 2.2.5 I explained that I will explore four different times: now, the now in 20 years, the now in 30 years, and the now in 50 years. These chapters thus explore how movements, hybrids, and landscape as being change over the course of 50 years. The identified events in the future, are not events that will surely happen, but events that will likely happen. How the design responds to these events, is explained in the first four subchapters. After that, I will analyse whether and how the approach I suggest to take at Amsterdamse Waterleidingduinen, leads to new ways of connectedness between humans and nonhumans.



Timescale

Detailed Scale:
1:20 - 1:200

> Haptic experience of landscape

From Detailed Scale to Middle Scale:
1:20 - 1:1000

> Haptic experience of hybrid in relation to landscape (human and nonhumhan)
> Positioning based on geomorphology and dynamics of the larger landscape

From Middle Scale to Regional Scale:
1:1000 - 1:50.000

> Geomorphology and dynamics of the landscape
> Moments of acting

Scale scale

3.1 MOMENT 1: NOW

We are at the now. The first hybrids are made, as well as the first interventions. New human and nonhuman movements come to the site. In this chapter I explain them from the large scale (1:20.000) to the small scale (1:50)

Time

North Sea

Sand

Duneforest

Sea buckthorn habitat

Heather habitat

Amsterdamse Waterleidingduinen

Flower bulb fields

Nitrogen

Estates

Fallow deer

Transition

Movement

Human

Nonhuman

Abiotic

Landscape as being

Water infiltration system

Design drawing 2 - 1:20.000: Moment 1 - Oosterkanaal, wetlands, planting of treelanes, biological flower bulb fields, hybrids and paths

- Hybrid crossing
- Hybrid introvert - super extrovert
- Hybrid introvert - extrovert
- Water infiltration system
- Dune
- Forest
- Biological flower bulb fields
- Savannah
- Wetland
- Grasspolder - wetter
- Prepared for biological flower bulb fields
- Oosterkanaal
- New waterway for flower bulb fields
- New paths
- Planted boundary

0 0.4 0.8 1.2 1.6 2.0km

3.1.1 Oosterkanaal, boundaries, first flower bulb fields

The first step, as already mentioned, is to stop retrieving water from the Oosterkanaal. This immediately leads to a rewetting at the adjacent land. Therefore a ditch is dug along the flower bulb fields. The soil of this ditch, is used further at the site to create infrastructure for maintenance and visitation. Along the room reserved for forest, there is a boundary planted. The shrubs and trees used form a closing edge around what will be the forest.
Not all hybrids are placed. Hybrids are condensations of movement. There should therefore be a relevance to the hybrids in all movements. Relevance of the hybrid I derived from relevance of the area at that moment. Therefore I now placed hybrids mostly directing to the Oosterkanaal, and the adjacent land, and towards what is mentioned in the analysis as the ‘dune area’. At the latter area it will be crucial to maintain small scale dynamics, in order to keep the present ecologies healthy.

Design drawing 3 - 1:5000: Moment 1 - Spatial relation between Oosterkanaal, wetlands, and planted boundary

0 100 200 300 400 500m

- Wetland
- New waterway for biological fields
- immediately turned into biological flower bulb fields
- later turned into biological fields
- Remnant of Oosterkanaal - no pumping
- Planted boundary forest
- New pathway visitor
- New pathway maintainer
- Grassland polder
- New parking lot

3.1.2 Spatial relation between Oosterkanaal, wetlands, and planted boundary

At this point there is no water retrieved from the Oosterkanaal anymore. This results in a higher water level at the Oosterkanaal and it results in a higher water level at the adjacent land (L. Geelen, personal communication, 3 May 2021). The water level at the polder land will be fluctuating through the seasons. In winter, the level will be likely to be at ground level (L. Geelen, personal communication, 3 May 2021). The boundary of trees and shrubs follows the polder pattern (see design drawing 3). The forest that will grow within the boundary is likely a Alder swamp forest (S. Janssen, personal communication, 3 May 2021)

Three hybrids are realised, as well as infrastructure leading to them. This infrastructure is mainly for maintainer, and visitor (red paths are new). The hybrids are placed at important crossings (Oosterkanaal, and newly planted forest edge), and transitions from introvert to extrovert landscapes (forest edge and open wetlands).

The wetlands are old flower bulb fields. This means that they are high in nutrients and there will be some pesticides in the soil left. At this stage, there will be mostly stingy nettles (Urtica dioica, Urtica urens) growing, as well as soft rush (Juncus effisus) due to the wet circumstances. There will be a regular mowing regime here that starts early in the year (Brouns, 2020). The clippings are taken away, which results in the land getting lower in nutrients. This mowing regime will not only take place at the fields directly along Amsterdamse Waterleidingduinen, but also at the agricultural patches where forest is not yet developed.

3.1.3 New and existing movements at the open field and forest

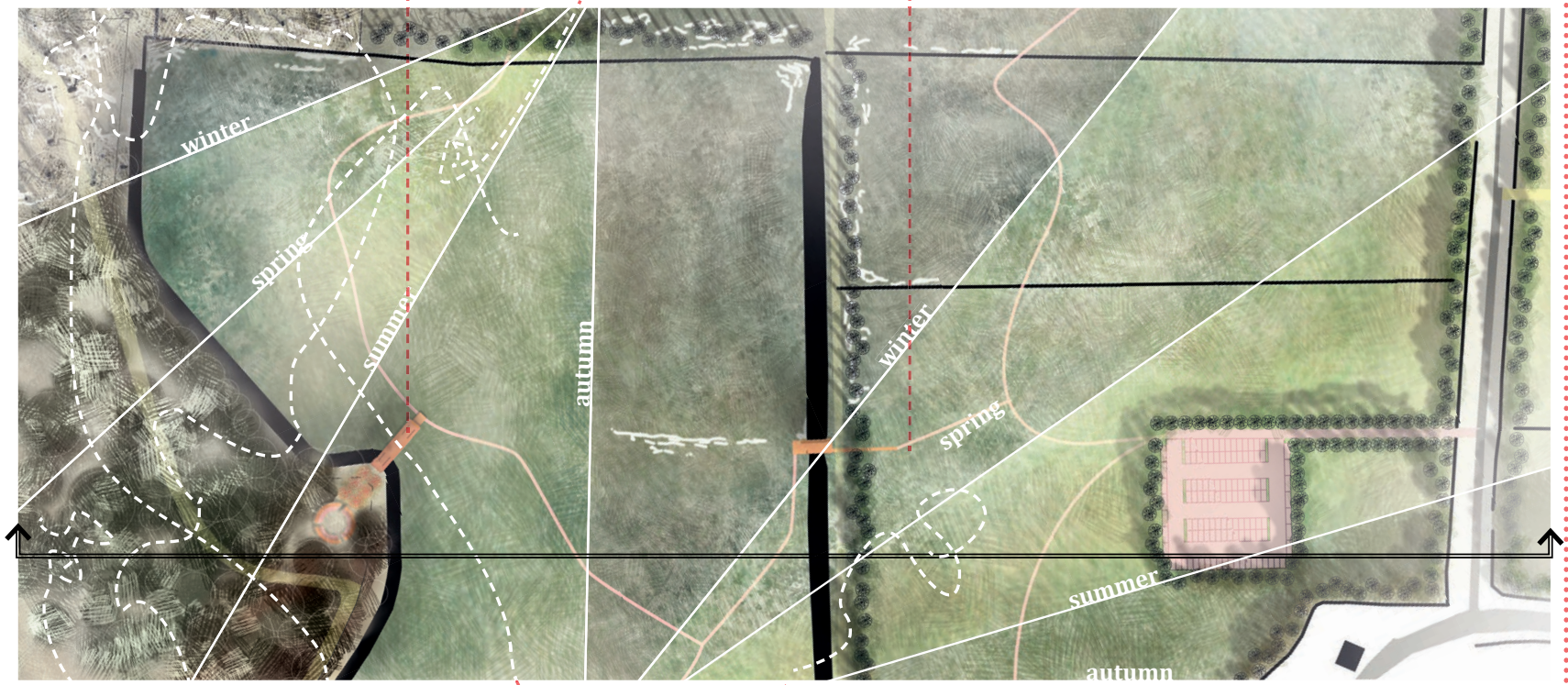
Hybrids both relate to already existing movements at the area, but also to the movements of nonhumans, and humans that arrive there after the interventions (see design drawing 4). This means that the hybrid that goes from dune forest to open wetland at the side of the forest considers three types of human movement: 1) the maintainer that cuts trees, and focusses on the deer population. 2) the visitor that watches autumn colours of the forest. 3) the explorer that is looking for special plants, mushrooms, and birds. In the forest this following nonhumans are related to through the hybrid: fallow deer (Dama dama), great spotted woodpecker (Dendrocopos major), purple hairstreak (Flavionus quercus), common oak (Quercus robur), and white poplar (Populus alba).

Both hybrids connect to the wetland immediately next to the dunes. Here the human movements of the maintainer consider mowing and bringing companion species (sheep), to the field. The mowing is done to get the soil poorer in nutrients. The high level in nutrients will result in the presence of nonhuman small and common nettles (Urtica dioica, urtica urens). This plant

human forest movements

hybrids of condensed movements

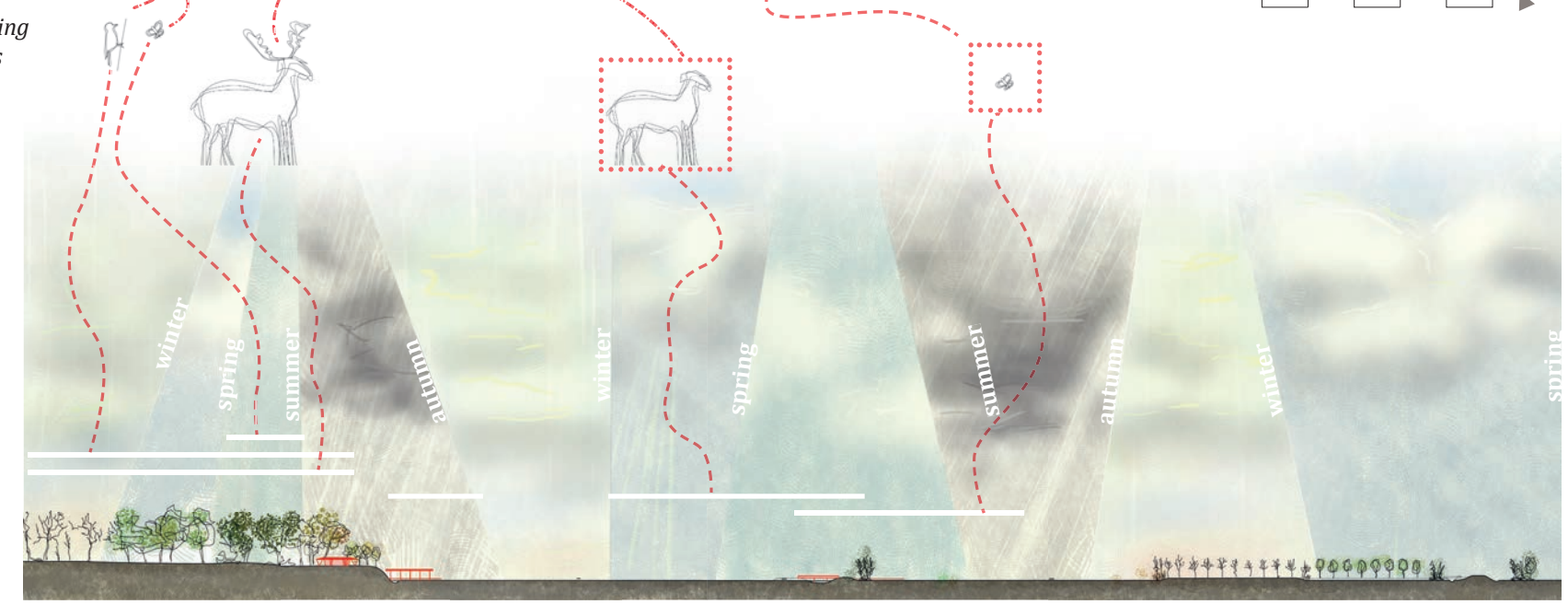
human wetland movements



New movements we relate to

corresponding nonhumans

horizontal movements



Vertical movements

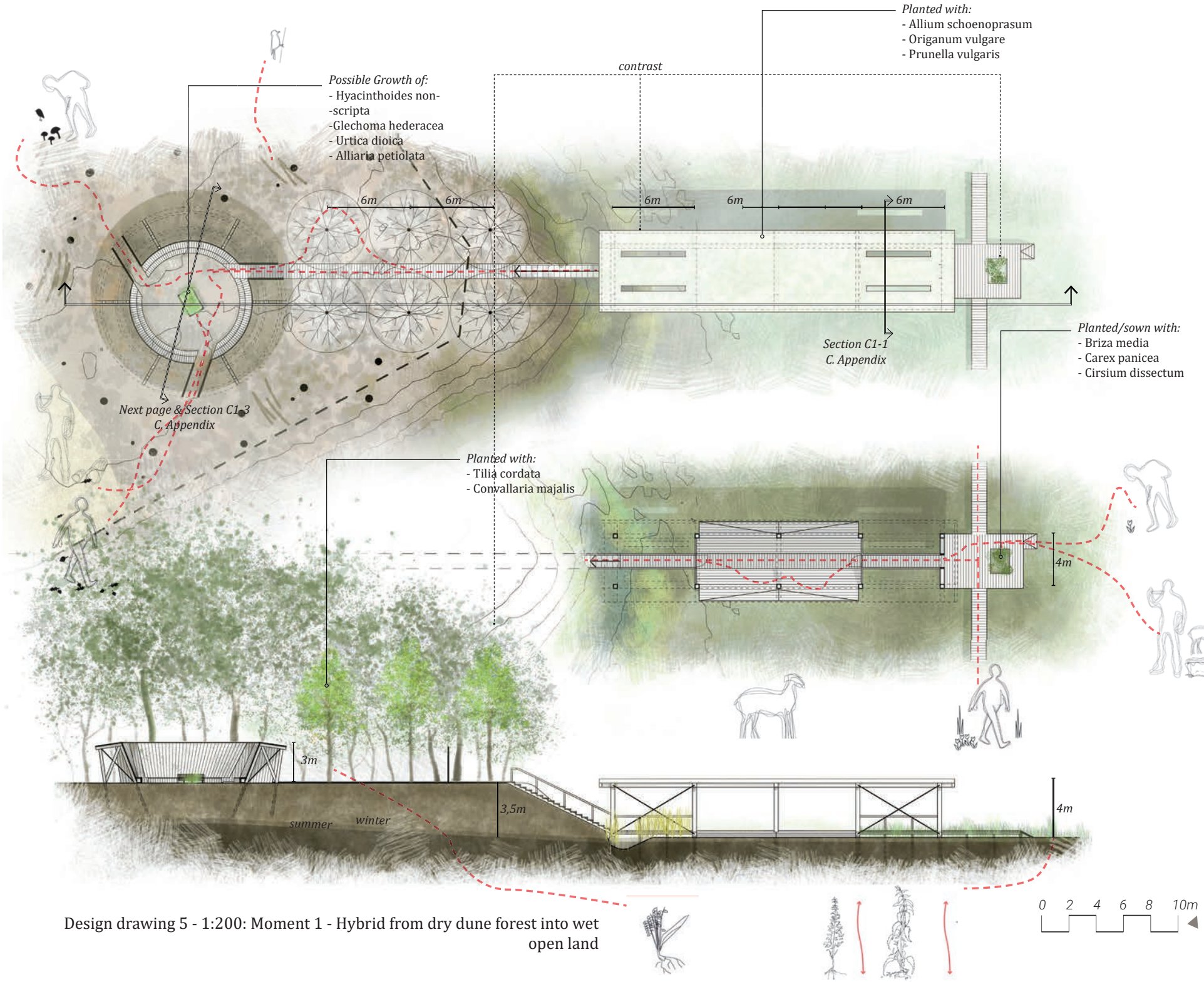
in return attracts butterflies such as red admiral (Vanessa atalanta) and European peacock (Aglias io) (Vlinderstichting, a). Human visitor movements consider walking through the wide landscape, and explorer movements consider finding small peculiar plant species that can also grow here.

For the hybrid that crosses from open land into open land, both sides will be the same at first. However, the open land that will grow into forest, is developing from the beginning. So at first, the land will be open, but soon this will start to change due to the difference in maintenance regimes. Whereas the open field adjacent to the dune forest is regularly mown, the open field where the new landscape as being structure is placed, is not maintained at this area. There is thus a relevant difference in human movement between the two areas. The design of the hybrid has to consider this.

It is likely that there will be a fluctuating water level of about 50cm, between winter and summer circumstances (L. Geelen, personal communication, 3 May, 2021).

Design drawing 4 - 1:1000: Moment 1 - New and existing movements at the open field and forest

NB: all nonhumans are named in design principle 13 & 23



Design drawing 5 - 1:200: Moment 1 - Hybrid from dry dune forest into wet open land

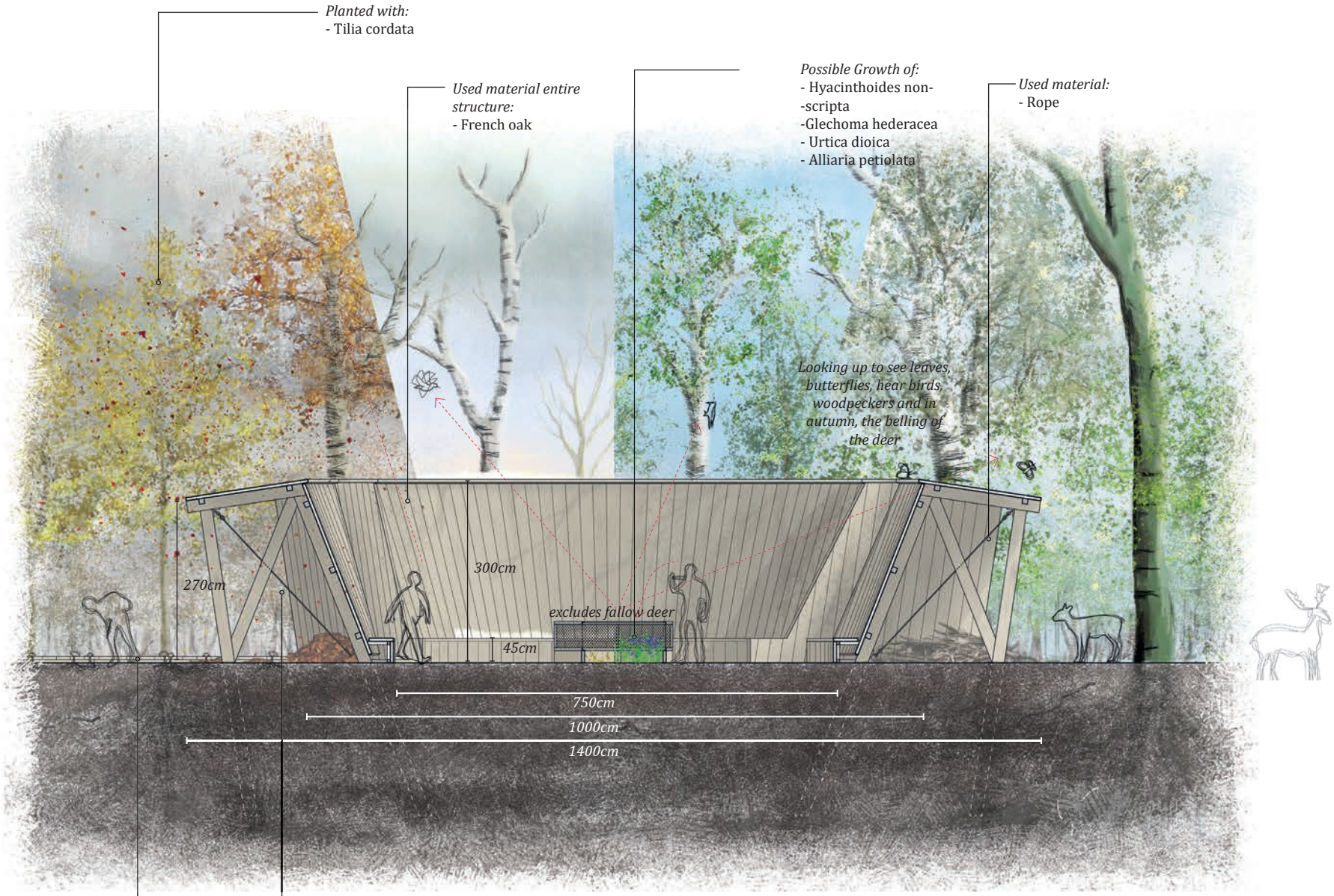
3.1.4 Hybrid from dry dune forest into wet open lands

The hybrid that reaches over the dune forest into the wet open land, is on a transition that goes from an introvert landscape (dune forest) to an extrovert landscape (open field). Therefore the hybrid follows the shape of circle, line, and opening. The hybrid is made of French oak. This has a timespan of about 30 years.

The circle is in the form of a dome (see design drawing 5, and 6). This is the case because in that way, humans are steered to not look horizontally, but vertically. On top of that, the circle is an introvert room, where there is not much of an overview of the entire landscape. This can heighten both awareness of the sky above the circle, and of sounds. Sounds are important in meeting the nonhuman great spotted woodpecker, and – in autumn – the belling fallow deer. On top of that, looking up towards the sky can make humans spot the occasional purple hairstreak, that flies higher up along tree tops (Vlinderstichting, b). To attract the great spotted woodpecker, the wood that needs to be cut is placed along the circle. This decaying wood can provide them with food of insects. The fallow deer is excluded in the circle. The rectangle is for the human maintainer, to watch what happens in plant growth at the forest, in order to understand the impact of the fallow deer on undergrowth in the forest (see also design at 1:50).

The line is half on the higher dune forest, half in the open field. In the higher forest Tilia cordata is planted, which gives

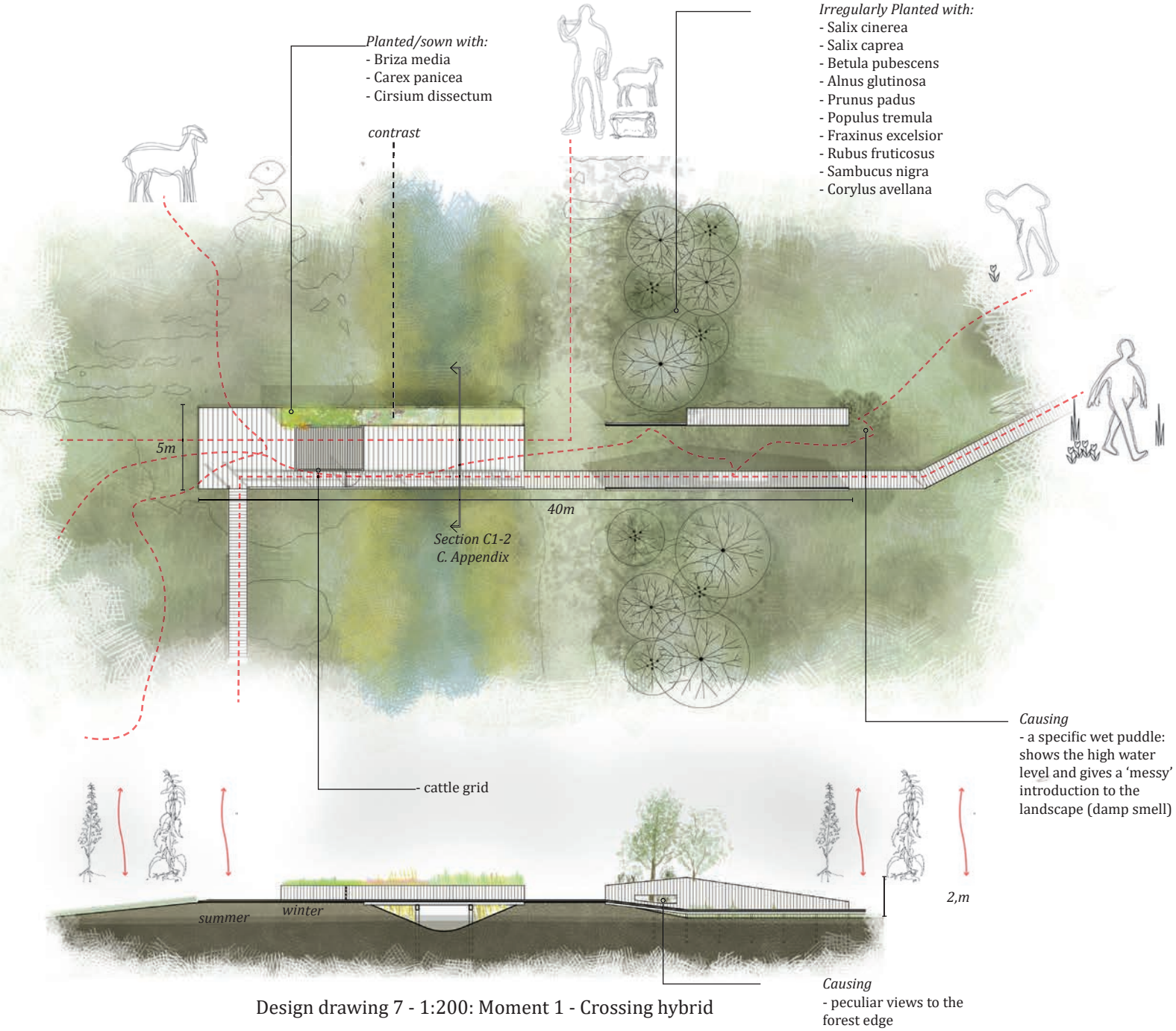
NB: See for basic construction drawings the appendix



Design drawing 6 - 1:50: Moment 1 - Circle

a contrast to the now present trees in colour, especially in autumn, and in undergrowth. The bulbs of lily of the valley are introduced here. This is where the well trained eye of the explorer could spot secret plant movements in ordinary processes. Moving down the stairs creates a sense of awareness of the difference in heights. Once below, sheltered by a roof where rains can fall through movements of the sheep can be met at the platform. The roof itself is planted with herbs that can deal with the draughts of being on the roof, and form a contrast with the landscape below. These plants are: chives (Allium schoenoprasum), majoram (Origanum vulgare), and self-heal (Prunella vulgaris).

Downstairs, the platform hovers 50cm above the ground. By exiting the hybrid, a similar shape is found as higher up at the dune forest. Here there is a small plantation of plants that you can find in the so-called molinia meadows that are a favoured ecological restoration, since they are both incredibly diverse in species found and rare (Ecopedia, a). In order to let these fields grow here, a lot of soil needs to be dug of, and that is within the paradigm of this research difficult to imagine. Therefore I decided to use the rectangle here as a 'container of seeds'. The rectangle is sown with quacking grass (Briza media), and planted with grass-like sedge (Carex panicea), and meadow thistle (Cirsium dissectum). This resembles some of the species found in Molinia meadows (Ecopedia, a). Again this spot is for the human maintainer in order to study whether the planted seeds, and grasses can grow.
The hybrid is placed in such a way that both the paths can be followed, but also there is a possibility to follow an intuitive route into the landscape.



Design drawing 7 - 1:200: Moment 1 - Crossing hybrid

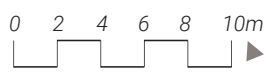
3.1.6 Crossing hybrid

This hybrid crosses the planted forest boundary. This planted boundary relates to what is likely to spur at the area reserved for forest. The trees within the edge are therefore grey willow (Salix cinerea), water willow (Salix caprea), downy birch (Betula pubescens), common alder (Alnus glutinosa), bird cherry (Prunus padus), common aspen (Populus tremula), and (Fraxinus excelsior). The shrub layer will be planted with European blackberry (Rubus fruticosus), elderflower (Sambucus nigra), and common hazel (Corylus avellana). This will result in a boundary that is quickly quite dense, and therefore quickly results in rooms.

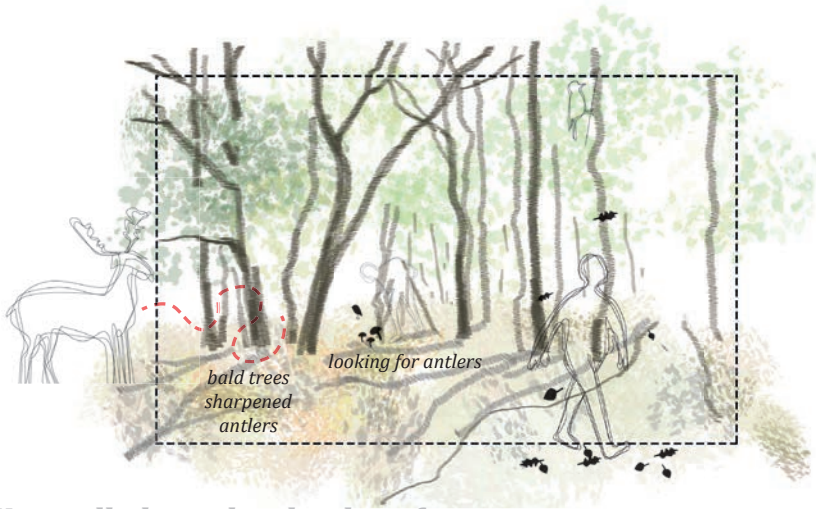
The crossing towards the open wetland immediately next to the dunes integrates larger scale movement of the human maintainer. It considers the movement of for instance a small mowing machine (max 2 m). Which results in mowing machines that do not disturb the soil too much. On top of that, this bridge excludes movement of grazing cattle, because of the cattle grid.

On the bridge is a set of plants that move vertically, and are similar to the plants used at the rectangle of the previously explained hybrid.

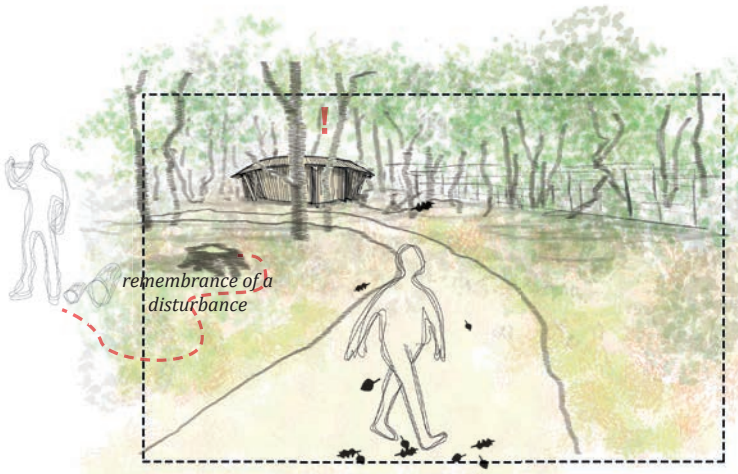
To the other side, the crossing does not include the movement of maintenance. The visitor can here follow a path. The explorer can be invited to explore the planted edge of the forest, and how wet circumstances create different, or more abundant plant growth.



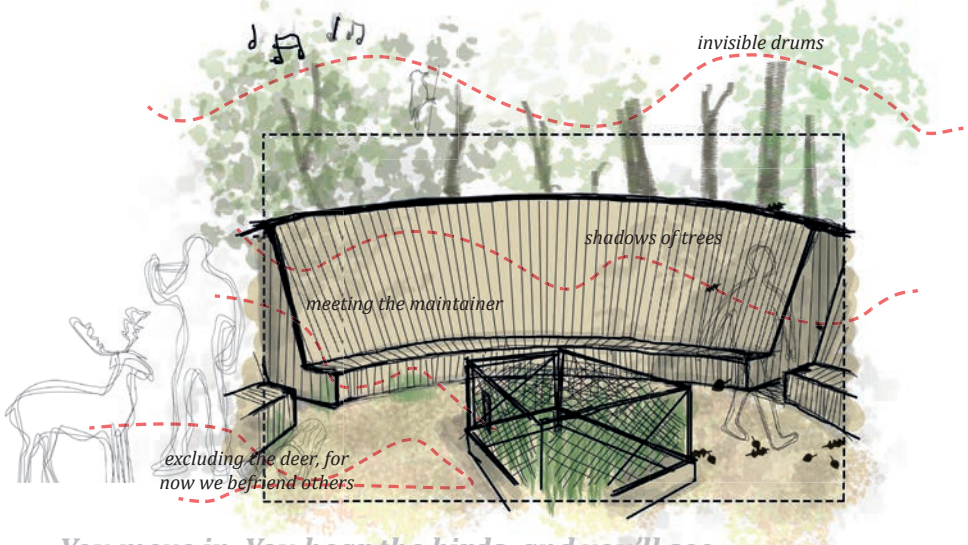
NB: See for basic construction drawings the appendix



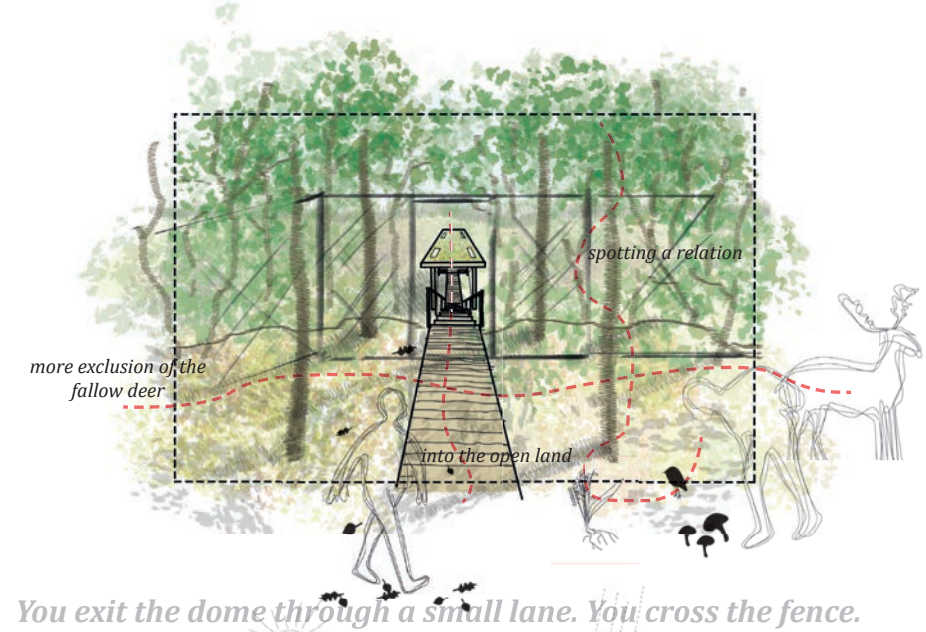
You walk through a dry dune forest.



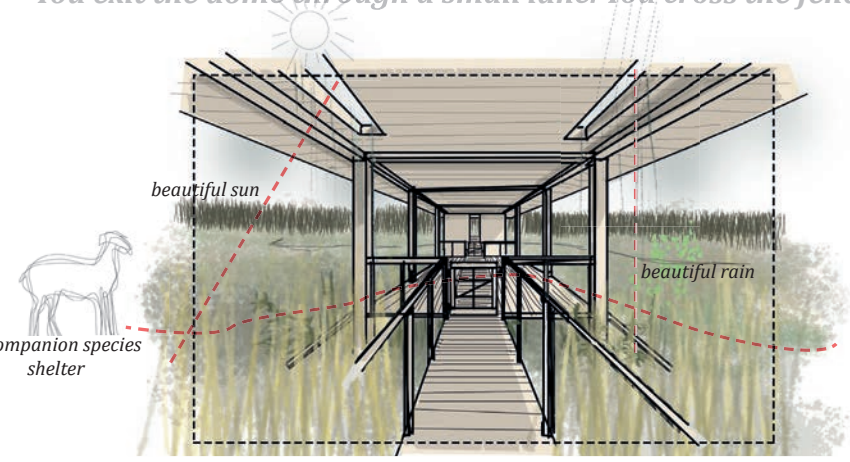
You come across a cut tree, and in the distance you see a structure.



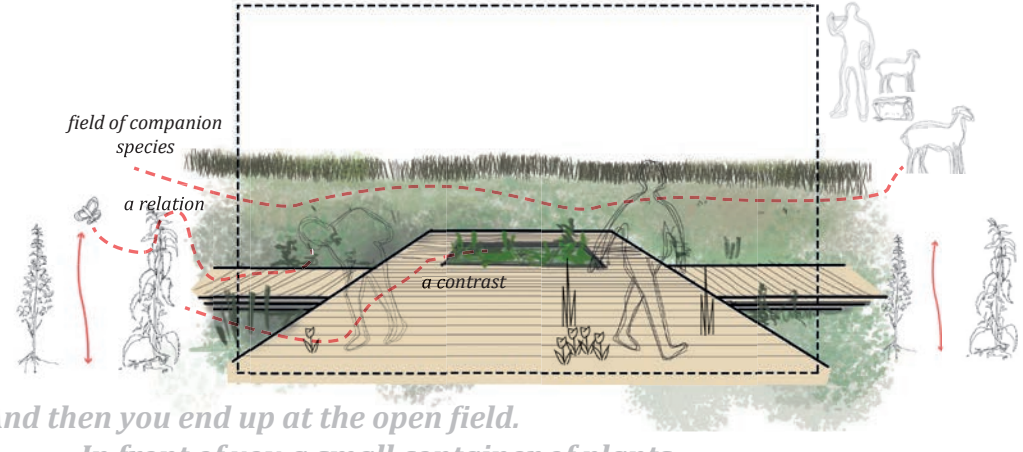
You move in. You hear the birds, and you'll see
the leaves above you. There is a ruffling sound of a woodpecker.



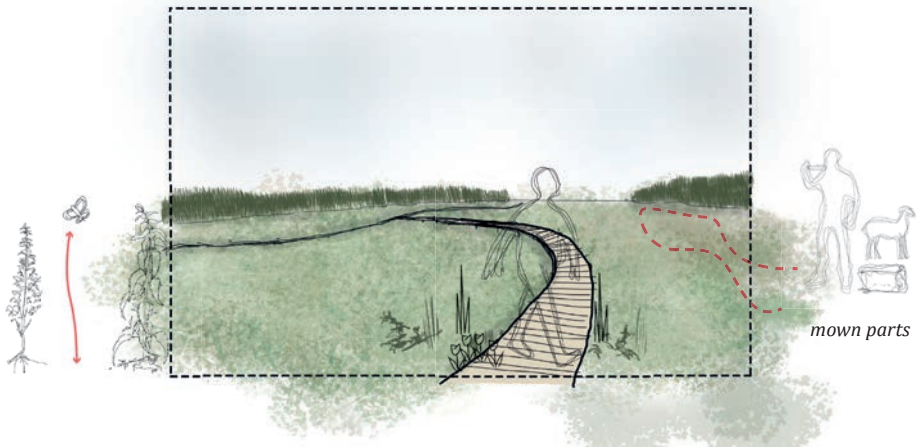
You exit the dome through a small lane. You cross the fence.



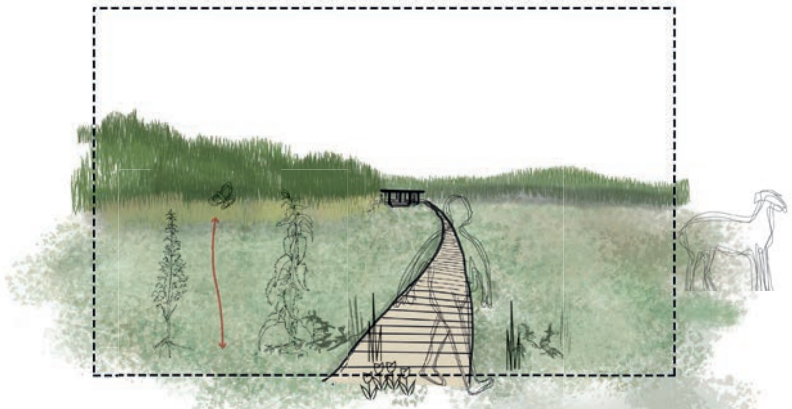
And move underneath the structure.



And then you end up at the open field.
In front of you a small container of plants.



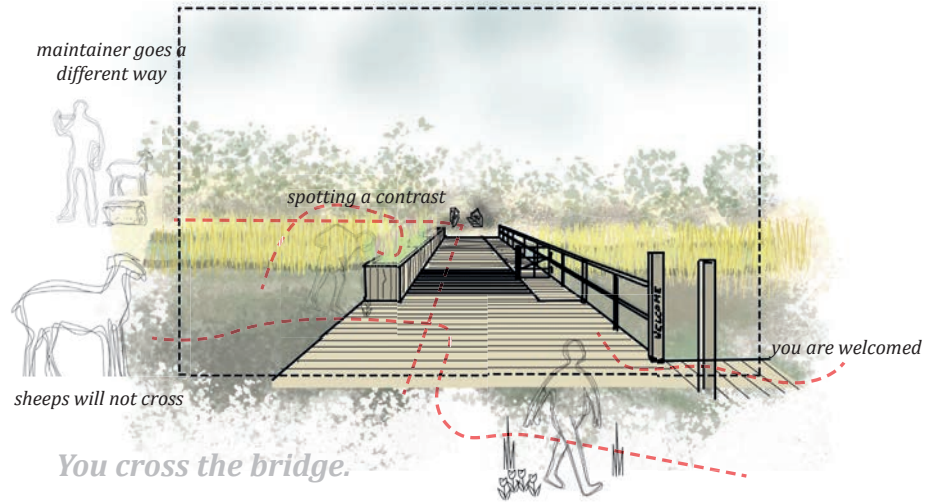
You move further into the wide field. You see the horizon and there are many nettles and butterflies around you.



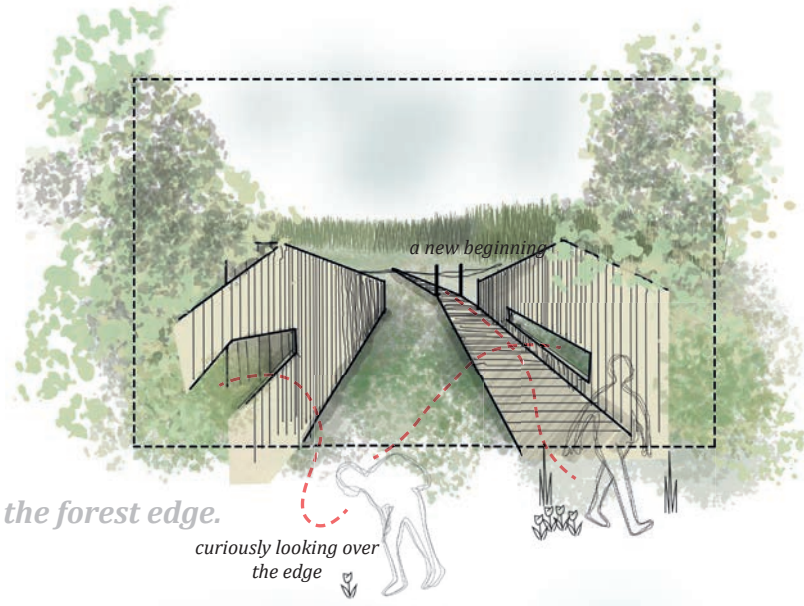
for a second you look back...

... but you continue your walk towards a bridge.

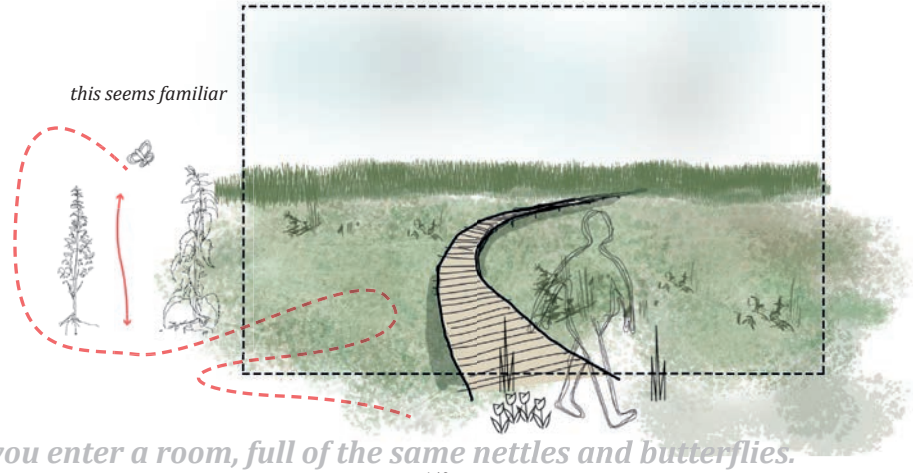
Design drawing 8 - Moment 1 - Series of encounters



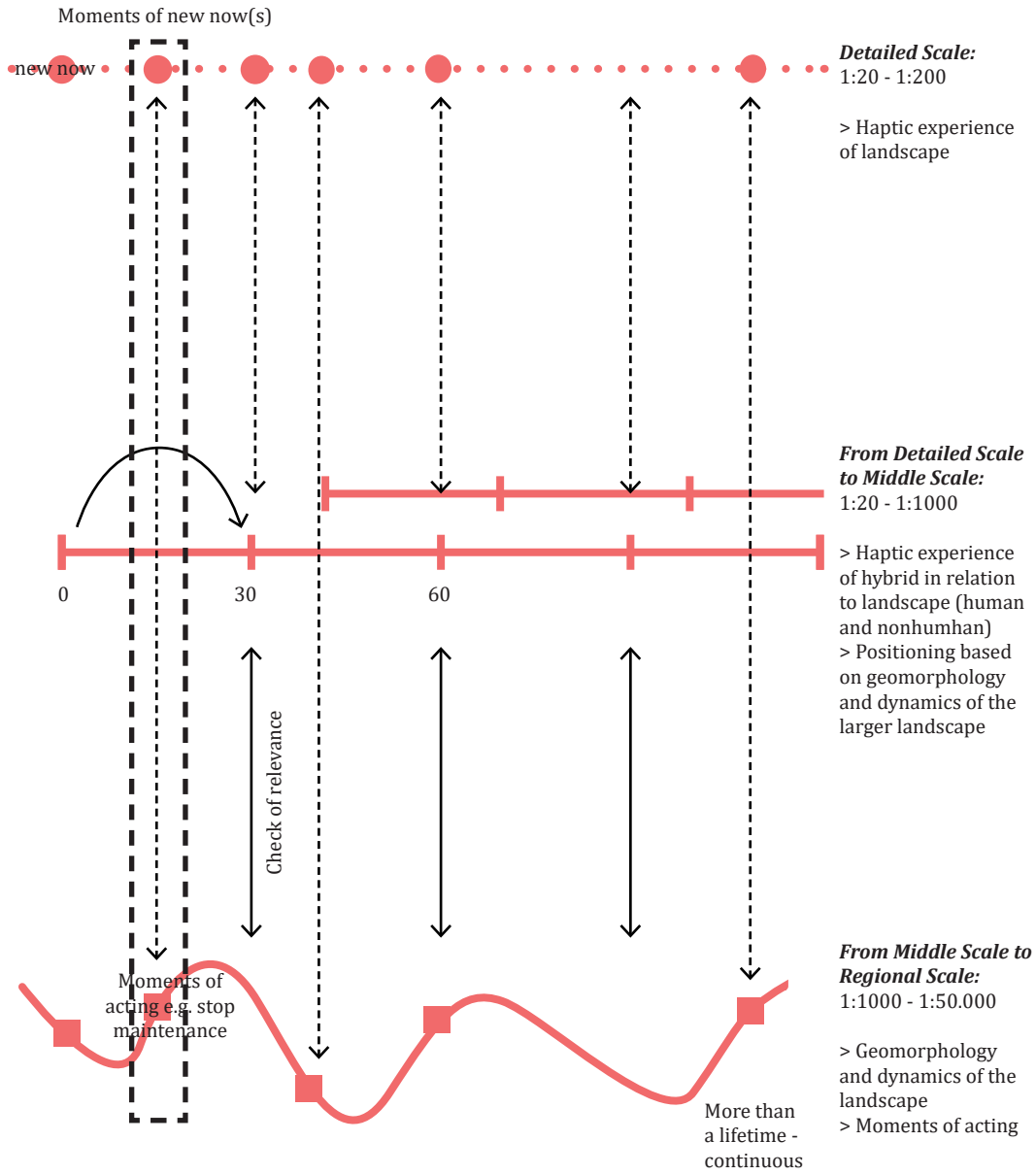
You cross the bridge.



You cross the forest edge.



And you enter a room, full of the same nettles and butterflies.



Timescale

Scale scale

3.2 MOMENT 2: NOW IN 20 YEARS

We are at the now. We celebrate 20 years of wetlands and the first young forest. The flower bulb cultivation has become fully biological. There are new nonhuman movements at the site. In this chapter I explain them from the large scale (1:20.000) to the small scale (1:50)

Time of making

Time of experience

North Sea

Sand

Duneforest

Sea buckthorn habitat

Heather habitat

Amsterdamse Waterleidingduinen

Flower bulb fields

Nitrogen

Estates

Fallow deer

Transition

Movement

Human

Nonhuman

Abiotic

Landscape as being

Water infiltration system

Design drawing 9: 1:20.000: Moment 2 - First forests, all biological flower bulb fields. Walking through the grassland polders

Hybrid crossing
Hybrid introvert - super extrovert
Hybrid introvert - extrovert
Water infiltration system
Dune
Forest
Biological flower bulb fields
Savannah
Wetland
Grasspolder - wetter
First forests

Oosterkanaal
New waterway for flower bulb fields
New paths
Planted boundary

0 0.4 0.8 1.2 1.6 2.0km

3.2.1 Further developments that should happen in twenty years

After 20 years the first agricultural plots within the boundaries will be grown into young forest. There are now for quite some time already sounds that the cultivation of flower bulbs has a negative impact on the environment. For instance Van der Wal and Hees already argue that the cultivation of flower bulbs has to be much more durable, in 2005. (Van der Wal & Hees, 2005). I therefore assume that the cultivation of flower bulbs has turned into biological fields besides what I propose in flower bulb fields at the previous moment.
On top of that, the grassland fields in the North next to the Amsterdamse Waterleidingduinen, are by that time maintained in a way that there is a lot of nonhuman presence as well.

Design drawing 10 1:5000: Moment 2 - Oosterkanaal, wetlands, planting of treelanes, biological flower bulb fields, hybrids and paths

3.2.2 The young forest, second agricultural plots, and wetlands poor in nutrients

The first agricultural plots are at this time young forest, and the second agricultural plots – let go after 15 years – are now beginning to grow with shrubs and seedlings (see design drawing 10). It is likely that there are many willows (Salix cinerea), maybe some very young common alder (Alnus glutinosa), and at the slightly higher grounds downy birch (Betula pubescens) (S. Janssen, personal communication 3 May, 2021). From now on, the wetland fields immediately next to the dunes will only be mowed once a year now in summer and additionally sheep can graze here (Ecopedia, a).

3.2.2 New nonhumans

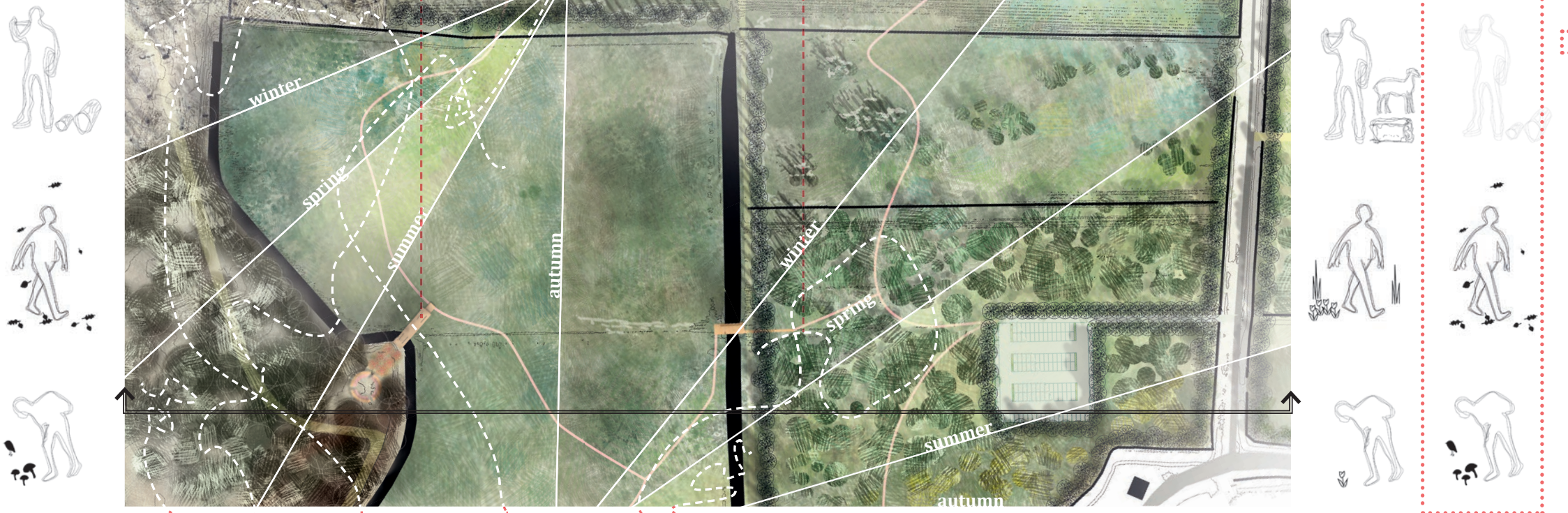
Due to the mowing regime, and the growth of forest, new nonhumans are moving in at the site. The growth of forest, means that there are now trees moving in that we have to relate to, such as the common alder (Alnus glutinosa), and grey willow (Salix cinerea). The forest will still be open yet dense (see design drawing 11). The transition of the hybrid that represented a crossing, now in facts begins to change. A nonhuman that might be attracted by the many shrubs, is the common nightingale (Luscinia megarhynchos) (Vogelbescherming Nederland).

human forest movements

hybrids of condensed movements

human wetland movements

human wet forest movements



New movements we relate to

corresponding nonhumans

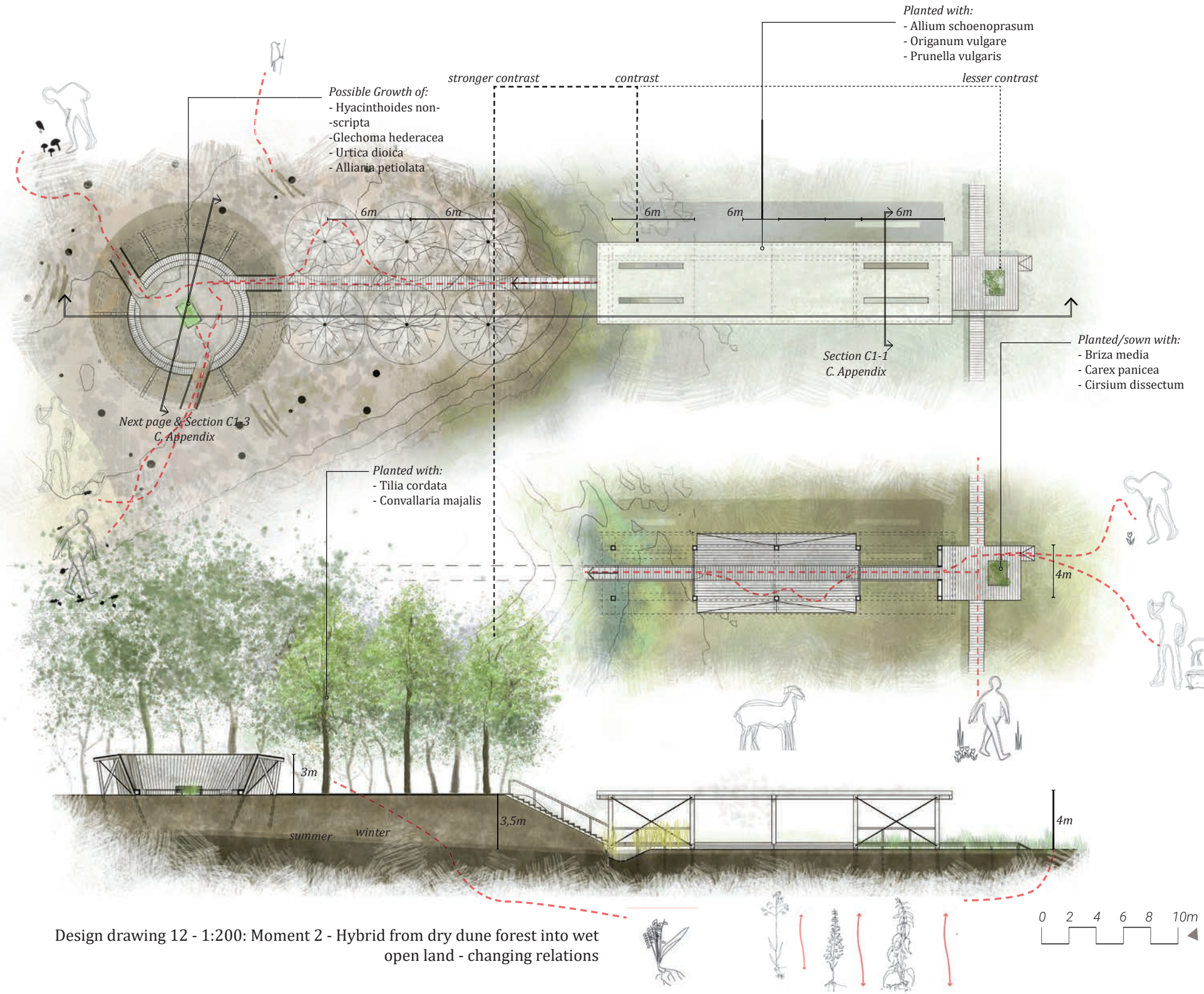
horizontal movements

Vertical movements

Briza media

At the open field, the nonhuman movements of for instance quacking grass (Briza media) (Ecopedia, b), might now grow. There are thus less nutrients, which also means that there are less small and common nettles. Some nonhumans will therefore disappear to some extent, for instance the butterflies mentioned in the previous subchapter will appear much less here. The new landscape as being is only maintained if necessary.

Design drawing 11 - 1:1000: Moment 2 - New and existing movements at the open field and forest
NB: all nonhumans are named in design principle 13 & 23, except from Briza media that arrives new at the site

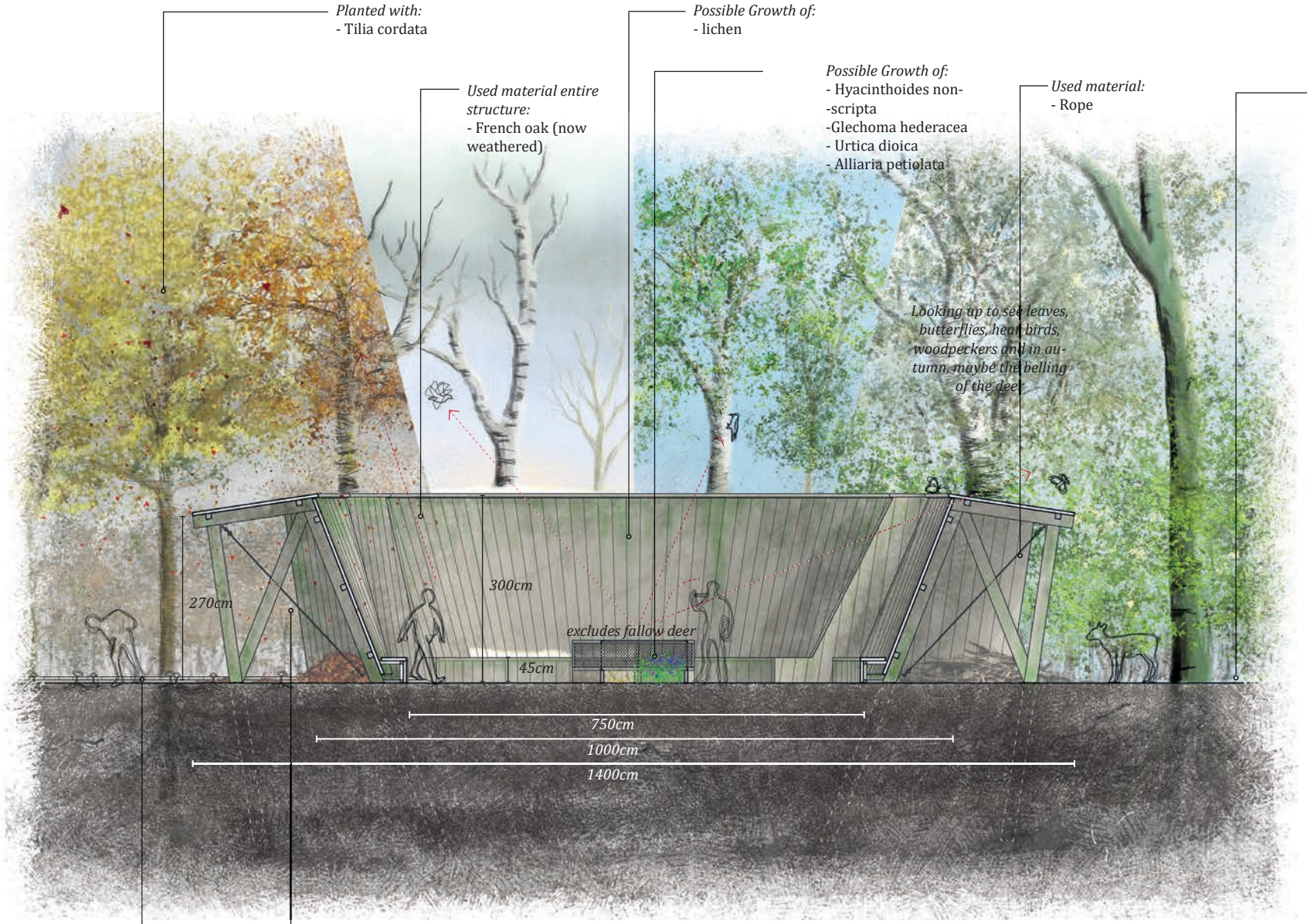


Design drawing 12 - 1:200: Moment 2 - Hybrid from dry dune forest into wet open land - changing relations

3.2.3 A weathered hybrid and changing relations

The hybrid after 20 years, weathers. However, the movements around this hybrid more or less stay the same. What does however change is the relation that the rectangles with monitoring research for the maintainers have.
It is likely to assume that in the upcoming 20 years, the maintenance of Amsterdamse Waterleidingduinen deals with the overpopulation of fallow deer (Dama dama). I assume this, because it is now already at the top of their list, considering the many reports and researches they do on the population of the fallow deer (Dama dama) (Waternet). Therefore the undergrowth of the forest, might grow more than it does now. Therefore, the contrast between the rectangle upstairs and the surrounding forest might start to be less obvious.
The same counts for the rectangle down at the wetlands, planted with quacking grass (Briza media) that might now be found at the field at some points as well (Ecopedia, b).

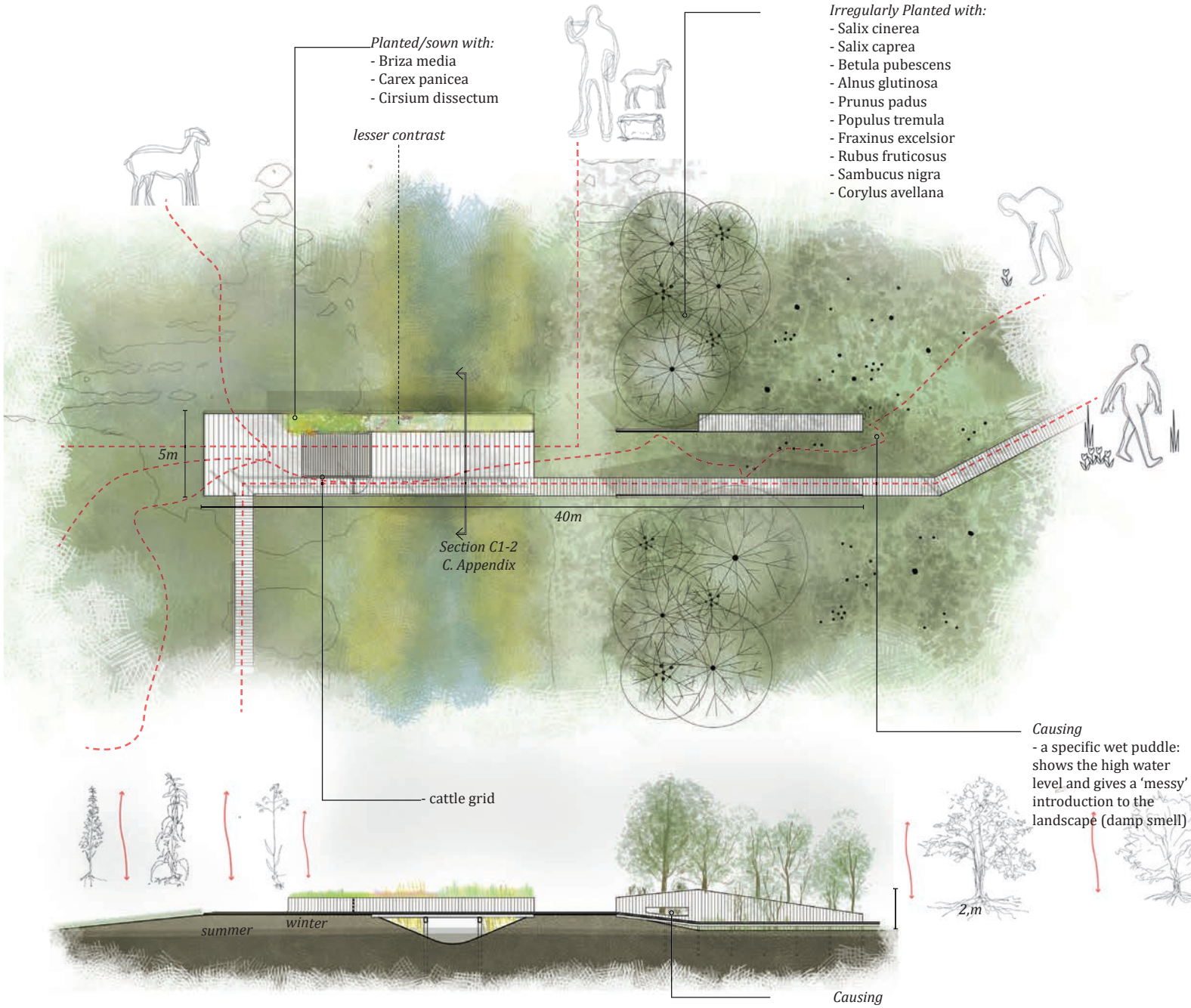
NB: See for basic construction drawings the appendix



Design drawing 13 - 1:50: Moment 2 - Circle - changing relations

3.2.4 Another weathered hybrid and changing relations

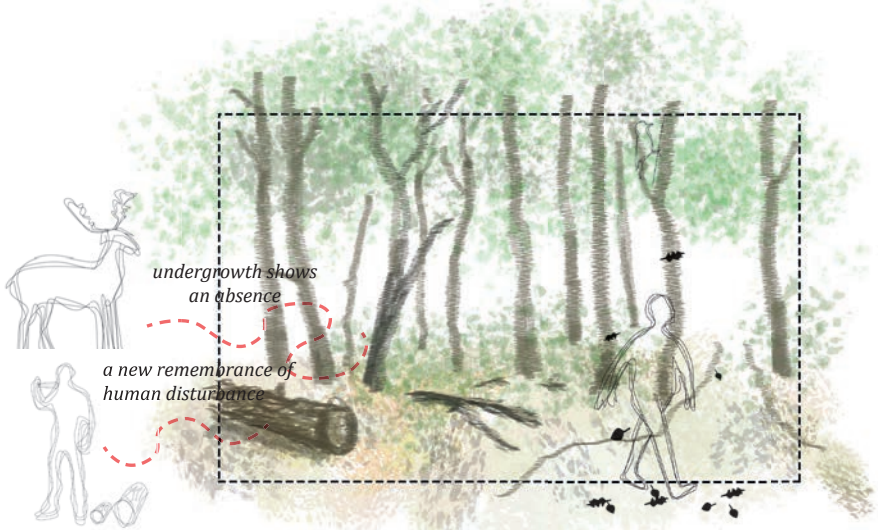
At the hybrid that was placed at what was before a crossing, the changing relations are even bigger. Here the hybrid starts to become out of tune with the transition. The transition is no longer a crossing, but moves from an introvert to an extrovert landscape.



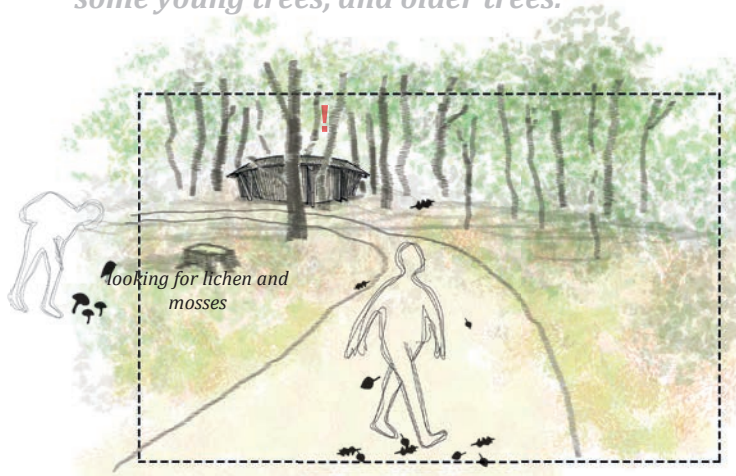
Design drawing 14 - 1:200: Moment 2 - Crossing hybrid and changing relationships

0 2 4 6 8 10m

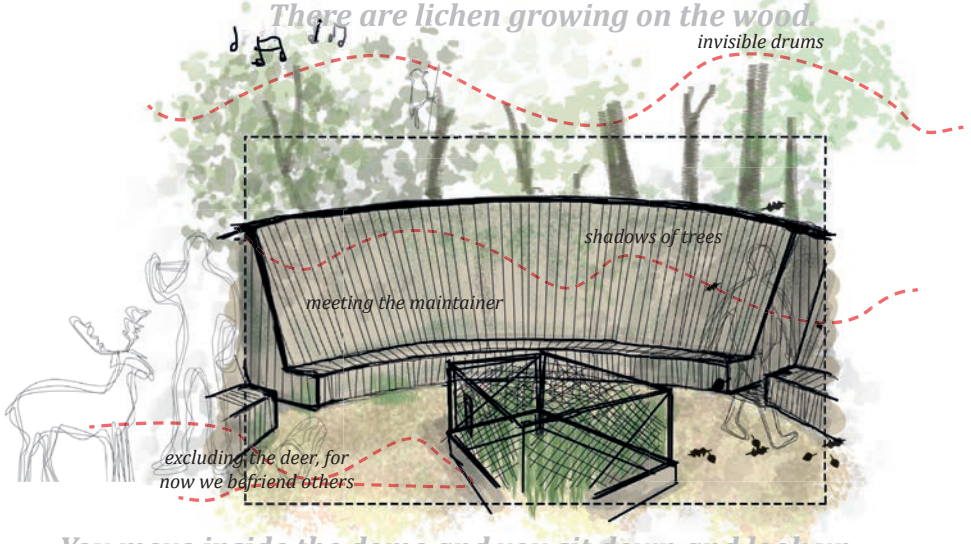
NB: See for basic construction drawings the appendix



You move through a forest. There is undergrowth, some young trees, and older trees.

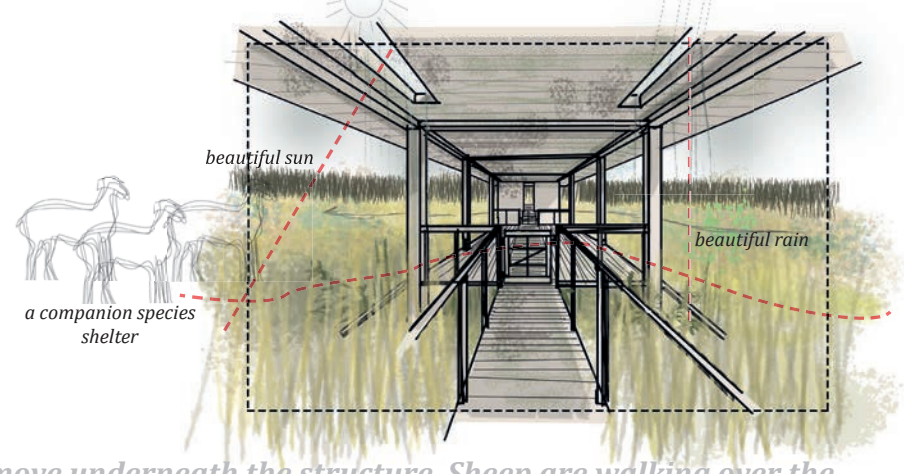


You move further and there is a grey-green weathered dome. There are lichen growing on the wood.

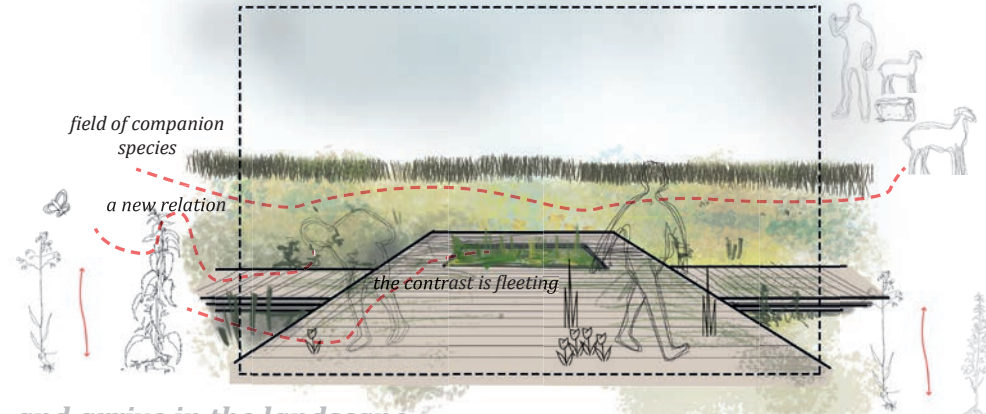


You move inside the dome and you sit down and look up. There is the sound of birds.

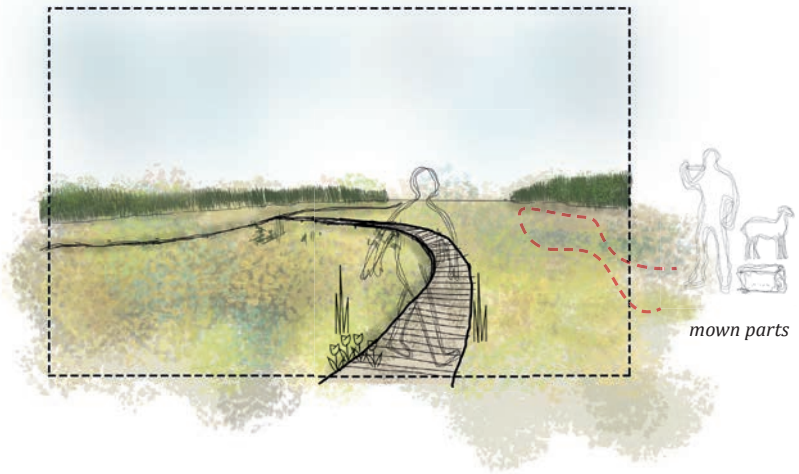
You walk further over this line. You see someone looking at some smaller flowers along the path.



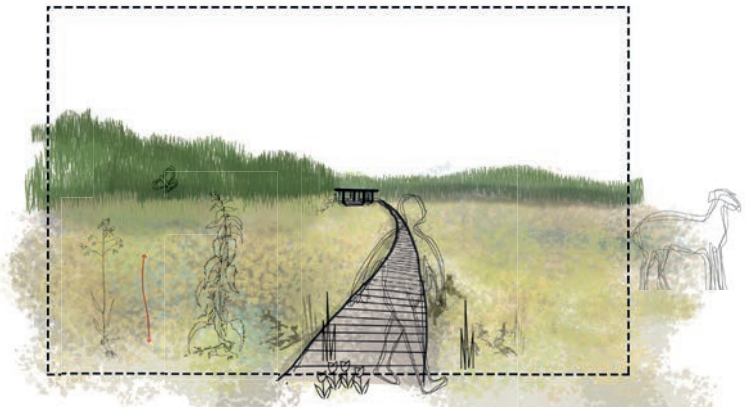
And move underneath the structure. Sheep are walking over the platform. You move along the sheep ...



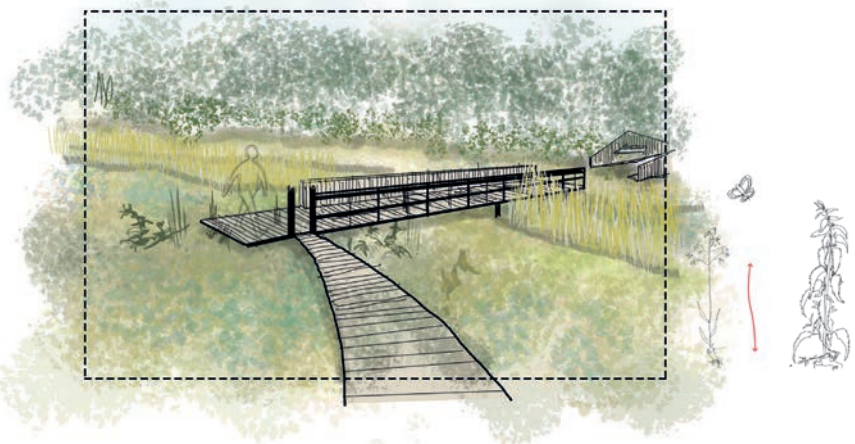
... and arrive in the landscape.



There are a lot of grasses. The path is sometimes a bit slippery.

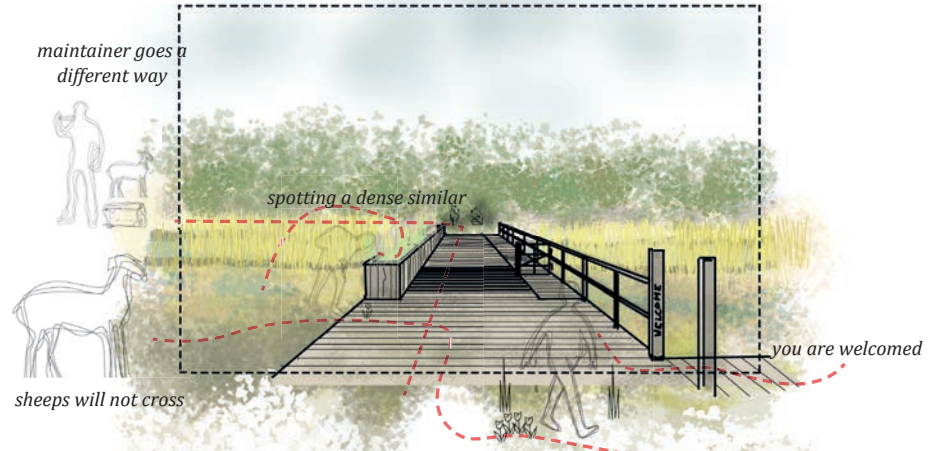


for a second you look around and see where you come from...

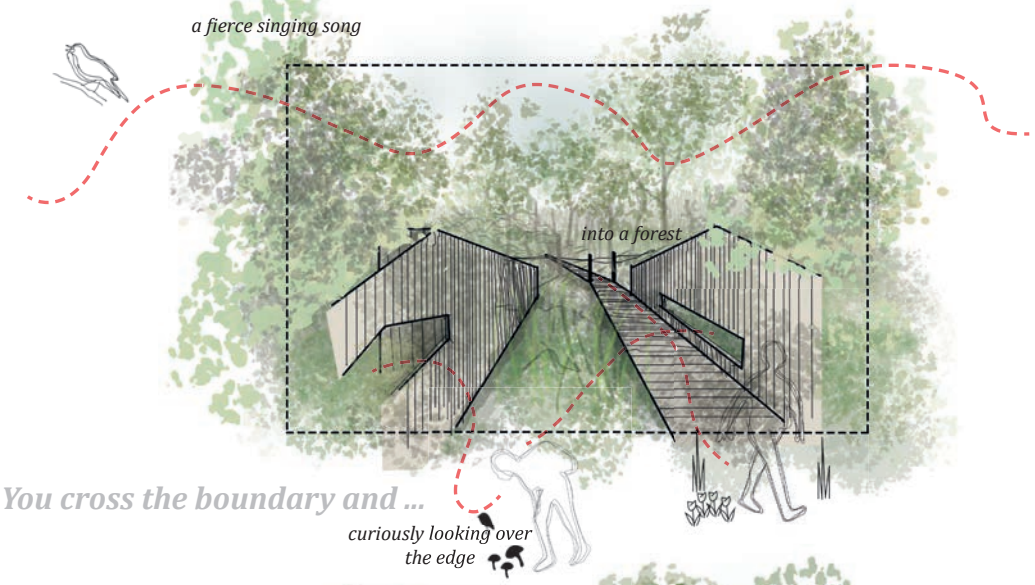


... and you walk on and move towards a bridge.

Design drawing 15 - Moment 2 - Series of new and old encounters

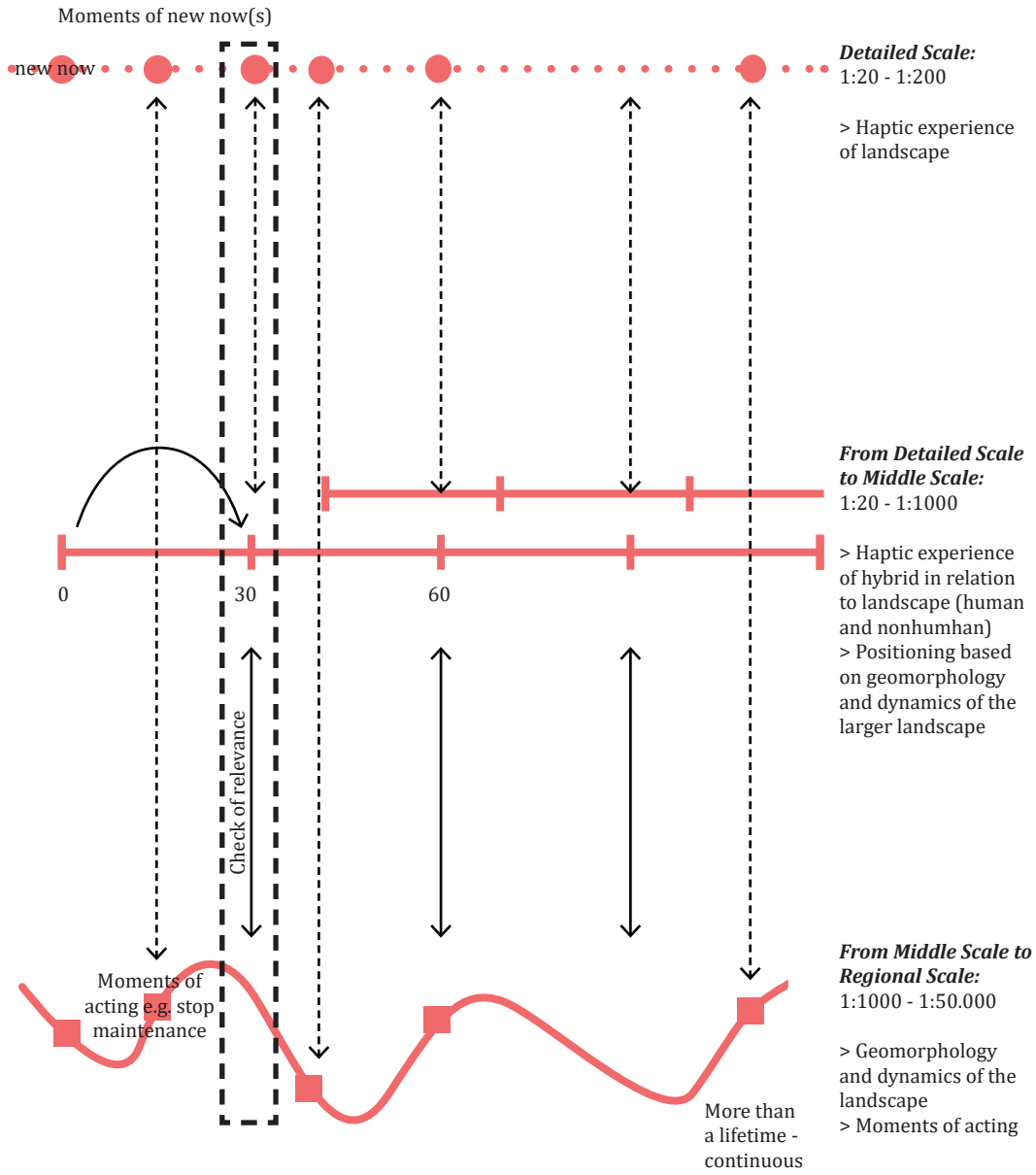


You cross the bridge and notice plants at the bridge that you also noticed in the field.



You cross the boundary and ...

... there you are all of a sudden in a landscape surrounded by shrubs and small trees.



Detailed Scale:
1:20 - 1:200

> Haptic experience of landscape

From Detailed Scale to Middle Scale:
1:20 - 1:1000

> Haptic experience of hybrid in relation to landscape (human and nonhumhan)
> Positioning based on geomorphology and dynamics of the larger landscape

From Middle Scale to Regional Scale:
1:1000 - 1:50.000

> Geomorphology and dynamics of the landscape
> Moments of acting

Timescale

Scale scale

3.3 MOMENT 3: NOW IN 30 YEARS

We are at the now. This is the moment in which we decide what we will do with our hybrids. Will we build again, or will we build differently, or do we give it to all nonhumans at the site, or all of the above. There are now patches of young forest, and patches of almost forest.
In this chapter I explain them from the large scale (1:20.000) to the small scale (1:50).

Time of making

Time of experience

North Sea

Sand

Duneforest

Sea buckthorn habitat

Heather habitat

Amsterdamse Waterleidingduinen

Flower bulb fields

Nitrogen

Estates

Fallow deer

Transition

Movement

Human

Nonhuman

Abiotic

Landscape as being

Water infiltration system

Design drawing 16 - 1:20.000: Moment 3 - Second forests, reassessment of hybrids

- Hybrid crossing
- Hybrid introvert - super extrovert
- Hybrid introvert - extrovert
- Hybrid left to decay
- Water infiltration system
- Dune
- Forest
- Biological flower bulb fields
- Savannah
- Wetland
- Grasspolder - wetter
- First forests
- Second forests
- Oosterkanaal
- New waterway for flower bulb fields
- New paths
- Planted boundary

0 0.4 0.8 1.2 1.6 2.0km

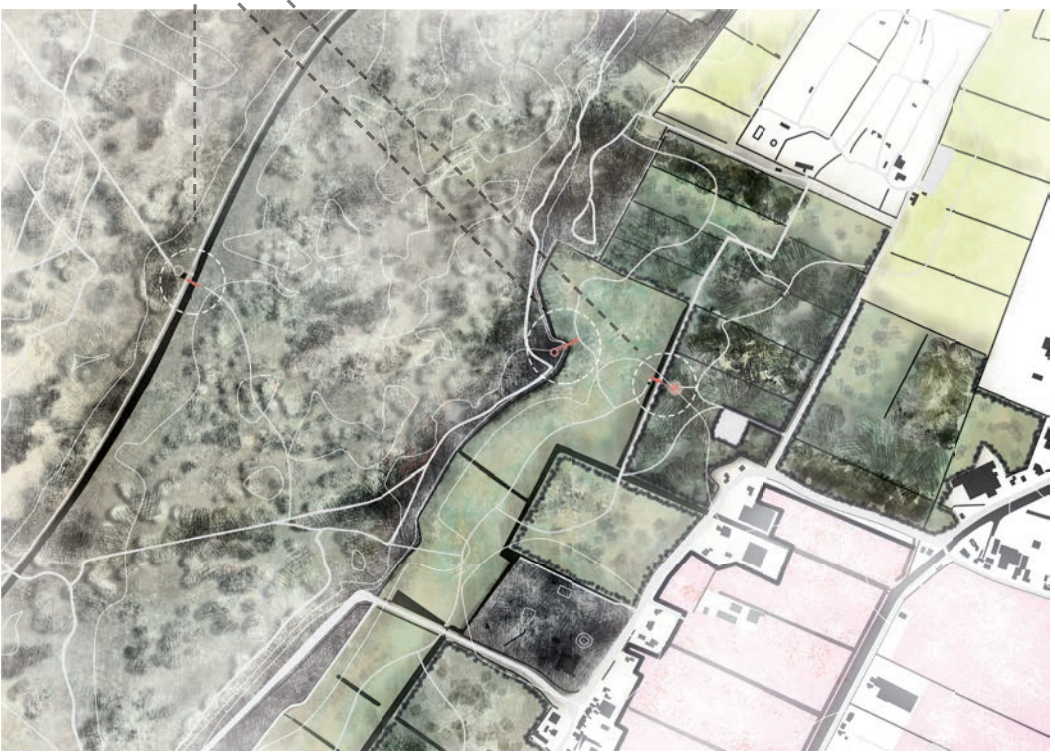
3.3.1 Further growth of the forest, reassessment of hybrids

In 30 years, the second agricultural plots that are let grown into forest are now 15 years old. It is then almost a young forest. There is now unrestrained growth of 30 years, and growth of 15 years. This is the moment that the third set and last set of agricultural plots is not maintained anymore. We have helped the wetlands a hand by introducing species of the molinia meadows.

On top of that, there is a reassessment of the hybrids that were placed thirty years ago. The French oak that was used is now weathered and should be renewed. Some hybrids are not relevant anymore and therefore left over to be colonised fully by nonhumans. Others are renewed in the same manner that they are now, or in a different way.

At this time, like the previous, there are likely to be less fallow deer (Dama dama) in the area. Therefore, there might be a denser growth of forest. Since the deer do not eat all the seedlings and undergrowth.

Renewed & Changed hybrids



Design drawing 17 - 1:5000: Moment 3 - First and second patches are growing, third patch is let go. Wetlands are poor in nutrients. New hybrids are made

Wetland

Biological flower bulb fields

Remnant of Oosterkanaal - no pumping

Planted boundary forest

Pathway visitor

Pathway maintainer

Grassland polder

30 year old forest

15 year old succession

Beginning growth

Parking lot

0 100 200 300 400 500m

3.3.2 Different transitions – different hybrids

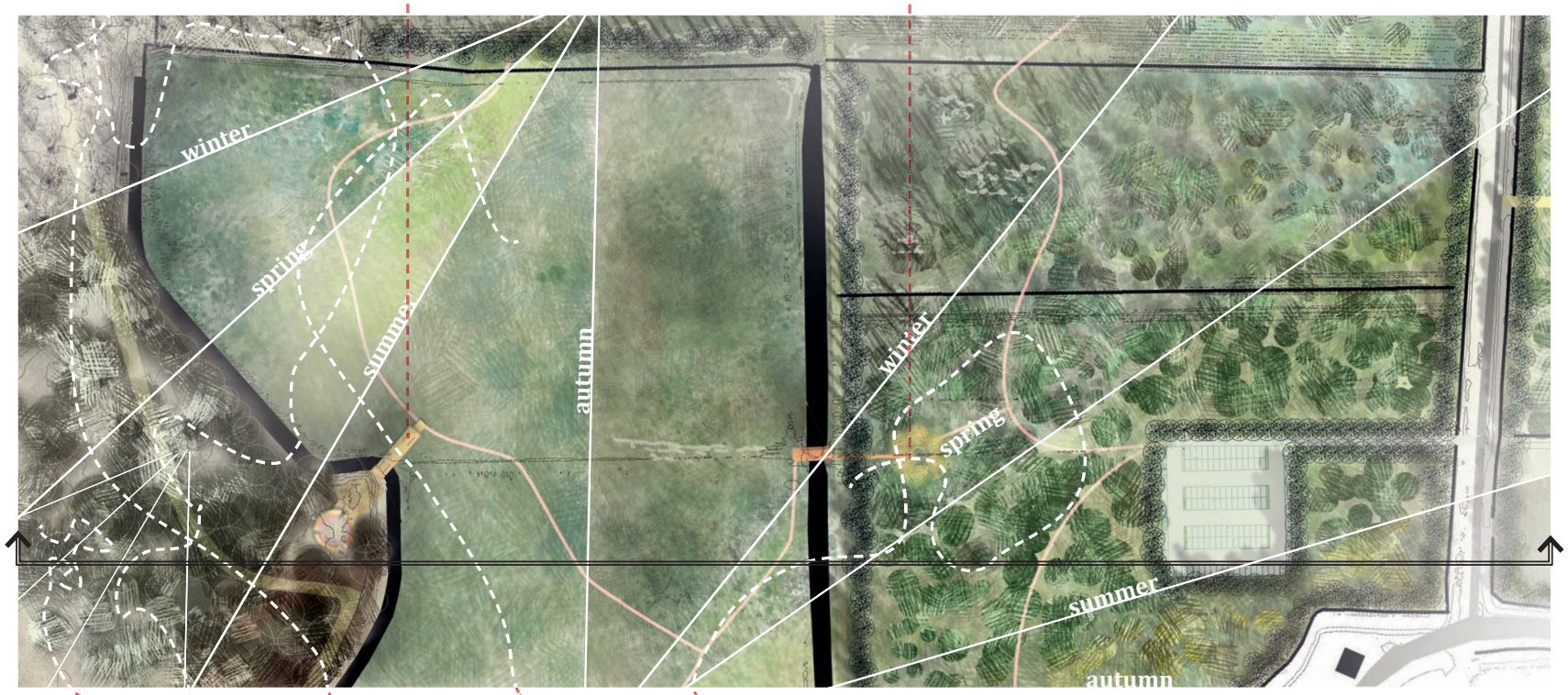
At this scale, it is visible why hybrids change. The forest edge at the west side changes, since there might be more forest growth. On top of that, there is now also a forest at the landscape as being. Therefore the transitions change. What was once a crossing, is now moving from an introvert to an extrovert landscape and vice versa. The hybrids that need to be changed anyway since they are at the end of their lifespan, can now respond again to the changed transition of the landscape.

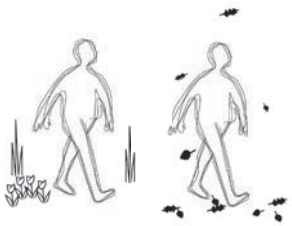
human forest movements

hybrids of condensed movements

human wetland movements

human wet forest movements

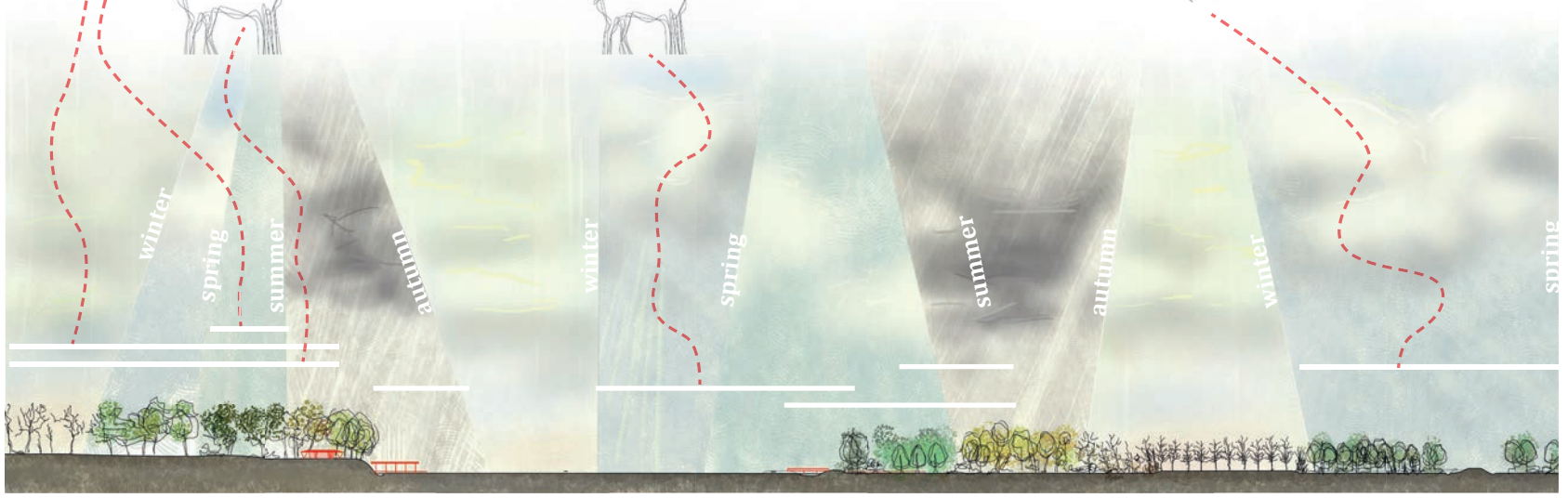




New movements we relate to

corresponding nonhumans

horizontal movements



Vertical movements

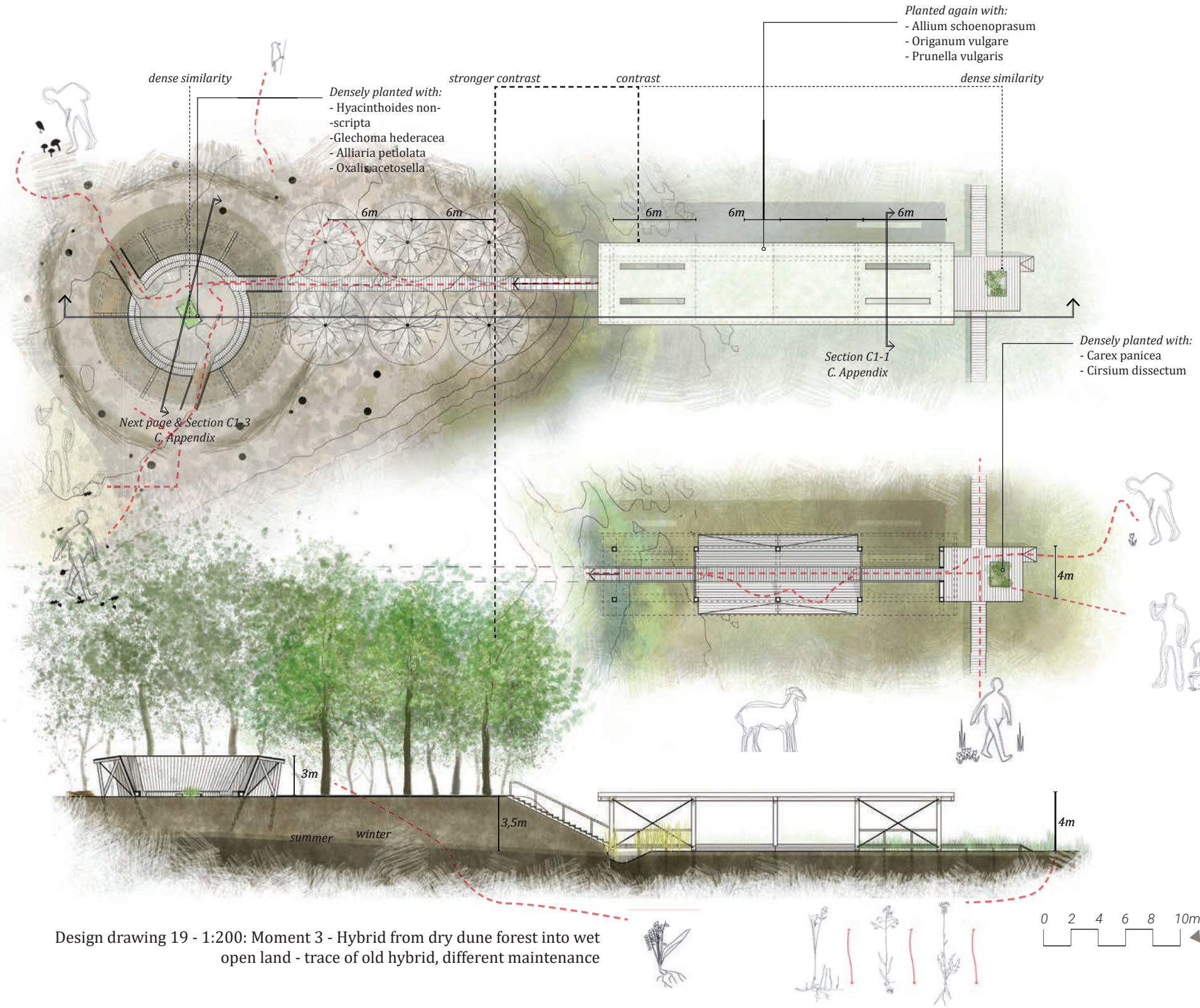
Carex panicea

Cirsium dissectum

3.3.3 Only some new nonhumans but different amounts

By thirty years, there will likely grow more of the species of the molinia meadows such as the meadow thistle (Cirsium dissectum), and grasslike sedge (Carex panicea). The fragility of the land, makes that a only a smaller herd of sheep can graze here. Sheep can however help here, since they can help in maintaining nutrient poor areas (Ecopedia, c). Whereas at the first now, the sheep did only help to some extent, here they are more important.
The fallow deer are in lesser numbers. The nightingale will likely find more places to stay in the wet forest, especially along the edge where there are many bushes.

Design drawing 18 - 1:1000: Moment 3 - New and existing movements, and new hybrids
NB: all nonhumans are named in design principle 13 & 23, except from Carex panicea & Cirsium dissectum

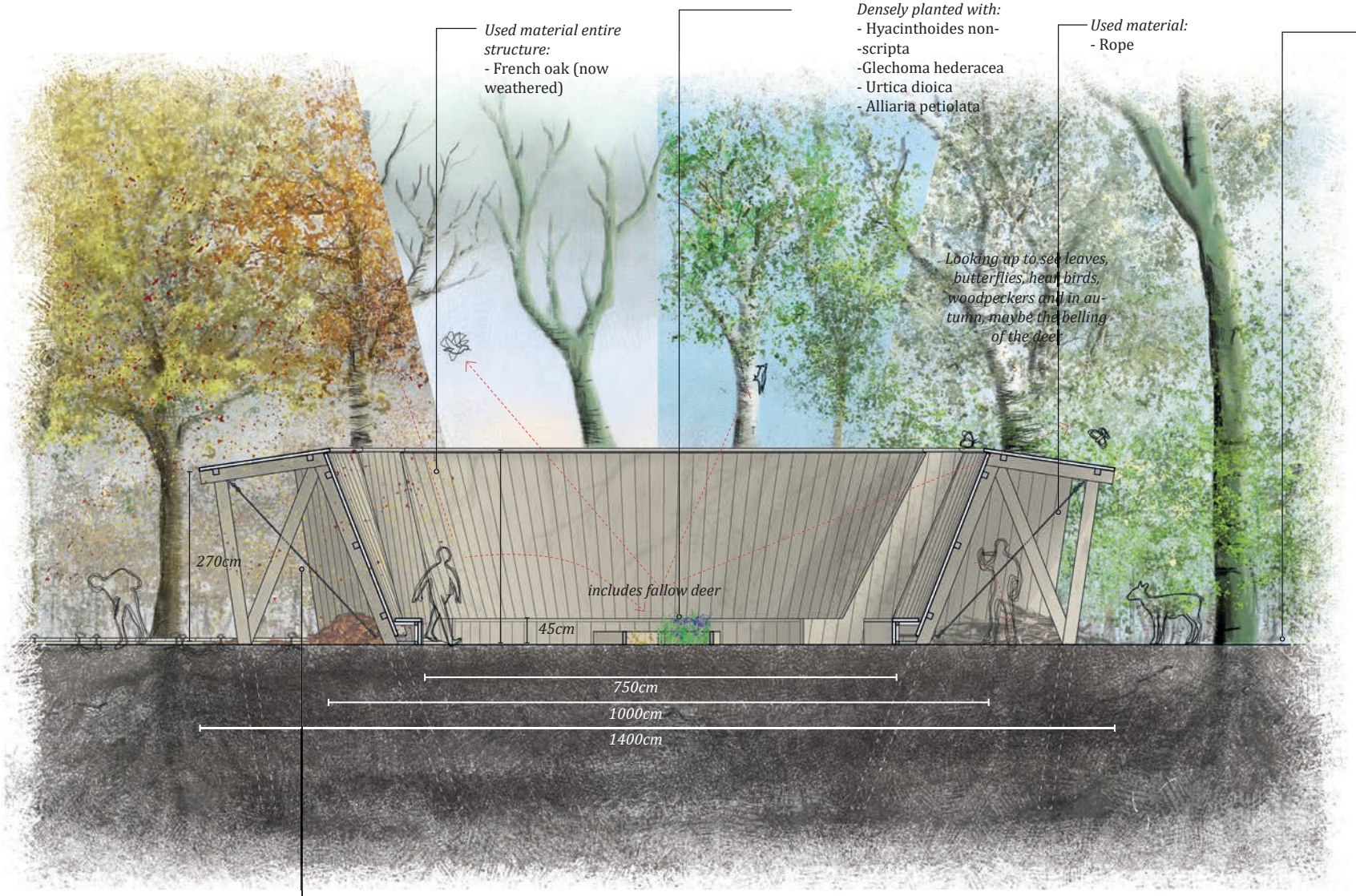


Design drawing 19 - 1:200: Moment 3 - Hybrid from dry dune forest into wet open land - trace of old hybrid, different maintenance

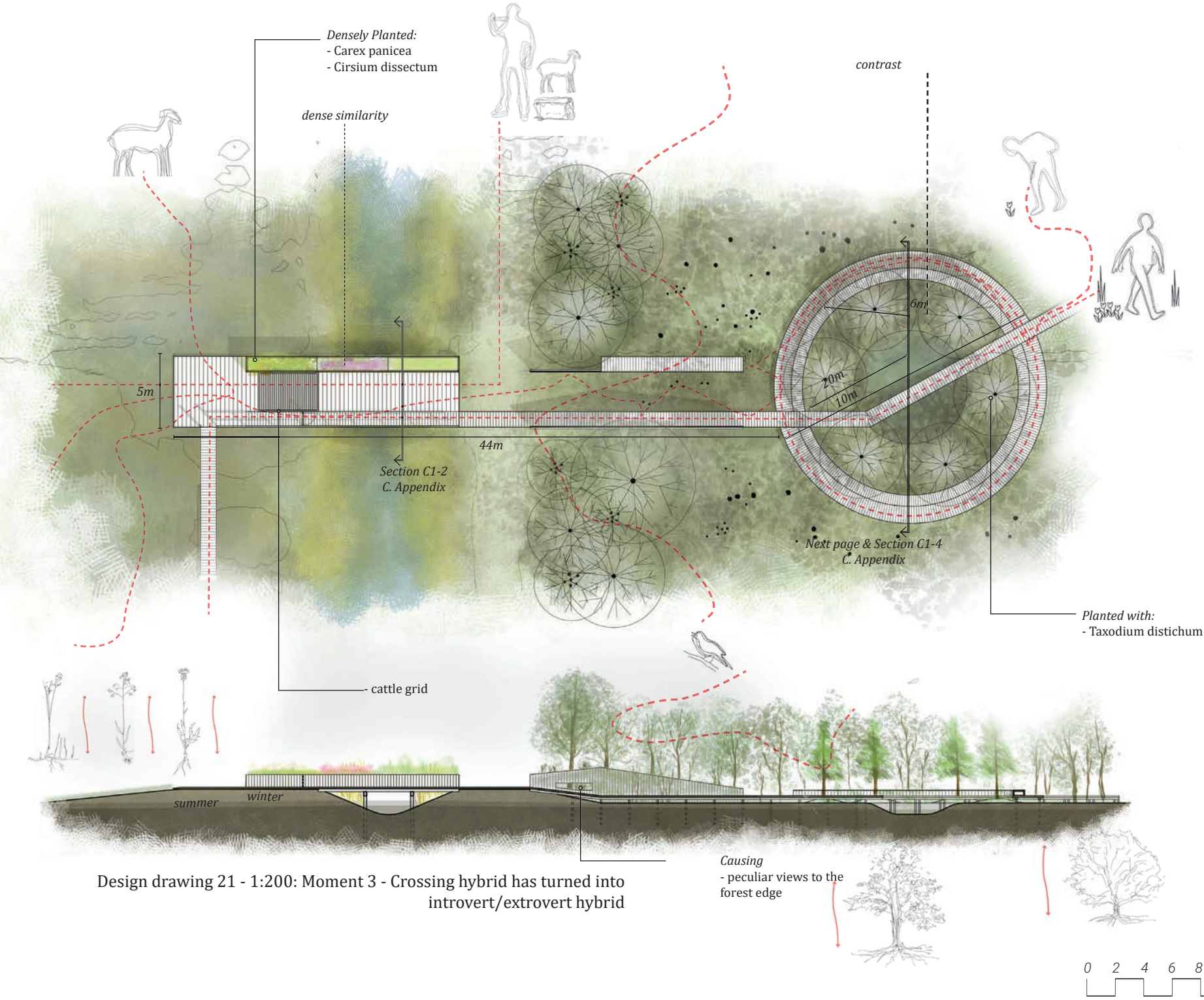
3.3.4 Old materials of the previous hybrid and small nuances in the hybrid

All the nonhuman movements meeting at the hybrid stay more or less the same. All human movements also stay more or less the same, since the transition is still from an introvert landscape into an extrovert landscape. The material that is left over and cannot be reused within the hybrid, is positioned in a circle around the hybrid, that can be overgrown and colonised by nonhumans.
Two small things at the hybrid change: the infill of the rectangles. Whereas the first idea of the rectangles was to research plant growth. This is now not necessary anymore, since the fallow deer (Dama dama) does not overpopulate the dunes at this time anymore. The plants used in the rectangle downstairs are now also likely to be found within the fields. Therefore, the rectangles have a different function. To the human maintainer, the rectangles are now not valid anymore. The rectangles therefore at this time are turned into densely planted representations of the forest, and the wetlands.
The movements of maintainers at this time in the forest, might need to deal more with the aging of forest. They cut wood in order to renew parts of the forest. The area around the circle can be used for woodcuttings, in order to attract multiple nonhuman movements to the circle.

NB: See for basic construction drawings the appendix



Design drawing 20 - 1:50: Moment 3 - Circle rebuild, slight nuance



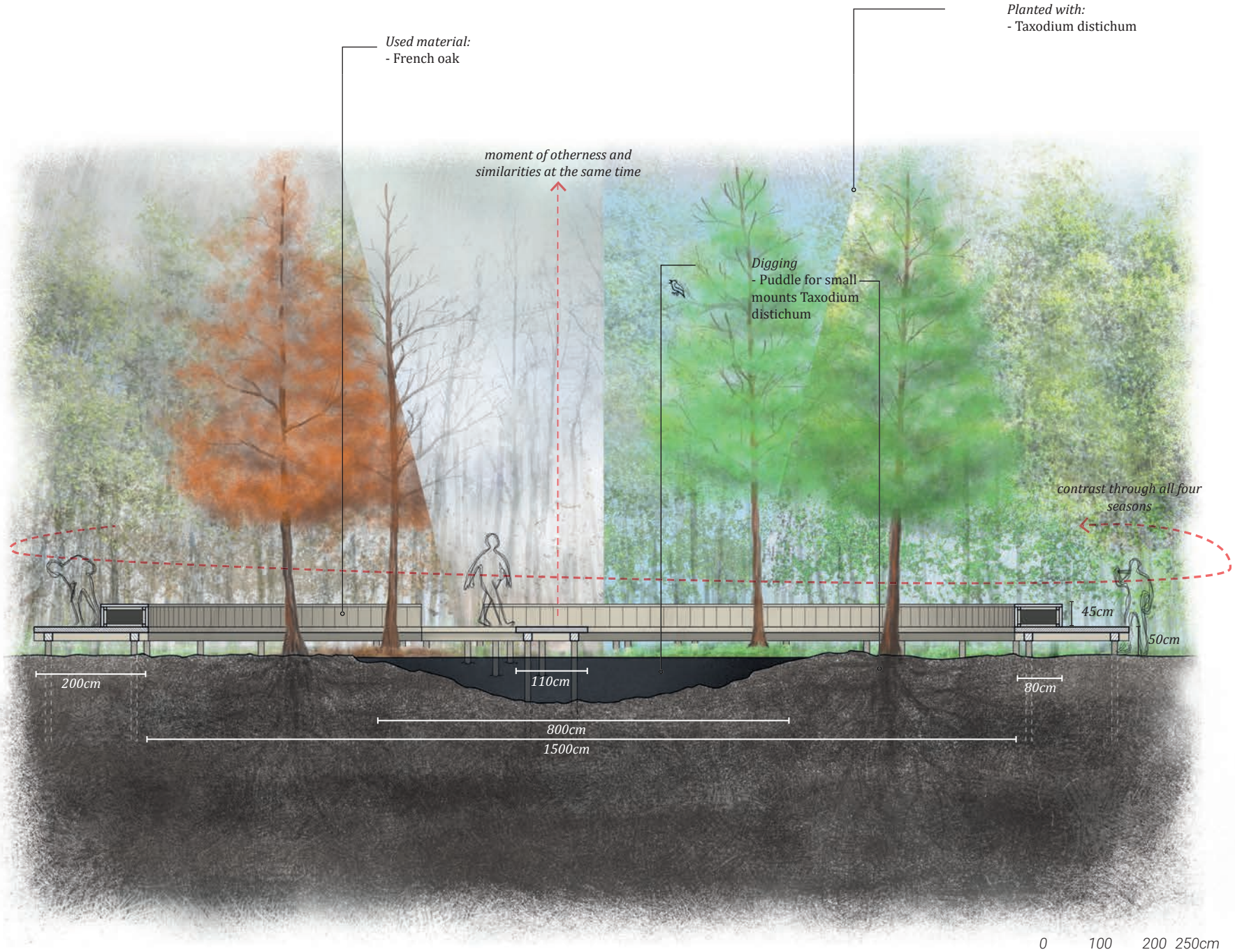
Design drawing 21 - 1:200: Moment 3 - Crossing hybrid has turned into introvert/extrovert hybrid

3.3.5 Changed hybrid and decay

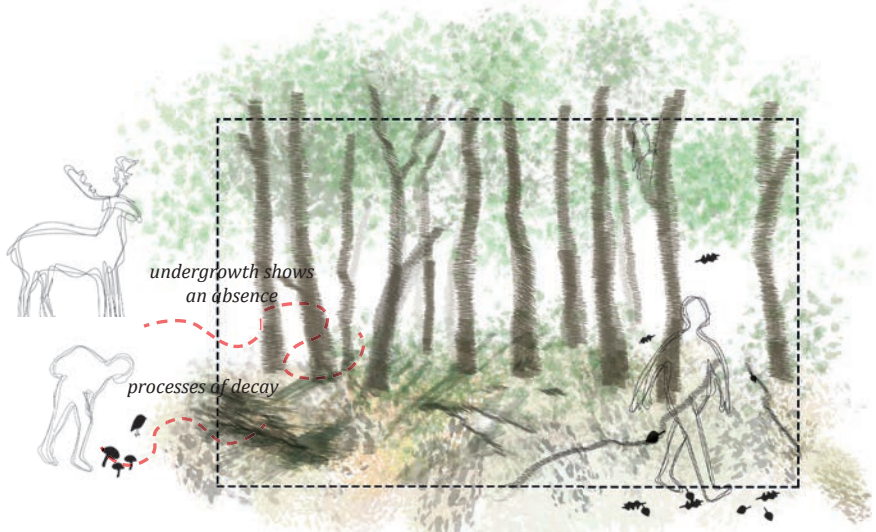
The hybrid of what first was on a crossing, now goes from an introvert to an extrovert landscape. The hybrid therefore also follows the shape of circle, and line. Therefore, the line of the crossing stays. A part of the structure, that focussed specifically on the forest boundary stays, but is not renewed. It is left to decay. The bridge into the open landscape is still similar to the previous. But like the rectangle, the planters also form a dense shape of nature.

The circle is a place where you can sit and look into the still dense forest. Within the circle, six bald cypress (Taxodium distichum) are planted. These trees are used because they contrast the naturally grown forest in shape, texture, smell, and colour. Since its a coniferous tree that looses its needles and colours bright orange in autumn (Janssen, 2013). Therefore the circle gets both a mystical atmosphere, and it can also heighten the awareness of the forest around it.

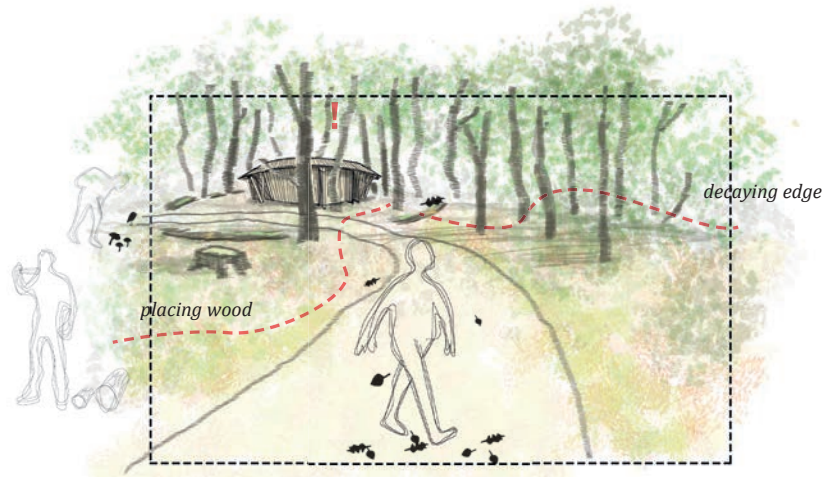
NB: See for basic construction drawings the appendix



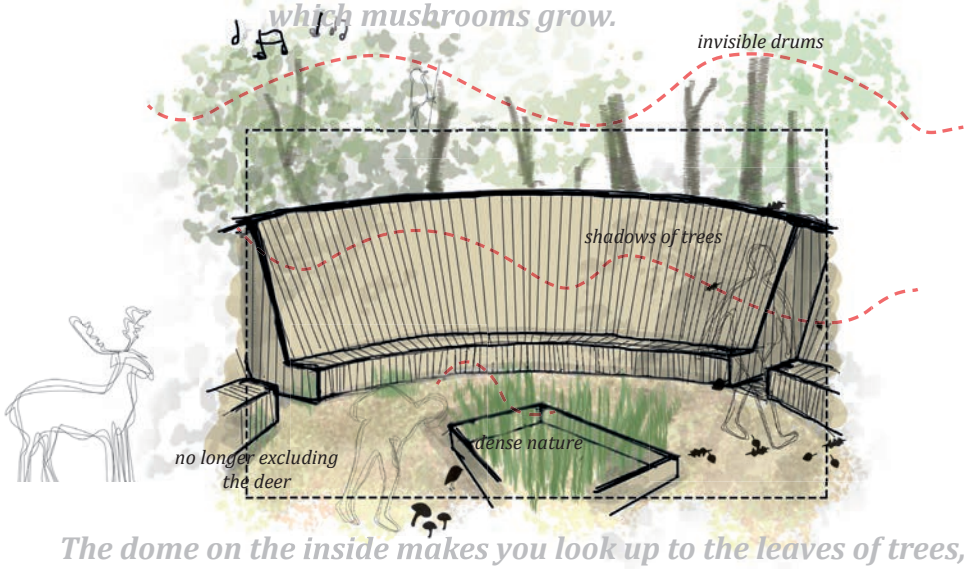
Design drawing 22 - 1:50: Moment 3 - New circle of contrasting trees



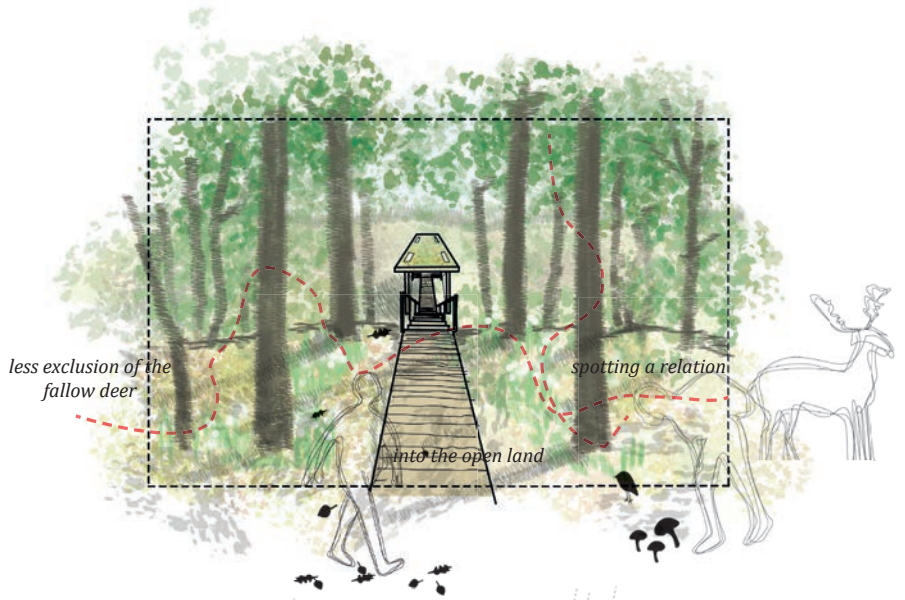
You move through a forest with sturdy trees.



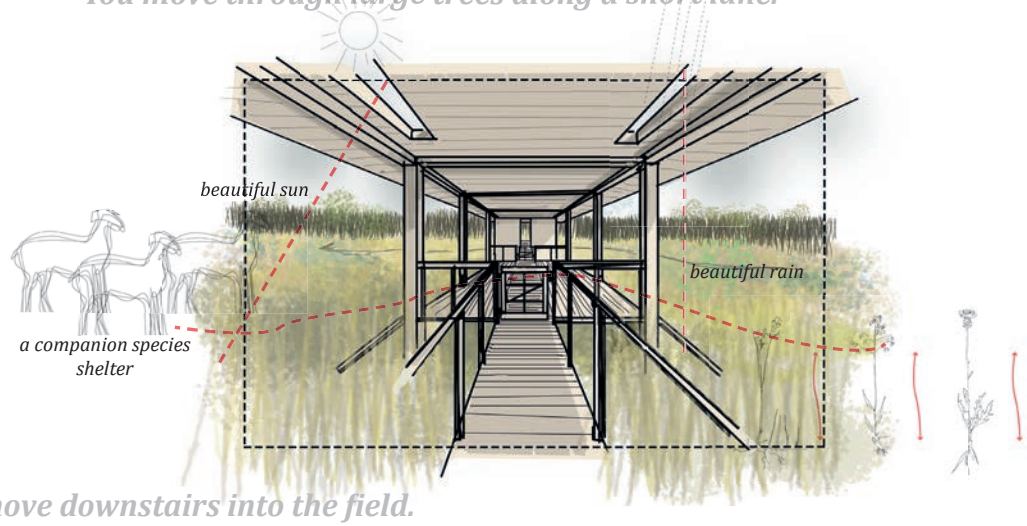
In the distance there is a dome. There is a circle around it on which mushrooms grow.



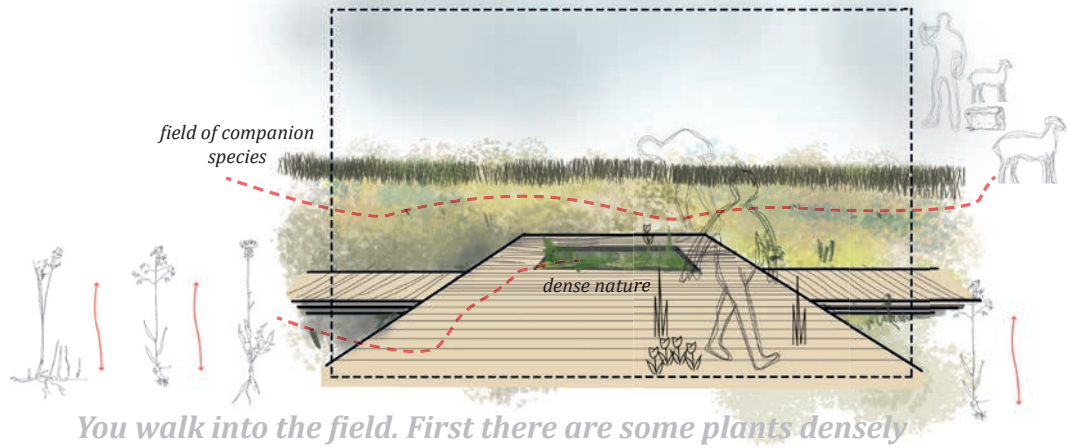
The dome on the inside makes you look up to the leaves of trees, and down. There is the sound of birds.



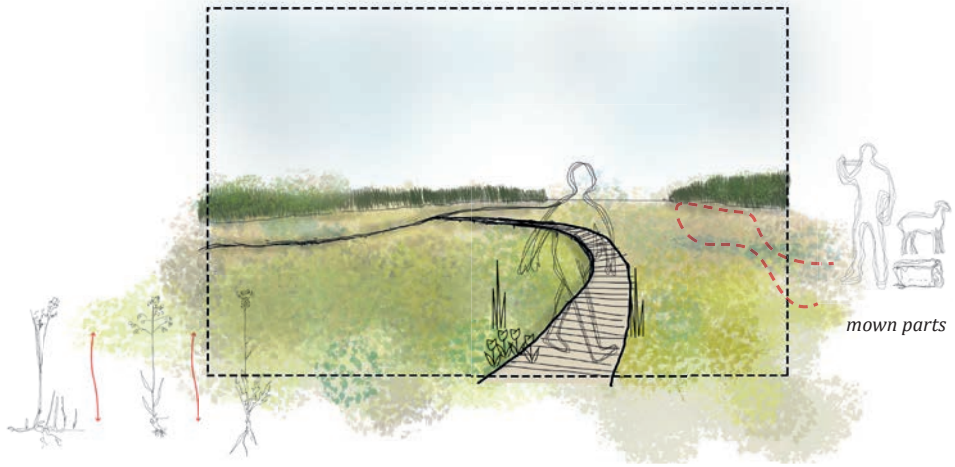
You move through large trees along a short lane.



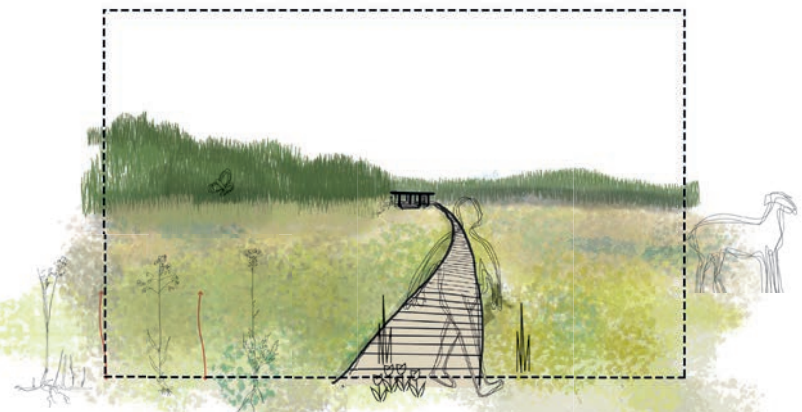
You move downstairs into the field.



You walk into the field. First there are some plants densely planted. They resemble the colours of the field.



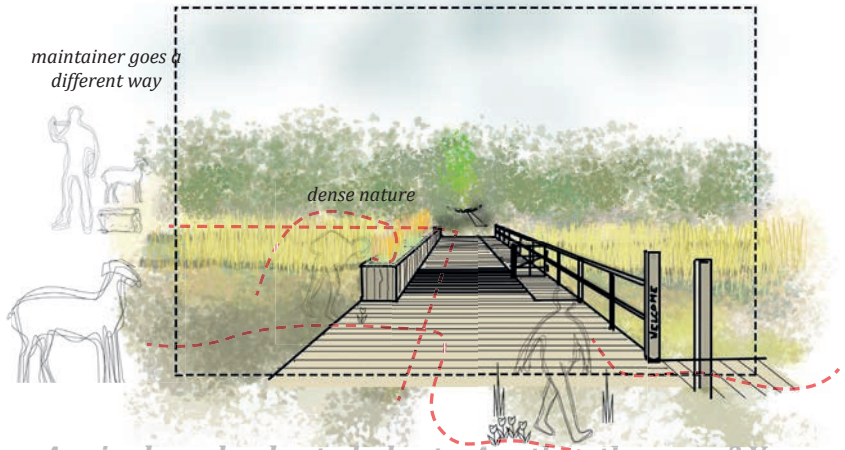
You walk into the open field. Someone is watching a plant in detail. Is it special?



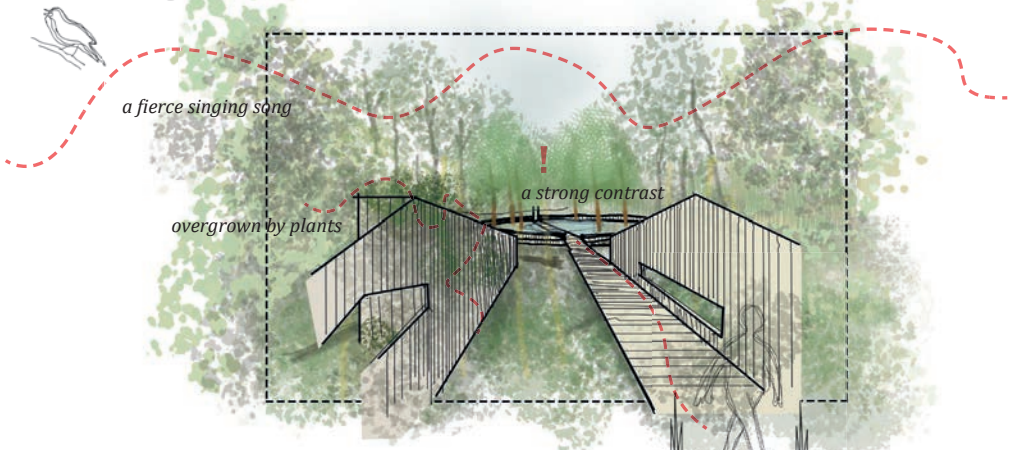
for a second you look around and see where you come from...

and then you walk further along the path towards a bridge

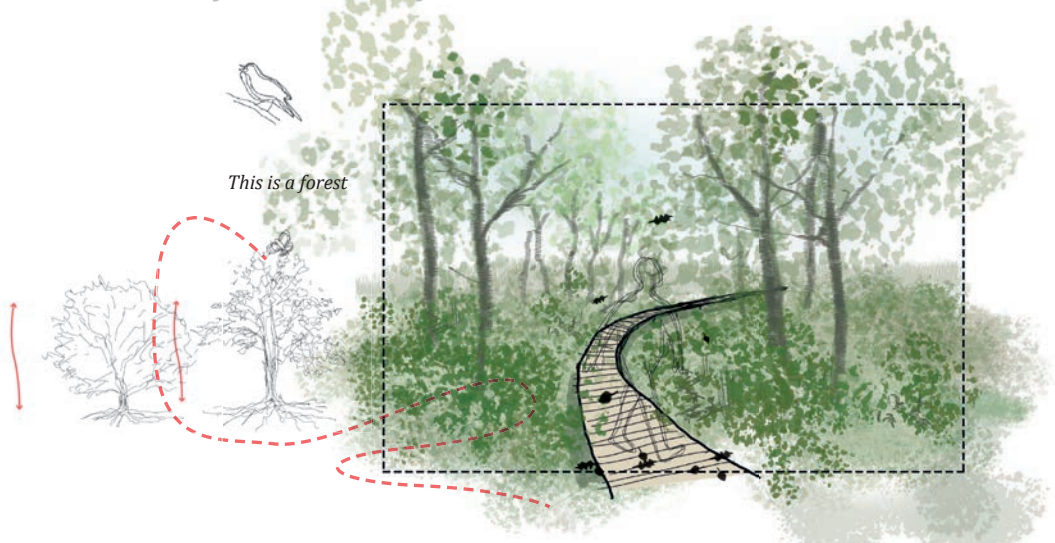
Design drawing 23 - Moment 3 - Series of new and old encounters and reassessed hybrids



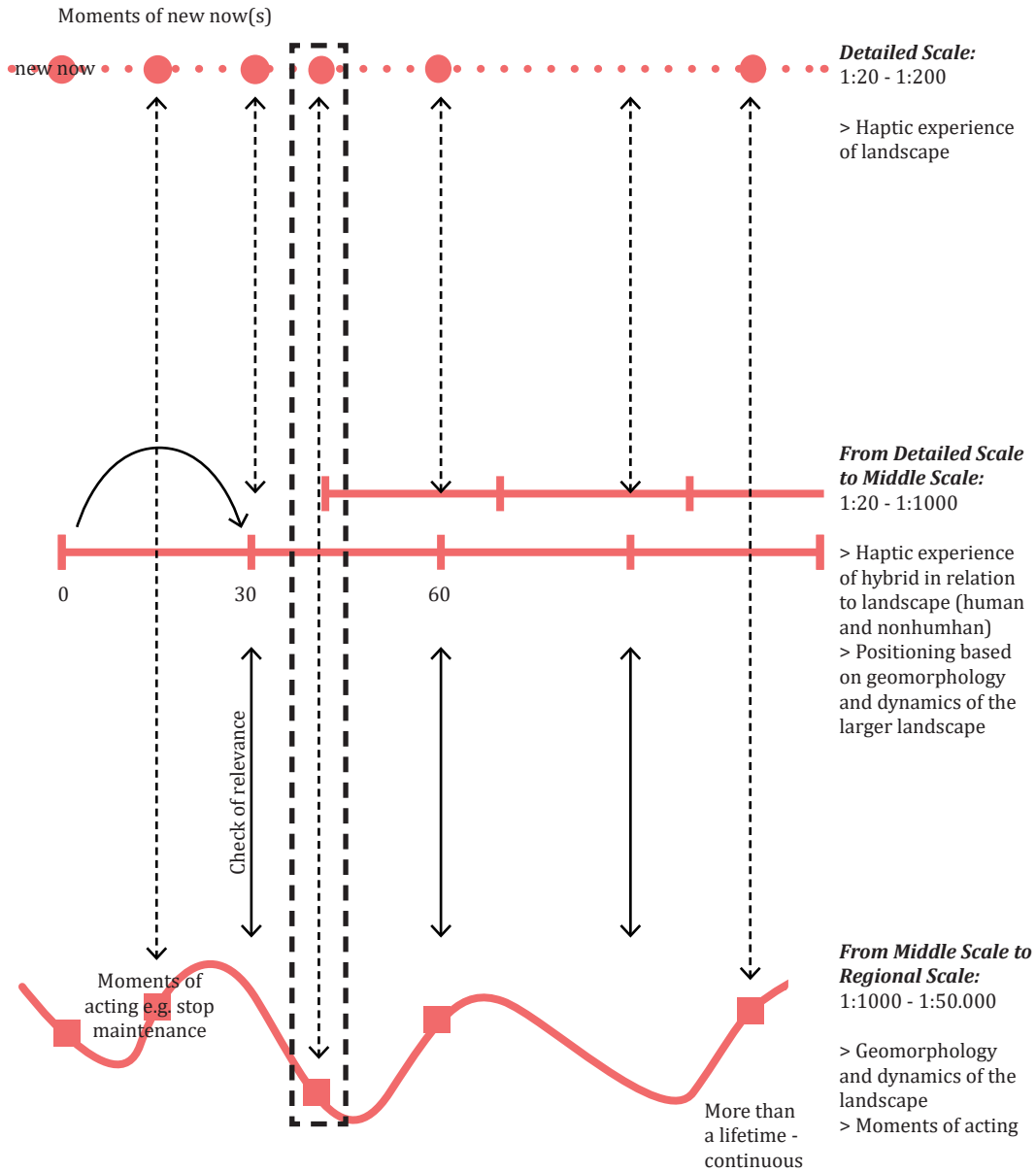
Again densely planted plants. Are they the same? You cross the bridge, and decide to walk over the cattle grid just for fun.



You walk along a decaying wall. There is a lot of plants growing over it. In the distance you find a quiet circle. You watch a bird flying into the dense forest around you.



You move after the bird along the path into the forest



Timescale

Scale scale

3.4 MOMENT 4: NOW IN 50 YEARS

We are at the now. The forest is now partly mature. We relate to the nonhumans that are there. In this chapter I explain them from the large scale (1:20.000) to the small scale (1:50).

Time of making

Time of experience

North Sea

Sand

Duneforest

Sea buckthorn habitat

Heather habitat

Amsterdamse Waterleidingduinen

Flower bulb fields

Nitrogen

Estates

Fallow deer

Transition

Movement

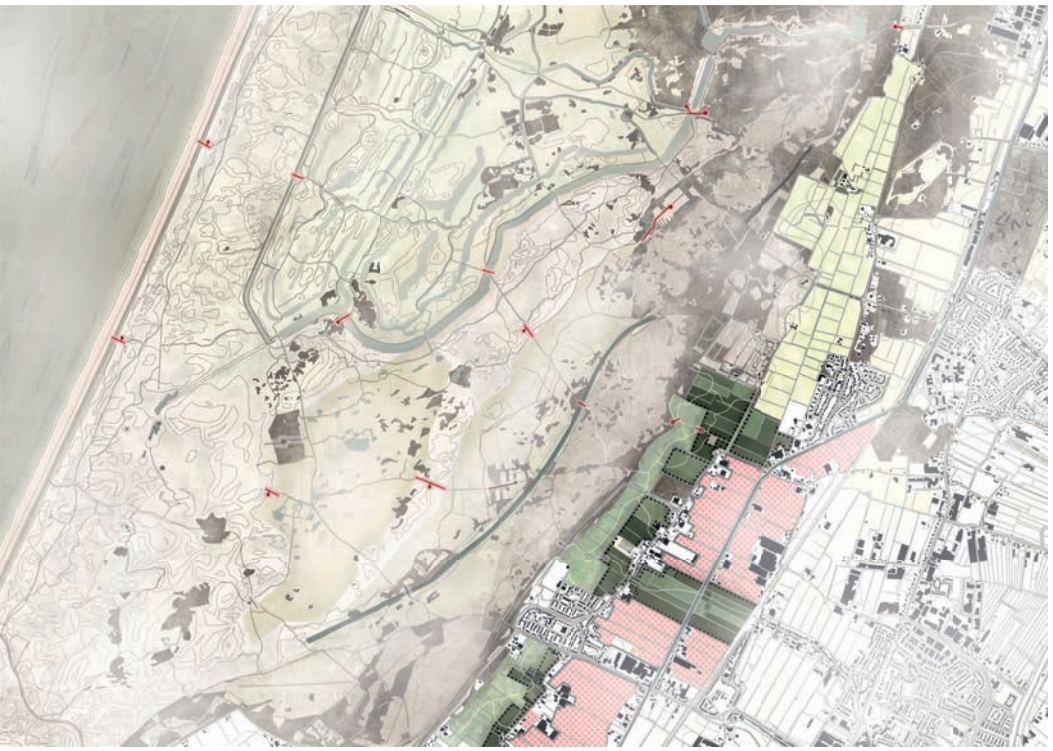
Human

Nonhuman

Abiotic

Landscape as being

Water infiltration system



Design drawing 24 - 1:20.000: Moment 4 - Fully grown forest, new hybrids around the water infiltration system

- Hybrid crossing
- Hybrid introvert - super extrovert
- Hybrid introvert - extrovert
- Hybrid left to decay
- Water infiltration system
- Dune
- Forest
- Biological flower bulb fields
- Savannah
- Wetland
- Grasspolder - wetter
- First forests
- Second forests
- Third forests
- Oosterkanaal
- New waterway for flower bulb fields
- New paths
- Planted boundary

0 0.4 0.8 1.2 1.6 2.0km

3.4.1 A forest grown

At now in 50 years the youngest agricultural plots will likely have grown into young forest, since there is no mowing regime at the last plots for the last 20 years by now. The first plots of forest are now 50 years old. This means that they are mature.
Looking at the history of Amsterdamse Waterleidingduinen (see history analysis of chapter 2.2), it is likely that by this time, the water infiltration system is renewed. There are therefore shifts in hybrids.

3.4 MOMENT 4: NOW IN 50 YEARS

Design drawing 25 - 1:5000: Moment 4 - Mature forest, and young forest. The new landscape as being is a complete forest.

0 100 200 300 400 500m

- Wetland
- Biological flower bulb fields
- Remnant of Oosterkanaal - no pumping
- Planted boundary forest
- Pathway visitor
- Pathway maintainer
- Grassland polder
- 50 year old forest (mature)
- 35 year old forest
- 20 year old forest (young)
- Parking lot

3.4.2 Grown forest, aging forest and hybrids

The last agricultural plots of forest will likely have the same species as mentioned before (grey willow (Salix cinerea), common alder (Alnus glutinosa), common aspen (Populus tremula), etc.). But at the mature forest, other species are now present as well, such as the common oak (Quercus robur), and hybrid oak (Quercus x rosacea) (Ecopedia, d)...

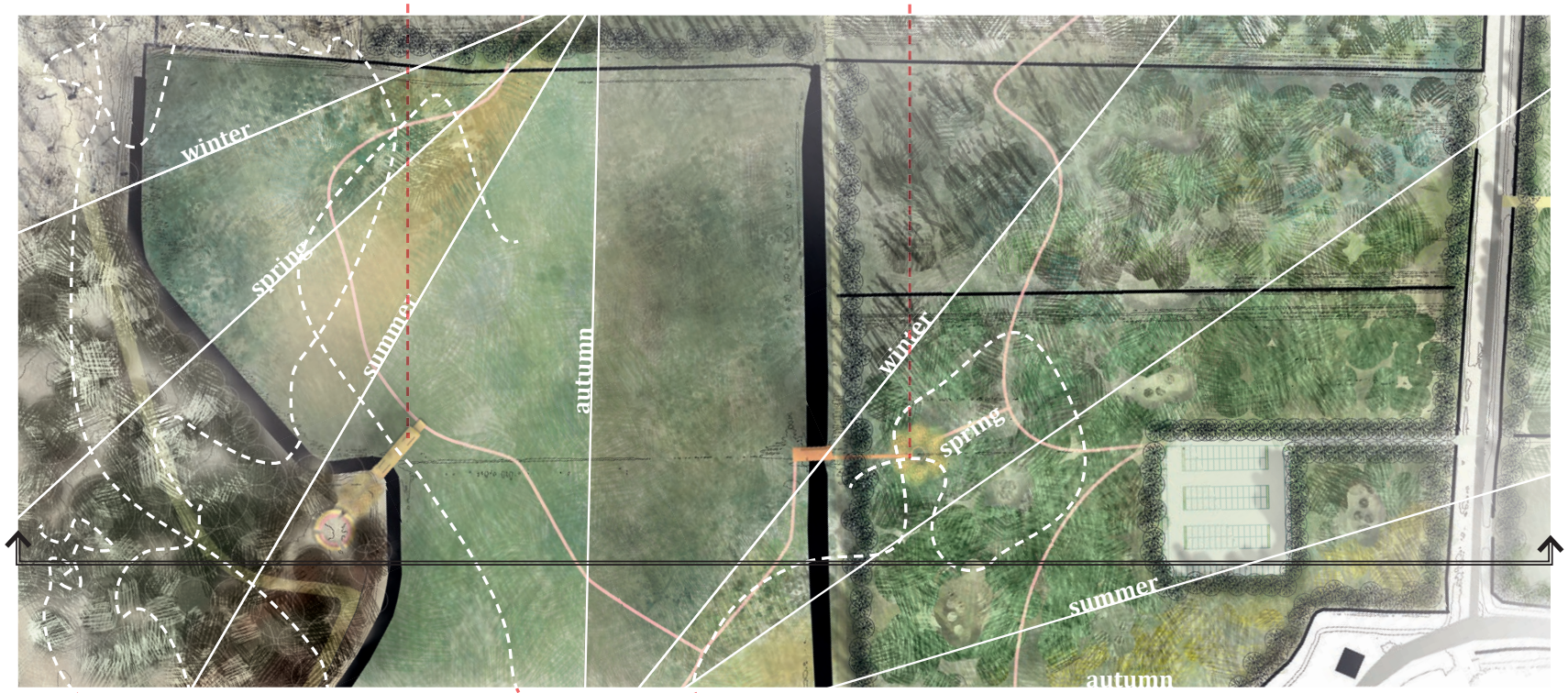
human forest movements

hybrids of condensed movements

human wetland movements

human forest movements

New movements we relate to



corresponding nonhumans

horizontal movements

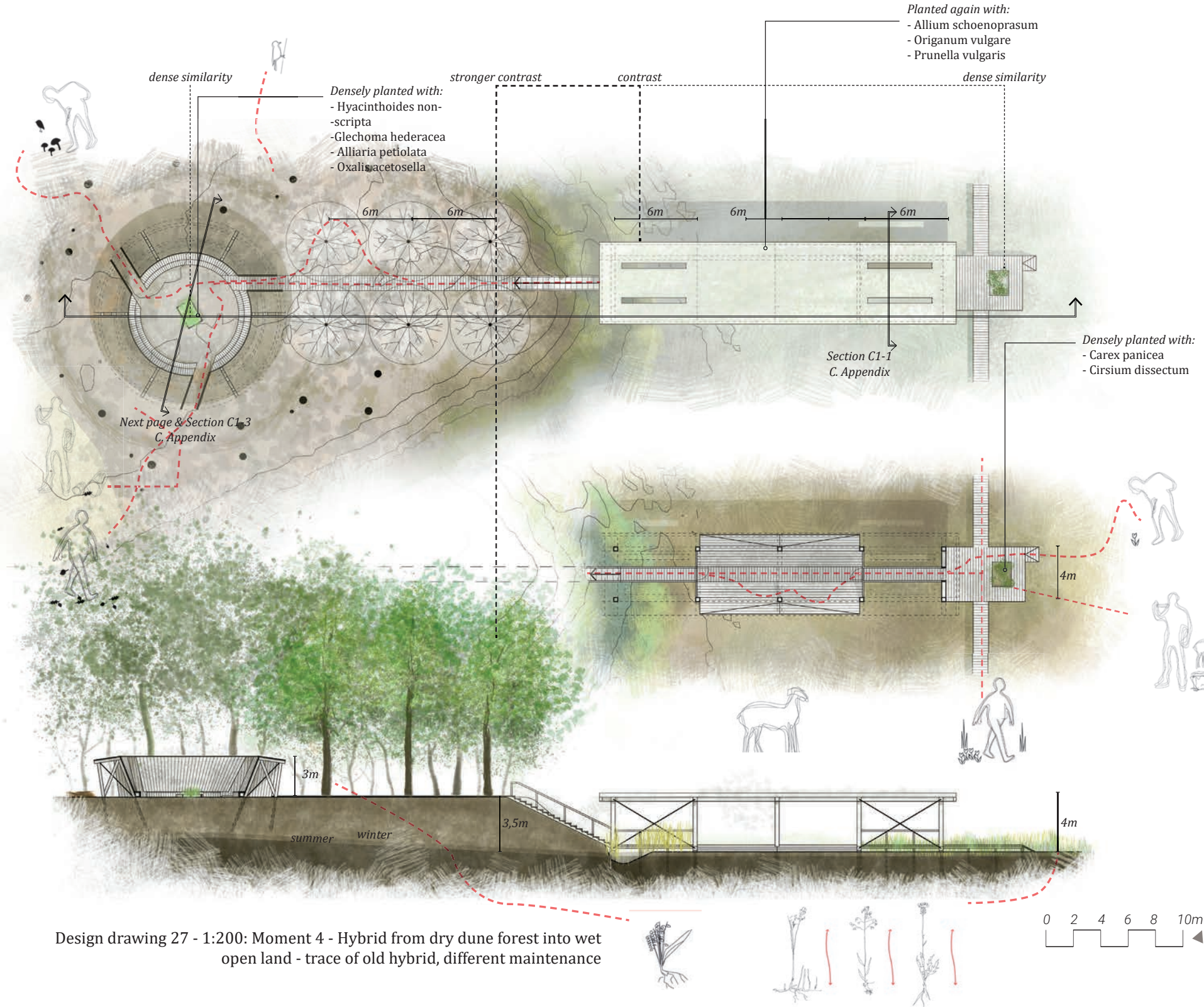
Vertical movements

3.4.3 Some new movements at the site

As mentioned, there are some new nonhuman movements at the site. Human movements of the maintainer become less. At this moment all agricultural plots are grown into forest. The plots differ from each other in age, and therefore density and perception. So to some extent, the rooms that were once formed by the basis of agricultural plots, are still visible.

Within the forest we relate to some new nonhumans such as the mentioned common oak. However, most stay the same at this point in time.

Design drawing 26 - 1:1000: Moment 4 - Some new movements at the forest
NB: all nonhumans are named in design principle 13 & 23, except from Quercus robur in the wet forest

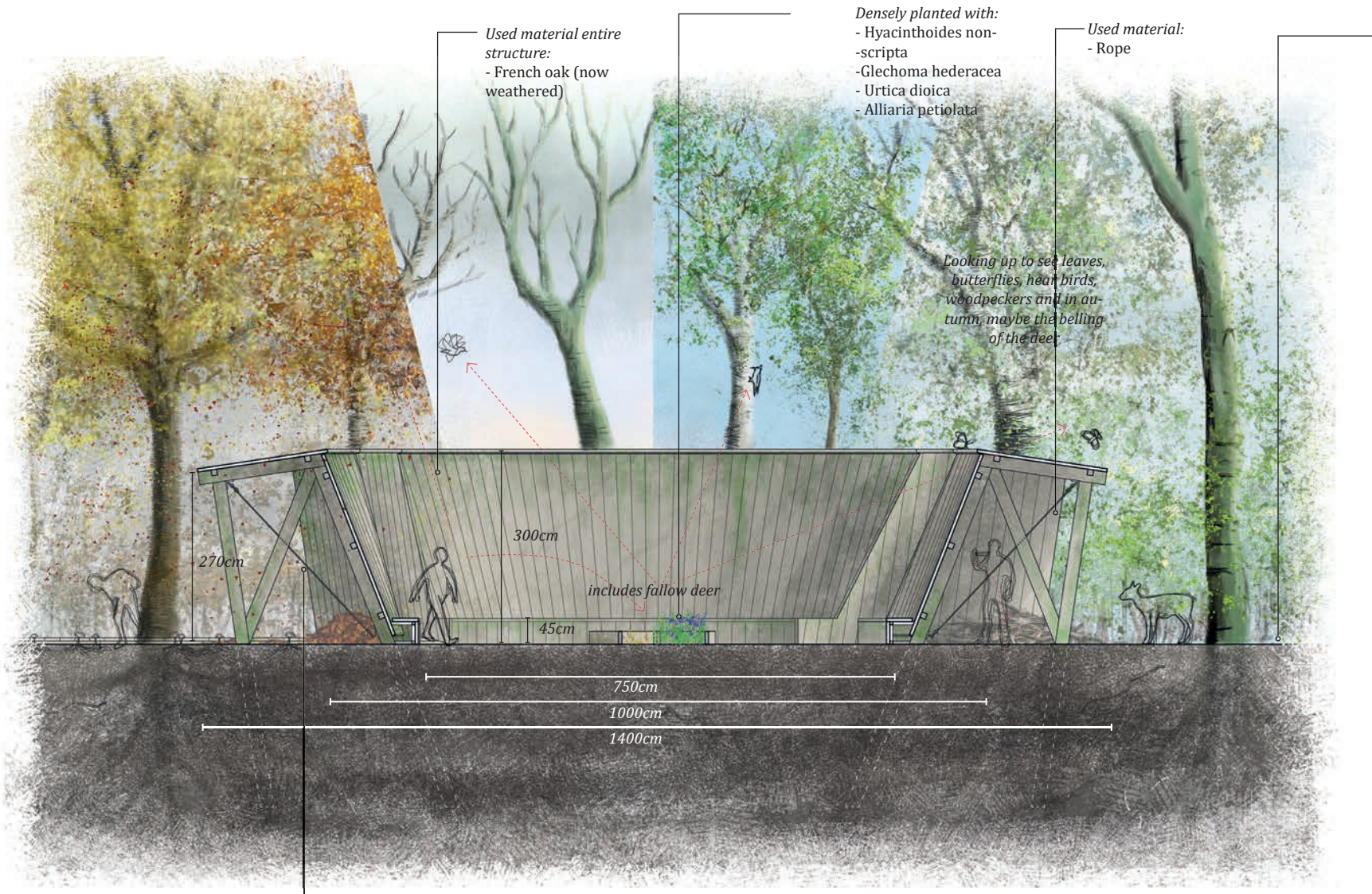


Design drawing 27 - 1:200: Moment 4 - Hybrid from dry dune forest into wet open land - trace of old hybrid, different maintenance

3.4.4 Again weathered hybrids

The hybrid weathers, similarly to what happened at 'now in 20 years'. The wood that was layed out in a circle, in the form of a wood crease, is taken over by fungi, and lichen, mosses, and beetles. The circle of used material decays further, leaving a trace in the landscape, by for instance wood sorrel (Oxalis acetosella) (Ecopedia, e).

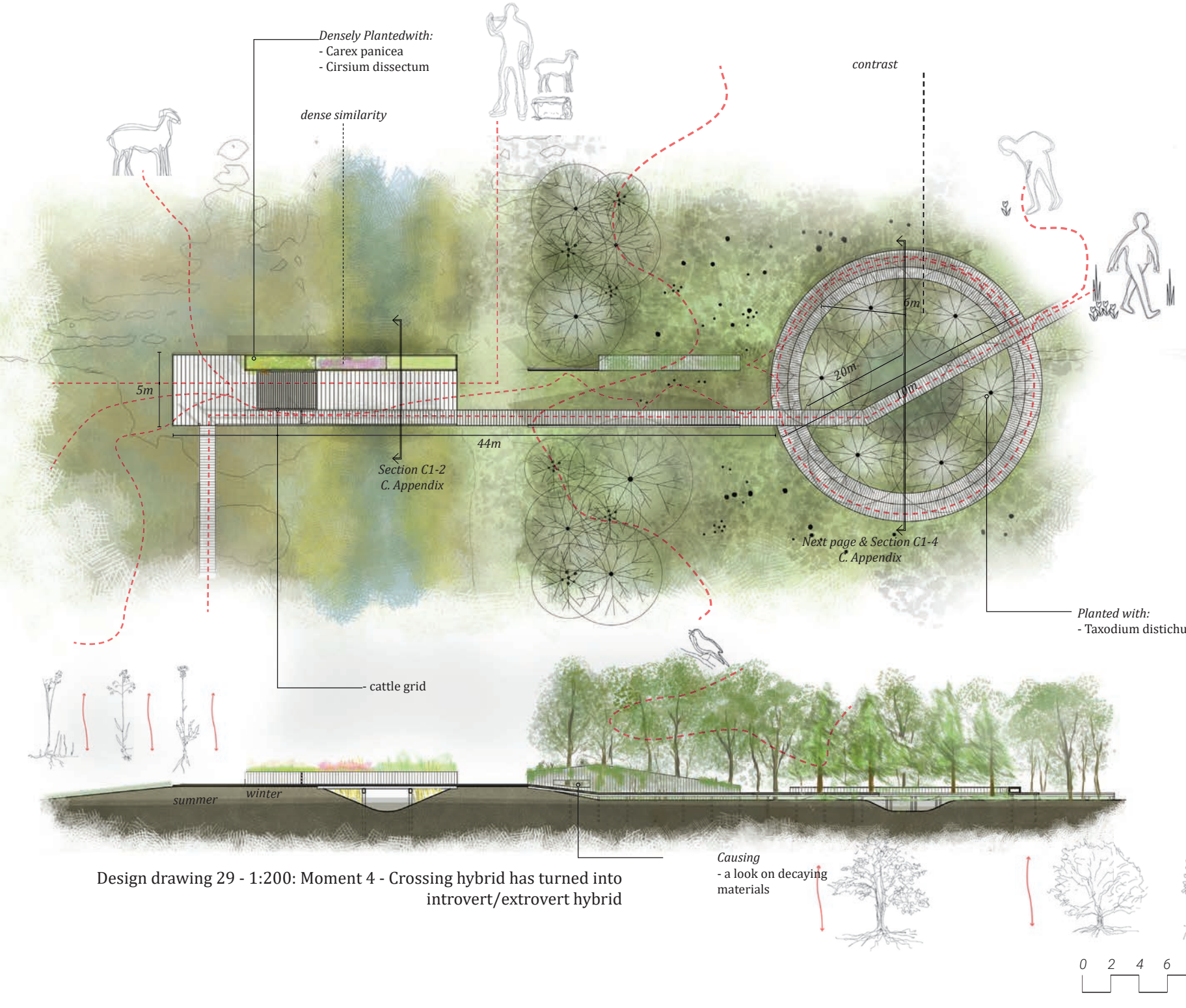
NB: See for basic construction drawings the appendix



Design drawing 28 - 1:50: Moment 3 - Circle weatherd, slight nuance

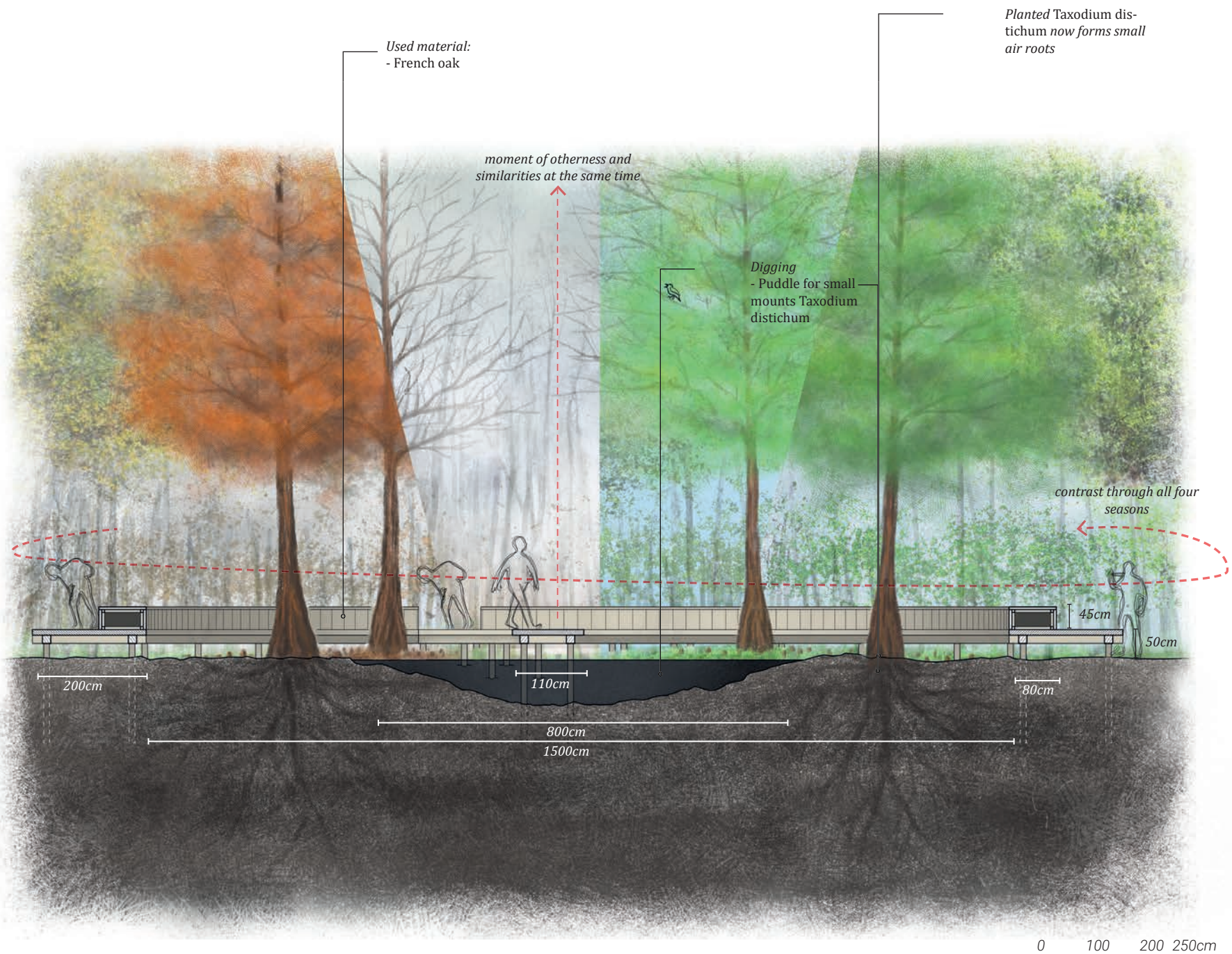
3.4.5 Woodwall with decay

The wall that was left to decay, is now – similar to the wood crease - likely to be overgrown by plants and mosses as well. The circle at the other hand, has taken a more important role than 20 years before. This is the case because, like the trees that grow around the circle, the planted bald cypress (Taxodium distichum) have grown as well.

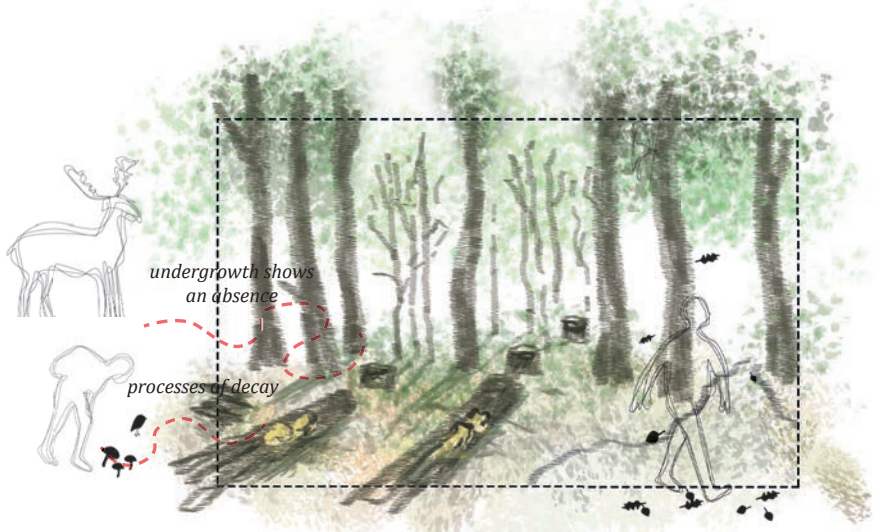


Design drawing 29 - 1:200: Moment 4 - Crossing hybrid has turned into introvert/extrovert hybrid

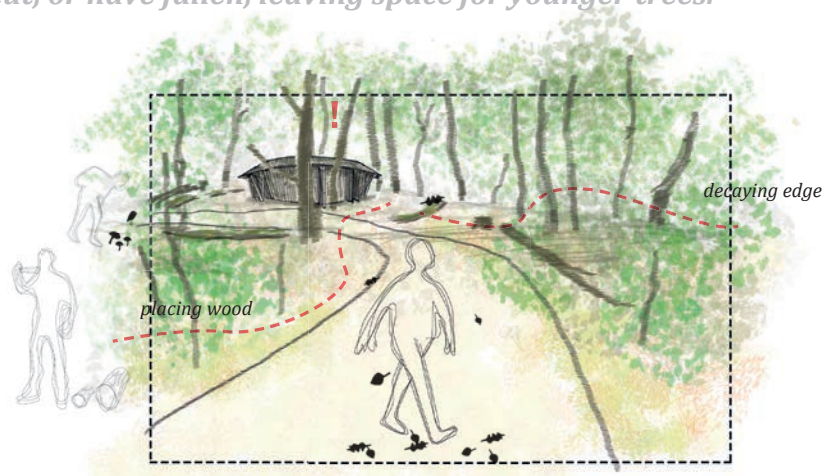
NB: See for basic construction drawings the appendix



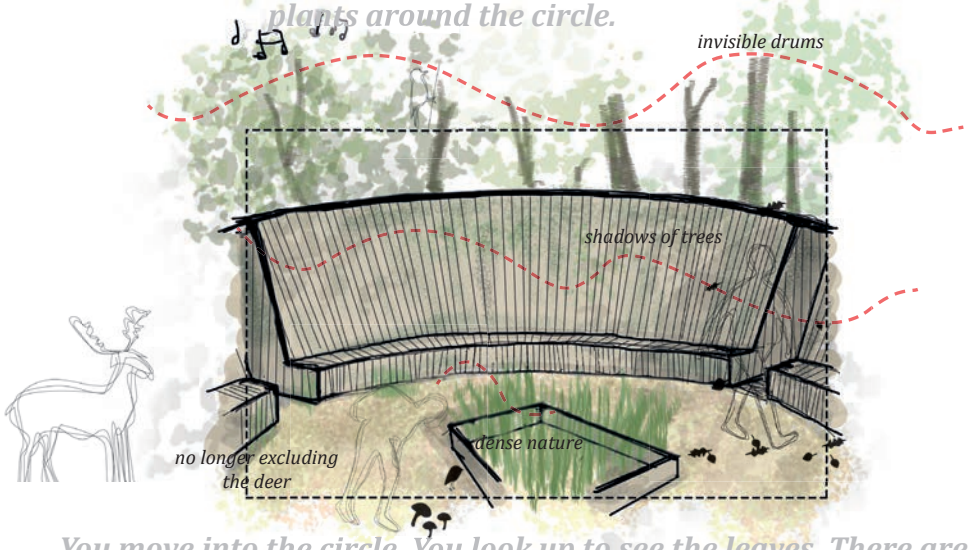
Design drawing 30 - 1:50: Moment 3 - Circle weatherd, slight nuance



You walk through an imposing forest. Some trees are cut, or have fallen, leaving space for younger trees.

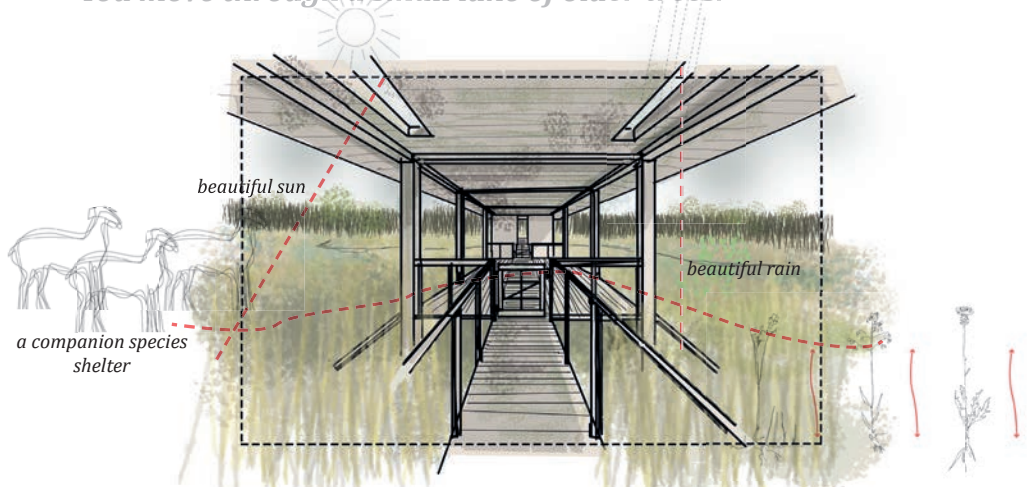


In the distance there is a dome. There is a line of mosses and plants around the circle.

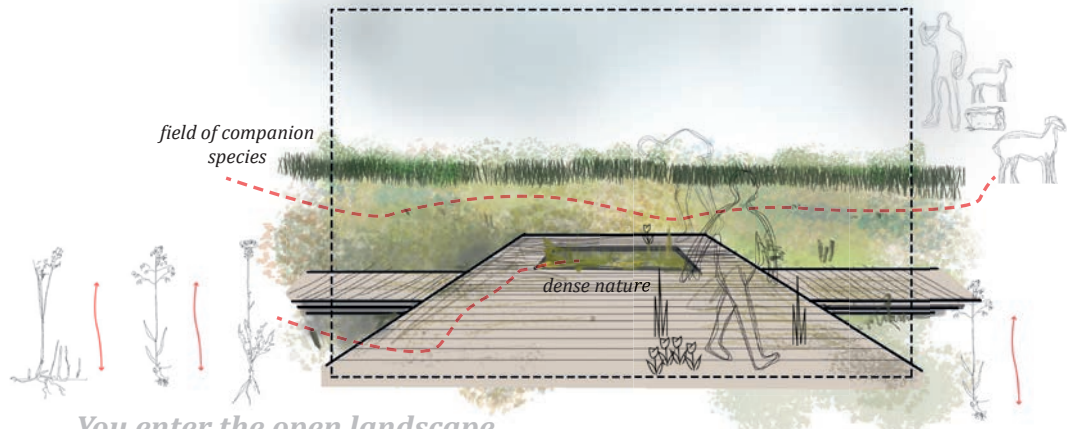


You move into the circle. You look up to see the leaves. There are some butterflies flying over the structure. There is the sound of birds.

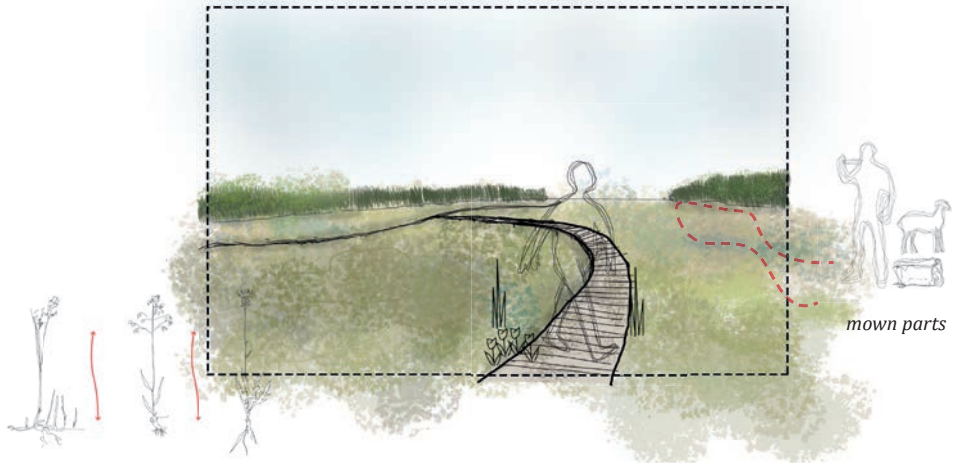
You move through a small lane of older trees.



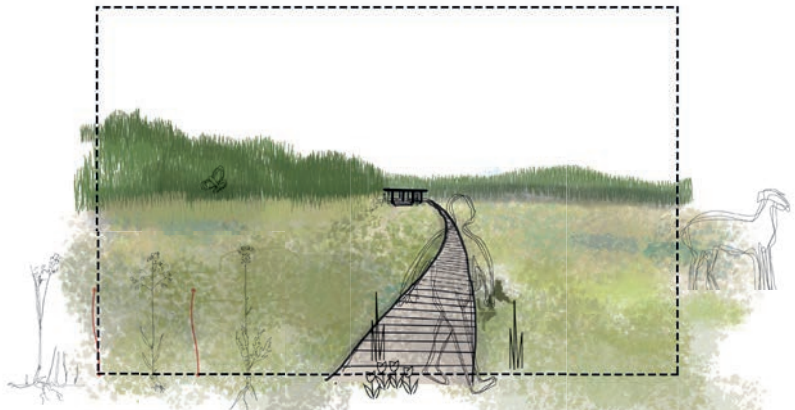
You walk down the stairs. You walk underneath the roof and you notice reeds and the holes in the roof.



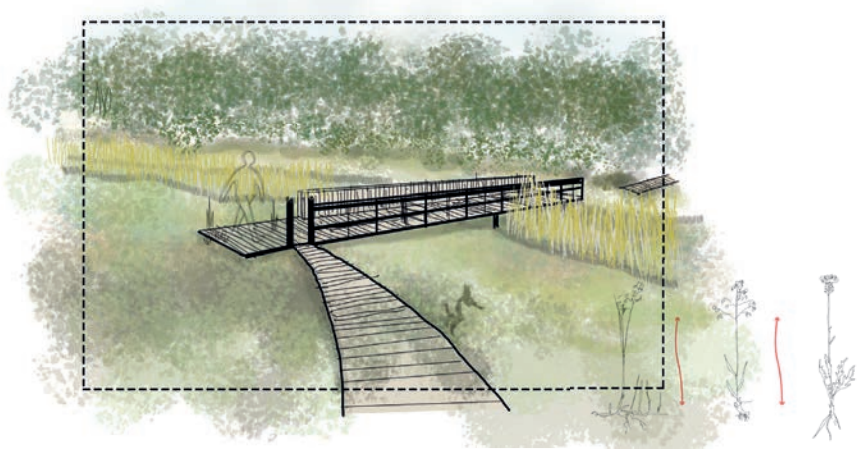
You enter the open landscape.



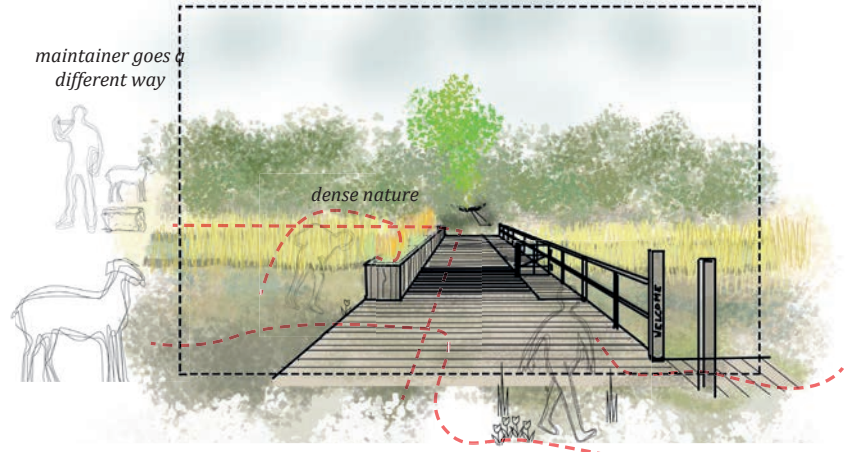
In the landscape there is a small herd of sheep. In the landscape there is a small herd of sheep.



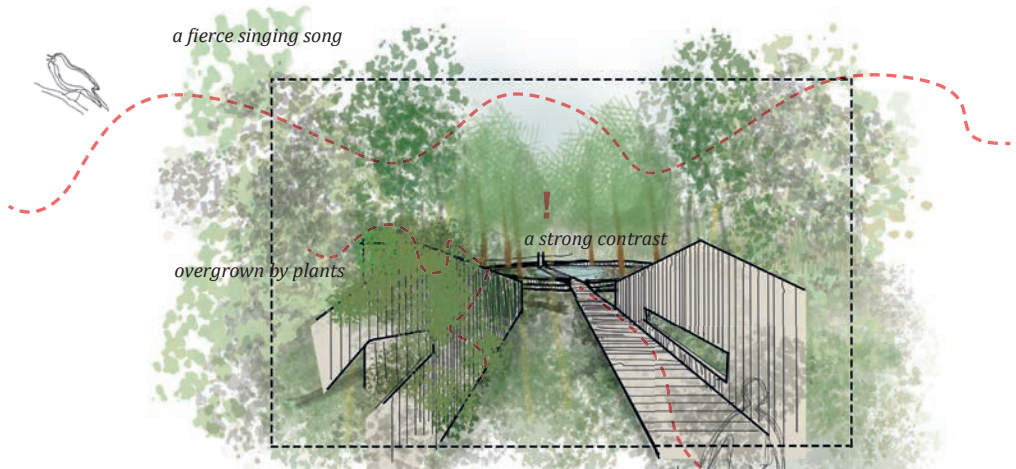
for a second you look around and see where you come from...



You walk along the path towards a bridge



You cross the bridge. Sheep cannot cross the bridge.



You walk along a completely overgrown wall and end up at a circle with 6 trees that smell different from the other forest. u.

You continue your walk and you move into an green forest with a damp smell.

Time of making

Time of experience

North Sea

Sand

Duneforest

Sea buckthorn habitat

Heather habitat

Amsterdamse Waterleidingduinen

Flower bulb fields

Nitrogen

Estates

Fallow deer

Transition

Movement

Human

Nonhuman

Abiotic

Landscape as being

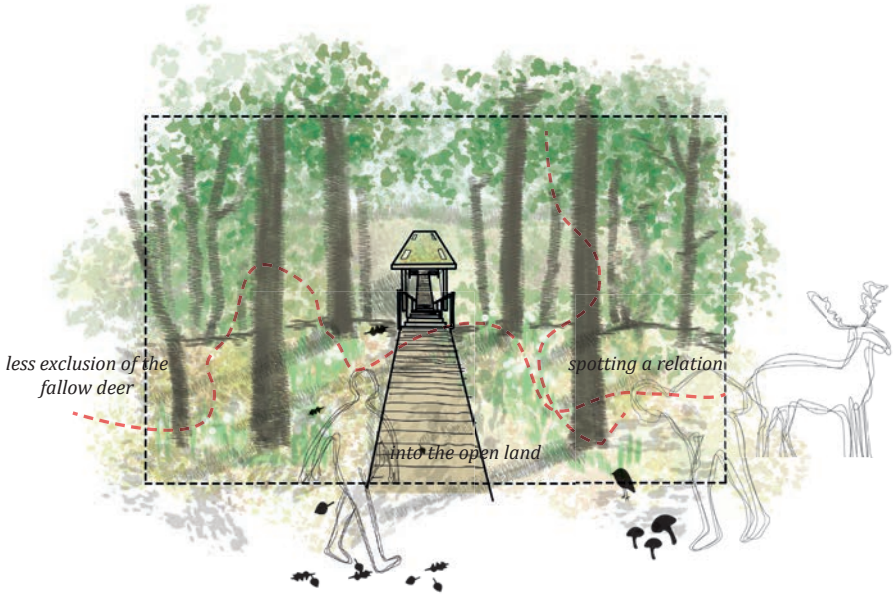
Water infiltration system

3.5.1 Movement is a fleeting event

The first thing that comes to mind when looking at the four series I have drawn and written a story of, is that they are idealised. They show idealised human, nonhuman, and abiotic movement. Through these series, I realised that these idealisations would in reality not necessarily exist. Humans meeting nonhumans can not be guaranteed by the design. Nonhuman movements cannot be guaranteed by the design. The same is the case for abiotic movements, and even human movements can only be steered up until a certain extent. There is thus no guarantee that movement through the landscape and the condensed movement at the hybrid, results in a meeting between humans, nonhumans, and abiotic movements. This means that the structures, even if they are designed to show movement, do not guarantee movement (see analysis of design 1 at the next page).

To be aware of nonhumans, and abiotic movements, thus cannot be guaranteed by the design. Because nonhuman and abiotic movements cannot be guaranteed by design. Movements can only be invited.

Another thing was interesting while looking at the series of movements. The idealisation is not only in the meeting of nonhuman and human movement. The idealisation is also in the fact that humans will notice nonhumans if there is a meeting of movement. This does not have to be the case (see analysis of design 2 at the next page). The hybrids do steer humans a certain way, but that does not all of a sudden mean that humans also make a connection.

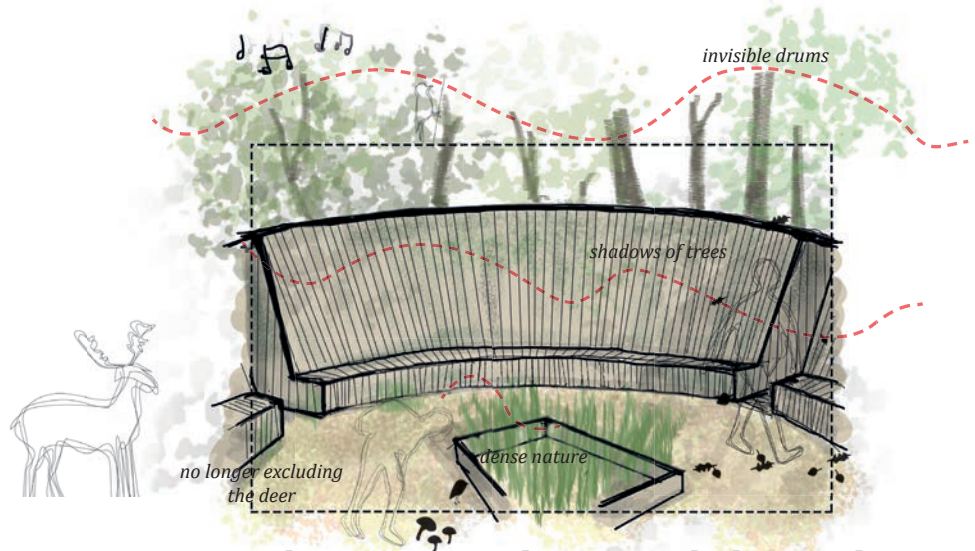


You move through a small lane of older trees.

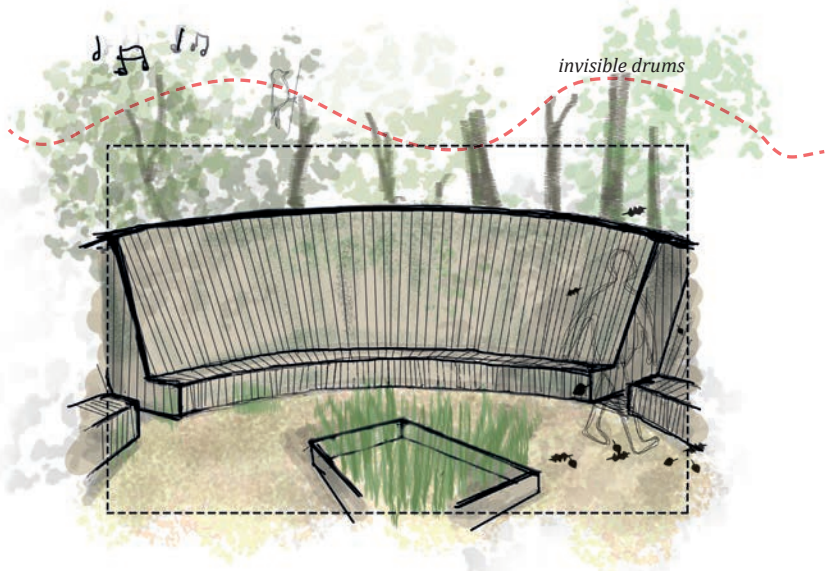
You move through a small lane of older trees. Someone is looking at a specific flower

You follow the route.

Analysis of design 1 - Not all nonhuman movements might be perceived, even if I try to design them as such



You move into the circle. You look up to see the leaves. There are some butterflies flying over the structure. There is the sound of birds.



You take a rest on the bench and eat your sandwich, sound of birds is at the background

Analysis of design 2 - Meeting one another does not necessarilly mean that there is connectedness

Movement within the hybrid can still be subconscious.

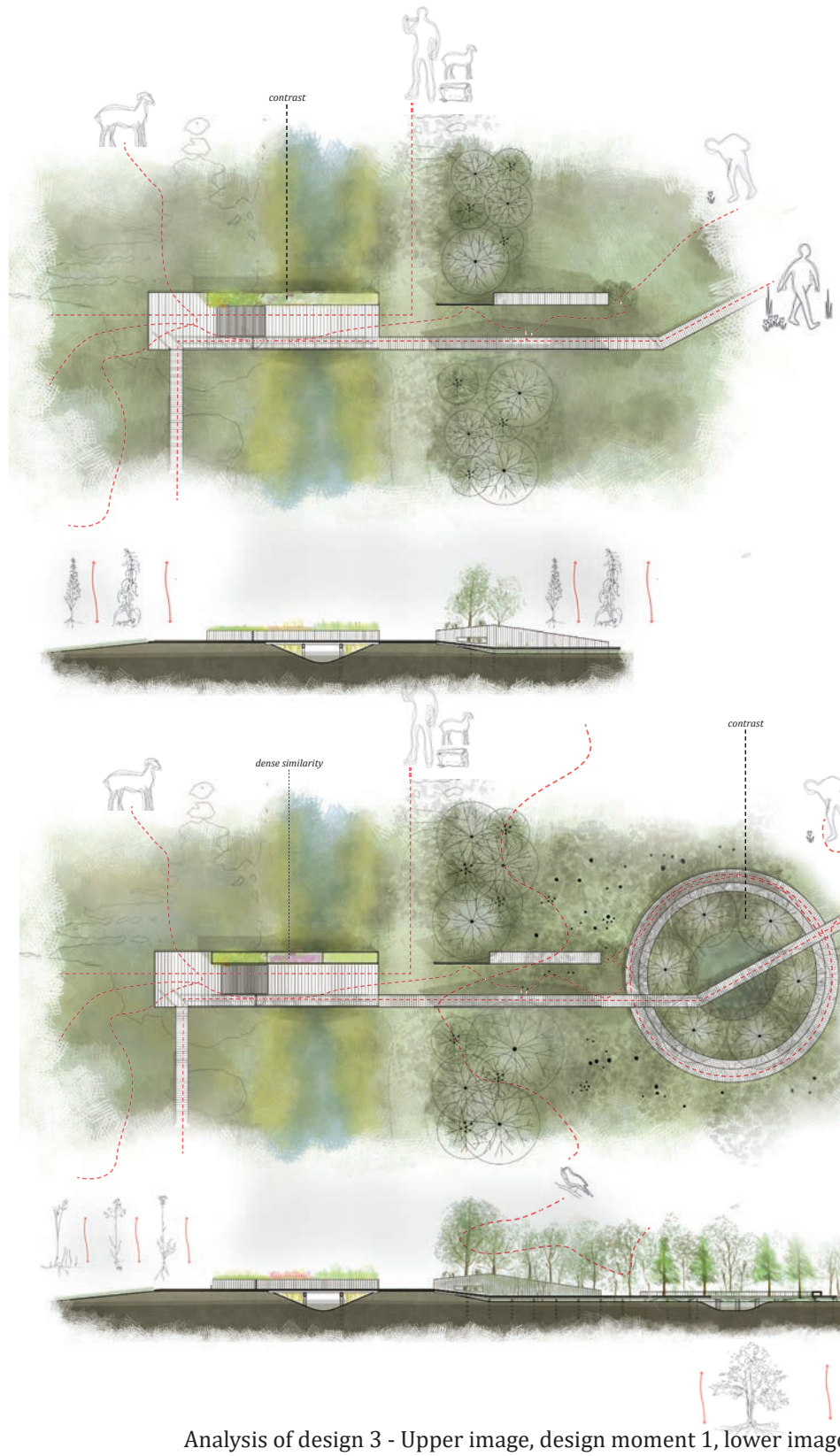
The presence of movement – human, nonhuman, and abiotic – does not necessarily generate connectedness.

But if humans were to meet nonhumans, and this would feel as a certain way of connectedness, in which there is a sense of wonder about a nonhuman (in a positive or negative sense). Then this does not make a new way of connectedness, since the importance of framing movements and dynamics of a landscape - in other words nonhuman movements - in a beautiful way, are already argued by Meyer, and Nassauer who I mentioned in chapter 1.

3.5.2 Movement changes over time – hybrids communally change over time

On top of that, present human, nonhuman, and abiotic movements change over time. This is the input for the hybrid. Therefore, the hybrid should also change over time. The hybrid, however, is also a fixation of time because they exist for about 30 years due to materiality. Their relations to the landscape change. Therefore, every 30 years the relation of the hybrid to the landscape can be reformed. The hybrid is thus a structure that can be used to continuously relate again to the nonhuman, and abiotic movements that are present.
You might argue that this happens already in nature reserves, where maintainers every couple years (have to) change their practices to relate again to the site, and move the site in a certain direction. The hybrid in this thesis, however, goes a little further and does something different as well. With the hybrid both change in movement of the maintainer, and change in movement of the explorer, the visitor, and nonhuman movement are considered. The hybrid is thus more of a communal project in which all these movements are celebrated. The most obvious example of this is the hybrid that changes from a crossing into an introvert - extrovert hybrid. Movement that changes here does consider multiple movements that relate to one another again after 30 years (see analysis design 3). The rebuilding of the hybrid every 30 years, is in fact what makes the hybrid, and the rest of the design different. The regeneration of the hybrid suggests a cyclical way of looking at time. In that sense, the design does not give an endform, only a starting action, after which every 30 years, our relation to the landscape is reconsidered.

This is a way of generating connectedness. It is not necessarily new, since many worldviews apart from the western worldview have a cyclical approach to time. But the change of the hybrid, or the decay of the hybrid, is at the core of the design. There is a realisation that the materiality of the hybrid has a lifespan, and this gives the opportunity to rephrase the hybrid and by that rephrase our relation to the landscape.



Analysis of design 3 - Upper image, design moment 1, lower image, design moment 2. Movements and hybrid have both changed, because the landscape, our relation to the landscape has changed, and the material of the hybrid (decay) have changed.

3.5.3 The landscape as a being

To treat the landscape as a being makes a difference in the presence of nonhumans. There is no immediate goal of moving towards a certain ecological type. The landscape in that sense is allowed dynamics that are unpleasant. This is seen in for instance the presence of the stingy nettle (Urtica dioica, Urtica urens).
Again the hybrid is important, since it gives us the opportunity here to relate to what humans consider unpleasant movements. This is a possible way of connecting. However, it is not new. As it is in line with the hybrid as suggested by the already mentioned Meyer, and Iverson Nassauer's essay on 'Messy Ecosystems, Orderly Frames' (see also chapter 1.3).

The design does not really have a proposed end vision. Of course there is the idea of the new forest. But because this is described as a being, it is entitled to change to. The design therefore proposes more of an action at the beginning. And this continuously moves forward through time. On top of that, there are the hybrids in which the relation that humans have to nonhuman presence can be rephrased and reassessed every thirty years. Therefore, the landscape as being together with the hybrid suggests more of a cyclical approach to the landscape then a linear approach in which there is an end state of the design.

The landscape as being in its shape, however seems quite similar to what could be designed as a buffer. Nevertheless, it is not the same thing. Our relationship to this landscape structure is different because we name it differently. Even though it provides 93 hectares of forest, it is ultimately a being.
The design gives an alternative to the forest strategy, however, if you were to add the policy of the forest strategy to the 1:5000 design map of moment 4, the forest strategy (landscapes for humans) would be placed along the landscape as being (see analysis of design 4). Which means that the landscape as being has a certain effect of not using for our profits. The landscape as being is thus (not) our forest.

3.5.4 Different connectedness

There is however, an underlying question within the design since it is a 'what if' scenario. This question is 'is this way of relating to the landscape, and to nonhumans, better?'. The design does not give a concluding answer in response to this question. It might be that the design, as it turns out, gives different connectedness, since it reassesses the connection between human and nonhuman movements, and it rather opts for a beginning then an end result. The landscape as being would only begin, and would not end, and we would have to reconsider our relation to this every 30 years

Analysis of design 4 - Possible locations for a policy such as the forest strategy within the paradigm of this research and the spatial design of the landscape as being.

4. GENERATING DIFFERENT WAYS OF CONNECTEDNESS

4.1 CONCLUSION

The ecological paradigm that is taken by the Dutch Ministery of Agriculture in relation to the forest strategy, is an old fashioned paradigm, that sees nature and forestry as something that is there for us. Even though the idea of planting forest in the Netherlands might be noble, there is therefore no change in our relation to this nonhuman forest. The research done opts for a different approach to our nonhuman surroundings, and therefore asks the main research question **How can new ways of connectedness between humans and nonhumans be generated in existing and newly constructed areas perceived as 'natural' or 'nature'?** with the underlying hypothesis **We can generate new ways of connectedness through designing within the theoretical framework of multispecies world.**

4.1.1 Perceiving a multispecies world through movement, hybrid, and landscape as being

The first step in finding new ways of connectedness is therefore through researching multispecies world. Multispecies world is a theoretical framework more common in the field of anthropology. This frame tends to be critical of human actions and embraces the ideas of the Anthropocene. It states that landscapes are shaped not solely by humans, but through actions of all humans and nonhumans. It is critical of capitalist landscape structures. And it sees nonhumans as active participants that disturb. This multispecies world, being a theoretical framework within the field of Anthropology, is an observant

theory and therefore suggests a way of looking at the world. In other words, multispecies world is there already, but there is not always awareness of it.

Therefore the research first explored how humans can perceive a multispecies world. I identified six elements in this research: 1) actions of nonhumans, or traces of these actions, 2) how we create disturbances and attractions to nonhumans, 3) to relate to a nonhuman is to move differently, 4) the landscape is the result of all actions of humans and nonhumans and it is therefore active and dynamic, 5) we are not aware of all nonhumans and we might have to relate to nonhumans that we could not have imagined, 6) transition zones and its changing nonhumans.
In order to perceive these elements within a landscape architectural design, I propose three different elements that can be used in the design in order to perceive this multispecies world. The first is that within the design movement is important. Movement is divided into three types of human movement: maintainer, visitor, and explorer. Movement also considers nonhuman movement: vertical and horizontal. And it considers abiotic movement.
The hybrid is the meeting point for these movements. Hybrids invite for human, nonhuman, and abiotic movements to meet. The hybrid is a site specific intervention, that strongly relates to the nonhuman, and abiotic movements at the site. The hybrid is located at transition zones in the landscape in order to create human awareness of a strongly changing landscape. On top of that, the hybrid is a material intervention. Multispecies world emphasizes an awareness of materials coming from a place, and materials that can have a devastating effect. Therefore the materials of the hybrid have a timespan in which they are used for thirty years, then if the transition zone still exists the materials are renewed, and reused, if the transition zone has disappeared, the hybrid is left to decay.
The third element are larger landscape structures, which is in this research called a being. These structures invite nonhuman presence. The landscape as being opts for a landscape that has the legal rights of a person. Within the research there are two imagined uses for this: 1) at an already to humans culturally valuable place, 2) at a harmed landscape. The first can exist in the presence of nature reserves and valuable natural areas. The second should be based on the present landscape that is harmed. Both have a positive effect on the surrounding landscape as well. Historical traces are important for this second type of landscape being, as well as the gradual development, in order to realise a strong landscape structure. The landscape as a being can be an uncomfortable, even unpleasant, dynamic structure. And in order to create acceptance for this, a well-defined boundary of the landscape is introduced.
These three elements relate to one another not only in scale, but most importantly also in time. Movement makes up for the now, the hybrid brings together different perceptions of now (human, nonhuman, and abiotic) and has a timespan of 30 years, in which it relates to the larger landscape as being. The landscape as being is a dynamic continuous structure, that continues to evolve over time.

4.1.2 Movements, transitions, and problematic areas at the dune region and Amsterdamse Waterleidingduinen

In the second chapter the research focusses on analysing what is in the forest strategy proposed as possible landscape structures for new forestation and planting of tree structures: the adjacent land of the dune region with in specific the areas of flower bulb cultivation.

The entire dune region is a dynamic region that were fixated by plants and trees put there through human interference, for a long time. However, today with new coastal management approaches such as sand suppletions and the sand engine, the dunes themselves are made dynamic again. This is rather important, since dynamics of the dunes is key for nonhuman movement at the dunes. Human maintenance at the dunes is mostly steered at saving these movements. Human movement at the dunes always happens through a clear entering. Within the dunes, human movement is steered through signage. Exploration is hardly allowed.
Even though the dune region is a more or less continuous structure, the different areas of the dunes are also very diverse. This has to do with where sand comes from and thus the abiotic movement of the sea, and historical events and human relations to the dunes. Therefore, in order to place forestry along the dunes, it is important to both consider the landscape where the new 'landscape as being' is allowed and the relation that this will have to already existing dune structure and its prevalent identity.
The research then focusses specifically on Amsterdamse Waterleidingduinen and the adjacent land. The Amsterdamse Waterleidingduinen has been used strongly by humans over time. Water was, and at some points still is, retrieved from the dunes. There are a few key actors at the Amsterdamse Waterleidingduinen: the human flower bulb farmer, the human maintainer, the fallow deer, the virus myxomatosis and sand high in calcium.
Within the analysis I defined 4 different greater areas: 1) forest, 2) dunes and the sea, 3) water infiltration system, 4) flower bulb fields. These areas were different in the human, nonhuman, and abiotic movements that could be found there. The areas could be subdivided in 8 different areas perceived differently by humans: 1) dense forest, 2) savannah, 3) grey dunes, 4) white dunes, beach, sea, 5) water infiltration network, 6) flower bulb fields, 7) grassland polders, 8) urban settlements. The transitions between these areas could either be in the form of crossings, introvert-extrovert transitions, and introvert-super extrovert transitions. Hybrids should be placed on these transitions and correspond in shape to the type of transition. On top of that, they should be a celebration of condensed movement that is found at both sides of the transition.
The hybrids should respond to the key elements at the site. This I defined to be the presence of the abiotic movement of water, and the presence of (remnants) of old planting structures, that are

found at many places at Amsterdamse Waterleidingduinen.
On top of that, I identified two now directly harmed landscapes. The Oosterkanaal, and the Flower bulb fields. Changing these structures, and tackling their problematiques, defined the place of the new 'Landscape as being' along the Amsterdamse Waterleidingduinen and towards the estates on the old beach ridge.

4.1.3 Four moments and reassessing our relation to the landscape

I then began to explore through design what interventions could be done in order to realise a new landscape as being along the Amsterdamse Waterleidingduinen. The new being is dynamic and is developed over time. Therefore our relation to this landscape, and in fact all landscapes, change through time. We thus have to reassess our relation to the landscape. The design therefore shows four moments of now. Now in the sense of the actual now when the proposed design intervention would become reality. Now in 20 years, when the first big changes in the new landscape as being and the adjacent lands have resulted in a different landscape. Now in 30 years, when there is a reconsideration of hybrids and, now in 50 years when the first patches in the proposed forest structure have turned into a mature forest.

The first 'now' on the large scale deals with the intervention of the Oosterkanaal, and the planting of the edge of the new forest structure. The land immediately adjacent to the Amsterdamse Waterleidingduinen will turn into a wetland, and due to the high concentration of nutrients in the soil, will be full of nettles and soft rush. This is accepted, however, it will therefore lead to a maintenance strategy that includes mowing and grazing regularly and taking away the clippings, in order to let the land become poorer in nutrients. The hybrid placed on the high forest edge, into the open wetlands tries to emphasise these movements by upstairs focussing on movements in the forest (light of leaves, and sounds of birds), and downstairs by granting shelter to not only humans, but also grazing cattle such as sheep.
The forest edge forms a crossing from the wetlands into the new forest structure. However, in the now, there is yet no forest. The forest has still got to grow. Which means that the crossing into this area is important, nevertheless it is only a crossing.
Within the structure there is the exclusion of cattle through the grid, and the holes in the wall that aim at the dense planted forest boundary in order to show nonhuman movements.
Moving through now in 20 years shows weathered hybrids. It also shows strong changes in the landscape along the Amsterdamse Waterleidingduinen. The first patches of forest will now have some trees. The nettles will mostly have been mowed away. The hybrid that symbolizes a crossing is hardly a crossing, and now starts to become an introvert-extrovert transition. The open wetland has gotten poor in nutrients. Molinia meadows might begin develop now.
Now in 30 years is the regeneration of the first series of hybrids. The materials find an afterlife at the site. Being put in circles around the dome to be eaten by nonhuman fungi, beetles, and plants. The hybrid that was once a crossing, is now different. The hybrid goes from an introvert to extrovert landscape, and thus has to change. This leads to part of the hybrid being abandoned and left over to nature. The second patches of forest have now grown into a young forest as well.
Now in 50 years is when the entire forest structure, or the new landscape as being, is filled. In 50 years a forest has grown of about ….ha. It was not the suggested 10 years by the Dutch Ministery of Agriculture. We have now reassessed our relation to this forest, and our relation to the Amsterdamse Waterleidingduinen in multiple 'nows'.

I then analyse what this design does. I find that connectedness between humans and nonhumans is not guaranteed through the elements of movement, hybrids, and landscape as beings. Movement, the now, is fleeting. And human movement meeting with nonhuman movement, and abiotic movement, is often a random event. Considering movement, hybrid, and landscape as being can thus realise a heightened awareness of movement, and nonhuman presence. But the design can only invite for this.
Nevertheless, if the design would create connectedness between humans and nonhumans through a hybrid, this does not make it a new connection. In fact this is an already existing connection within the landscape architectural design course.

The hybrid, due to its lifespan, is reassessed every 30 years. Because the hybrid in fact shows our relation to nonhuman movement, abiotic movement, that we find important, every 30 years we can reassess our relation. The hybrid is thus both in relation to the greater landscape, and to us, a structure through which new, changed, faded, relations are explicitly shaped. The design thus invites a cyclical approach to time in which there is at specific points a strong reassessment of whether we still relate to the landscape and its corresponding nonhumans the same way, or that our relation and thus our movements within this landscape have changed. This also makes change – even when it is small – at the core of our design. Change does not have to be pleasant, but the point is that we cyclically relate to this change.

The landscape as being is a dynamic structure that from time to time gets unpleasant. As mentioned, the hybrid gives us the opportunity to relate to these unpleasant nonhuman movements. Again, this is not a new way of connectedness. It is again close to the landscape architectural design discourse, in which 'Messy ecosystems' are shown in a comforting way to humans, in order to generate awareness and acceptance for this.
The landscape as being proposes a design that is only a beginning and without defined end goal. This is a different way of connectedness, but again it is not new.
The way I name the landscape as a being, is different. Even though, the shape of the landscape as being is similar to a buffer, our human relation to this landscape is different because we have given it a different name: 'being'. We can connect to a being, but is never

truly ours. The landscape as being is in this research thus (not) our forest. Again this is a different connection, and not a new way of connectedness.

4.1.4 How can we generate new ways of connectedness between humans an nonhumans

To answer briefly the main research question **How can new ways of connectedness between humans and nonhumans be generated in existing and newly constructed areas perceived as 'natural' or 'nature'?** is that we cannot generate new ways of connectedness. At least not within the framework of the underlying hypothesis **We can generate new ways of connectedness through designing within the theoretical framework of multispecies world.** What it nevertheless does, is create a different way of connectedness, in which a cyclical approach to time, recurring reassessment, happens.
Within the design there is an underlying question 'is this a better way of relating to the landscape, and to nonhumans?'. The design and research is not capable of giving a concluding answer to this. In this research this question is impossible to answer.

4.2 REFLECTION

4.2.1 Side effects of working within the theoretical framework of multispecies world: processes, time, palimpsest, and words

The theoretical framework of multispecies world was taken because it shows a more nuanced vision on the relation between humans and nonhumans. The theoretical framework is more commonly used within the field of anthropology, and the reason why I found it valuable is because it has some aspects in common in relation to landscape architectural design. For instance, landscape architecture strongly works with the presence and recognition of nonhumans through perception. On top of that, it has been at the core of my education at the Technical University of Delft, that within the landscape, dynamic flows and processes are at stake, and that we need to consider these flows within the design. This is also the case for palimpsest. All these elements were relevant in relation to the Multispecies paradigm, but they occasionally gave a different twist to this.
These processes were at the core of the design. However, design often suggests an end state, or something that we move towards over a period of time. The framework of multispecies world changed this slightly. In my design there are elements that suggest a certain end. However, at the same time, the different times are all forms of now through which we have to relate differently to the landscape. On top of that, there is not a strongly defined end state. There is only a suggested end state, and a strongly defined beginning. For the forms of the design, this hardly mattered. However,

there is a slight nuance that really tends to focus on the now at different times. Therefore movements in the design approach I took relate to movements that are now at the site. And these movements change along with the site. Trying to work within this theoretical framework lead to some other unforeseen effects. First of all, I have gotten much more aware of materiality. Materials come from a place and they decay and at some point in time end up in the landscape again as a mineral. This approach to material was quite different from what I usually tended to do. In my designs there was usually not an awareness of where materials come from and where they end up after use. The presence of decay thus also became important within the design. It made me consider a palimpsest in the future, as well as a different kind of palimpsest: the harvest of materials at a different location. On top of that, the landscape as being very directly considers the palimpsest of the landscape (cultural lines, geological structures).

Throughout the research I began to name things differently. I have stayed quite close to the use of the words human and nonhuman. But the framework of multispecies world tends to do a bit more. By stating that nonhumans are active beings, there is some sense of honour to them. This has some results. First of all, it becomes unpleasant to describe nonhumans as native or non-native. Even if they are in fact native or non-native, it becomes almost rude to name them as such. A simply pragmatic approach to favour native species over non-native species, became rather uncomfortable to do. On top of that, at some point in the research I began to name the new forest structure, or larger landscape structures 'beings'. This was derived from the case of the Whanganui river in New-Zealand, in which a river got the legal rights of a person. Within the framework of a multispecies world, a landscape can be seen as the results of all human and nonhuman actions and disturbances together. However, this does not directly lead to seeing a landscape as a being. Yet I chose to do so, and the reason why is because seeing an entire landscape as a being, there is already a different relation established between me as a designer and the landscape structure I propose. Even though my forest is likely to look similar to what would happen if you were to design a buffer, there is a difference in calling it a being or a buffer. Nevertheless, I have to admit that the landscape as being is something that would really have to be researched further, in order to investigate the actual effects and qualities of such a structure. On top of that, it should be researched further what the exact meaning of this 'being' than is, and where in the world this is already the case. It now remained more of a useful concept to accept dynamic landscape structures.
Another side effect of working within this framework, is that the framework is rather fluid. I really had to be very specific in that sense on what that meant for me as a designer. This is an unfinished process. In that sense, the theory makes me – as a designer – reassess my relation to the world every time. I find this one of the most valuable side effects of my research. This research does not offer me 'the paradigm' in which I can solve everything, it gives me 'a paradigm' in which I can work in a relation to the world. For some designs/landscapes this can be the right way of working, for others I might need to reposition myself as a designer. The theoretical framework is in that sense allowing me to do so.

4.2.2 What if scenario and research to be continued

This research has really begun from a fascination and an estranged feeling from the forest strategy of the Dutch ministry of agriculture. From the start the research has thus been placed both inside and outside of this forest strategy. The research does respond to the addition of forest in numbers, but it does this from a different worldview. The design within the research is therefore a 'what if' scenario, which is a common approach within the Dutch tradition of landscape architectural design. These kind of designs often imagine a world that could happen under different circumstances.
There was, nevertheless, a difficulty within this research. And this was that designing within a multispecies world did not automatically lead to a defined brief. The only condition that had to be present within the design was the addition of forest. But what amount of forest, and why was really difficult to define. However, this opened up the research in a way as well. The research and design could transform into not only questioning what do we humans want (extra forest), but also into what the harmed aspects of the landscape are. Within this what if scenario, my role of a landscape architect almost became that of a mediator. In this mediating role, I am at the one hand focussing on the perception of humans, and at the other at the presence of nonhumans. But the presence of nonhumans, is not something that I decide on for an entire landscape. I decide on how humans meet nonhumans. These meetings change over time, since the different actors at a landscape also change over time. With this role I took on, I tried to invite us humans to relate to nonhumans that we often overlook, or think of as ordinary. The hybrids and the landscape as being show a different approach to processes and time. The approach is cyclical, instead of linear. The processes will change, but they are ongoing.
I already mentioned that the design is, due to its 'what if' character, almost a question. It seems to ask whether this way of relating to nonhumans is better. Within this research I could not give an answer to this. But in a sense, finding that the paradigm I worked in gives different ways of connectedness, was valuable to me. Through this I learned that design, even when I design strongly with perception and different perceptions (different humans, different nonhumans), will not automatically lead to new connectedness to the site. And that designing with a cyclical approach to time, generates a different way of connecting to the site.
The scenario thus proposes an alternative to the forest strategy.
It proposes an option that can be considered, because the design could be made. But it is a choice to do so or not. I do not think it will ever become reality due to Dutch society, but the research

turned into a possible alternative.

What would have been interesting to research in relation to the makeability of the design, is the economics of what I suggest. There is a price and an economic loss in the landscape that I propose. This is now not touched upon in the research. This would have been interesting to research.

4.2.3 Hybrids, scales, and research to be continued

I would have liked to do a lot more research into these hybrids. The hybrids at this point in my design remain conceptual structures that work in relation to the larger scale of the landscape, and the small scale of movement. However, if I look at the design at the large scale, the hybrid could have used more exploration on where, and how many hybrids there had to land. The hybrid had a role of connecting the small scale to the large scale, and to a certain extent it did. However, it did this rather strange, since I proposed quite a lot of hybrids.
On top of that, the regeneration of the hybrids was quite an important point in my design. At this topic, I would have liked to research further what this regeneration would be in society. Would it be a communal multispecies event, would it become a top down solution from the owner of the site? Is it a festivity that happens every 30 years? Is the structure redesigned, or do I as a designer give the construction drawings to someone other? These are questions I would like to research further.

4.2.4 Methods and different paths within the research

There are many different paths that were at the beginning part of the research, but that eventually were left out. At the beginning of the research I was focussing on the entire dune region. This hovering over the dunes was incredibly useful to understand dunes. But the goal at the beginning of the research was to design a strategy for the entire dunes. This strategy is more in the shape of a concept, then I designed for the entire dunes. I then focussed on two sites: the Amsterdamse Waterleidingduinen and Schoorlse Duinen, in order to research the methods of collages and scores that I was using. Even though, making the collages, making the scores, and comparing Amsterdamse Waterleidingduinen and Schoorlse Duinen, was useful, the comparison did not research whether specific methods. What it rather did, was that I could understand the site of Amsterdamse Waterleidingduinen, at which I eventually designed, much better and clearer through the comparison. On top of that, analysing both Amsterdamse Waterleidingduinen and Schoorlse Duinen did in fact made me realise that working through movement, the hybrid, and the landscape as a being would result in site specific solutions. Since in the research I did, these elements relate strongly to movements that are found at the site, and what the site is without harming.

The other method I took quite seriously at the beginning of the research, was the making of collages (see for all collages, Appendix). But I stepped away from this. I wanted to combine my collages into conceptual collages of a site that did not exist. But it did not prove to be efficient. So I redrew my multispecies collage, to make my design goals easier to understand to myself. Nevertheless, working through collages was a process in itself which made me rephrase the site and my knowledge on multispecies world. Nevertheless, for instance the multispecies collage turned into a drawing. It was easier to compose, and to understand what I meant (see difference in drawing and collage). The drawing was representative in that I positioned myself clearer within the theoretical framework, whereas the multispecies collage shows the overwhelming aspect of the – to me – hard to grasp theory. For more explorations in collage see the Appendix.

Multispecies drawing vs multispecies collages

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For maps, and analysis of movements of species I made use of the following additional resources:
topotijdreis.nl, PDOK, vogelbescherming.nl, vlinderstichting.nl, ecopedia.be, floravannederland.nl

C. APPENDIX

A. PRECEDENTS

a collection of (almost) movements, hybrids, and landscape as beings

INDEX

A. Precedents is part of the research:

(not) our forest
a multispecies approach to forest and landscape

MSc Thesis

Lotte Oppenhuis

Supervisors:
1st mentor: Saskia de Wit
2nd mentor: Luisa Calabrese

External examinator: Marietta Haffner

The precedents consider a collection of important works for the research. Sometimes they were used as a source of inspiration, sometimes they were used as a source of clarification. In the explanation of the hybrids, I therefore refer back to the main body of research by stating what I used, or which design principle the precedent relates to.

A.1 MOVEMENT

A.1.1 Score - Lawrence and Anna Halprin

Valuable within the light of the research were the important work of Lawrence and Anna Halprin on ***scores*** of public space. Scores are a kind of notation that are commonly used for choreography and dance. Anna Halprin was a choreographer and together with her husband Lawrence Halprin - landscape architect - they began to explore public space through the notation of scores (Merriman, 2010). Through this, they analysed how public space changed or steered movement (Merriman, 2010).
Their work thus strongly relates the surrounding to movement. Their scores have been both a tool to design (image 1) and to analyse (image 2). In my research, 'score' (unfortunately) is an ***analytical tool I used in chapter 2.2, and 2.3.***

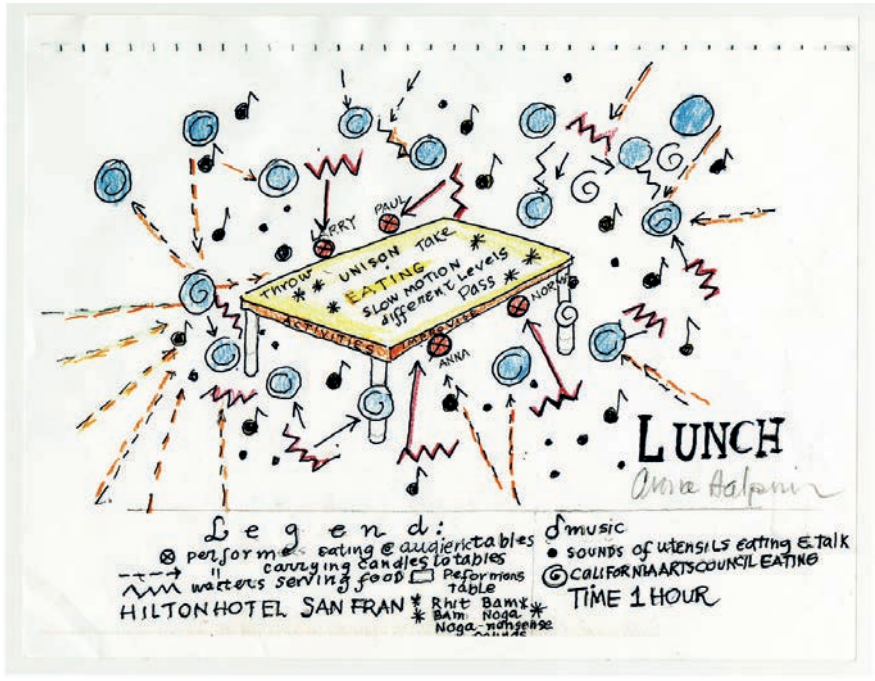

Image 1: Lawrence Halprin, illustrator, 'Lunch, Score for a Dance by Anna Halprin,' 1968

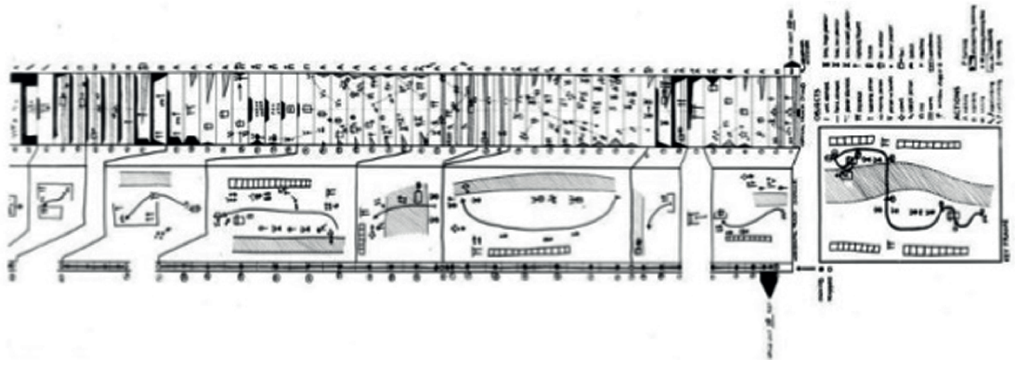

Image 2: Motation study Lawrence Halprin, 1969. (source: Alejandre, 2020)

A.1.2 Halprin once more - Ira Keller Fountain: a synthesis of movement

The design for the Ira Keller Fountain in Portland considers movement of not only humans, but also the abiotic movement of water. The design captures movements of water and how this relates to human movement, at the High Sierra Mountains (Voerman & Emmerik, 2019) (see image 3). Such movements can be considered while thinking about ***design principle 4.***

Image 3: Ira Keller Fountain, Lawrence Halprin & Associates, 1970

A.1.3 Strange human movements - Cycling through trees, Burolandschap

'Fietsen door de bomen', or Cycling through trees at Hechtel-Eksel (Belgium), is an elevated cycling path through a forest (see image 4). Through following the cycling path, you can come quite close to the tree tops. The path has an elevation of 10m at certain points (Burolandschap, 2019). The extraordinary experience of the cycling path attracts humans to the site. Extraordinary experiences such as elevations, can cause humans to both see the environment anew, and attract humans to a certain place. In the case of this design, however, the attraction to humans became strong to a point that newspapers were talking about traffic jams (nieuwsblad.be, 2019). Since apparently in the first weekend of opening, the path attracted 8000 visitors. In relation to the research, 8000 visitors are not providing a pleasant environment for nonhuman movement, which is to be considered according to ***design pricniple 3.***

A.1.4 Movement through his-

Image 4: Fietsen door de Bomen, Burolandschap, 2019.

**tory and material - Pikion-
is' pathway, 1954 to 1957**

A pathway that shows a way of going towards a place imbued with history and meaning is the pathway to the Akropolis (see image 5). This pathway is designed by Dimitris Pikionis and made up by clay tiles, reclaimed stones, and concrete statements (Malawski, 2017) (see image 6). By using found stone and the new additions of concrete, the movement that is created by walking over it connects both the history of the Akropolis and the present. By this, it becomes an expression of ritual movement mentioned in ***design principle 1.***

A.1.5 Site specific movement of

Image 5: Pikionis' pathway, 1954-1957, Image 6: Pikionis' pathway with expressive concrete elements (Source: Malawski, 2017).

**human and nonhuman friendships -
Alice in Wonderland, L. Caroll, 1865**

Archetypical landscapes often have a connotation. This is best illustrated by Gillette's analysis of Alice in Wonderland (2016). She mentions how Alice finds herself lost in the forest of no name, while she comes across a fawn. Both the fawn and Alice forget who they are and become friends (see image 7). Once they left the woods and are out in fields, they are shocked to find their own identity and that they are each other's enemy (Gillette, 2016). The forest is something different from what the fields are, and therefore a different way of moving through is necessary. In other words, movement is landscape specific. But another thing is important here. Apparently, in order to befriend certain nonhumans and move together, we need to forget who we are. This is at the core of ***design principle 3,*** in which humans meet nonhumans.

A.1.6 Abiotic movement of sand

Image 7: Alice and the Fawn, John Tenniel, 1871

- Aeolis Gap the Border, 2018

Another project that considers abiotic movement, is the project 'Aeolis Gap the Border'. This project was a temporary project made during the Landscape Architecture On Site course, for the Oerol Festival in 2018. This structure in specific was made in order to speed up the process of duneforming. What is interesting, is that the structure, by its form and shape, makes humans more aware of the dynamics of sand (Van der Velde, Pouderoijen & Van Bergen, 2018). The location of the structure was on the beach. Therefore, the project made humans meet explicitly with abiotic movements that are at stake at that site (see image 8). This project thus also relates to ***design principle 4.***

A.2.1 An explicit human

Image 8: Aeolis Gap the Border, 2018. (van der Velde, Pouderoijen & van Bergen, 2018)

structure colonised by nonhuman movement - ESTAR & CITYLABORATORY, Rotunda, 2014

A precedent that shows the actions of nonhumans is Rotunda by ESTAR and CITYLABORATORY (ESTAR, 2014). The design was made for Jardin des Métis in Canada and consists of a miniature experimental garden (ESTAR, 2014). The garden is a black bowl filled with water. The black object is clearly a human intervention, but it reflects its surroundings, drawing attention to the mirroring effect of water. On top of that, like ***design principle 5,*** the object can be colonised by nonhumans. Birds can drink the water, leaves can fall on top of the object, spores and seeds can land in the water and maybe grow there (ESTAR, 2014) (see image 9). The object is thus not solely human, it is changed by nonhumans as well. The design therefore is not only for humans nor for nonhumans, it does not oppose the cultural and the natural, and is thus to use Meyer's words, a hybrid (2008).

Image 9: ESTAR & CITYLABORATORY, Rotunda, 2014 (ESTAR, 2014)

A.2.2 Nonhuman movement at human birdnests in Sloten

Sloten is one of the small villages that is eaten by Amsterdam. Therefore there are very small peat polders found. The meadows are home to birds. This is highlighted by four large wooden built structures, that serve as nests (see image 10). The structures are made by humans. (Un)intentionally they are placed in such a way, that they seem to correspond to each other. By that they seem to have a sacred meaning. Humans cannot reach the nests, and the nests are surrounded by reeds, and placed at the polder, instead of at the surrounding dyke. By the organisation of the structure, movements of birds that are situated at the polder, become much more clear. This relates to ***design principle 5.***

Image 10: Bird nests Sloten, own material.

A.2.3 A designed ruin in the language of the site - RAAAF, Deltawerk //, 2018

'Deltawerk //' was once a scale model to research the actial working of the 'Deltaworks' in Zeeland. The design has cut open the structure, and by that makes it actively into a ruin (RAAAF, 2018) (see image 11). The structure is at the beginning of Waterloopbos, in the Flevopolder. Many scalemodels that researched water can be found here (see image 12 &13). All models are now out of use, and have become overgrown. The design for 'Deltawerk //' both shows the identity of the structure by mimicking waves of turned concrete slacks, and of the Waterloopbos with its other structures, around the design. This therefore relates to ***design principle 6.***

Image 11: Deltawerk //, RAAAF, 2014.

Image 12: Plan of Waterloopbos, Image 13: Scale model in Waterloopbos (Natuurmonumenten)

A.2.4 Another language of the site, taken over by nonhuman movement - Studio D.I.R.T., Urban Outfitters Headquarters, 2005-2011

The garden design of Urban Outfitters Headquarters made use of the materials found at the site (Meyer, 2008). There were many concrete slacks, that were broken into parts and by that give new grounds for nonhuman movements (see image 14). The intervention is thus site specific (Meyer, 2008). On top of that, this intervention also invites the presence of new nonhuman movement. Therefore this project also relates to ***design principle 6***

Image 14: Urban outfitters headquarters, Studio D.I.R.T., 2005-2011. (Landezine)

A.2.5 Origins of Materiality - Un Bosco Morto Per Le Troiane, Steffano Boeri Architetti, 2019

A precedent that involves this symbolic movements of materials is designed by Steffano Boeri Architetti and is called Un Bosco Morto Per Le Troiane (see image 15). It was a stage design for the old Euripides' tragedy "The Trojan Women' at the old Greek theatre at Syracuse. The design includes many fallen dead trees, that were killed during the storm Vaia in Northern Italy (see image 16) (Stefano Boeri Architetti, 2018). The awareness of where materials come from, and the meaning of moving the materials to the site, gave inspiration for ***design principle 9.***

Image 15: Un Bosco Morto Per Le Troiane, Steffano Boeri Architetti, 2019 (Steffano Boeri Architetti, 2019), Image 16: Fallen trees used for the design (Steffano Boeri Architetti, 2019)

A.2.6 Shape of Hybrid: Line - Gilles Clément, Jardin du Tiers Paysage, 2012

This garden considers manmade leftover spaces, taken over by natural processes (Clément).
In the garden, a line that cuts through the concrete walls in a large concrete basin (see image 17). The line is filled by water, and along the line

plants grow. Through the different concrete walls that are perpendicular to this line, there is a sequence of spaces in which all of a sudden, small changes between the spaces become visible. This relates to the line mentioned in ***design principle 18.***

Image 17: Jardin du Tiers Paysage, Gilles Clément, 2009-2012

A.2.7 Shape of Hybrid: Circle - Tuinen Mien Ruys, Bos, 1987

'Bos' or in English 'Forest', is a garden in a forest. In order to make the garden possible, some trees were cut (see image 18). By doing this, an open circle was made. Above the circle, the trees do not touch (Tuinen Mien Ruys). So you see the sky, and by that, also the tree tops explicitly. For the circle, specific plants are planted, such as wood sorrel (Oxalis acetosella). By this, the open circle is further emphasized. This shape within the forest relates to the circle mentioned in the introvert-extrovert transition of ***design principle 18.***

Image 18: Bos, Tuinen Mien Ruys, 1987 (Tuinen Mien Ruys)

A.2.8 Shape of Hybrid: two elements - James Turrell, Celestial Vault, 1996

The third is the Celestial Vault (1996) by James Turrell in The Hague (James Turrell). His intervention considers a mount (image 19) and a vault (image 20). At both the same element is placed: a bench. By doing this, he emphasizes the difference between the two land forms. This relates to the two elements mentioned in ***design principle 18.***

Image 19: Bench at mount. Image 20: Bench at vault

A.3 LANDSCAPE AS BEING

A.3.1 The inspiration for the landscape as being - Whanganui river, New Zealand

I already mentioned in ***chapter 1.3.3*** the Whanganui river (see image 21). I mention it here once again, since it has been the main source of inspiration for naming the larger landscape structure 'Landscape as being'. The Whanganui river cannot be owned, it is a legal being. And by having the form of a long line going through a large area, the river can have a positive effect on the adjacent areas as well.

Image 21: Whanganui river (Parliament New-Zealand)

A.3.2 The edge of the landscape as being - Gilles Vexlard & Latitude Nord, Riemer Park, 1997-2005.

To further explain what I mean by the boundary mentioned in ***design principle 12*** around the landscape as being, I refer to Vexlard's and Latitude Nord's design of Riemer Park in Munich (Vexlard & Vacherot, 1997-

2005). Here multiple edges of forest were planted, some with undergrowth, others without undergrowth, in order to design different scenes and atmospheres. This project is therefore an inspiration of how to deal with a forest edge (see image 22), since this project shows a strong relation between how a boundary is planted and how this boundary is perceived by humans.

Image 22: Two different edges at Riemer landschaftspark, Vexlard & Latitude Nord, 1997-2005

A.3.3 An ecological approach to landscapes - Lentevreugd

Seeing the landscape as a being, is quite different from our common understanding of landscapes. Therefore the example of Lentevreugd (see image 23) is interesting to show that a succesful project in terms of nonhuman presence, does not necessarily make it a landscape as being. Lentevreugd is a polder where adjacent flower bulb fields were transformed into wetlands (Van Reisen & Van der Burg, 2012). The older polder patterns are still visible.
For this intervention, soil was moved in order to get the right key species and habitat types (Van Reisen & Van der Burg, 2012). The landscape was therefore steered towards a certain stage.
If you see the landscape as a being, it is strange to steer it into a certain conditon. The landscape as being suggests a starting point from which the area develops itself with sometimes the help of humans. This is thus a **different approach** to landscape than I take on in ***design principle 10, 11, and 12.***

Image 23: Lentevreugd, Wassenaar, The Netherlands

A.3.4 Along the landscape as being, working together with the landscape - Satoyama forests

In the ***design principles 10, 11, and 12*** I also mention that the land around the landscape as being is treated differently. This means that, even though humans intervene more within this area, this is still with great consideration of the landscape.
A precedent that does this is Satoyama Forest strategy found in Japan (Tsing, 2015) (see image 24). Satoyama forests are forest patches that are created

through long time small scale human disturbance (Uddin & Fujieda, 2015) (see image 25). They are ecologically vital, and recently there is new interest from society in the regeneration of this old forest maintenance (Tsing, 2015). The reason why this is the case, is both because they are important for native ecologies and because the culturally important Matsutake mushroom can possible grow there (Tsing, 2015). The forest are thus revived because of this cultural meaning, the economic meaning (that is of course also present) is less important.

Image 24: Satoyama forest strategy.

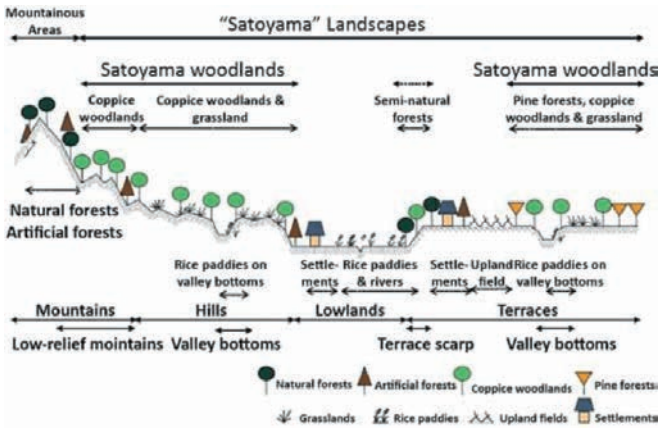

Image 25: Disturbances in a Satoyama landscape. (Dublin & Tanaka, 2014)

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B. GLOSSARY

important words of the research in alphabetical order

B. Glossary is part of the research:

(not) our forest
a multispecies approach to forest and landscape

MSc Thesis

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Supervisors:
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A

Abiotic movement Abiotic means not biotic (Merriam-Webster, a), thus basically what is not alive. Light, wind, water, and to some extent soil, are considered to be abiotic. Abiotic movement is therefore the movement of light, wind, water, and soil.

Actor Any living being that makes changes, in other words, acts (Tsing, 2015).

Affordance A quality that defines how to use something. Humans and nonhumans first and foremost understand the landscape in matter of affordances, or in other words: what the landscape has to offer and how we can use that (Gibson, 1979). These affordances can become clear through moving.

Agriculture According to Webster: „the science, art, or practice of cultivating the soil, producing crops, and raising livestock and in varying degrees the preparation and marketing of the resulting products" (Merriam-Webster, b). Modern day agriculture is also largely responsible for the nitrogen problem in the Netherlands, with negative effects to bioidiversity, and 'nature' reserves (Groenendijk, 2017).

Amsterdamse Waterleidingduinen Dune area owned by Waternet. The area produces 40% of the drinkwater supply of Amsterdam. Currently, the site is dealing with an overpopulation of

fallow deer (Dama dama) (Waternet, a). Amsterdamse Waterleidingduinen is the site that is specifically researched and designed for.

Alder swamp forest Type of forest with common alder (Alnus glutinosa) as most important tree. These types of forests, only grow at wet, swampy grounds that dry out only partially in summer (Ecopedia, a)

Attraction A disturbance by either human, or nonhuman, that is profitable for another species (Tsing, 2015).

Austrian pine (Pinus nigra subsp. nigra) Type of pine tree that was used massively along the coast and at drifting soil places, in order to make sand stay in place. Both austrian pine and corsican pine were most succesful at this. Austrian pines and corsican pines are hard to distinguish from one another (DLG & Staatsbosbeheer, 2016).

B

Bald cypress (Taxodium distichum) A conifer tree that originates from the Southern states of the USA. In Europe it is commonly planted in parks. It can grow in wet conditions (Janssen, 2013).

Beach Strip of land between sea and dunes. Location where embryonal dunes are formed (Ministerie van LNV, 2008).

Beauty Suggests within traditional

landscape architectural paradigm a sense of harmony, that results in the aethetic perception of the place (Meyer, 2008).

Beech tree (Fagus sylvatica) Deciduous tree species. This tree is a climax tree, and are used by humans at estates (Ecopedia, b). Is common to some of the older dune forests in the Netherlands

Birch (Betula pendula, Betula pubescens) Deciduous pioneering tree species. Has a very distinctive stem. Is common to the dune forests in the Netherlands (Ministerie van LNV, 2008).

C

Common oak (Quercus robur) Deciduous tree that is considered as native species to the Netherlands. This tree is a climax tree and is largely used at and around estates. The tree is an indication of healthy forests at the dunes (Ecopedia, c)

Common nettle (Urtica dioica) A plant species that is often considered a weed. The plant appears on nutritious, moist, soils. The plant is valuable for many butterflies (Ecopedia, d).

Companion species Species that closely moves along with humans. Through this relation both human and nonhuman are changed positively (Haraway, 2006).

Condensed movement A moment/ location in where humans are steered into discovery mode. In discovery mode humans are open to impulses and highly engaged (Schultz, 2014). Here they can therefore meet, and become more aware of, nonhuman (and abiotic) movement.

Corsican Pine (Pinus nigra subsp. laricio) . Type of pine tree that was used massively along the coast and at drifting soil places, in order to make sand stay at place (DLG & Staatsbosbeheer, 2016). Both austrian pine and corsican pine were most succesful at this. Austrian pines and corsican pines are hard to distinguish from one another.

D

Decay In relation to this research, a natural falling apart of materials. This is often caused by nonhuman, and abiotic events (Ecopedia, e).

Disturbance The altering of a beings surroundings in order to change its life conditions for the better (Tsing, 2015).

Dune A dynamic coastal zone that is shaped mostly by the sea and wind.

Dune forest In Natura2000 policies named H2180 A, B, or C (Ministerie van LNV, 2008). Within these policies, not all trees that grow at the dunes are considered. Only 'native' species, such as birch-oak forests, are considered and

named this way.

Dynamic coastal management Type of management that creates dynamics at the dunes, while at the same time the coastline is maintained at the same spot. Dynamics keep the dunes healthy. Inventions such as the sand engine, and sand suppletions to the coast make this kind of maintenance possible (Van der Valk & Arens, 2012).

E

Estates A property with land. In this research, situated on old dune ridges along the dunes. Often they have a strong relation to the dunes.

Explorer One of the three types of human movement. Explorer's move through the site by curiosity.

F

Fallow deer (Dama dama) A companion species of humans. Have been kept by humans for centuries. Whereever humans invade, in many cases fallow deers invade as well (Future Ecology podcast episode 'Dama drama', 2021). The overpopulation of fallow deer cause many problems at the Amsterdamse Waterleidingduinen (Faunabeheereenheid Noord-Holland, 2021).

Ferality When a nonhuman goes wild again after domestication.

Forest More than a collection of trees.

Often functions as one organism. Has this cultural meaning to humans as well. A type of landscape that we can visit.

Forest strategy A recently introduced policy by the Dutch Ministry of Agriculture to expand the total forest area by 10%, 37.000 hectares (Ministerie van LNV, 2020)

Flower bulb fields Fields used for the cultivation of flower bulbs. The water level at these fields are highly regulated. Many nutrients and pesticides are used in the cultivation of bulbs (Van der Wal & Hees, 2005).

G

H

Haptic sensation Through touch exploring a landscape, walking but also touching (De Wit, 2014).

Heather habitat In Natura 2000 policies named H2140 A or B, or H2150, depending on the type of heather that is found (crowberry or common heather). In the dunes, this habitat type only exists north of Bergen, or at small spots in the dunes that are older (Ministerie van LNV, 2008).

Human Type of animal species. Can be called ecosystem engineers (Schilthuizen, 2018), and can thus be seen as a species that shapes not only the world of its own species, but also defines possibilities for many nonhumans by this.

Human infrastructure A capitalist infrastructure that considers movements based on an economic capitalist system (Tsing, Deger, Saxena & Zhou, 2020).

Human perception The way humans perceive the world is through their senses: Seeing, hearing, tasting, touching, smelling.

Hybrid A word derived from Elizabeth Meyer (2008). An explicit human structure that can be colonised by nonhumans. The hybrid steers for meeting moments between humans and nonhumans. Through the hybrid, nonhuman presence within the landscape is clarified.

I

Invasive A nonhuman event that often happens because of human infrastructure (Tsing, Deger, Saxena & Zhou, 2020), eg. the overpopulation of fallow deer (Dama dama). Often relates to ferality gone wrong. See also Human infrastructure and ferality.

J

K

L

Landscape as being A landscape structure that is designed as if it has the legal rights of a person. A term derived

from the case of the Whanganui river in New-Zealand, that has the legal rights of a person (Berger, 2016).

M

Mature forest State of forest in which climax species arise, and present species do not change that much anymore (Ecopedia, g). Often happens after about 50 years. However, disturbance still happens in mature forests.

Maintainer One of the three types of defined human movement. This human movement is lead through taking care of an area, through a practice that more or less considers returning events year after year.

Molinia meadows Type of wetland hay meadows with a large amount of different plant species (Ecopedia, f).

Movement Ways of going further and by that exploring the landscape (De Wit, 2014). Eg. climbing, walking, jumping, trotting, dancing, etc.

Multispecies world Observational, mostly anthropologic theory that underlines that every movement and change made by humans, disturbs or helps nonhumans. As well as that nonhumans also tend to shape their world largely.

Myxomatosis Virus that has killed a large part of the rabbit population at the dunes, and by that has speed up the

grassing of the dunes. After the downfall of the rabbit population, rabbits turned out to be a key species at the dunes (Groenendijk, 2017).

N

Native / Non-native Even though useful biological connotation whether plants, or animals move at the site without human intervention, a separation that the research is critical of. To describe species as non-native is in this research seen as an unpleasant thing to do.

Natura 2000 European policy that protects areas considered important for fragile ecologies (European Commission).

Nature There are many different descriptions of the word nature (Drenthen, Proctor & Keulartz, 2009). One of these descriptions is that 'nature' is a system which humans are a part of (Drenthen, Proctor & Keulartz, 2009). In this research nature is seen as this dynamic system.

Nonhuman All species that are not human: animals, plants, fungi.

Nonhuman movement Depending on the nonhuman, can be horizontal, vertical, or both. Animals often move horizontally, whereas plants often move vertical above ground (and sometimes horizontal below ground). Fungi form networks that grow horizontally and spur vertically.

North Sea Sea that moves sand towards, and takes away from, the Dutch dunes.

Nitrogen At the moment one of the largest concerns when it comes to agriculture. Common agricultural practices lead to a large nitrogen deposit, that leads to the grassing of the dunes (Groenendijk, 2017).

O

Oosterkanaal Only canal in Amsterdamse Waterleidingduinen that still retrieves water directly from the dunes (Groenendijk, 2017).

P

Q

R

S

Sacred landscape Heathen religion in the western world used to be closely related to the landscape. Especially transition zones, water, certain trees, and mounts were important for religious practices (Schuyf, 2018).

Sand low in calcium Soiltype that travels from northern waters through North-sea currents, and ends up at the coast north of Bergen (DLG & Staatsbosbeheer, 2016). Substance of which the dunes are made.

which the dunes are made.

Sand rich in calcium Soiltype that travels from the great rivers along the Dutch coast, and ends up at the coast south of Bergen (DLG & Staatsbosbeheer, 2016). Substance of which the dunes are made.

Savannah A special part of the forest at Amsterdamse Waterleidingduinen that does resemble the spatial qualities of an actual Savannah (Waternet, b)

Schoorlse Duinen Dune area owned by Staatsbosbeheer. One of the sites that was researched. The site has the heighest dunes in the Netherlands, and has large plantations of Austrian and Corsican pines (DLG & Staatsbosbeheer, 2016).

Sea buckthorn habitat In Natura 2000 policies named H2160 (Ministerie van LNV, 2008). This is a habitattype that is commonly found at the dunes south of Bergen. This has to do with sand that is rich in calcium.

Secrecy When you find something special or unexpected in what was seen as the ordinary before.

Signage There are six types of signage for humans in the dunes: welcome signs, warnings, prohibitions, guidance, information, and challenges. In the end, presence of signage shows that nature areas in the Netherlands are still human terrain.

Silver aspen (Populus alba) Deciduous tree species that is common to the dune forests in the Netherlands (Ministerie van LNV, 2008).

Small nettle (Urtica urens) In contrast to the common nettle, this nettle is much more of a pioneering species. The nettle is smaller than the common nettle (Ecopedia, h).

Small-leaved linden (Tilia cordata) Deciduous tree species that is to some extent present at the dune forests. The leaves that fall of this tree provide nutrients in the soil, which results in the presence of lily-of-the-valley (Hommel, Siepel & Slings, 2010). On top of that, this tree is wellknown for its pollinating qualities.

Sublime An aesthetic experience in which 'it is not about the threat of the experience, but about its liberating effect on the beholder' (Teunissen, 2020).

Succession Change in vegetation over time, that happens in a certain order (Ecopedia, g). See also decay.

T

Time Time can be the now, which is present in movement. Time can be the returning, which is present in the regeneration of hybrids about every 30 years. Time can be the continuous, which is present in the Landscape as being. All layers of time are present simultaneously.

Transition A change from one landscape to another, such as from forest to field, from land to water. In this research there are multiple types of transitions found in the landscape, eg. crossings, from an introvert to an extrovert landscape, and from an introvert to a super extrovert landscape. The type of transition depends on the contrast between the two landscapes.

U

Unpleasant landscape If a landscape is seen as a landscape as being, or adjacent to a landscape as being, it has the right to be unpleasant to humans.

V

Visitor One of the three types of human movements at the dunes. This is the most common way of moving. Usually this way of moving follows a certain predefined route.

Visitor centre Often serves as an official introduction to the site, where there is information about the site to be found.

W

Water infiltration system Common system within the dunes, since the dunes serve as a good natural purification system for water. Many of

the infiltration systems in the dunes are now mostly out of use, because they retrieve water from the dunes. Amsterdamse Waterleidingduinen is an exception to this. Here, water is hardly retrieved from the dunes anymore, since the water within the system comes from the Lek (Borst, Vissers & Vliegenthart, 2014).

Wind A crucial abiotic factor at the dunes, since it steers many of the dynamic dune processes (Groenendijk, 2017; DLG & Staatsbosbeheer, 2016)

X

Y

Young forest A stage in succesion that often happens after about 20 years. The first pioneering trees are for instance birches. The forest is often dense and not very tall yet. There are many shrubs at this stage (Ecopedia, g).

Z

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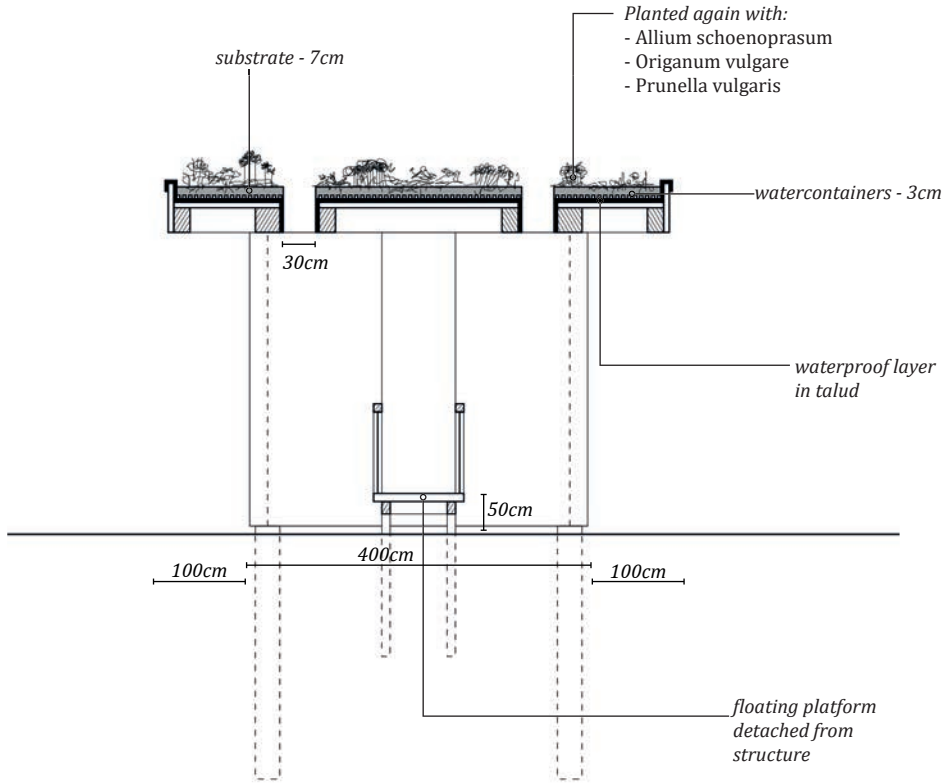
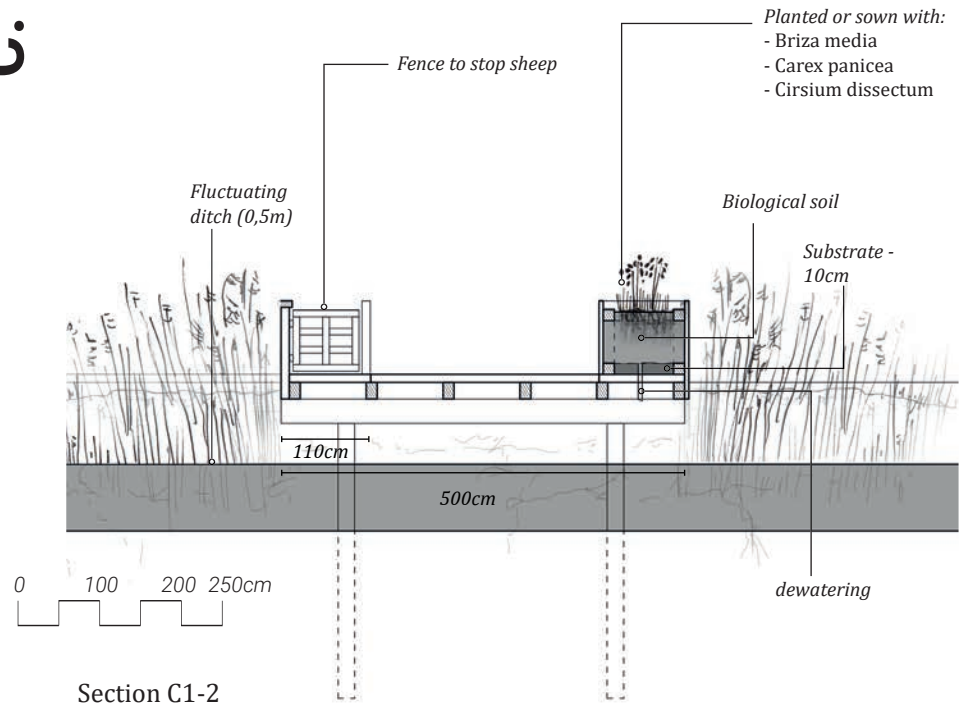
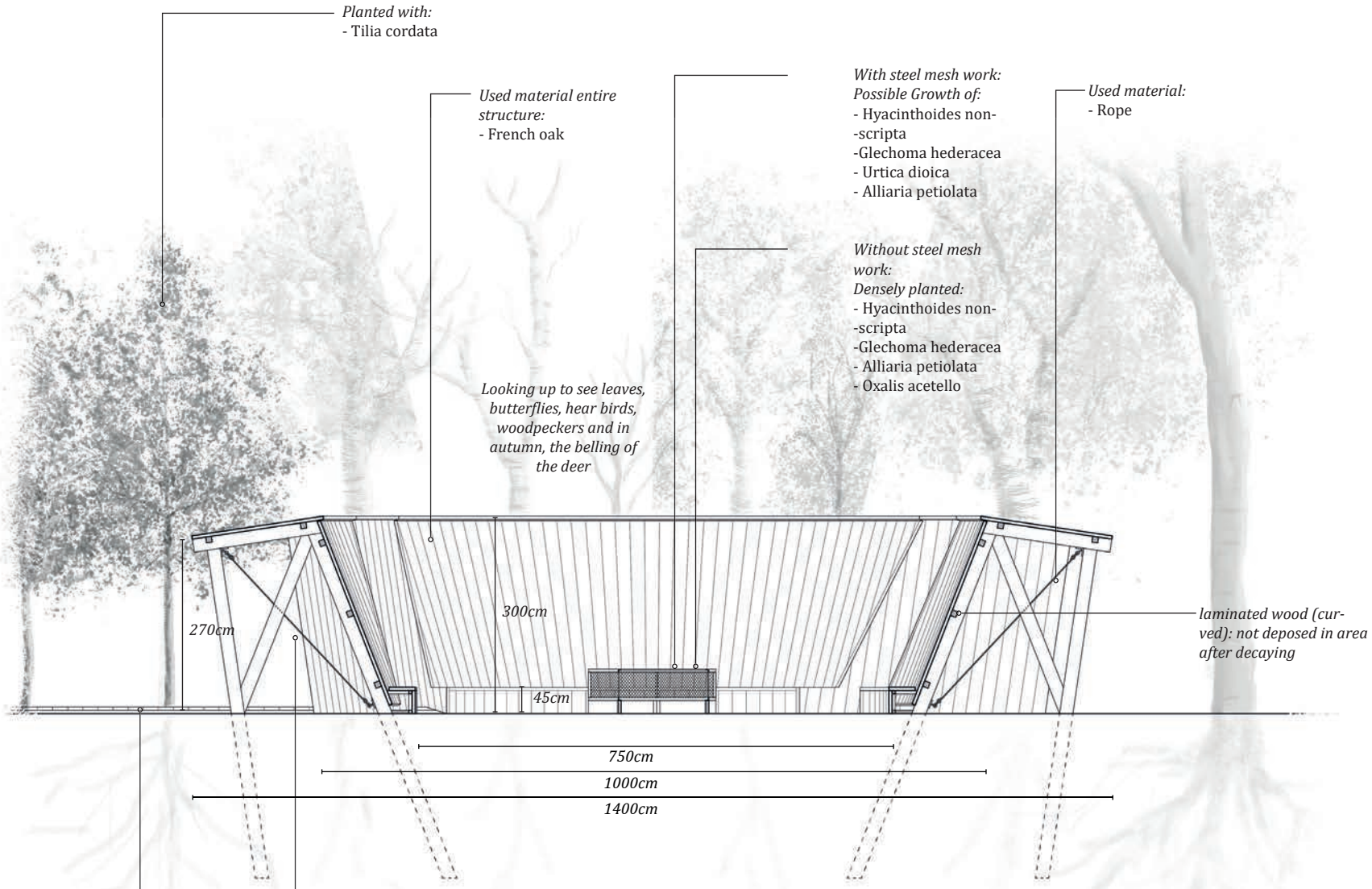
C.1 DRAWINGS 1:50 HYBRIDS



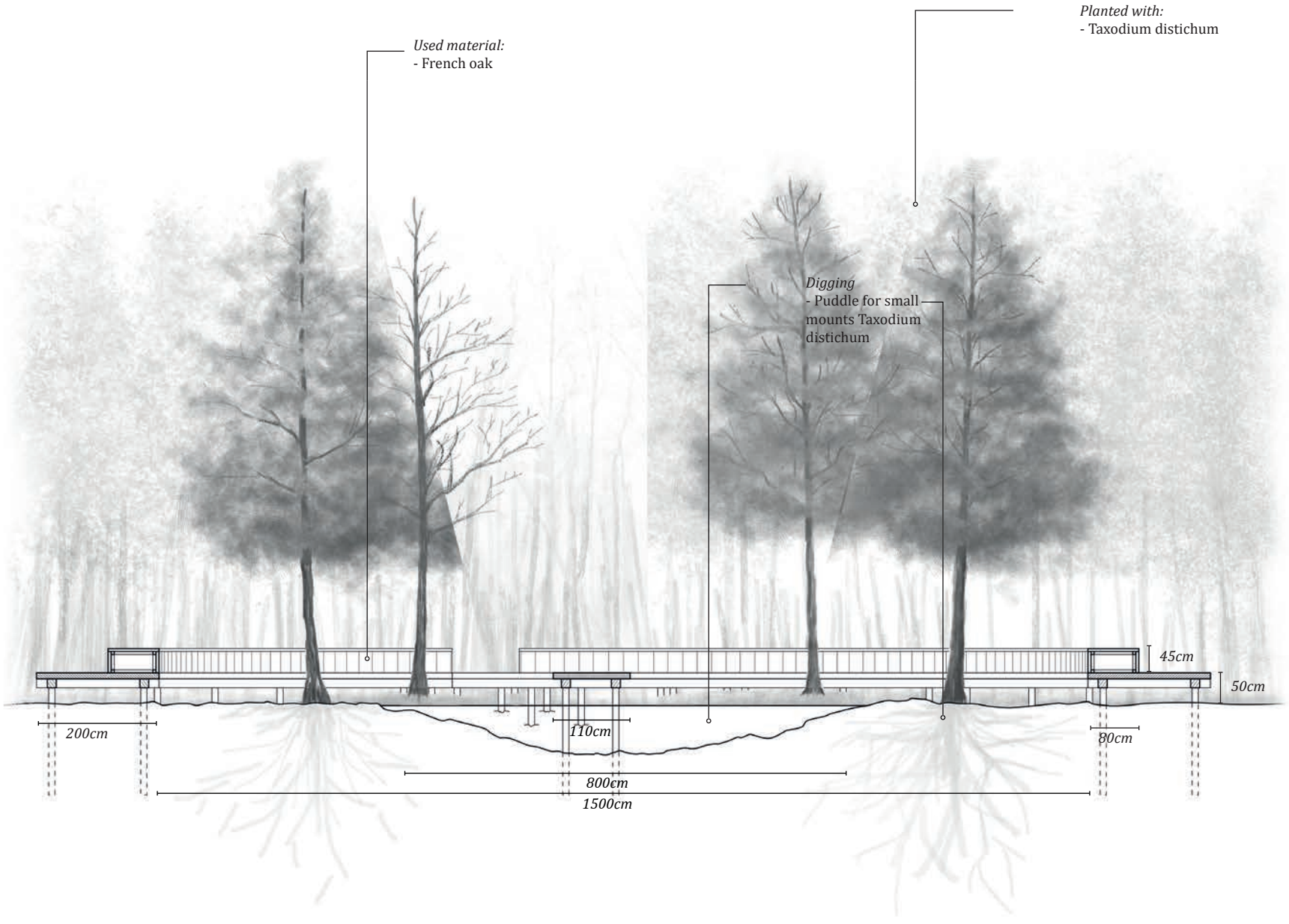
Section C1-1



Section C1-2


Planted with:
- Tilia cordata
Used material entire structure:
- French oak
With steel mesh work:
Possible Growth of:
- Hyacinthoides non-scripta
-Glechoma hederacea
- Urtica dioica
- Alliaria petiolata
Used material:
- Rope
Without steel mesh work:
Densely planted:
- Hyacinthoides non-scripta
-Glechoma hederacea
- Alliaria petiolata
- Oxalis acetello
Looking up to see leaves, butterflies, hear birds, woodpeckers and in autumn, the belling of the deer
300cm
270cm
45cm
750cm
1000cm
1400cm
laminated wood (curved): not deposed in area after decaying
Planted along platform with:
- Convallaria majalis
Invites more nonhumans than only great spotted wood pecker for instance:
- Wood mouse (Mus sylvaticus)
- Multiple spiders (Arachnid)
0 100 200 250cm

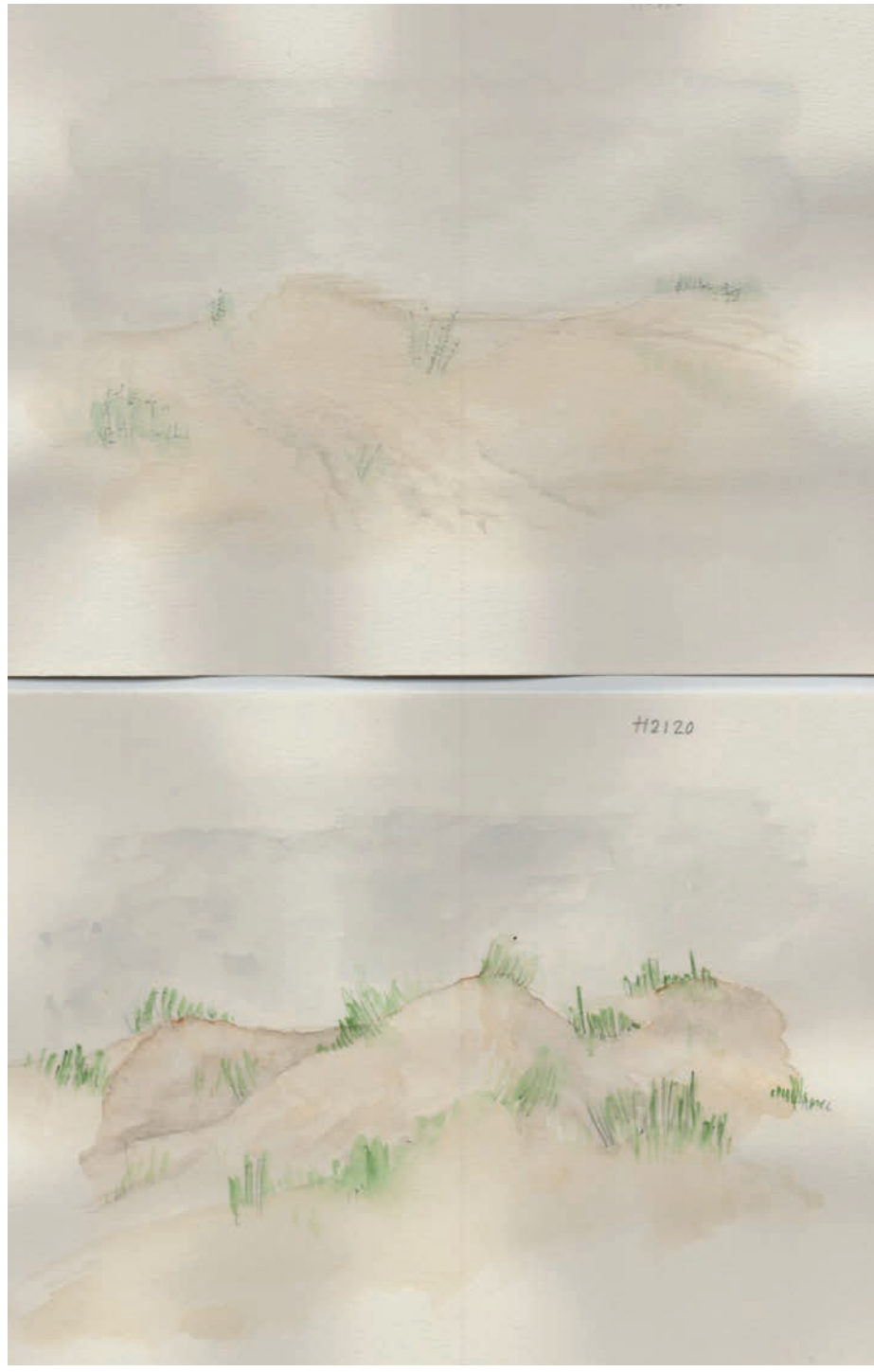
Section C1-3



Section C1-4

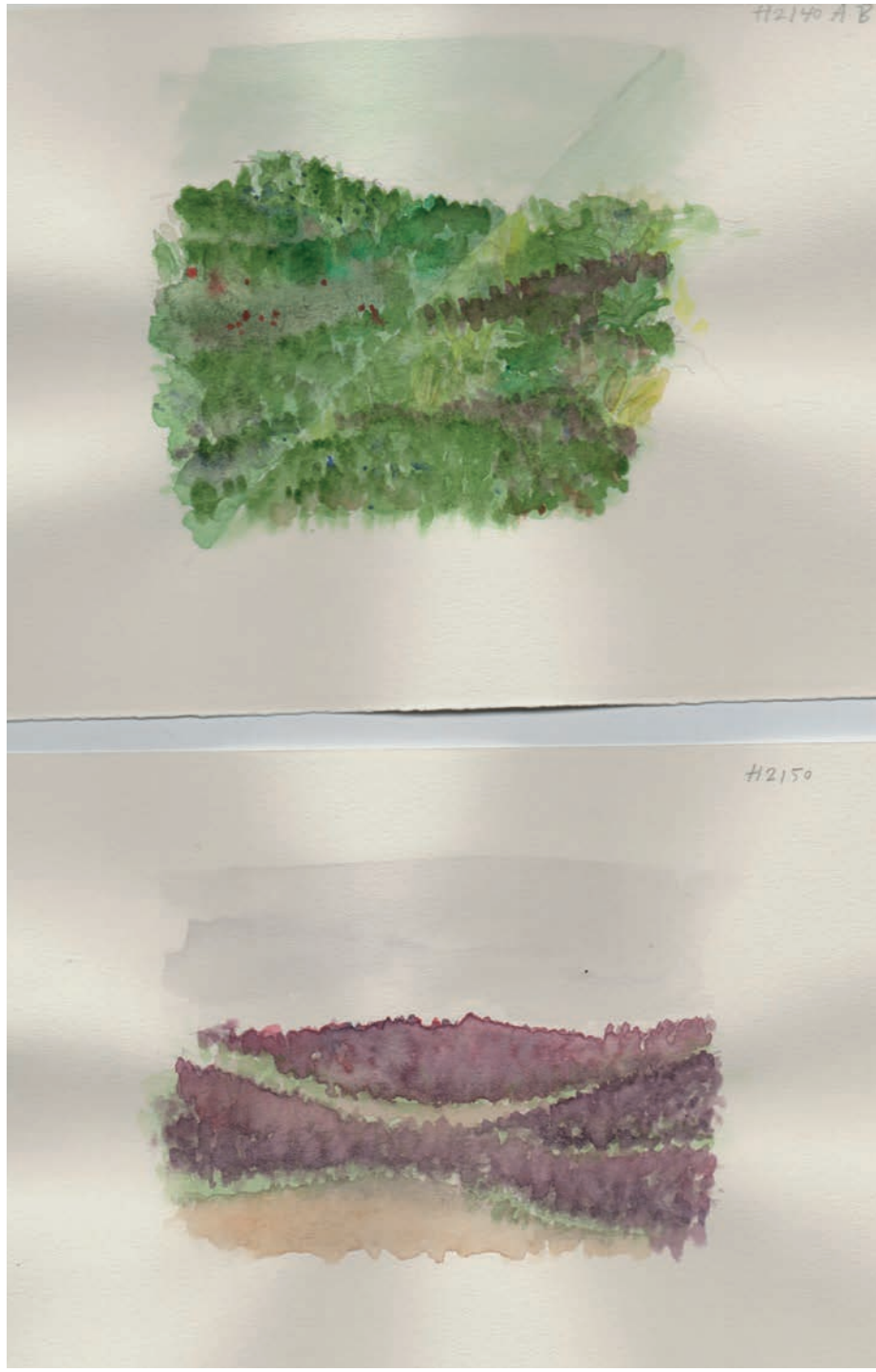
0 100 200 250cm

C.2 WATERCOLOUR HABITAT TYPES



Water Colour Habitat Types H2110 - Embryonal dunes & H2120 - White dunes

Water Colour Habitat Types H2130 - Grey dunes, A: Calcium rich, B: Calcium low, C: Nardus



Water Colour Habitat Types H2140AB - Crowberry, A: Moist, B: Dry & H2150 Common Heather

Water Colour Habitat Types H2160 Sea Buckthorn

Water Colour Habitat Types H2170 Willow thicket - Grey Willow

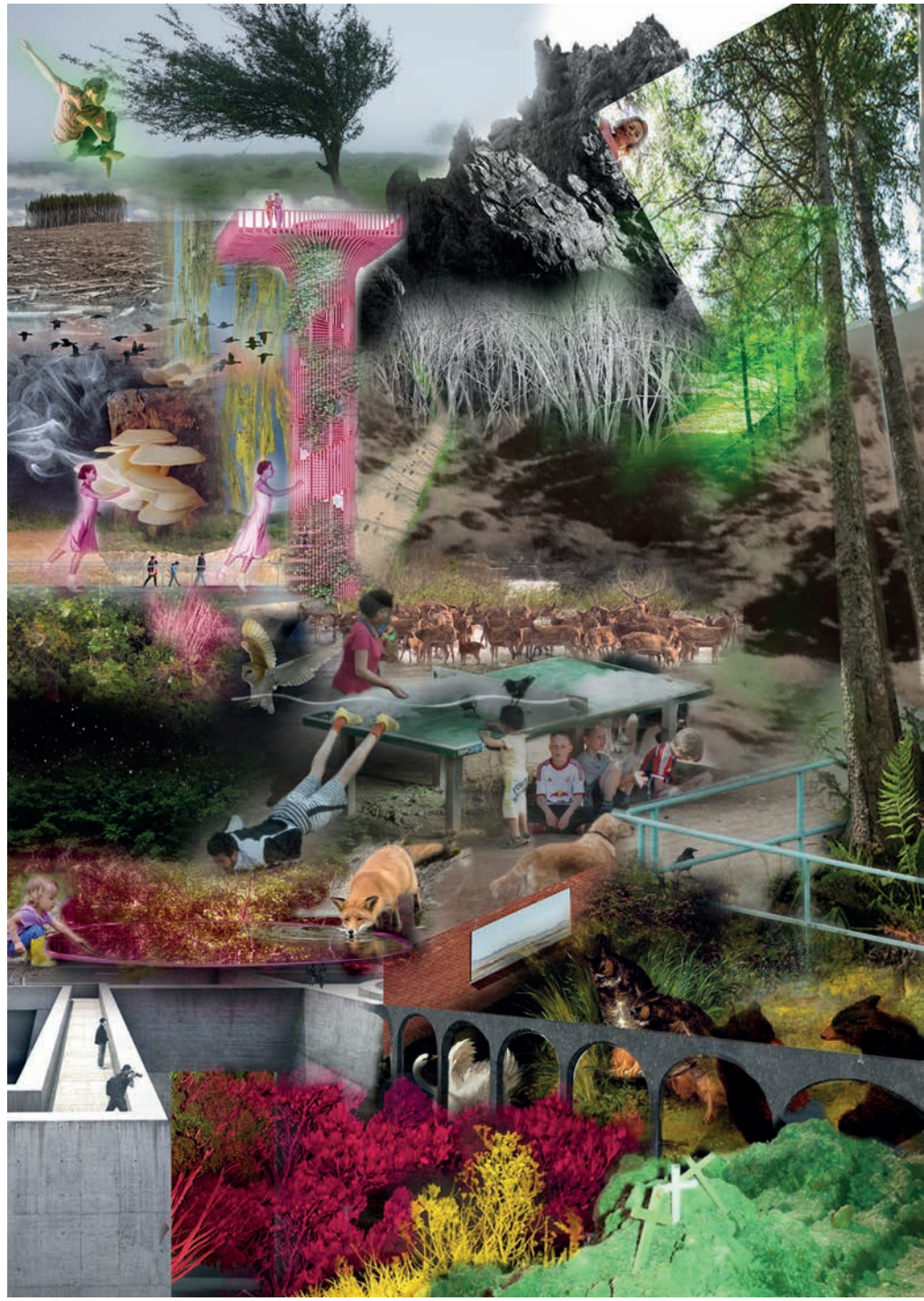
What is not a Habitat Type - Pine forest in Schoorl (edge at Baaknol) &
Water Colour Habitat Types H2180 Dune forest

Water Colour Habitat Types H2190 Moist dune valleys, A: Open water, B:
Calcium rich, C: Calcium low, D: High swamp plant growth

C.3 COLLAGES

Collage 1: Zuid-Kennemerland Collage - History, specific trees, and backyard

Collage 2: Meijendel Collage - An area with two sides: Scheveningen and Wassenaar



Collage 3: Multispecies World Collage Through the eyes of a Human being. What do you perceive looking at a multispecies world

Collage 4: Multispecies World Collage Through the eyes of the Fallow deer

Collage 5: Schoorlse Duinen Collage Concept Attempt 1

Collage 6: Schoorlse Duinen Collage Concept Attempt 2

Collage 7: Amsterdamse Waterleidingduinen Collage Concept Attempt 1

Collage 8: Amsterdamse Waterleidingduinen Collage Concept Attempt 2