

WEATHERED SENSES

Exploring the sensory experiences of nature

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WEATHERED SENSES

The story of this thesis takes place in a forest. When walking in the forest we can hear the leaves shiver in the trees and feel the chill of the wind on our skin. We balance on stones and slippery roots and smell the scent of damp soil in our nostrils. It often makes us feel at ease. Experiences of nature can be restorative and healing, because it affects all of our senses. At the same time, people in the cities spend a lot of time indoors, away from nature and the qualities that makes us feel well.

The built environment has a great impact on people's wellbeing. Architecture can make us feel content but it can also make us feel uncomfortable and uneasy. Of course, this depends on many things. Such as high consideration of materials, light and sight or other qualities in a building. One quality that is however often forgotten, is the sensory qualities. Contemporary architecture tends to focus on only one of the human senses, the sense of vision, forgetting to consider the rest of our senses. The purpose of this thesis is to investigate how the human senses exposure of nature and weather can increase people's sense of wellbeing, and to design an environment that helps that action.

This project consists of a series of investigations on the human senses and its perceptions of nature, through the concept of a Project diary and sensory studies in models. The result is a design proposal implemented into a choreographed walk - a walk for the human senses, placed in Slottsskogen. Throughout the walk the visitor will experience four spatial installations, focusing on the sites specific impact on the human senses, all with the goal to increase the experience of nature and to weather our senses.

The aim is to give a sensory experience of nature that people are not used to, to explore the qualities of nature and also to engage people to spend more time in nature, being exposed to the weather and the seasonal changes, thus increasing people's sense of wellbeing.

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STUDENT BACKGROUND

BACHELOR STUDIOS:

Wind shelter, Bohus Malmö
Sauna facility, Härryda
Artist's studios, Röda Sten
Residential quarter, Flatås
Conversion of Lyckholms fabriker to public library
Mechanical workshop in Viared, Borås
City plan for Pustervikskajen
Hotel and conference facility, Åkareplatsen
Urban development, Hammarkullen
Cultural Center, Heurlins Plats

MASTER STUDIOS:

Spatial morphology and design
Healthcare studio

Direction for MT: Matter Space Structure
Examiner: Morten Lund
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WHY ME AND WHY THIS THESIS?

The first course I took at the masters was in the Healthcare studio and this started my interest for how much the surroundings affects us. It works in both ways, the environment we are in can make us feel tired and depressed, or happy and content. This is something that I find important to be aware of when planning and designing for people.

At the same time, I felt that I wanted to work with architecture in nature, how the built and planned can take shape of the place it is in. It was the idea to combine these two areas of interest that led to my thesis question.

PURPOSE AND AIM

A walk in the forest triggers all of our senses. We use our balance when walking on slippery ground, the vision when we look at where to place our feet, the sense of acoustic when listening to the bird song and the proprioception when we have to swift away branches in front of us. The purpose of this thesis is to increase our sensory experiences of nature. By designing a walk in the forest I will help the visitor to focus on different senses, experience those activated senses in a strengthened way, and with that increase the sense of wellbeing.

The aim is to give a sensory experience of the nature that the visitors are not used to, to explore the qualities of nature and also to engage people to spend more time in nature.

THESIS QUESTIONS

How to design for environments in nature that would help to increase our sensory experiences, hence contributing to peoples sense of wellbeing?

What kind of elements in nature responds best to the human senses?

How can we use natural elements to trigger our senses?

METHOD

My main method has been Research by design, but with a start in Research for design, looking at elements in nature that affects us in a healing way.

As an important process method I have worked with a Project diary, in which I have documented the specific elements of the site and most importantly my own perceived sensory experiences from the location. This Project diary, along with the research about natural environments that is beneficial for the public health, was then used as the program for the proposal of this thesis.

DELIMITATIONS

Since this walk takes place in the forest, and that part of this thesis is important to me, I have chosen not to take people with walking disabilities in concern. This kind of experience would of course be beneficial for that group as well, but I want to explore and work with the nature as it is found in the forest and not intervene with the nature in a scale that that would demand.



HEALTH AND NATURE

Natural outdoor environments, such as forests, parks, trees and gardens are known to bring opportunities to improve public health and wellbeing. Contact with nature can act as a counter pole to some of the unhealthy effects an urban lifestyle brings. Contact with plants and animals can have a strong therapeutic or preventive effect on many people, it reduces stress and contributes to improving both people's mental and physical abilities. Additionally, close access to green areas can provide a supportive setting for physical exercise and restorative relaxation (Nilsson, Sangster & Konijnendijk, 2011).

How well one achieve recreational outcomes is related to the choice of activity and the site for it. Not all natural environments are equally restorative or appropriate. Grahn & Stigsdotter has identified eight different perceived sensory dimensions (PSDs). The PSD's can be used to describe differences of the natural environments as well as differences within the same type of environment. The research shows that people that are in need of psychological restorations prefers environments that are dominated by the sense of Serene,

Refuge, Rich in species and Nature. Where Serene is interpreted as a haven, almost a holy place. Refuge, as a place where people can feel safe, Rich in species is interpreted as diverse in sensory experiences and Nature as a wild, free-growing, untouched room. The other PSDs which are Space, Culture, Prospect and Social are related to qualities of experiencing cultural objects, social activity and being active (Stigsdotter, Corazon, Sidenius, Refshauge & Grahn, 2017).

In this thesis I will mainly focus on environments that dominates by the PSDs Serene, Refuge, Rich in species, Nature and Space.

The word nature has already been used a lot, it has several definitions and people tend to use it differently. Before I go on, a definition of how this thesis interpret nature is necessary. This is to be found at following page.

CONCEPT OF NATURE

The concept of nature has many definitions. Very simplified, one can say that there are two common ways to define the word. First, one can refer to “the entire physical world influenced by the general forces described by physics, chemistry and evolutionary biology” (Vogel, 2017, p.187). Which would mean that all species, like humans, are completely natural. The opposite of nature would therefore be supernatural, but put in practice this means that everything is natural. The second way of using the word nature, is to refer to the world without human interference, and if so, there is not much left in our world that can be called natural (Vogel, 2017). This way of describing nature is therefore not of much use for me.

In the field of healthcare one is much more pragmatic when using the word. Nature simply describes an outdoor settlement that have a great amount of vegetation. It doesn't have to be in a great distance to human

settlement, nor does it have to be an of human, untouched landscape. Research has shown that all kinds of greenery is good for the health. This includes parks, forests, lawns in the cities, plantings on a square etc (Kaplan, Kaplan & Ryan, 1998).

In this thesis I will use the word nature when talking about vegetation, all elements that can be found in a garden. In the concept I also include the weather, as in rain, sun and wind, and water, such as streams, ponds and the sea.

SENSES IN CONTEMPORARY ARCHITECTURE

The built environment has a great impact on people's wellbeing. Architecture can make us feel content but it can also make us feel uncomfortable and uneasy. Of course, this depends on many things. Such as high consideration of materials, light and sight or other qualities in a building. One quality that is however often forgotten, is the sensory qualities. Contemporary architecture tends to focus on only one of the human senses, the sense of vision, forgetting to consider the rest of our senses (Pallasmaa, 2012).

In the book *Questions of perception*, Holl, Pallasmaa, and Perez-Gomez (2006) writes about the experience of nature as restorative and healing because it affects all seven senses which reinforce each other, thus strengthens our sense of reality.

This would mean that these elements combined, nature and a high consideration of the senses could have a great impact on the human well-being.

“Every touching experience of architecture is multi-sensory; qualities of matter, space, and scale are measured equally by the eye, ear, nose, skin, tongue, skeleton and muscle. Architecture involves seven realms of sensory experience which interact and infuse each other. “

- Holl, S., Pallasmaa, J., Perez-Gomez, A., (2006)

THE HUMAN SENSES

SENSORY INTEGRATION

Sensory integration is the neurological process by which we receive information through our senses, organize this information, and make it possible to use our body to make adaptive responses to the environment.

ACOUSTICS

The function of the ear and the brain is to translate the magnitude and frequency of the vibrations to different sound intensities and tones, while calculating where the sound comes from. Hearing creates a sense of connection and solidarity. A sound can make us realize our affinity with the space, the sound measures space and makes its scale comprehensive.

SCENT

Smell is our ability to distinguish scent, odour molecules in the air. Our noses contains hundreds of olfactory receptors. These receptors are directly connected to our limbic system, which can explain why smells so often trigger memories. The strongest memory of a place is often its smell. A smell can bring us back in to specific memories and make us re-enter a space.

TOUCH

The mind sends information to the brain when activity in a sensory receptor is triggered by a specific stimulus, ie pressure, drag and movement, as well as temperature and pain. The sensory receptors are located everywhere on the skin, especially on the fingers, on the feet and in the face. If vision is the sense of distance and separation, the touch is the sense of closeness and intimacy.

VISION

The vision is what enables the eyes to focus and to detach images of light and then creates electrical nerve impulses for colors, hues and brightness. Visual perception is how the brain processes these impulses and converts it into something we can understand.

TASTE

Humans receive taste through the sensory organs called taste buds, placed on the tongue. There are five basic tastes, sweet, bitter, sour, salty and umami.

VESTIBULAR

The vestibular system makes us understand our body in relation to gravity, movement and balance. Small, fluid-filled channels in the arches of the ear measures acceleration, g-force, body movements and head position.

PROPRIOCEPTION

This sense keeps the mind oriented about the placement of the different parts of our body, how we are positioned in space and helps to plan our movements (Lynch & Simpson, 2004).



F1

REFERENCE PROJECT 1

KIVIK ART CENTER AND THE PAVILLION “SCULPTURE FOR THE SUBJECTIVE EXPERIENCE OF ARCHITECTURE”

Kivik art center is a meeting place that works in the interface between sculpture, architecture and nature. It is a place for both the practitioners and the public, where you can experience sculptures as well as take part of the thoughts and discussions behind them.

As a part of the exhibition there is several pavillions, designed by architectures and artists, placed at the site. I have looked closer at a pavillion from 2008 designed by David Chipperfield and Antony Gormley, named “Sculpture for the Subjective Experience of Architecture”.

The sculpture consists of three volumes: the cave, the stage and the tower. The three volumes represent and recreate three forms of experiences of nature and the landscape around Lilla Stenshuvud. All done in concrete.

The cave symbolizes the enclosed feeling of being in a dense forest. It is dark and closed, and allows the sense of acoustics to dominate.

The stage, one floor up, is a place to both be exposed but also to have an outlook. A place for contemplation.

The tower, that stretches 16 meters up into the air, leads you up to a platform where you are overlooking the ocean (kivikart.se, 2018).



F2

REFERENCE PROJECT 2

NORWEGIAN SCENIC ROUTES - TROLLSTIGEN VIEWPOINT

In Norway 18 roads have been appointed as national scenic routes. This is routes where the nature attractions and wonders have been amplified with art, design and architecture to give the visitor a greater experience of the place (visitnorway.se, 2018).

Small scale structures are placed in the nature to help the visitors to get closer to the nature. Placed alone in nature, I find them inspiring because they stand out in its surroundings yet have to communicate with the same. I like some more than others but they all have in common that their main purpose is to get the visitors to observe nature, to enter it and experience it. The

one problem is that they all focus on only one of the human senses, the sense of vision, forgetting to consider the rest of our senses.

On the route between Langvatnet on Strynefjellet and Sogge Bru in Romsdalen you find Trollstigen. On this spot Reiulf Rastad Architects has been invited to design for a scenic walk as well as a visitors center. Built in concrete and corten, the walk stretches along the mountainside making it possible to view the valley from points you couldn't reach before (nasjonaleturistveger.no, 2018). An experience for the sense of vision but its position on the edge of the mountain and with parts lingering over the cliff, also challenges the senses of vestibular and proprioception.

LOCATION

The site chosen for this thesis is a spot i Slottsskogen in Gothenburg. I looked for a place with a great variation of character, close to the city but uncrowded. I have looked closer at four places at the site. These places vary in its characteristics and offer different sensory experiences.

The investigation is made in three parts. Part one is an inventory of the place and its different natural elements. Answering the question of what there is today.

Part two focuses of my own experiences of the site. How did I feel when walking around in the woods? What different senses was triggered and why? I documented this in a Project diary of which parts of it has been documented in a diagram showing the intensity of the sensory experiences.

The third part is the mapping of the sensory highlights. Distances were measured and rocks were climbed.



SLOTTSSKOGEN

As early as the 17th century, the land was used as pastures, orchards and mooring beds. The name Slottsskogen started to be used only in the 1700s, when Gothenburg's middle class got access to the area. In 1874 it was turned into a real park with winding footpaths, wide lawns and a zoo (goteborg.se, 2019).

Today it is a well visited park in the middle of Gothenburg, where you still find a zoo but also several playgrounds and cafés.

In its northwestern part you find the location for this thesis. It is a place not much used today, well hidden in its greenery and with a great variation of character. Here you find old beech woods, a waterfall, lush slopes and steep edges.

INVENTORY - VEGETATION



Hornbeam



Birch



Hazel



Oak



Mountain ash



Sallow



Maple



Pine tree

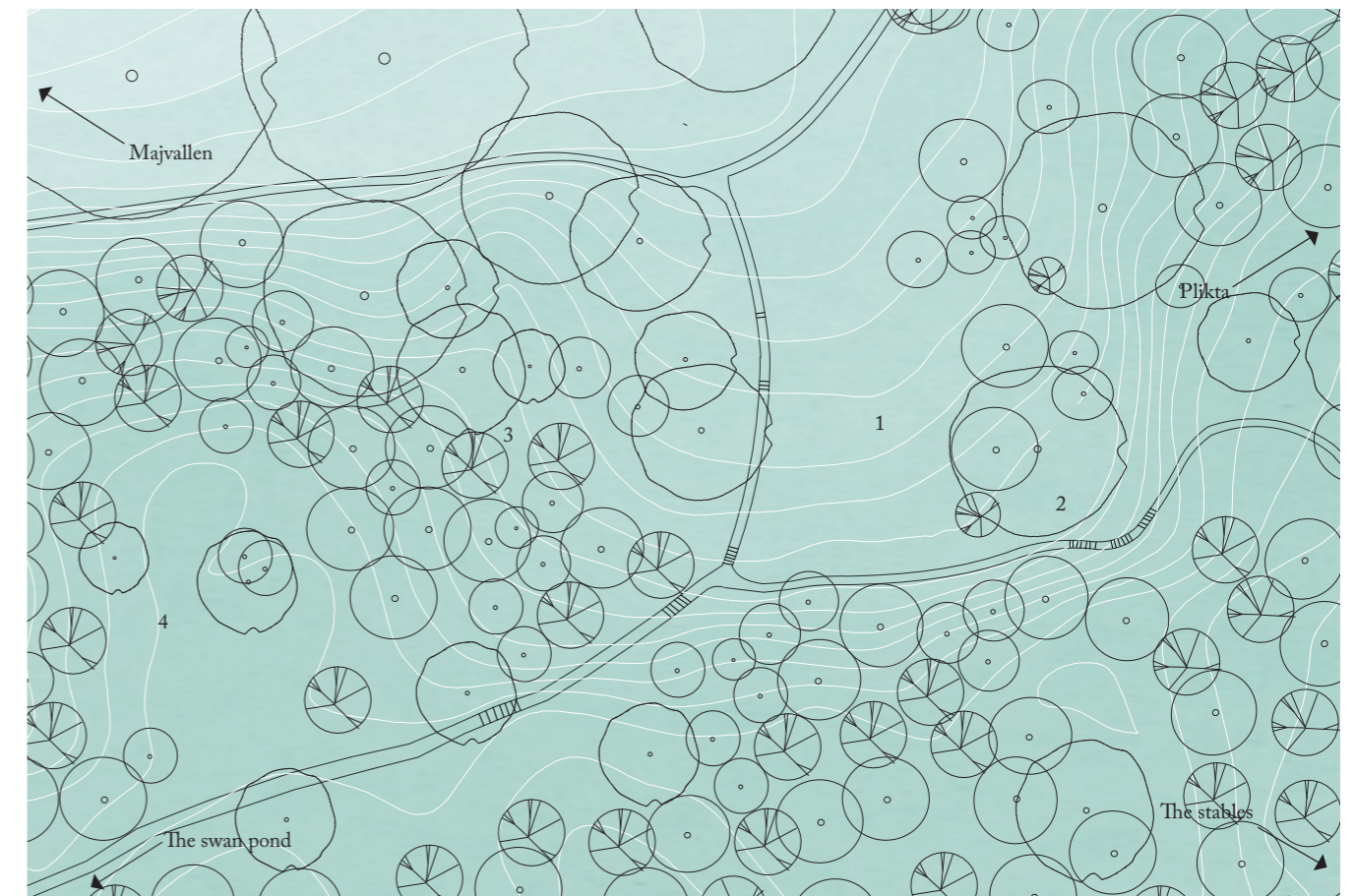


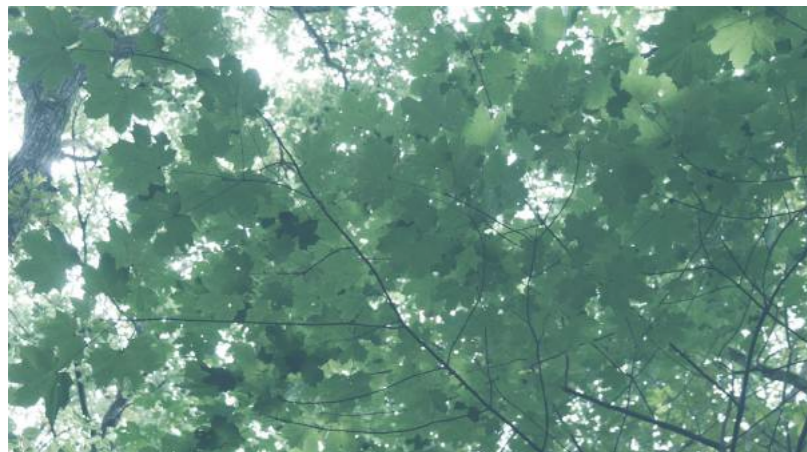
Beech

PROJECT DIARY

I have looked closer at four places at the site. These places vary in its characteristics and offer different sensory experiences.

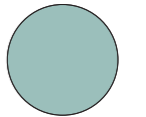
For five days I visited the site and studied these four places. I took notes and documented my sensory experiences. I wrote down what I felt and what it was that triggered the feelings. I drew sketches, took pictures, recorded movements and sounds. I have collected all of this investigation in a physical Project diary of which parts is reproduced on following sides.



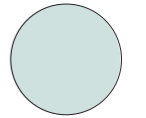


PLACE 1

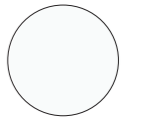
“Standing on the slope, the tree crowns above me creates a roof over my head. The ground is uneven under my feet and I am standing on a green bed of plants. The sound of the waterfall dominates the hearing and I can easily see where the water used to flow.”



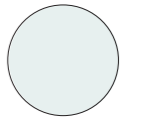
Vision



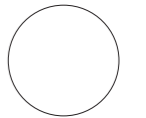
Vestibular



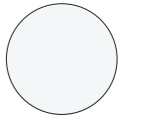
Touch



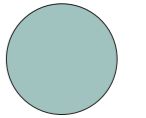
Scent



Taste



Proprioception

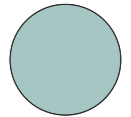


Acoustics

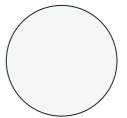


PLACE 2

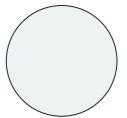
"This is where the pigs used to live and the foundation of their house is still here. Standing up I can see the whole valley, but sitting down on the benches the edge of the platform covers half of the view and I take notice of the sounds. Leaves rustling, dripping from the waterfall and the birds singing."



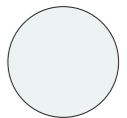
Vision



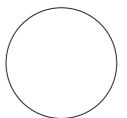
Vestibular



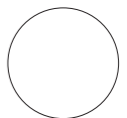
Touch



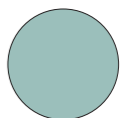
Scent



Taste



Proprioception

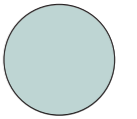


Acoustics

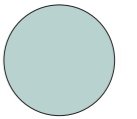


PLACE 3

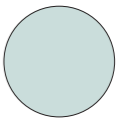
“On this part of the site rocks and large stones are spread on the ground. It tickles the playfulness in me and I climb on them jumping from one to another. Here there are younger trees growing and thin branches hit me while I’m jumping. Insects falls down on me.”



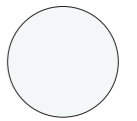
Vision



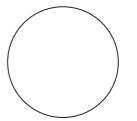
Vestibular



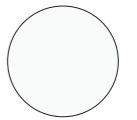
Touch



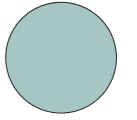
Scent



Taste



Proprioception

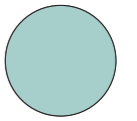


Acoustics

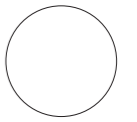


PLACE 4

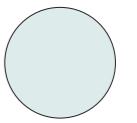
"First time I can see the sky and feel the wind on my skin. The sound of the city hits me but drowns again, when the wind makes the leaves shiver. Bird song, trees swaying in the wind and cars in a distans."



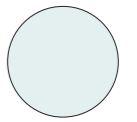
Vision



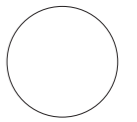
Vestibular



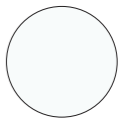
Touch



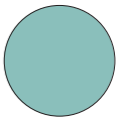
Scent



Taste

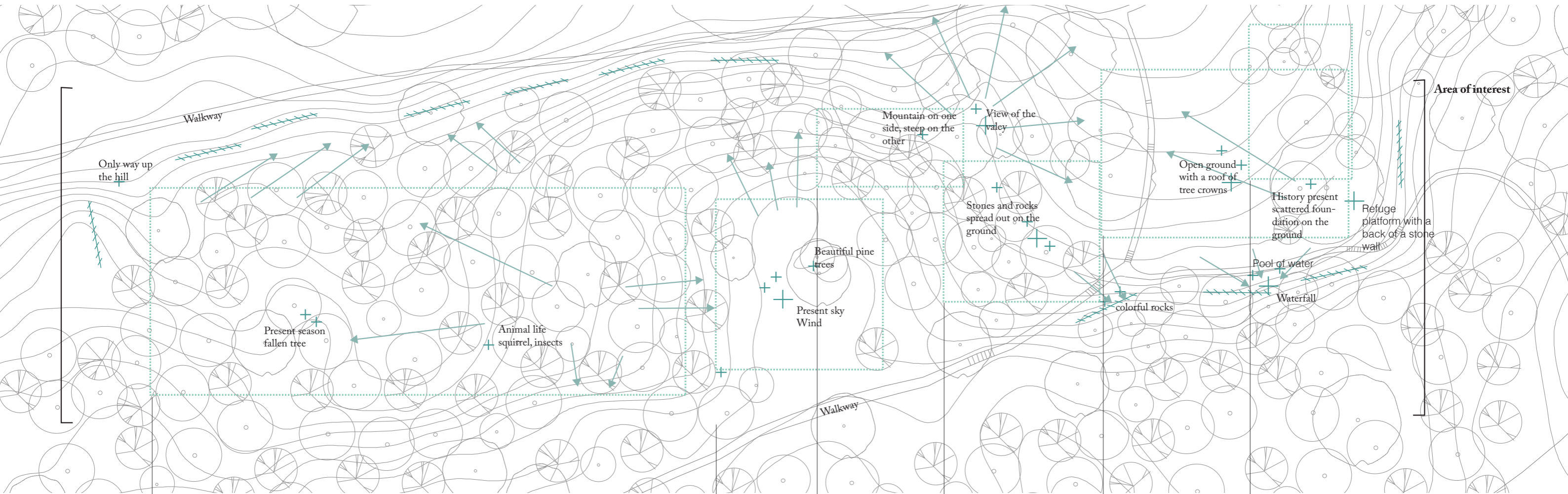


Proprioception



Acoustics

MAPPING OF THE SITE



Young trees, variation of tree species, no signs of human activity



Glade with moss and heather on the ground



A slope with a variation of ages and species on the trees



Variation of trees, earth and stones on the ground



Beech wood. Leaves and soil on the ground



Ground full of green plants (sw: Nordlunda)

THE WALK

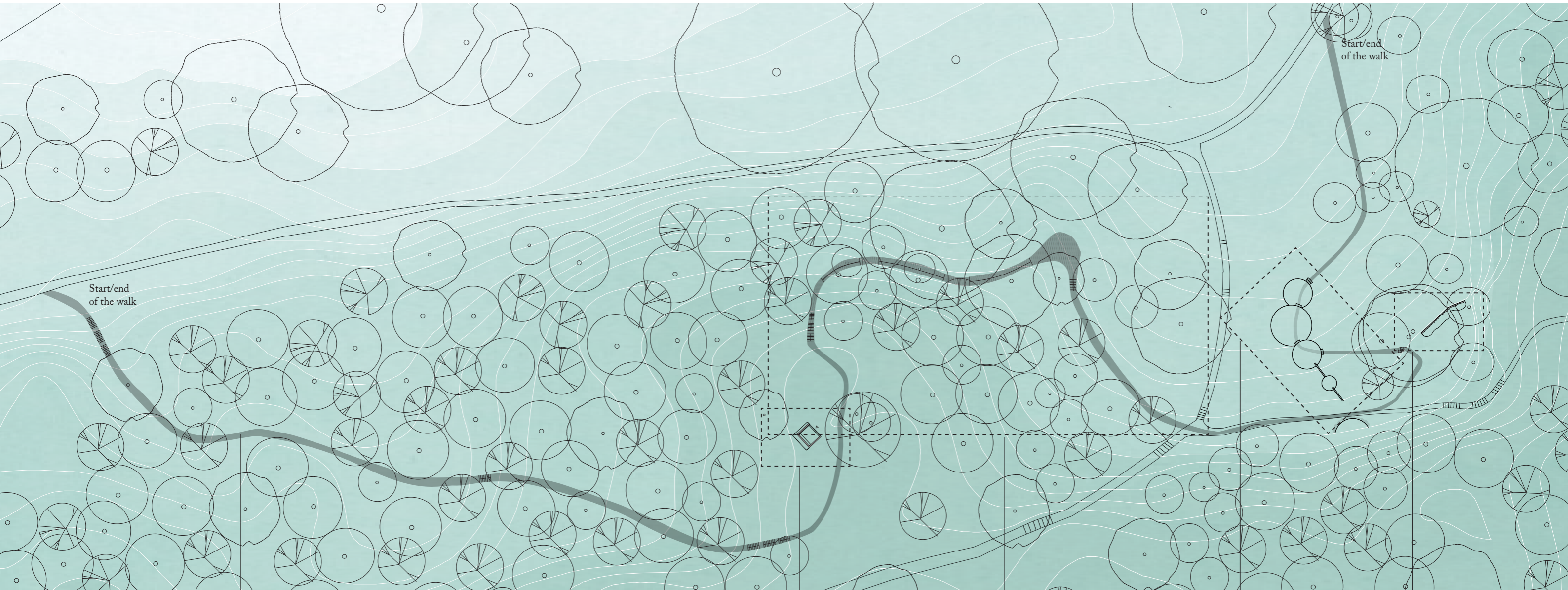
The Project diary and the mapping of the site results in a walk. The walk has been choreographed carefully to maximise the sensory experiences along the way. The walk uses the nature as it is today and steers the visitor in “right” directions, through the “right” passages in the forest.

Most people that is moving in the area is walking on the north walkway, therefore using that path as a startingpoint seems like the best way to get people to enter the area. Placing the two entrees at some distance makes people enter the walk and moving through it, as a part of their path that they already on.

Along the walk the visitor will enter four spatial additions in which I have added elements to increase the sensory experience. The sensory spaces has different focus and work with a variation of elements dependent on my experiences from the site. But the walk as a whole is connected through the materials and the respect to the nature.

The attitude of the walk can be summed up in a quote from the 18th century English author and landscape architect Joseph Spence, “What is, is the great guide as to what ought to be.”

CONCLUSION



New walkway

The Wind tower
(place 4)

Special features of the place:
Wind, sky, treetops.

Focus on touch and vision by
exaggerating the experience of the wind and
setting the visual focus to the treetops.

The Forest trail
(place 3)

Special features of the place:
branches, view of the valley, large stones and
rocks spread on the ground.

Focus on touch, vision and proprioception by
designing a footbridge among the treetops, a
viewpoint on the edge of the hill and lifting out
the stony ground by steering the visitor right on
the stones.

The water mirrors
(place 1)

Special features of the place:
waterfall, open space with
tree crowns as roof.

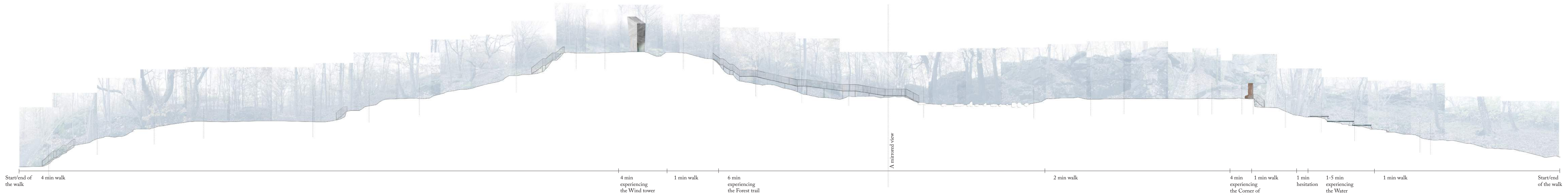
Focus on touch, vision
and vestibular by lifting out the
water and the roof of the place
and exaggerating the experience of
walking on different grounds.

The Corner of sounds
(place 2)

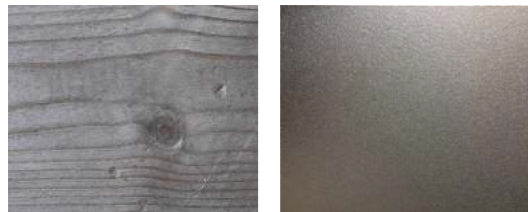
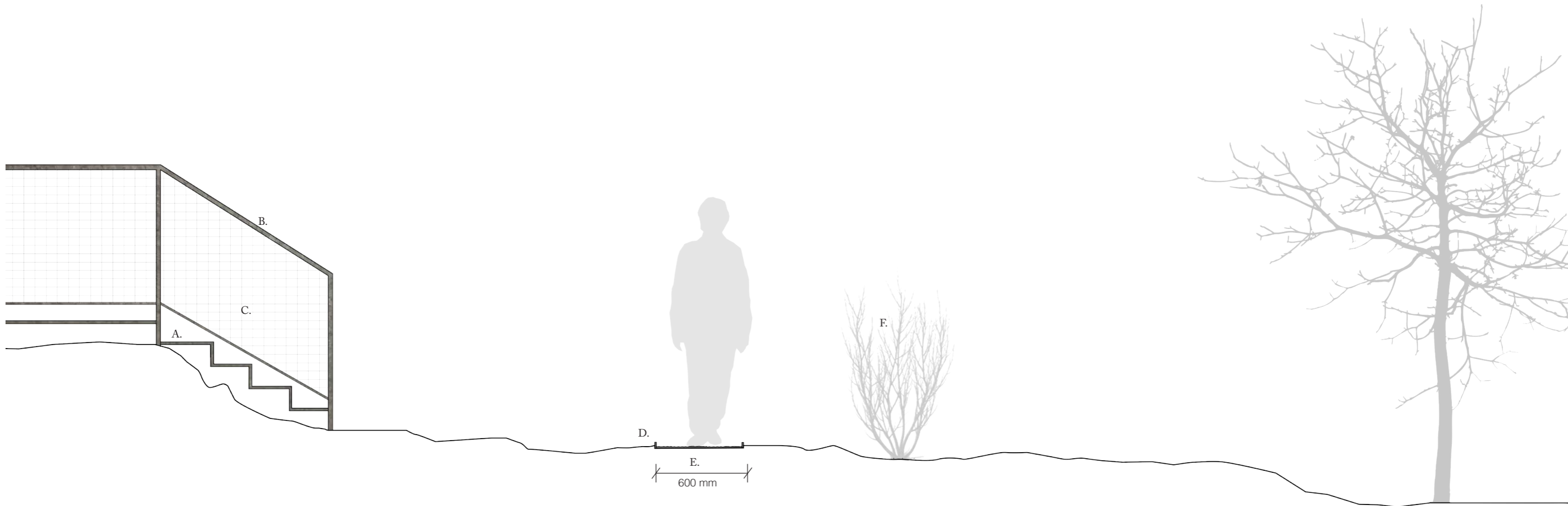
Special features of the
place: the sound of the
forest and a rock wall.

Focus on acoustics by
cutting of the sense of
vision and in that way
exaggerating the sounds
of the forest.

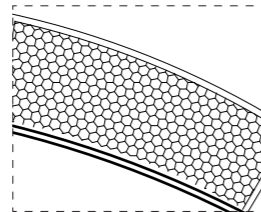
SECTION 1:40



MATERIALS AND DETAILS



There are mainly two materials used along the walk. Wood and matte steel.



A. Steel mesh steps, visually transparent so that the ground is present.

B. Handrail of steel

C. Thin profile to make it visually disappear in the greenery.

D. A thin edge of steel to border and define path edges.

F. The path is made of gravel and made narrow to make people walk in a line, and to limit the chances of conversation.

E. Avoid damage to the surrounding vegetation during construction.

WEATHER AND SEASON

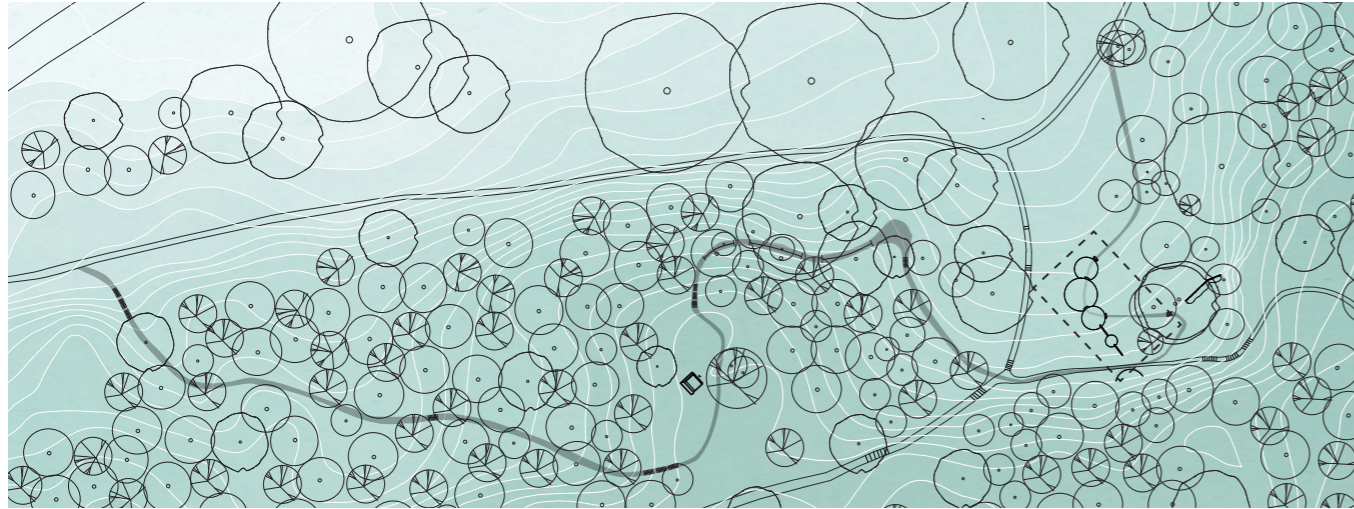
When being outdoors and out in nature you are fully exposed to the weather and the seasonal changes. This walk embraces that. All additions have open structures to allow the the weather and the seasonal changes to be a part of the space.

Autumn leaves finds its way down the windtower or rains down on the person lying in the acoustic space. When it rains you see the drops on the surface of the pools, creating tiny rings that enlarge and disappears.

In the winter the ground gets harder to walk on and the water mirrors freezes to ice. Red leaves are forever captured under the surface.

Walking on the footbridge you are up close and can see the buds on the trees growing and bursting out to light green leaves in the spring. And in the summer the flowers bloom and the woods get full of insects that falls down in your hair.

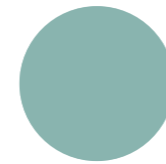




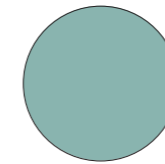
THE WATER MIRRORS

This addition works with prolonging the sensation of the water on the site, by reinforcing the existing water pool and creating four new ones.

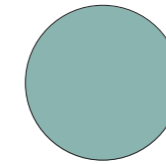
It aims to make us experience water with the senses of touch, vestibular and vision. The three large water pools mirrors the surrounding on its surface and invites the visitor to step into it and walk through. Different natural elements are placed at the bottom of the pools and gives the visitor different sensations under her feet, some smooth, some balance triggering.



Vestibular



Vision



Touch

INVESTIGATIONS

The experience of different materials under your feet is crucial in this event. I have tried to step on five natural elements and documented this. It is also important that the person walking in the pools get to take a few steps on each element.

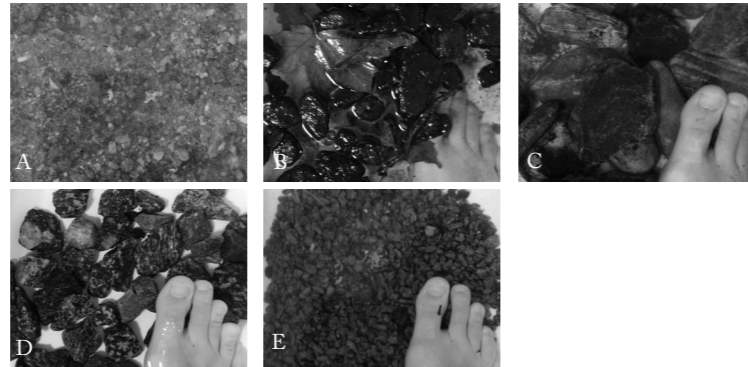
A. Sand. Nice and smooth under my feet. Brings my thoughts to sandy beaches and summer. Sand stuck between my toes when getting up.

B. Bark. Of course, it floats.

C. Large rounded stones. Quite comfortable. A lot of balancing.

D. Sharp stones, like large gravel. Hurts! Extremely uncomfortable.

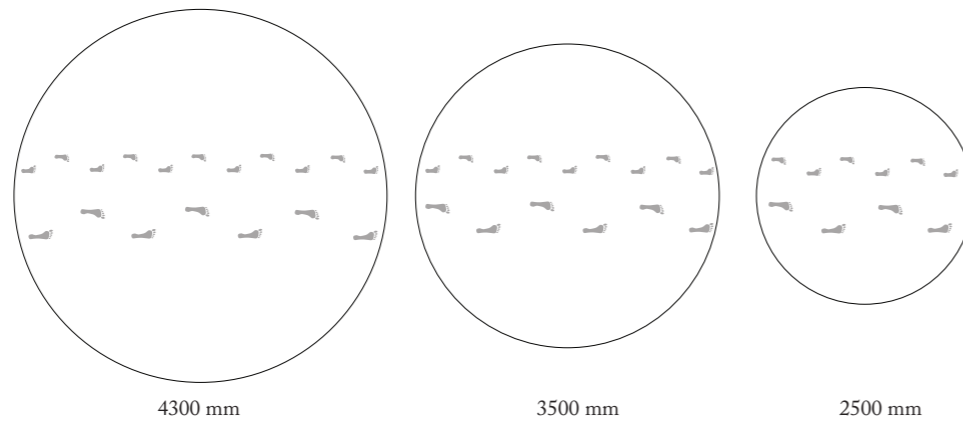
E. Gravel. Uncomfortable but in a okay way.



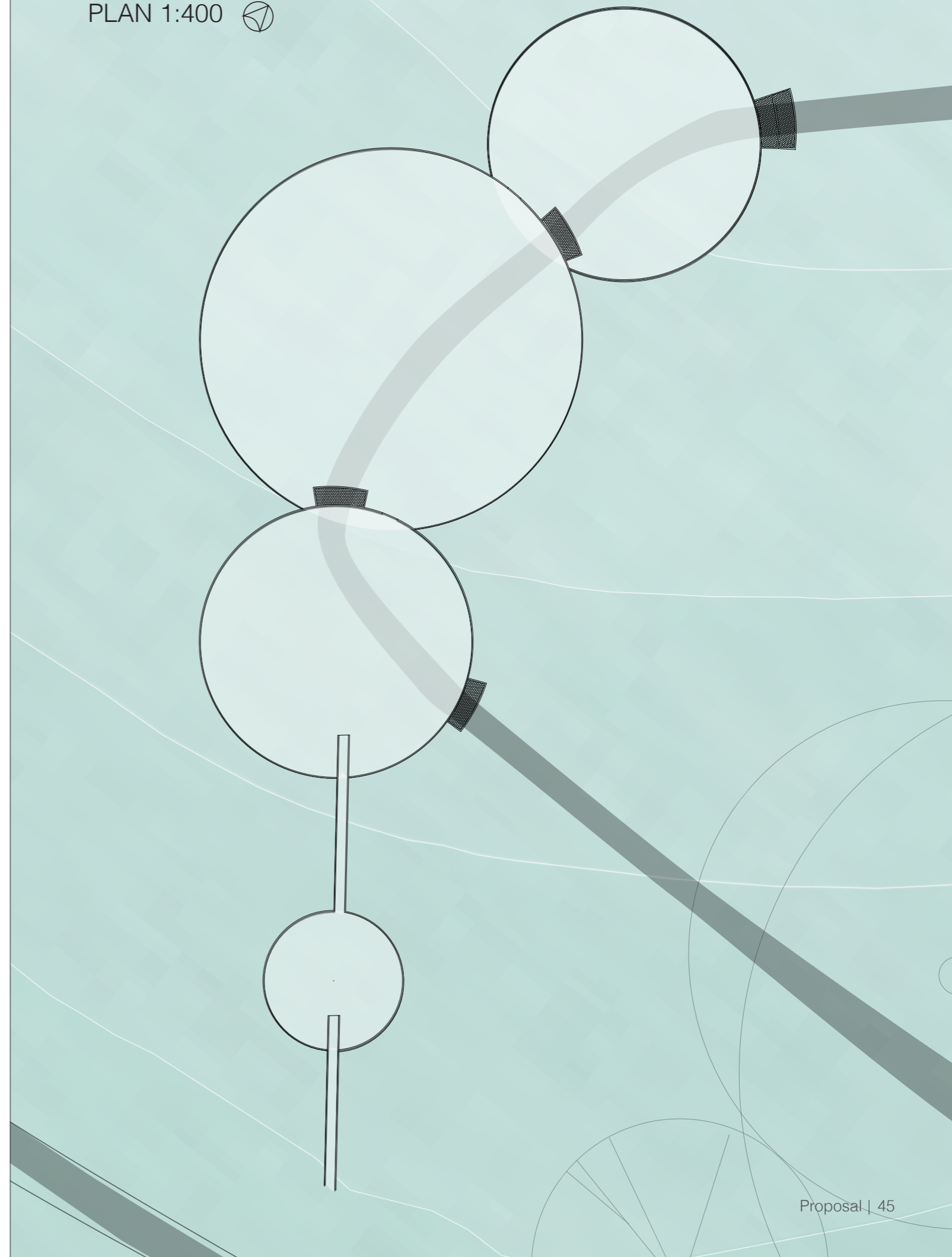
Number of children's steps

Number of adult's steps

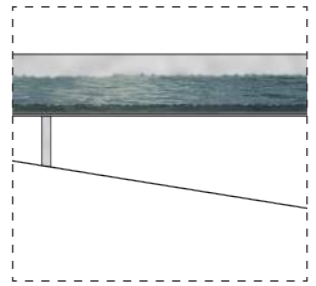
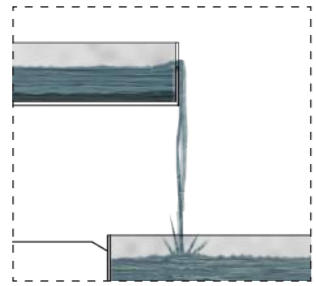
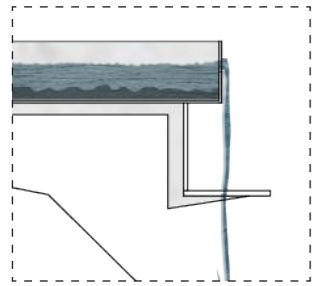
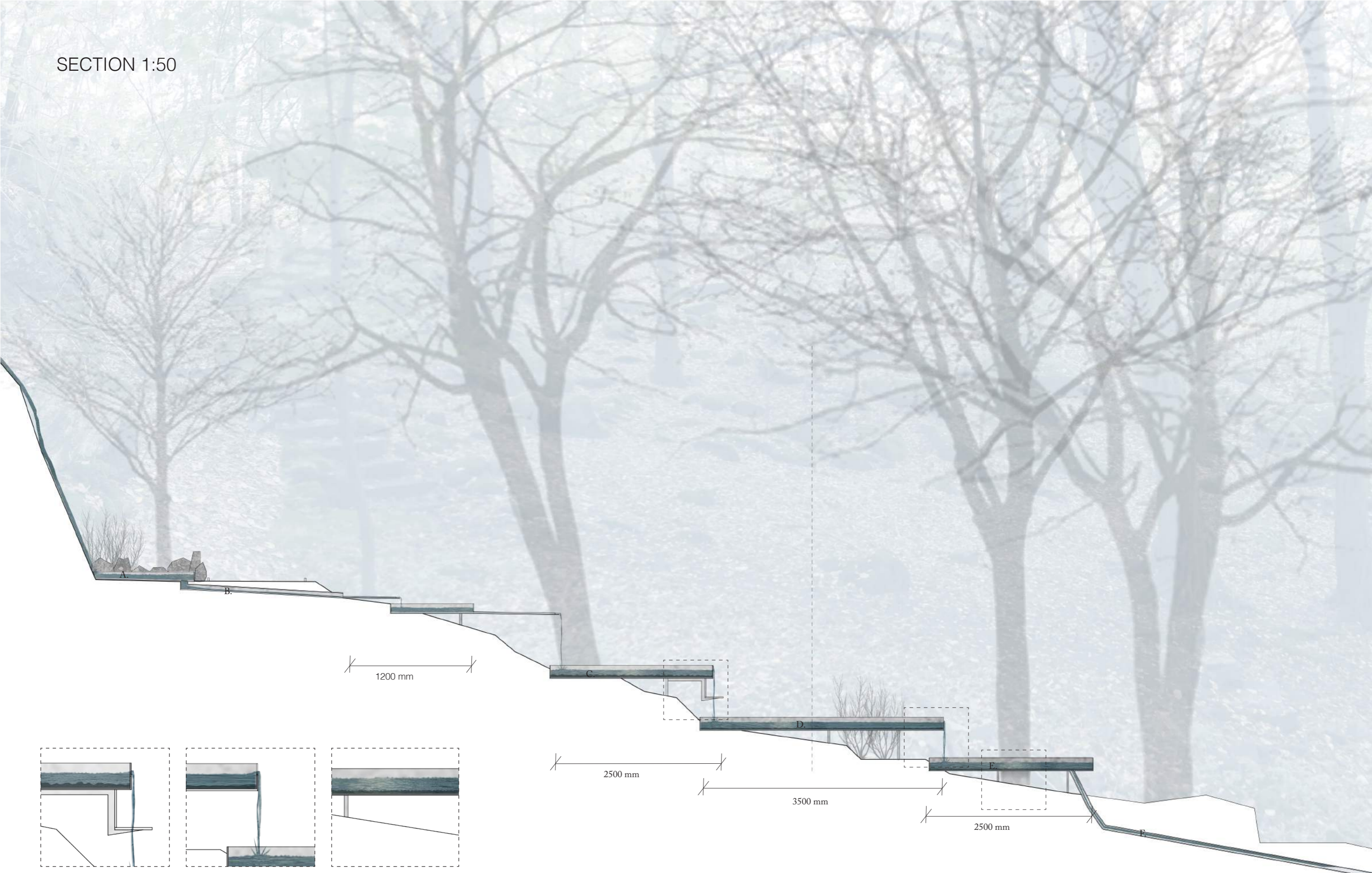
Radius of the circle



PLAN 1:400



SECTION 1:50



A step guide you into the water and up to the next pool. The steps are made of stainless steel with a hexagonal pattern.
46 | Proposal

The height of the edge is 200 mm, which will make the depth of the water no higher than a child's boot edge.

The pool is made of stainless steel with a matt finish, to avoid reflections on the surface.

A. Reinforcement of an already existing water pool.

B. Existing pipe is raised from the ground.

C. The material at the bottom of the pool is smooth rounded stones.

D. The material at the bottom of the pool is sand.

E. The material at the bottom of the pool is gravel.

F. The water is again connected to the existing pipe.

EXPERIENCING THE WATER MIRRORS

The path leads you to large circular water pools. You come up close to the first water mirror and see the trees from above reflecting on the surface.

You step up on the steps and take your shoes and socks off. The material of the steps feel cold but smooth under your feet.

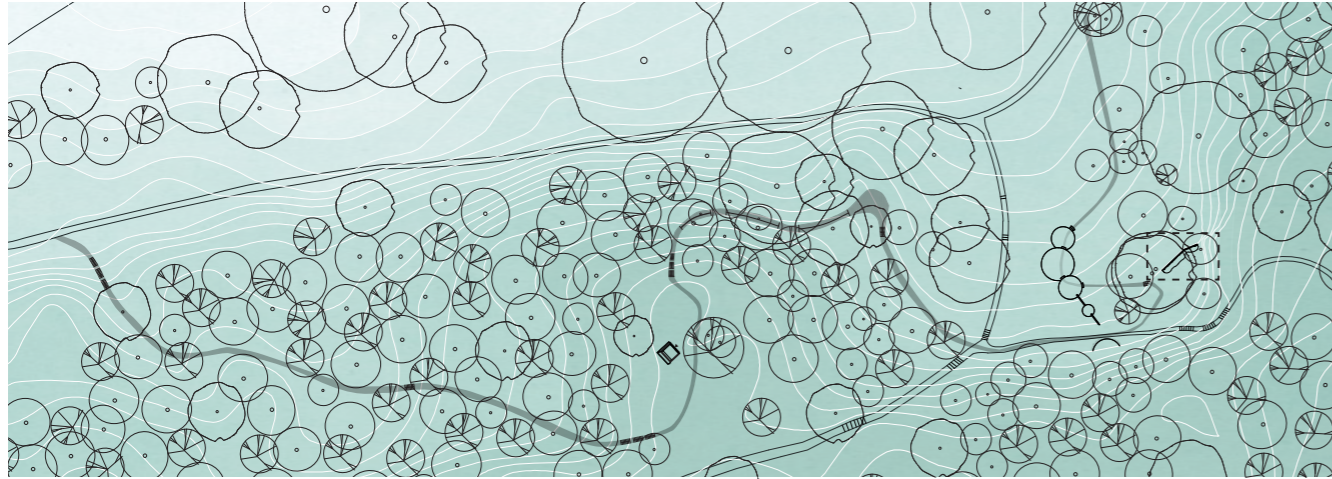
You take your shoes and socks in one hand and gently step into the water. The surface brakes and the reflections get blurred. The water is chilly and the gravel under your feet feel uncomfortable in a way that is quite nice. You walk through the pool to the next step.

In the next pool the ground is softer. The sand under your feet brings you back to the summery beaches. But the sound of today is completely different. You hear the water from the waterfall and the wind in the trees.

One step up again. This time you see larger stones at the bottom of the pool. You see the trees swaying in the reflections on the surface and leaves from the autumn trees is floating on the water. You step down into the last pool. This time you feel the pressure of smooth larger stones under your feet. It triggers your balance and you have to walk carefully.

You step out of the water and take your socks on. They feel nice and warm. Shoes on and then on again.

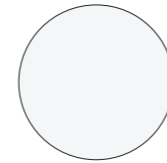




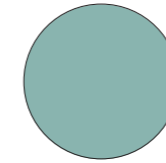
THE CORNER OF SOUNDS

This place is full of sounds. With its rocky wall in the back the spot faces the valley. The ground is flat and you can see the remains of the foundation from the pigs house.

This addition aims to increase the perception of the sound of the forest. By cutting of the sense of vision you will notice the sounds better. A place to sit down encourages you to close your eyes and hear the birdsong, the leaves rustling and the dripping from the waterfall.



Vision

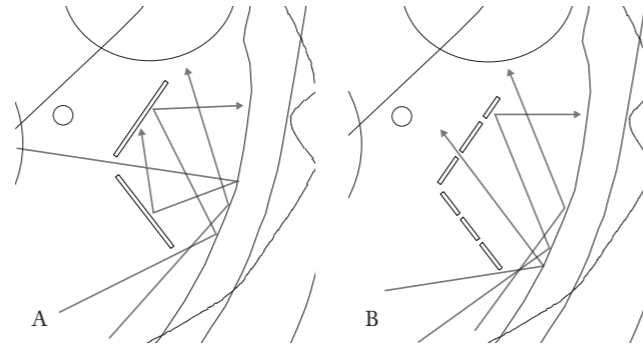


Acoustics

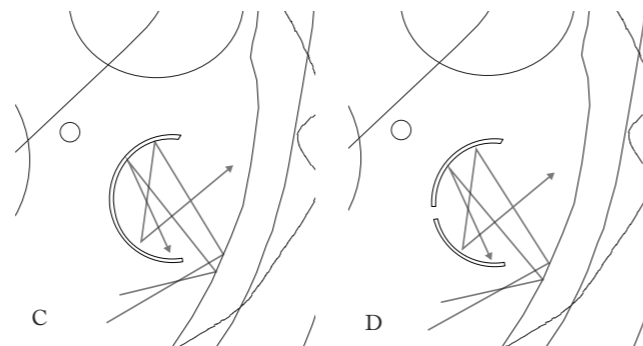
INVESTIGATIONS

To increase the experience of the sounds of the forest the design shall cut off the vision but not contribute to misrepresented sounds.

sound	vision
A. The sound reflects on the wall, and disappears towards the sky	Visually screened off, but still with some contact with the surroundings.

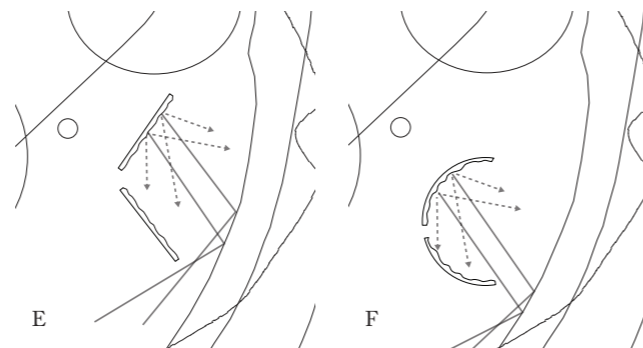


B. The sound reflects on the wall, partly disappearing through the gaps.	A clear contact with the surroundings.
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C. The sound is increased, but also misrepresented.	No contact with the surroundings, visually cut off.
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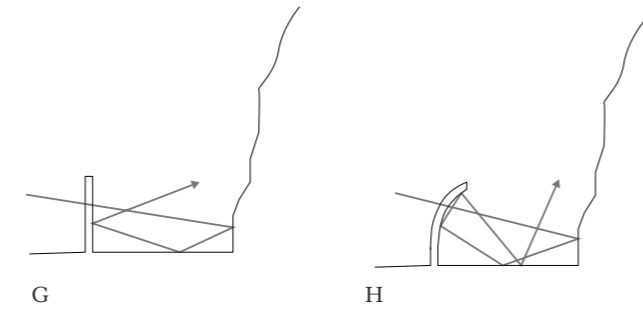
D. The sound is increased, but also misrepresented.	Visually screened off, but still with some contact with the surroundings.
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E. The sound effect is diffused.	Visually screened off, but still with some contact with the surroundings.
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F. The sound effect is diffused.	Visually screened off, but still with some contact with the surroundings.
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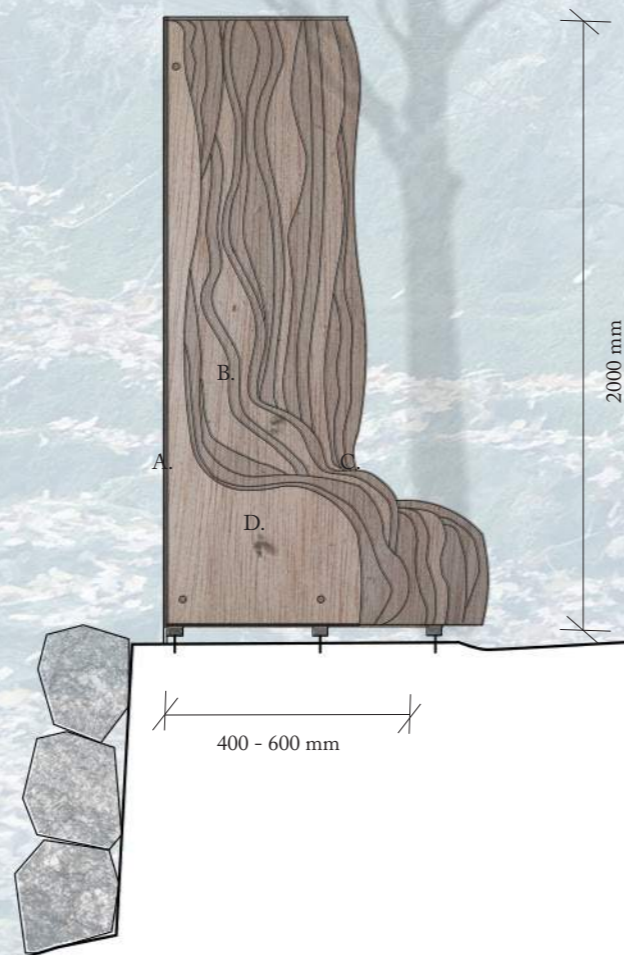
G. The sound reflects on the wall, and disappears towards the sky	
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H. The sound is increased, but also misrepresented.	
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PLAN 1:250 



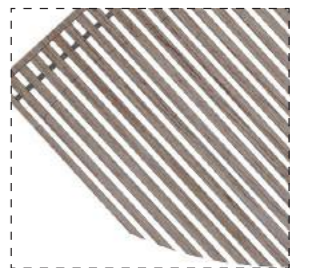


A. The outside of the wall is covered in plates of steel.

B. Sitting on the bench you have the valley in your back facing the rocks in front of you.

C. In between the sitting area the ribs are formed to make the sitting uncomfortable.

D. The bench is made of wooden plates put together to shape a sitting area. The plates differs in its curvature to ensure that the sound reflections gets diffuse.



The variation of the plates also forms seats in a 1200 mm distance to each other.



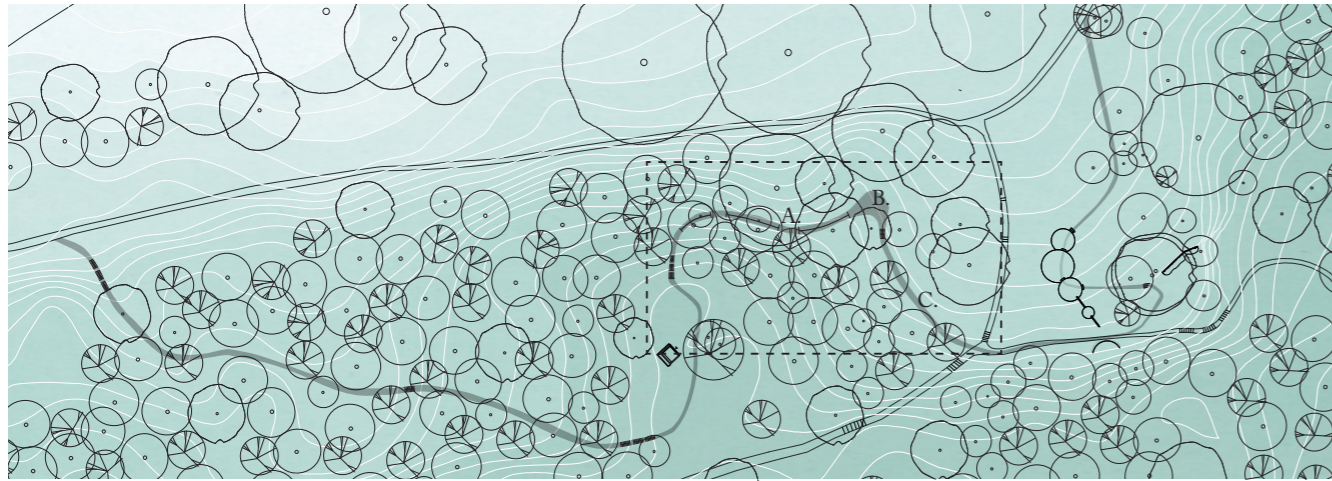
You come up to the platform and spot the prolonging of the old foundation of the pigs house. Passing the old oak and take the steps up. All the time the sounds of the forest is all around you.

Up on the platform you see that the wall forms a bench. It turns its back on the valley and the water mirrors, only facing the stone wall in front of you. The bench and the wall creates a small room, like a refuge in the woods. The tree crowns creating the roof of the space.

You sit down on the bench, forced to only look at the stone wall, the sky or the treetops over your head.

The sounds of the woods embraces you. You can hear the birds sing, leaves rustling and the dripping from the waterfall. You slide down on the bench and close your eyes, concentrating on the sounds of the forest.





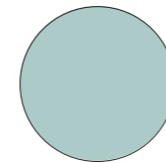
THE FOREST TRAIL

This addition focuses on the sense of proprioception, vision and vestibular. It is three different experiences in the same addition.

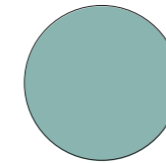
The first part (A) focuses on the sense of proprioception. Here a footbridge takes you into the woods, through the treetops. Determination of distance and bodily perception is crucial.

The second part (B) focuses on the sense of vision and gives you a wide view of the valley. This is a place for a pause.

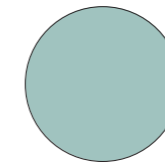
On this part of the site rocks and large stones are spread on the ground. Perfect to jump on. The focus at part three (C) is the sense of vestibular.



Proprioception



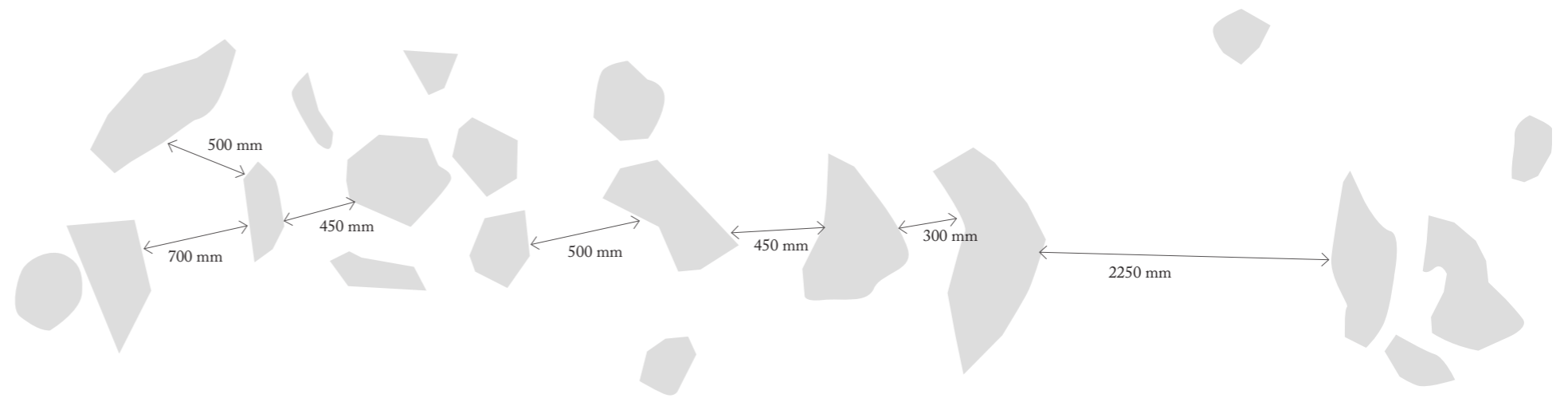
Vision



Vestibular

INVESTIGATIONS

The distans of the stones at site

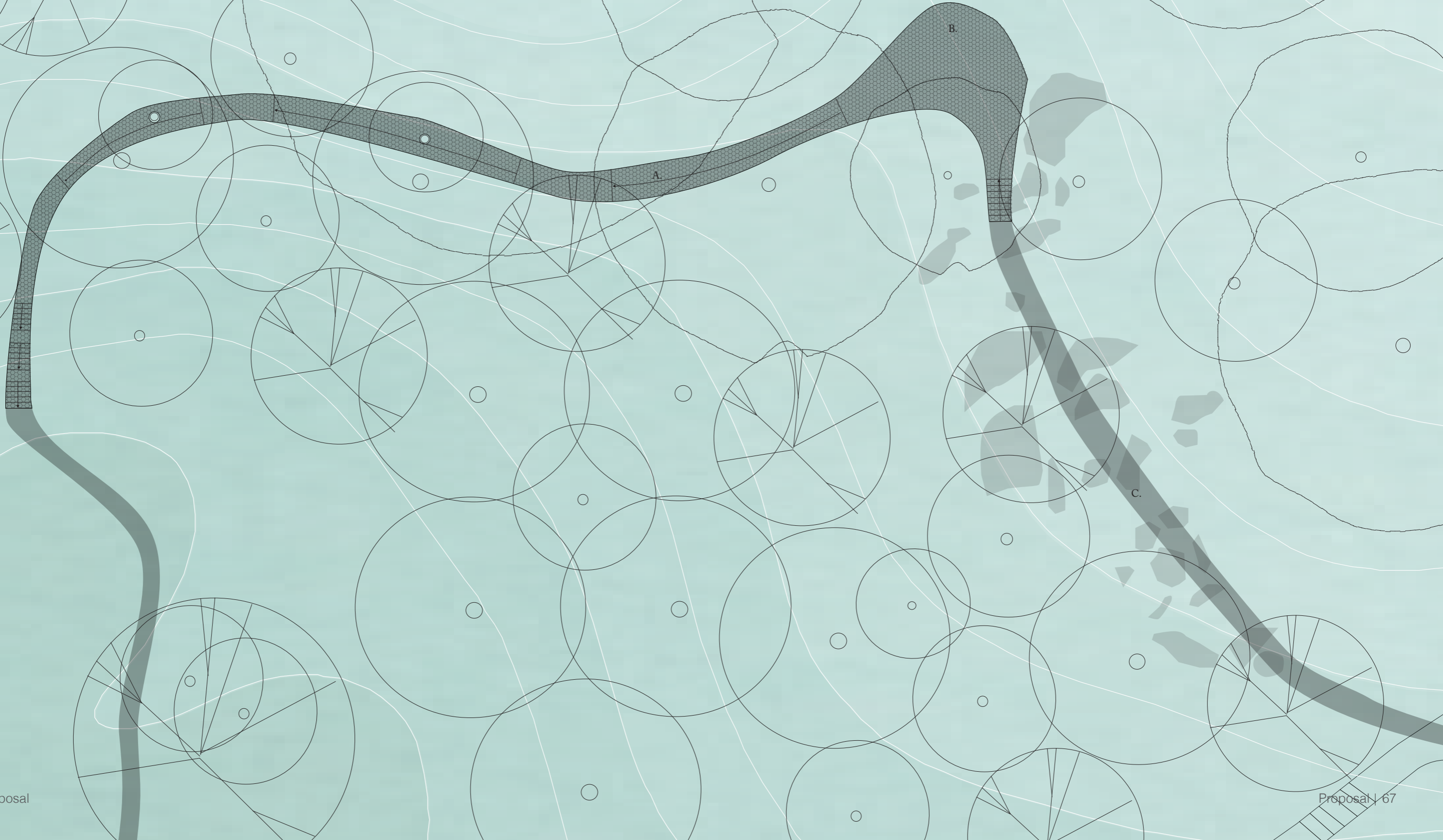


The movement of a child around stones



The movement of an adult around stones







A.

B.

C.

D.

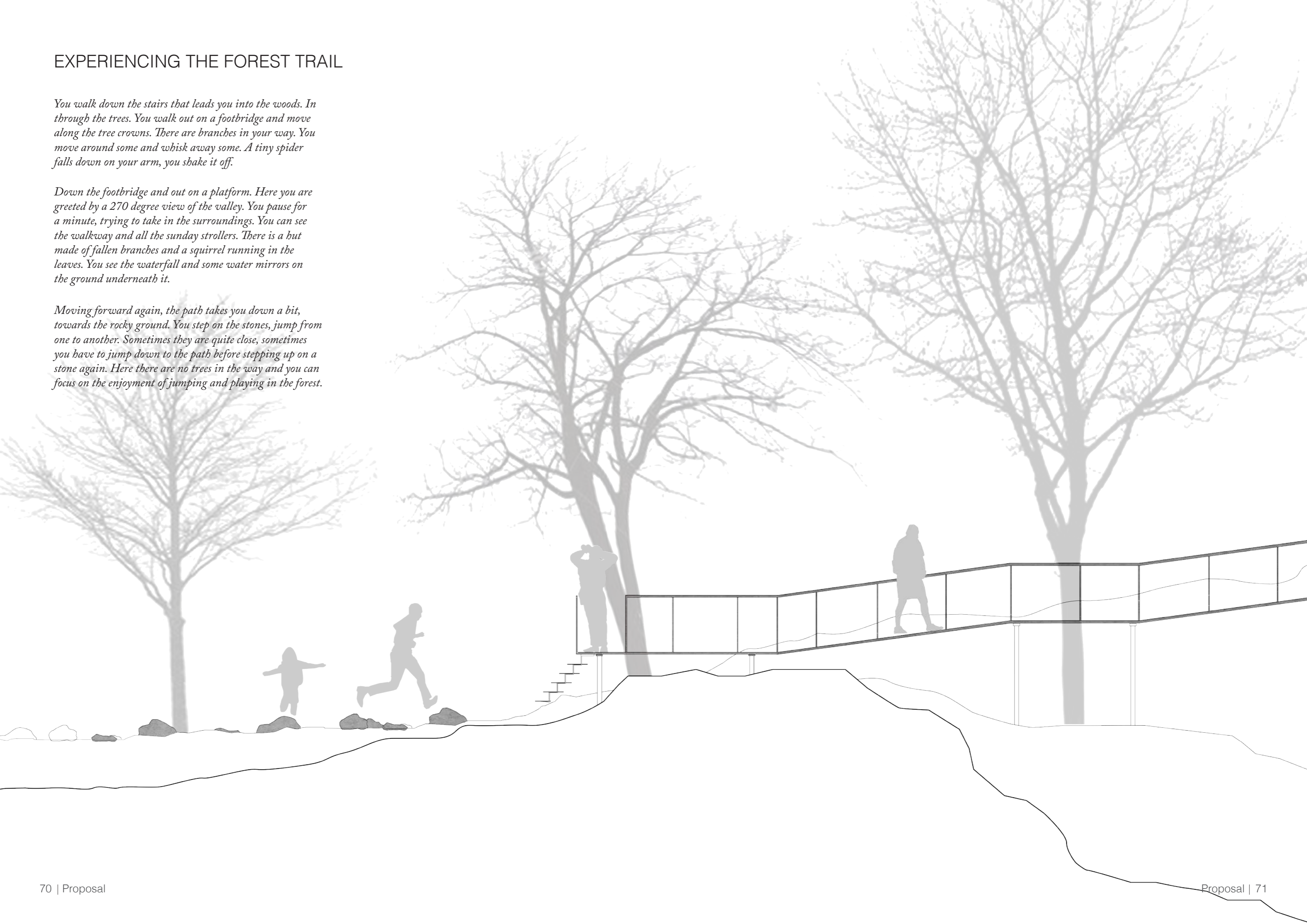
- A. Avoid damage to the surrounding vegetation during construction.
- B. Thin profile of a rectangular wire mesh, to make the handrail visually disappear in the greenery.
- C. Steel mesh floor, visually transparent so that the ground is always present.
- D. The width of the footbridge varies, always wide enough for two people to meet but at the same time allowing the trees in its way to remain.

EXPERIENCING THE FOREST TRAIL

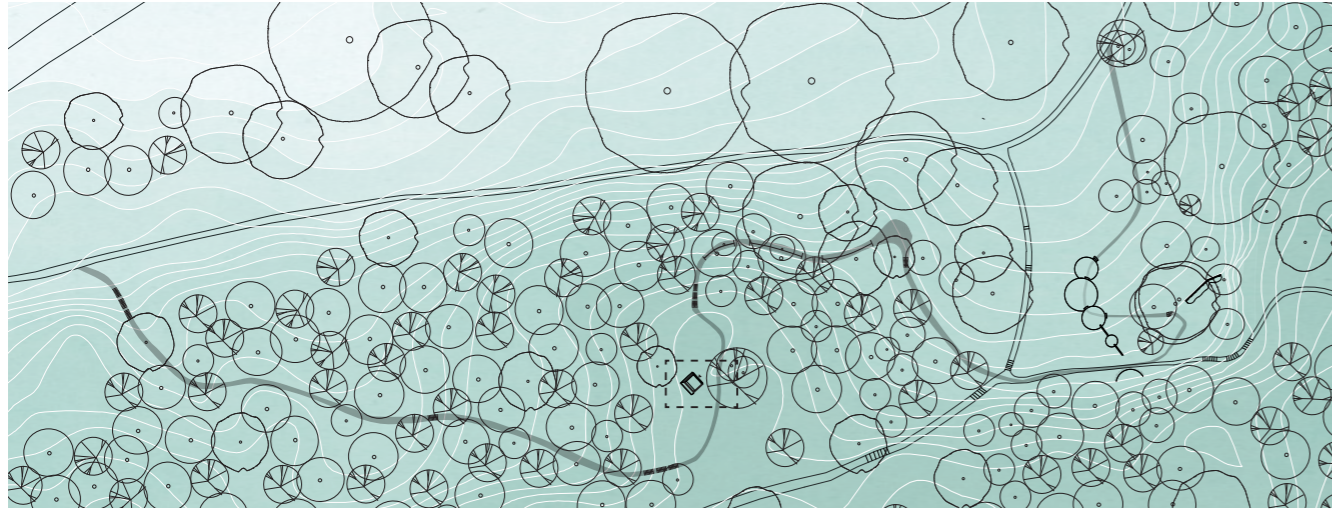
You walk down the stairs that leads you into the woods. In through the trees. You walk out on a footbridge and move along the tree crowns. There are branches in your way. You move around some and whisk away some. A tiny spider falls down on your arm, you shake it off.

Down the footbridge and out on a platform. Here you are greeted by a 270 degree view of the valley. You pause for a minute, trying to take in the surroundings. You can see the walkway and all the Sunday strollers. There is a hut made of fallen branches and a squirrel running in the leaves. You see the waterfall and some water mirrors on the ground underneath it.

Moving forward again, the path takes you down a bit, towards the rocky ground. You step on the stones, jump from one to another. Sometimes they are quite close, sometimes you have to jump down to the path before stepping up on a stone again. Here there are no trees in the way and you can focus on the enjoyment of jumping and playing in the forest.



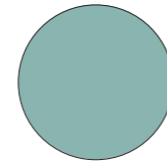




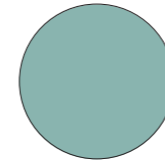
THE WIND TOWER

The aim is to increase the perception of the wind. At this place the forest opens up in a glade. In the late summer this is the first time you can see the sky and the first time you can tell if its a windy day. Up on a hill you are surrounded by treetops.

This addition works with triggering the senses of touch and sight, by increasing the experinces of the wind and setting your focus to only see the treetops. You feel the wind on your skin as well as see how the wind makes the treetops sway.



Vision



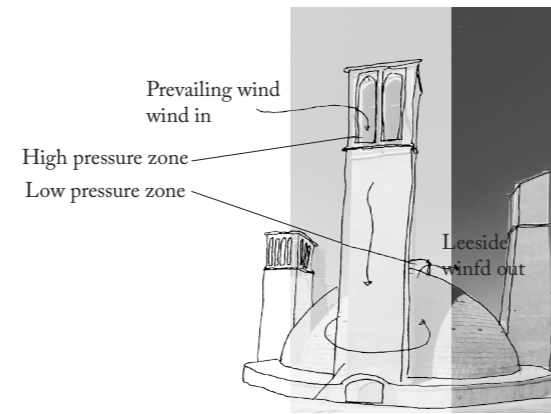
Touch

INVESTIGATIONS

I've looked closer at a persian windcatcher and how it works. Its a traditional way to create natural ventilation in buildings. It works in two ways, with the wind effect, which is the predominant aspect, and with the buoyancy effect, which aids the wind effect.

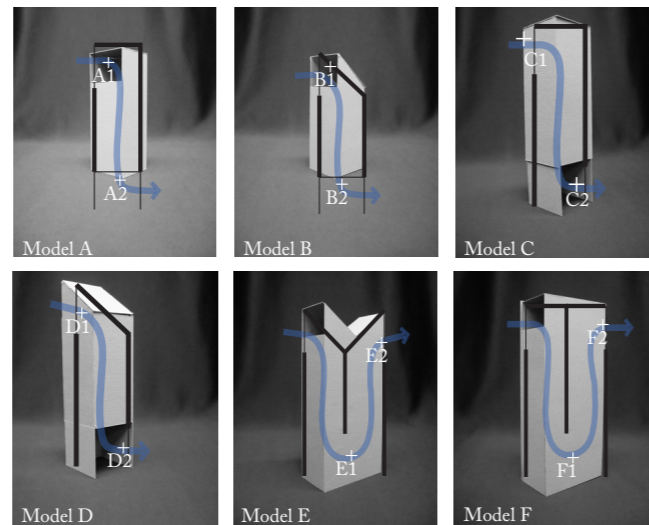
The wind intends to match the pressure and flows from the high-pressure region to the low-pressure region (Saadatian, Chin Haw, Sopian & Sulaiman, 2012).

I've used the model of a windcatcher and created a few prototypes. I've then tested the different prototype's (model A-F) ability to catch the wind, indoors with a fan. The result is shown below.



Measured wind speed: 1 m/s 3 m/s 5 m/s

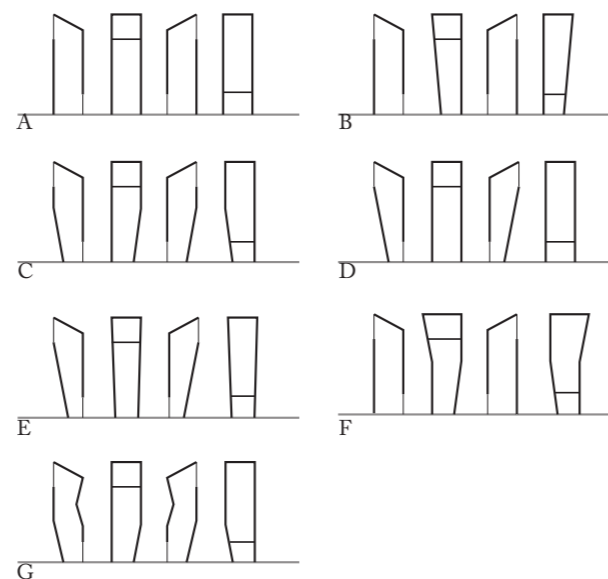
Model A.	A1: 1,0 A2: 0,8	A1: 2,4 A2: 1,5	A1: 5,3 A2: 3,3
B.	B1: 1,0 B2: 0,8	B1: 2,5 B2: 1,8	B1: 5,5 B2: 4,5
C.	C1: 1,0 C2: 1,0	C1: 2,5 C2: 2,0	C1: 5,1 C2: 3,8
D.	D1: 1,0 D2: 1,0	D1: 2,8 D2: 1,8	D1: 5,7 D2: 4,2
E.	E1: 0,4 E2: 0,9	E1: 1,4 E2: 1,9	E1: 2,8 E2: 4,5
F.	F1: 0,4 F2: 0,7	F1: 1,6 F2: 2,2	F1: 2,6 F2: 4,8



Iterations of original Prototype (A).

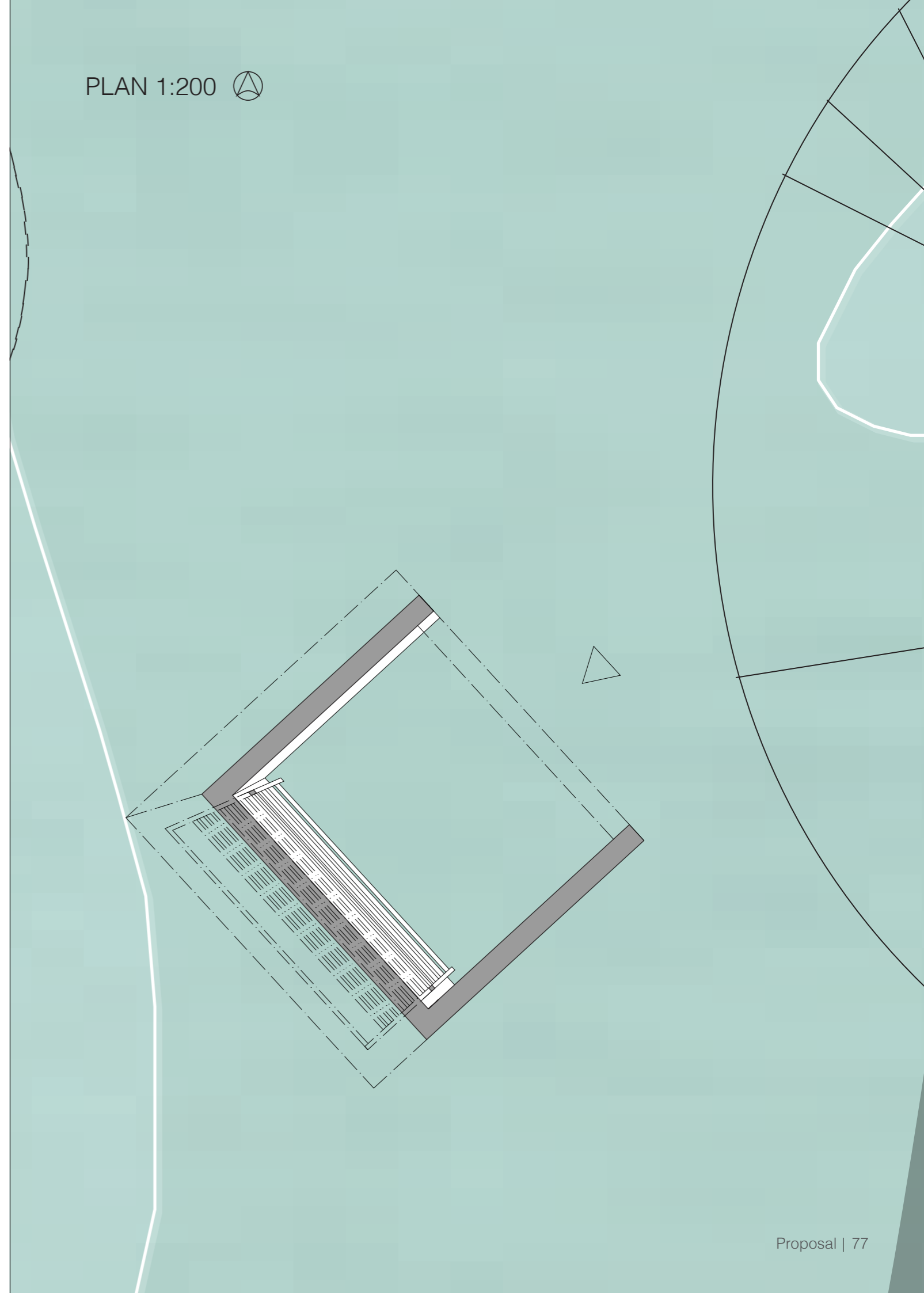
Designrules: The opening for the in-flow should be larger than the opening for the out-flow. The airflow should be prevented as little as possible.

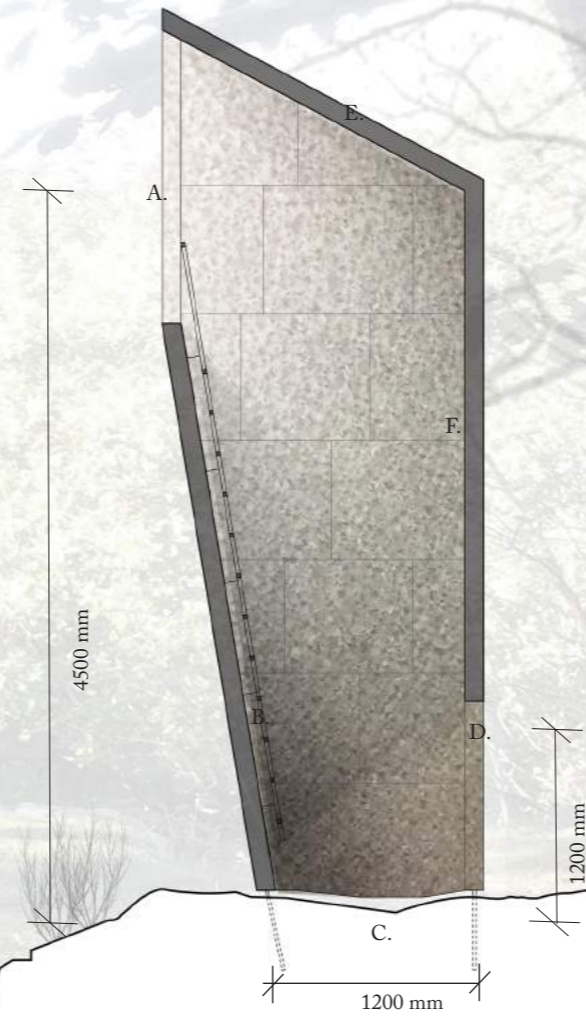
Model D has the largest difference in sizes of the opening. How does the fold in model G affect the airflow? Whats the difference of climbing up a ladder then stepping on to a ledge (A, B, C, F, G) compared to climbing in a slightly tilted wall and staying on the ladder (D, E) when looking out? How does the ledge affect the airflow (A, B, C, F, G)?



Considering the designrules and the answers to the questions above I chose to go on working with a combination of model D and E.

PLAN 1:200





A. Just the height to see the tree tops, but avoid a view of the city.

B. A ladder is placed on the tilted wall to not prevent airflow, but to easily get up and down.

C. The windcatcher has no flooring, the ground is the same as before and outside.

D. An adult has to bend to get in. But with a smaller opening the wind out throthe air presses through a smaller hole and is perceived to be more intense.

E. The roof is slightly tilted to lead the wind further down the structure.

F. The inside of the tower is covered in steel plates to make the air flow more smooth, and the outside with wooden panel.

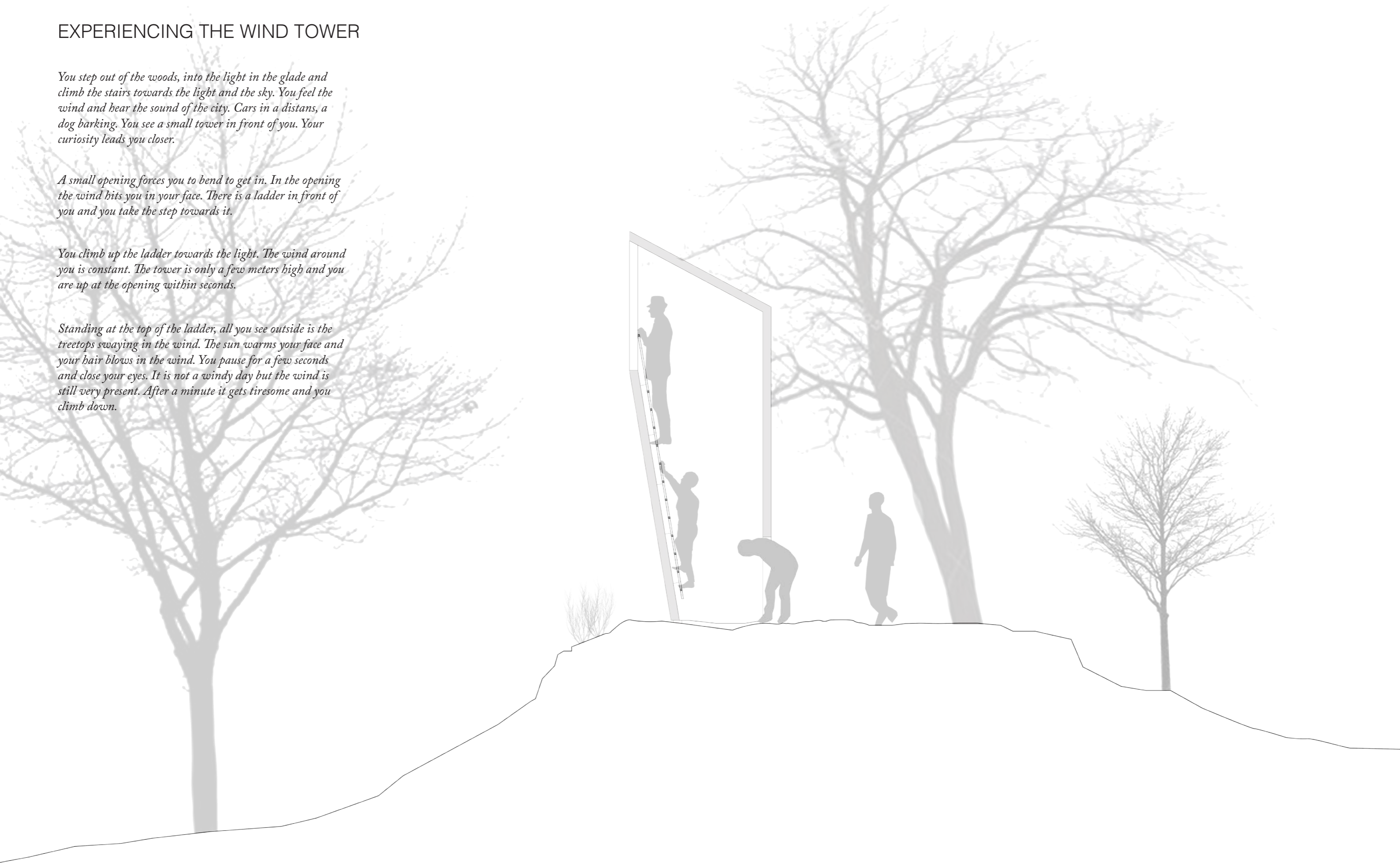
EXPERIENCING THE WIND TOWER

You step out of the woods, into the light in the glade and climb the stairs towards the light and the sky. You feel the wind and hear the sound of the city. Cars in a distance, a dog barking. You see a small tower in front of you. Your curiosity leads you closer.

A small opening forces you to bend to get in. In the opening the wind hits you in your face. There is a ladder in front of you and you take the step towards it.

You climb up the ladder towards the light. The wind around you is constant. The tower is only a few meters high and you are up at the opening within seconds.

Standing at the top of the ladder, all you see outside is the treetops swaying in the wind. The sun warms your face and your hair blows in the wind. You pause for a few seconds and close your eyes. It is not a windy day but the wind is still very present. After a minute it gets tiresome and you climb down.





CONCLUSIONS

This thesis has investigated the sensory experiences of the forest, with the aim to design a space that increases these experiences. An important part has been to investigate the site and its specific characteristics, and letting what is already there decide and shape the project. Making the decision early on to let the Project diary be the program, the form has in a very high regard followed the function. This has been a great help in the design process.

This thesis is quite personal in its approach since the design is based upon my own experiences. One could say that there is a risk of other people having other sensory experiences and that people's experiences of the forest and this site can differ from mine. But I believe that most people growing up in this part of the world share the same reference frames and would experience this place in a relatively similar way. I therefore dare to design an environment with my own experiences of the place as a programme. After all our reference frames affects us all the time and influence our designs whether we are aware of it or not.

With this project I have investigated how I as an architect can manipulate and work with the elements that triggers our senses. I have let my eyes, but also my senses of touch and smell, acoustics, proprioception and vestibular decide and form this project. The work has been very site specific but I have still learnt a lot. About how we humans function and what affects nature has on us. I have learnt to work with the context and to pay a lot respect to the surroundings.

I believe that if we designers and architects can become more aware of how our surroundings affects us, we can in a more conscious way contribute to environments that can increase people's sense of wellbeing.

I am really looking forward to designing with this in mind in my profession.

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IMAGES:

- Figure 1.* Gerry Johansson (Design by: Antony Gormley and David Chipperfield, 2008)
- Figure 2:* Roger Ellingsen / Statens vegvesen 15-06-2012 (Arkitekt: Reiulf Ramstad Arkitekter as. Landskapsarkitekt: Multiconsult.)

