

ROOM TO THINK

An investigation of how nature inspired architecture
can contribute to contemplative spaces in the city.

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Chalmers School of Architecture
Master Program of Architecture and Urban Design

Examiner: Morten Lund

Supervisor: Erica Hörteborn

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Matter, space, structure

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Abstract

We humans are affected by our surrounding. Both by the built and the natural environment. Many people experience stress in their daily lives today. This problem might not be solved by architecture alone, but what we can do is to create spaces where people have a chance to slow down and let their mind wander. Spaces like these are called contemplative spaces.

The aim of this project is to make a building for contemplation in Gothenburg. The thesis explores how phenomena in nature can be used as inspiration to create contemplative spaces in the city. To be accessible to more people the building has, unlike most contemplative buildings that exist today, no specific program. It is available for everyone who needs some time to slow down.

The method is to visit different forests in Halland, where I grew up, and find some phenomena to bring into the building. The phenomena are soft fascinations, and that is things that only require effortless attention. The sound of a stream or light play in the forest are examples of soft fascinations, and when spending time among these, people may have a chance to reflect. To find the essence of the soft fascinations, the phenomena are explored with photos, videos, drawings, models and tests in different scales. The design of the building is created through the exploration of the soft fascinations.

The result is a design proposal of a contemplative building on Götaplatsen in Gothenburg. The soft fascinations in the building is a forest light spot, creating an inviting light that spreads out from the center of the building, and water, that creates a light play, sound and a water landscape that you can walk on in the building.

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Introduction

Purpose and aim

I believe that we are in need for contemplation today. With a constant abundance of impressions, the need for stillness increases. Also, people feel more stressed than ever. We need spaces where things slow down. Churches, libraries and museums are examples of architecture that can be used for contemplation. Where movements are slower and sounds are lower.

The aim of this project is to make a room for contemplation. But I don't want to make a church or a museum. I want the room to be unprogrammed. According to *Public Art Agency Sweden*, there is a clear need for new types of spiritual rooms, or rooms for rituals, independent of religion and culture (Östman, 2006). Rooms that are not locked into old ideas, but open up to new values and approaches. The reason to make the room unprogrammed is to make it accessible to more

people. There will be no expectations for the visitor to read books, look at art pieces or pray like there might be in libraries, museums or religious buildings.

The building is designed with soft fascinations that can be found in forests. Soft fascinations are phenomena in nature that are perceived as peaceful and that I think can contribute to a contemplative space. But I still want to make a building and not a park or garden, and the reason for this is that nature is much more than a contemplative space. Parks, gardens and forests in cities are used for meeting friends, running and exercising. I believe people feel more free to do what they want in nature, compared to in a building, and that is good in most cases. But if you want a space for contemplation, I think it has to be designed so that contemplation and stillness feel like the only alternatives in the space.

Method

The first step in this thesis was to do some research about how architecture can create conditions for contemplation and what kind of natural phenomena are perceived as peaceful.

The next step was to visit different forests in Halland, where I grew up, to find phenomena to bring into the contemplative building. The phenomena I looked for were soft fascinations, that catch one's interest but only require effortless attention. Two different soft fascinations were chosen and documented with photos and films.

The design part of the thesis was to explore and find the essens in each phenomena. This was done with physical models in different scales. The light phenomena was mainly researched with a model of the building in scale 1:100. The sound phenomena was mainly researched with models in scale 1:3 and tests in scale 1:1. The exploration of the soft fascinations laid the ground for the building's final design.

Thesis question

How can soft fascinations in nature be used as inspiration to create a contemplative space in the city?

Delimitations

This project is about the senses and the experience of space. Building norms and rules will not be taken into consideration.

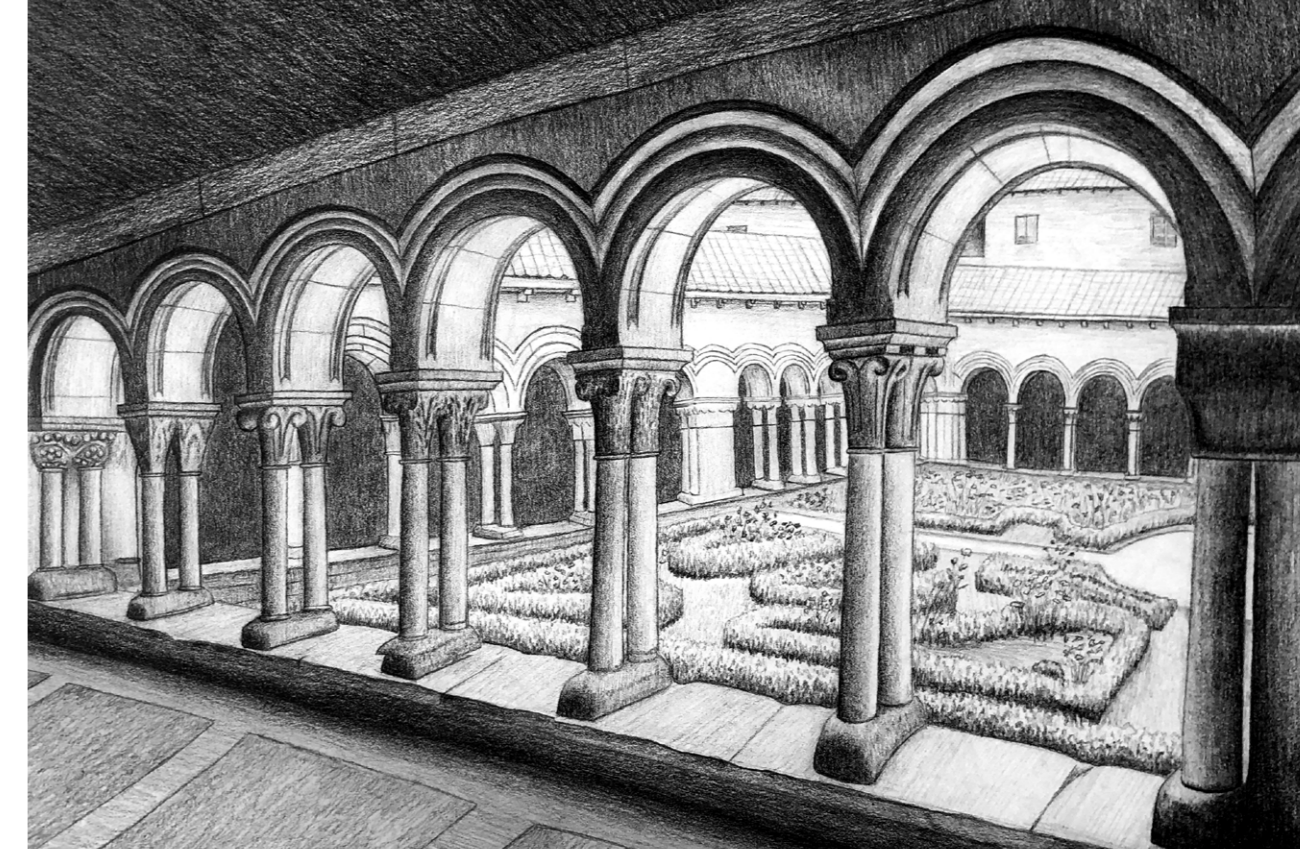
Reading instructions

The first part of the thesis contains a theoretical part with the discourse, which deals with contemplation and how human perceive nature.

The second and biggest part of the thesis handles the exploration of the soft fascinations, where the design is created.

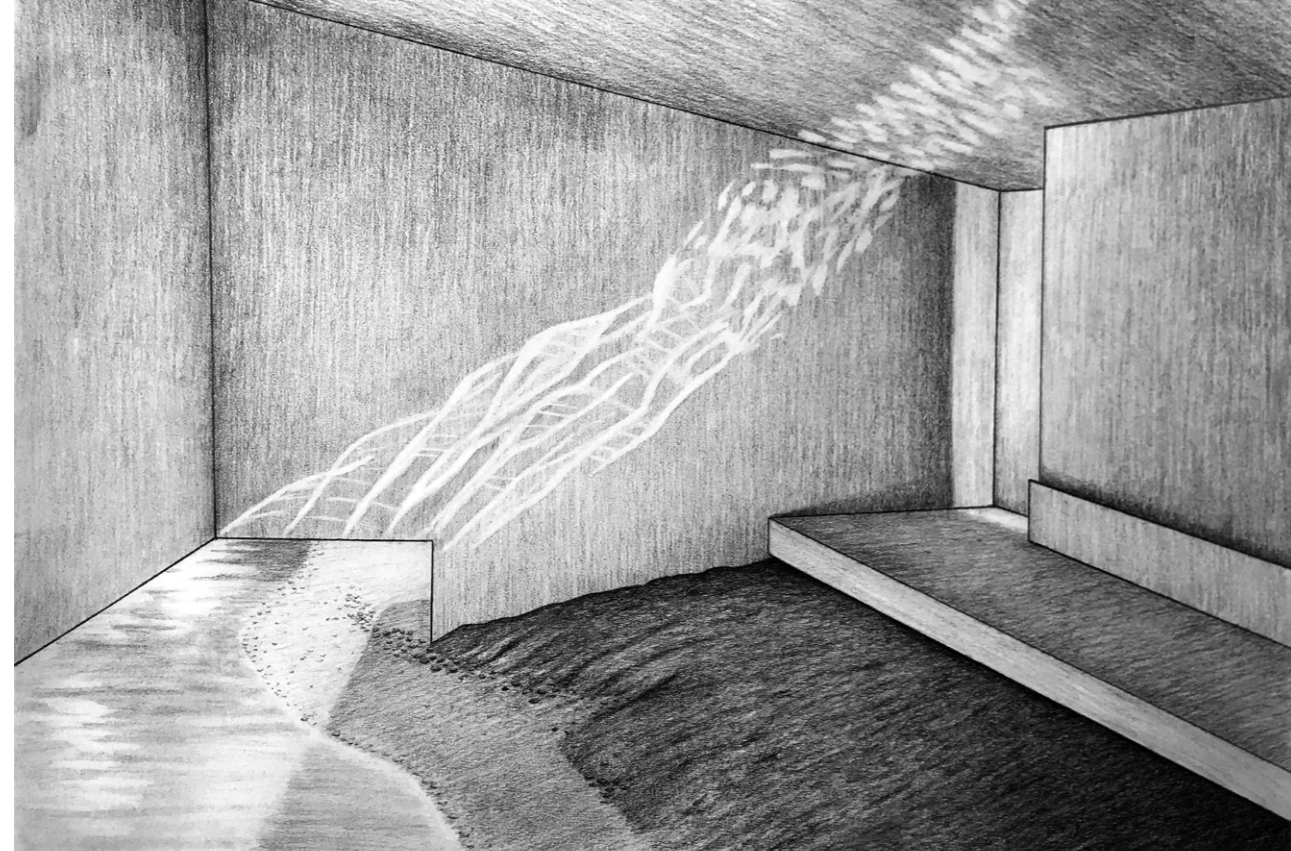
The third part of the thesis shows the final design proposal through drawings and perspectives. The thesis ends with a discussion.

The discourse of this project is contemplation. Contemplation is long and carefully thinking about something, to be lost in thoughts ("Contemplation", 2019). Research in several disciplines support claims that contemplation can have a positive impact on human health and that designed environments can help reduce stress in our everyday lives (Contemplative Sciences Center UVA, 2013). Contemplation has been practiced for a long time and all over the world. When looking at buildings throughout history, one can find intentions to evoke contemplation and create connections between the individual and society, nature or god. There may not be a universal recipe for a contemplative space, but one can definitely find some ingredients that are used in many of these spaces around the world. Three of these ingredients are interiority, increasing or reducing visual, tactile or aural qualities and the relationship between natural and built space.



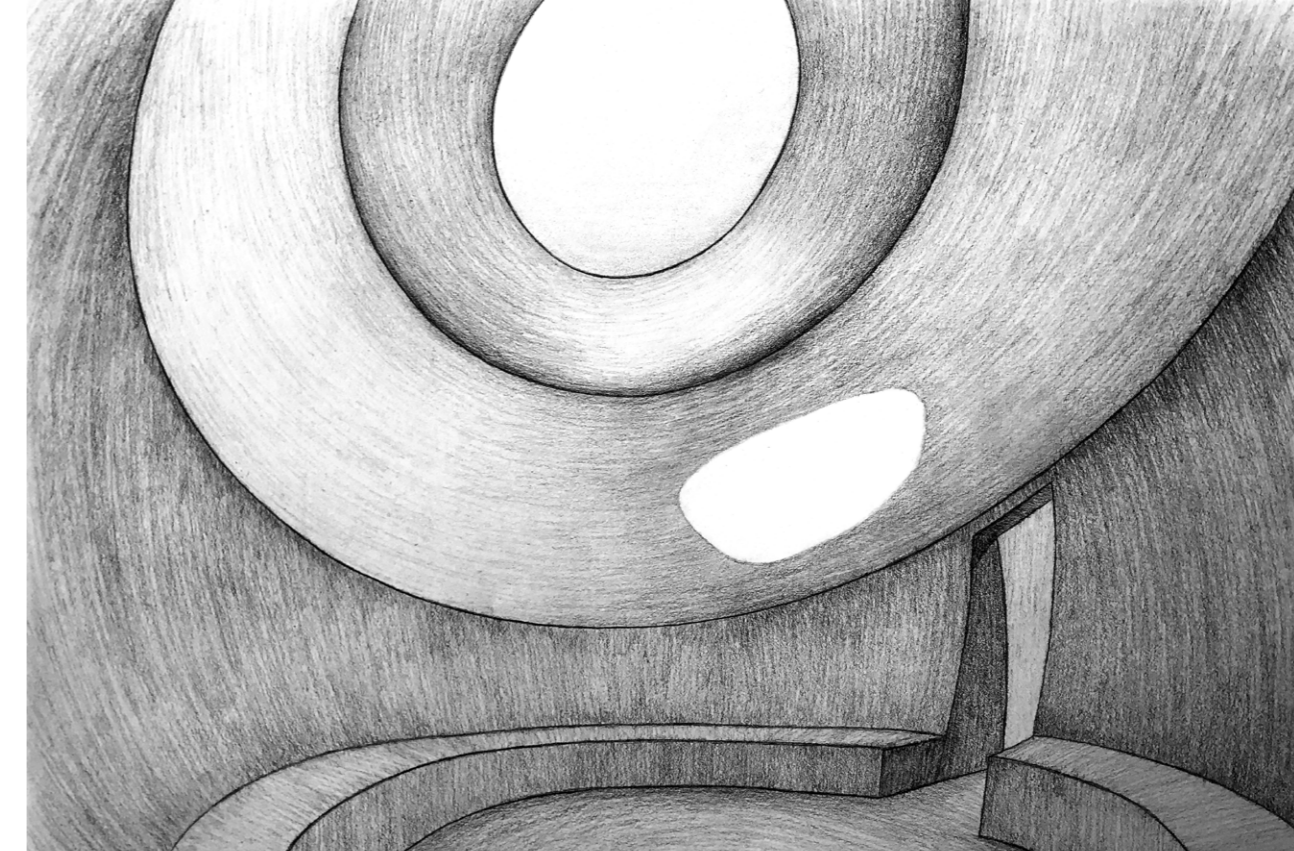
Interiority or inwardly focused space, creates a kind of disconnection to the outer world and its constantly distracting stimuli, and can remove people from their daily routines (Contemplative Sciences Center UVA, 2013). If we look at contemplative spaces located in a city, most of them are lacking transparent windows. This cloister garden, enclosed by the church building, has no connection to the city around it.

Increase or reduce visual, tactile or aural qualities



Many contemplative spaces intentionally increase or reduce certain visual, tactile or aural qualities to connect the visitor with the natural world (Contemplative Sciences Center UVA, 2013). For instance many buildings have natural light filtered in a certain way or through a certain window to amplify the effect of the natural light. This room by Finnbogi Petursson is placed by a lake and catches the light reflections from the water.

The relationship between natural and built space



The relationship and the balance between natural and built space is meant to enhance the connection between the human and the cosmos (Contemplative Sciences Center UVA, 2013). The built space can be used to frame the natural space. Like the horizon between two buildings or the sky through a roof window. This Skyspace by James Turrell has an opening in the ceiling. LED lights color the ceiling around the opening and affect the appearance of the sky.

Human perception of nature

To achieve an environment that provides the conditions for contemplation, the building in this project is inspired by phenomena in nature. Most people feel peaceful when spending time in nature. One reason to that is that nature is full of soft fascinations, and that is things that only require effortless attention ("Attention restoration theory", 2020). One can divide attention into directed and effortless ("Forskarna har många teorier - men ännu inga säkra svar", 2004). The directed is very energy consuming and is the one we use most often in our modern society. The effortless attention, on the other hand, requires a minimum of energy and is the one we use when we watch a light play in the forest or hear the sound of a stream. When spending time in an environment with soft fascinations, and away from our daily routines, we may have a chance to reflect and explore new thoughts.

Soft fascinations



I have chosen two different soft fascinations to explore and bring into the building: the light of the spruce forest and the forest stream.

The site

The site I have chosen for my project is Götaplatsen. The place has been criticized for being too big and unused. I agree that you can make more use of the place. Götaplatsen is a cultural center in Gothenburg, enclosed by the Gothenburg City Theatre, the Gothenburg Museum of Art and the Gothenburg Concert Hall, and I think it holds more potential than just a place for a statue.

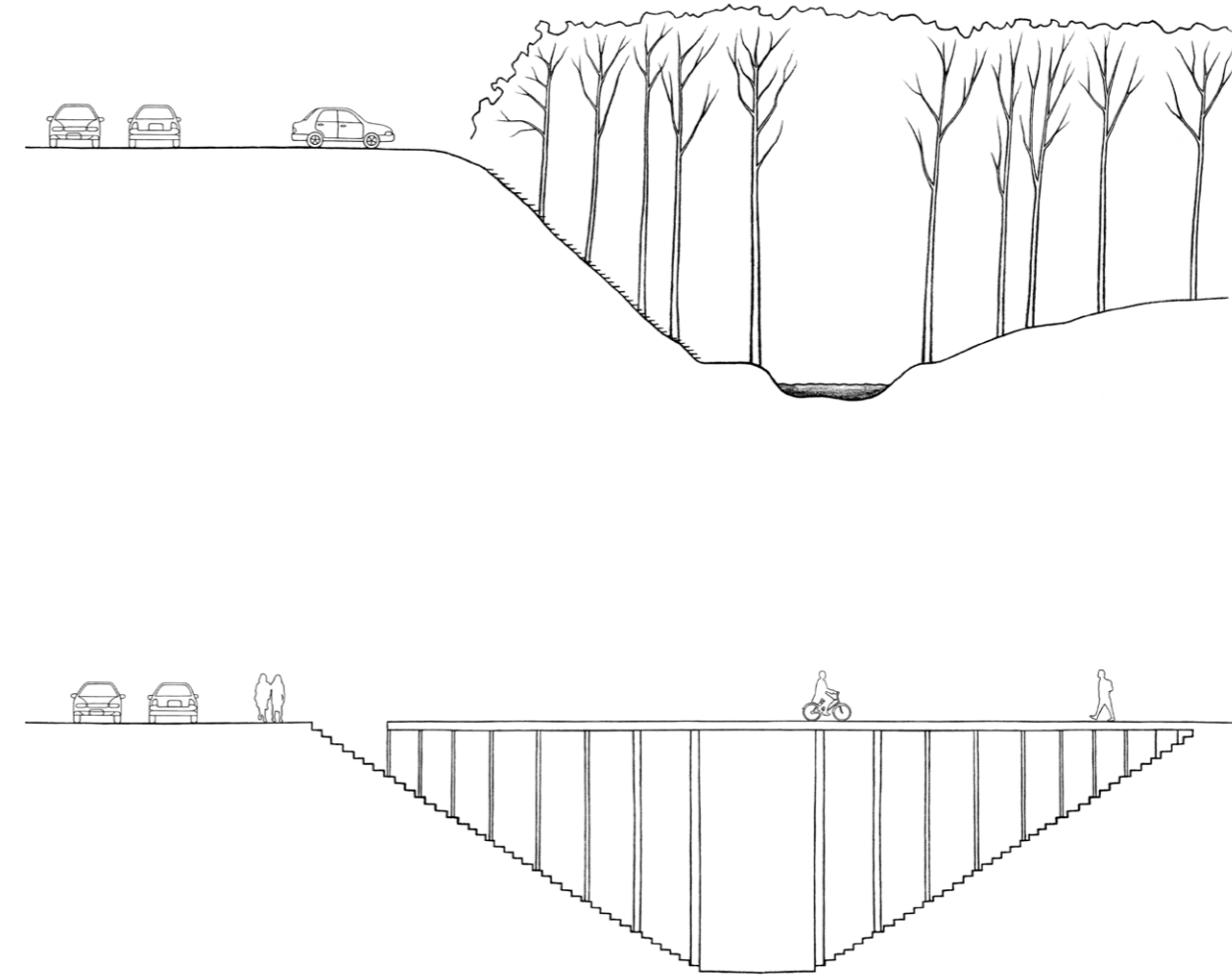
When the place was new, Ragnar Östberg came up with a proposal to build a church in the middle of the square (Roos & Ask, 2018). I like the idea of a contemplative building on Götaplatsen, but I don't think Gothenburg is in need for another church. I want to make an unprogrammed building for contemplation and my hope is that it can be used by people from every religion or no religion at all, when they need some time to slow down. I also see no need for taking away the square since it is used for many events through the year. So my proposal leaves the square more or less as it is since the whole building is underground, but instead of Poseidon there will be an opening to let the light in to the building.



The room



The shape of my building is inspired by a sequence in a beech forest in Halland. What I like so much about this sequence is the way you enter the forest and the way the topography shapes the forest room, as shown in the section on the next page.



The beech forest lies next to a quite busy road. From the parking you take a staircase to get down to the forest. And by walking down to this forest, you get very disconnected from all the traffic.

I have used the sequence of walking down in my building as well. This design will create a disconnection to the city around the building and give the space a feeling of interiority.

The light spots



During this project I have visited different beech and spruce forests. The light in these forests are quite different. The beech forest is brighter and the whole forest has a rather even light. The spruce forest is darker and has a more focused light. The light in my building is inspired by these light spots, that you will see if you walk in a spruce forest on a sunny day, where the light starts from one point and fades out among the trees. The contrast between light and dark is big so they really catch your attention.

Follow the light



1



2

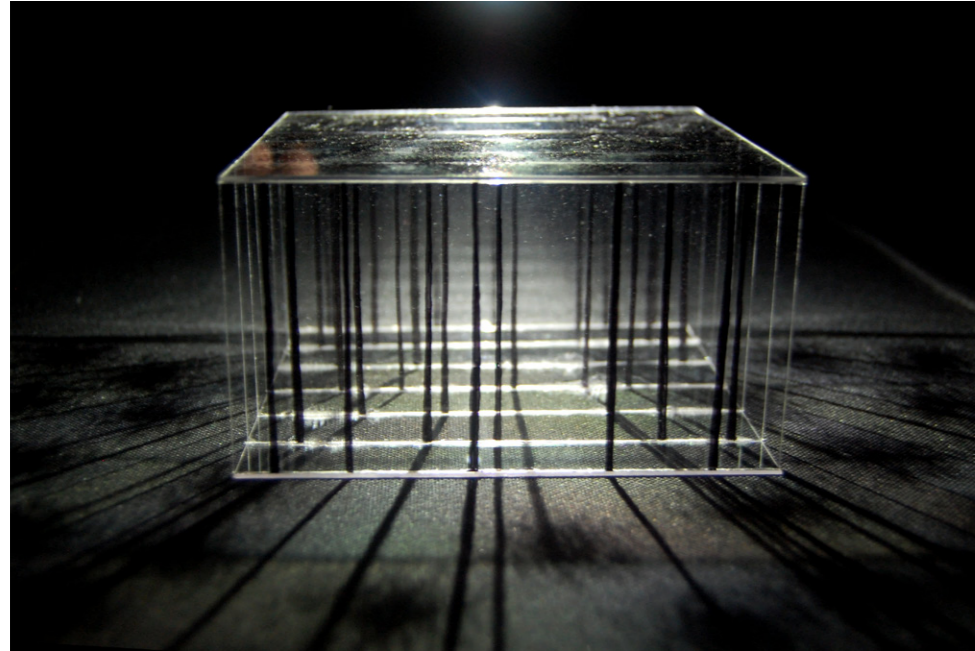


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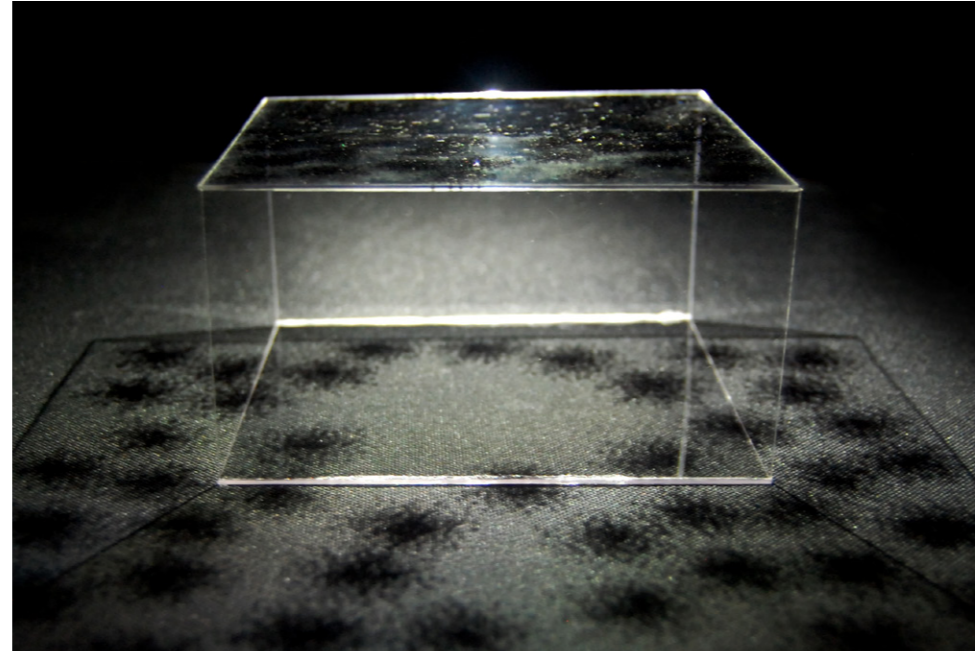


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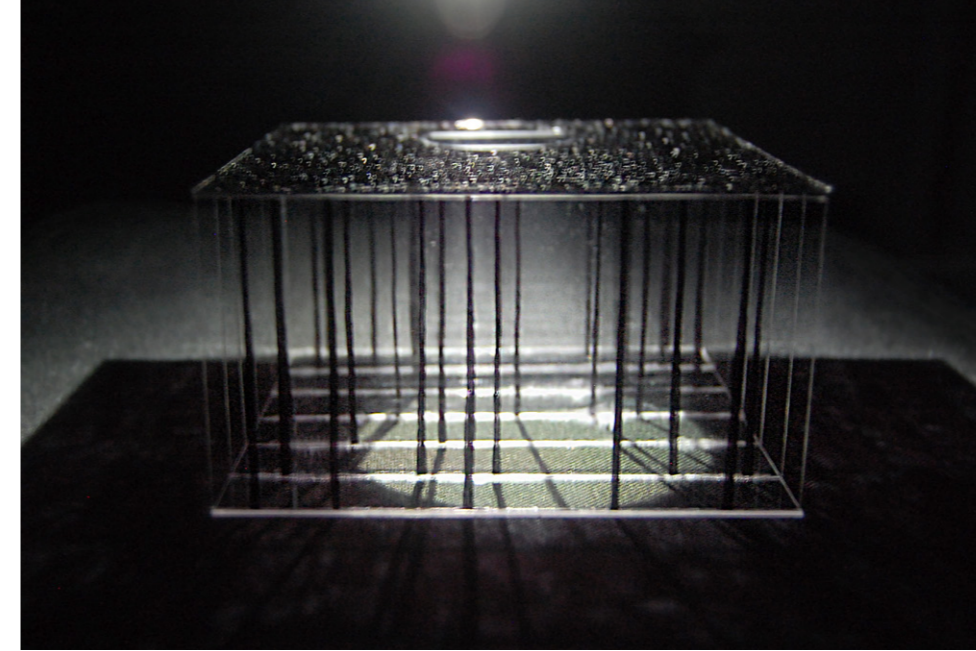
If you see a light spot from a distance and follow the light, you might find a nice place, maybe with some water reflecting the light.



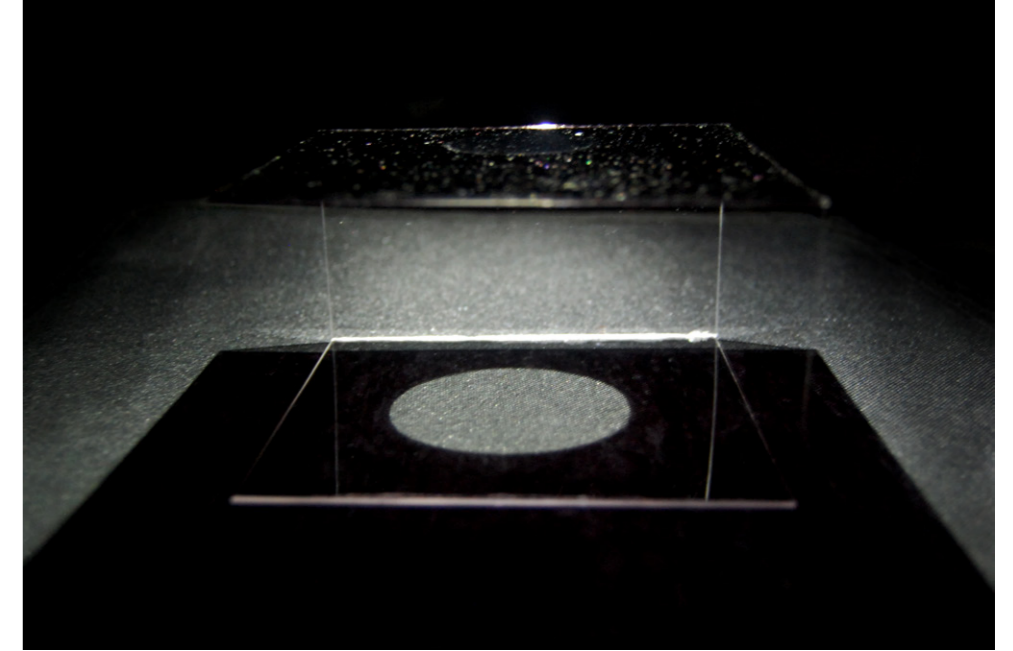
In this light model, I tried to recreate the forest light spots. The model is based on how I think the phenomena occurs: with an opening in the trees. The lid in this model represents the treetops and the vertical lines the tree trunks.



Here, the same lid is used but the trunks are removed, which shows how important the trunks are to create the filtered light.



This model has the same trunks as the first model but the treetops are translated into a solid roof, with a circular opening. This design doesn't work very well since the light ends in a very clear circle instead of fading out like it does in the forest and in the first model.

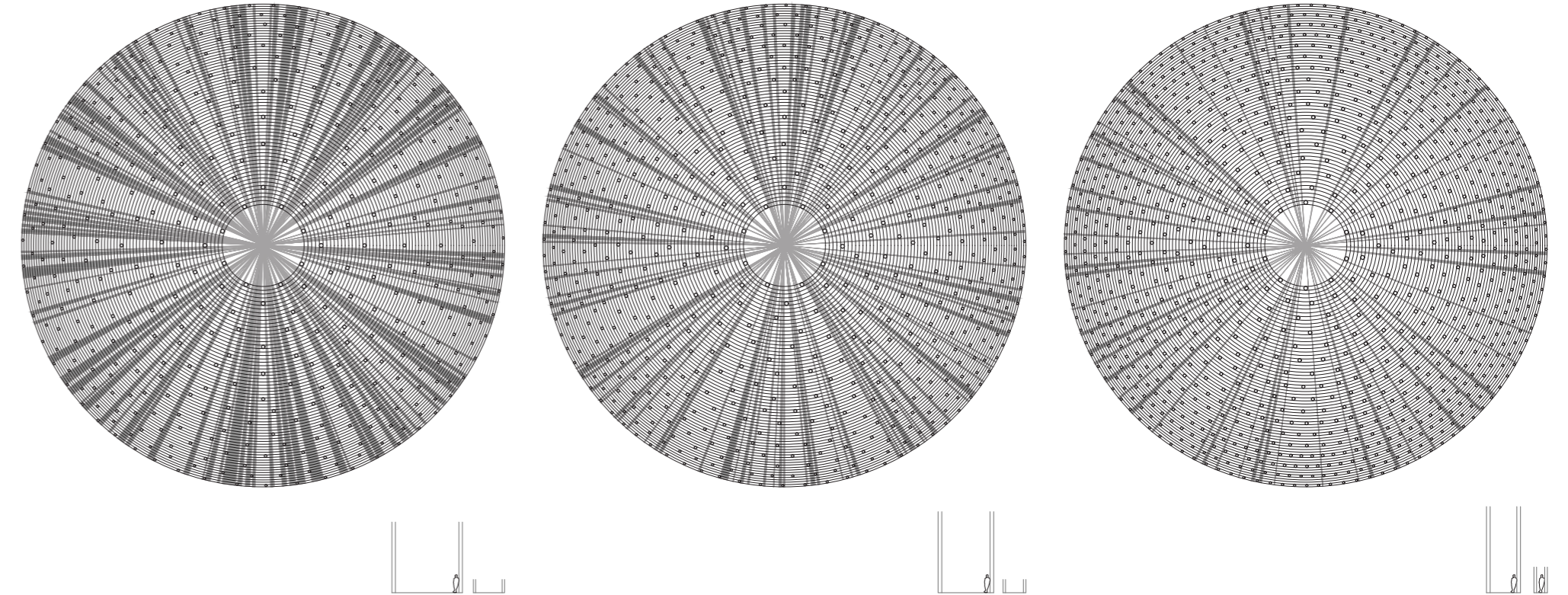


Here, the same lid is used but the trunks are removed. And again, it shows how important the trunks are to create the light spot phenomena.

The pattern of the pillars

Since the tests on the previous two pages showed that the tree trunks are important to create the light spot phenomena, there will be a lot of pillars in the building. The pillars have a regular pattern, because I think this many pillars in an irregular pattern would look messy. When I sketched on the pattern I wanted to make it dense so that when you stand in the middle of the building, you don't see the end of the pillar forest. This is another way of creating a feeling of interiority in the building. In the same way you don't see the center of the building, or the light from it, when you are by the entrance of the building, but only when you have taken a few steps in. Then you can begin to follow the light like I did in the forest.

The grey fields in the plans show the sight lines from the middle of the building. I have made the pattern more and more dense to take away the sight lines. In the final version you can still see the end of the building in some places, but I don't want to make the pattern denser, because then I think the distance between the pillars would be too small. The figures below the plans show the biggest and the smallest distance between the pillars in each plan.

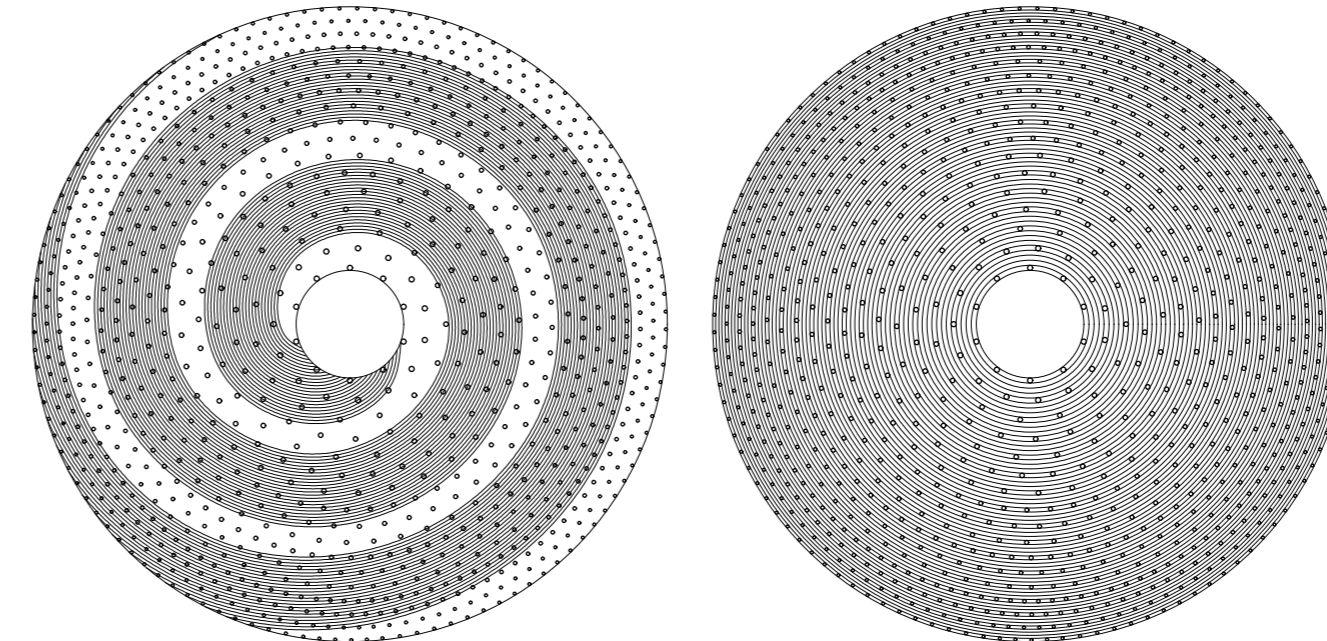


The design of the stairs

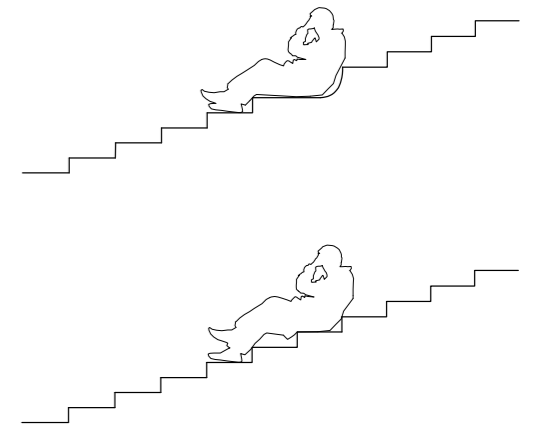
I have tested to put a ramp in the building, but with this many pillars, I think the building would be messy with ramps and other additions. I have also made sketches on seats in the stairs. But it takes away the opportunity to walk wherever you want in the building, and I think it takes away the feeling that you can sit wherever you want, even though the opportunity still exists. I have therefore chosen a staircase without interruption. I think a more simple design also will make the movement of the water and the play of light more prominent.

The final version of the staircase has lower and deeper steps the further down the building you come. The diameter of the pillars follows the depth of the steps. The lower part of the stairs has a dimension similar to the Spanish Steps in Rome which, before it was banned, was a very popular place to sit.

The light spots



The light spots

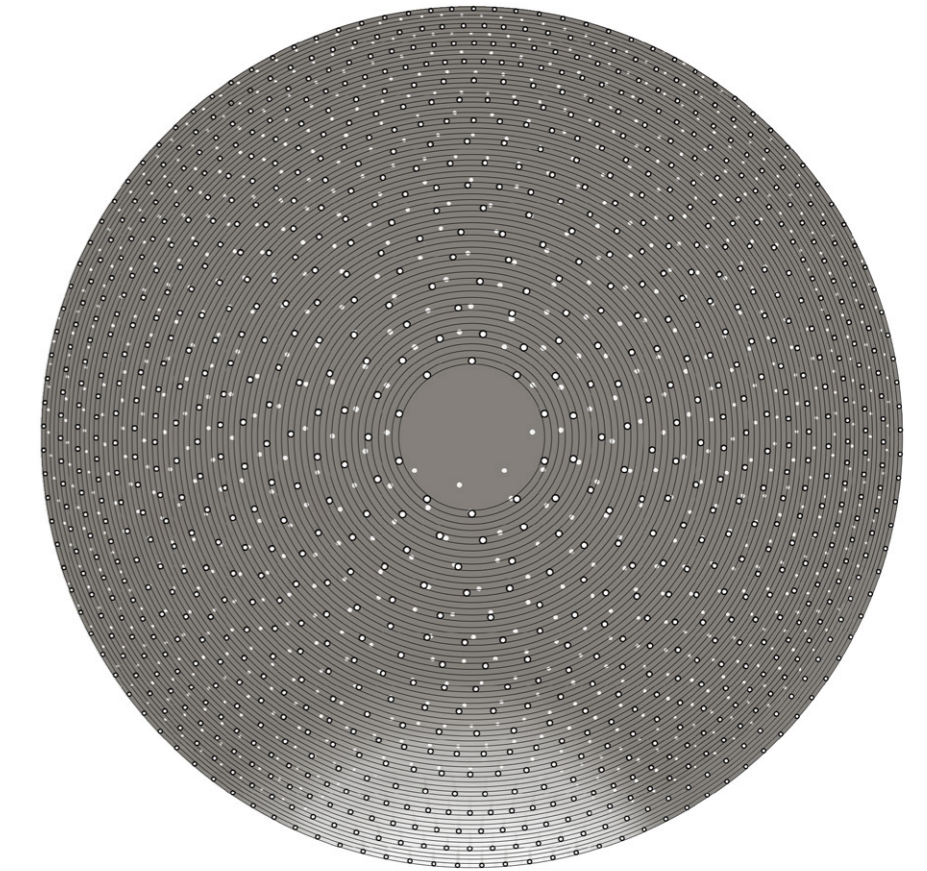


Building model

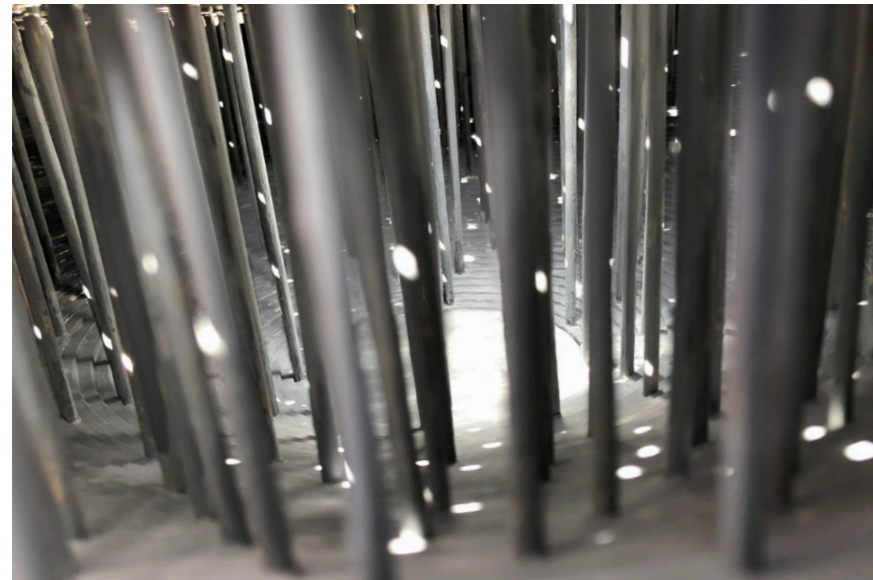
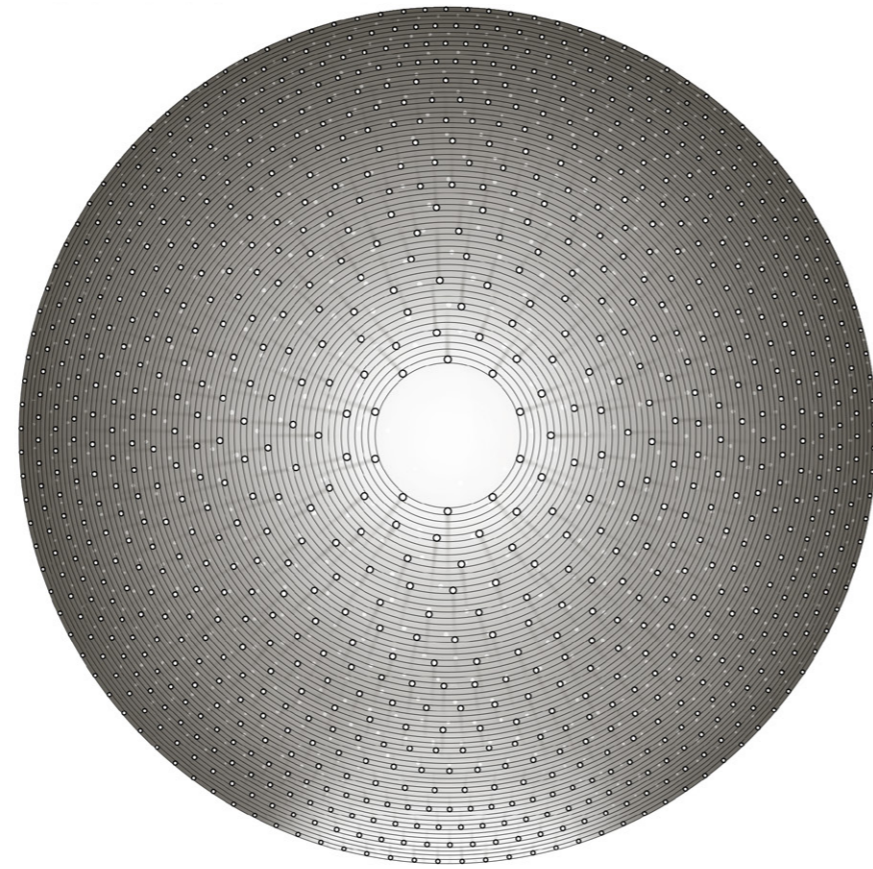


After making the light models, I made this building model in scale 1:100 to test the light in the final building. The pillars in this model do not go all the way up in the stairs as it does in the final building, since I wanted to be able to see and take photos of the center of the building when I did the tests. The photos on the following pages show the view from a few meters into the building.

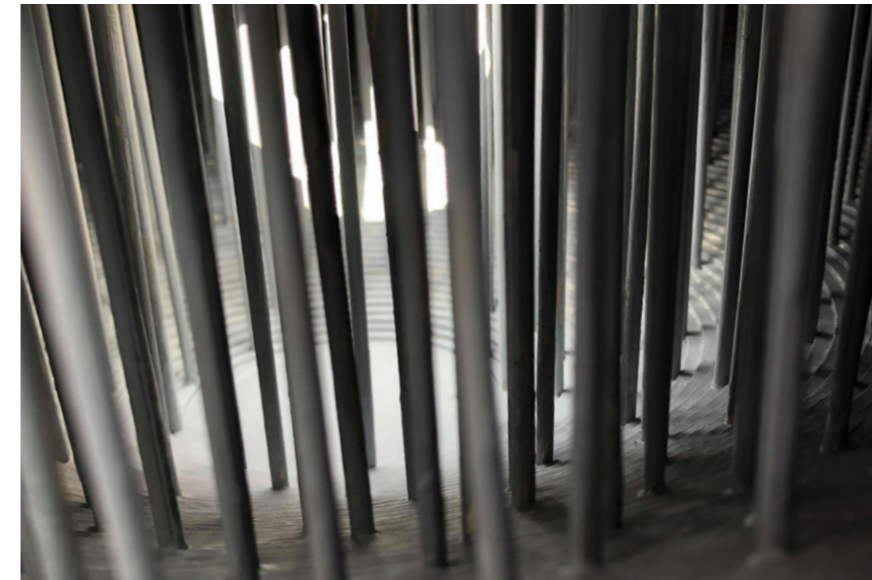
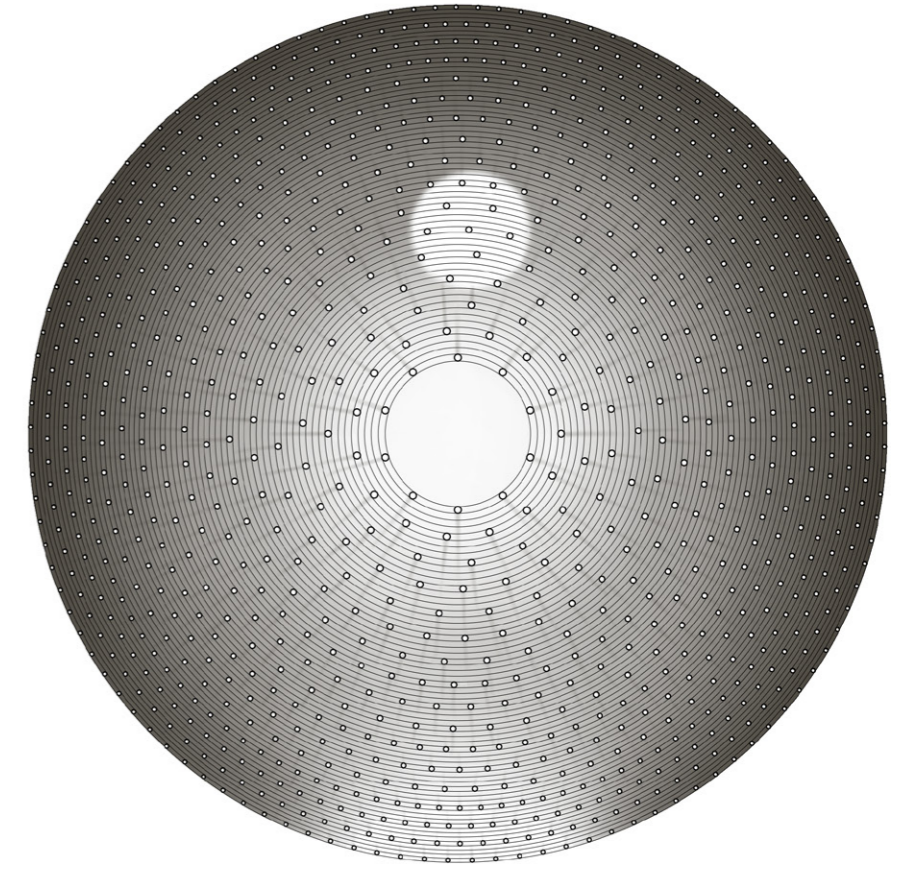
The light spots



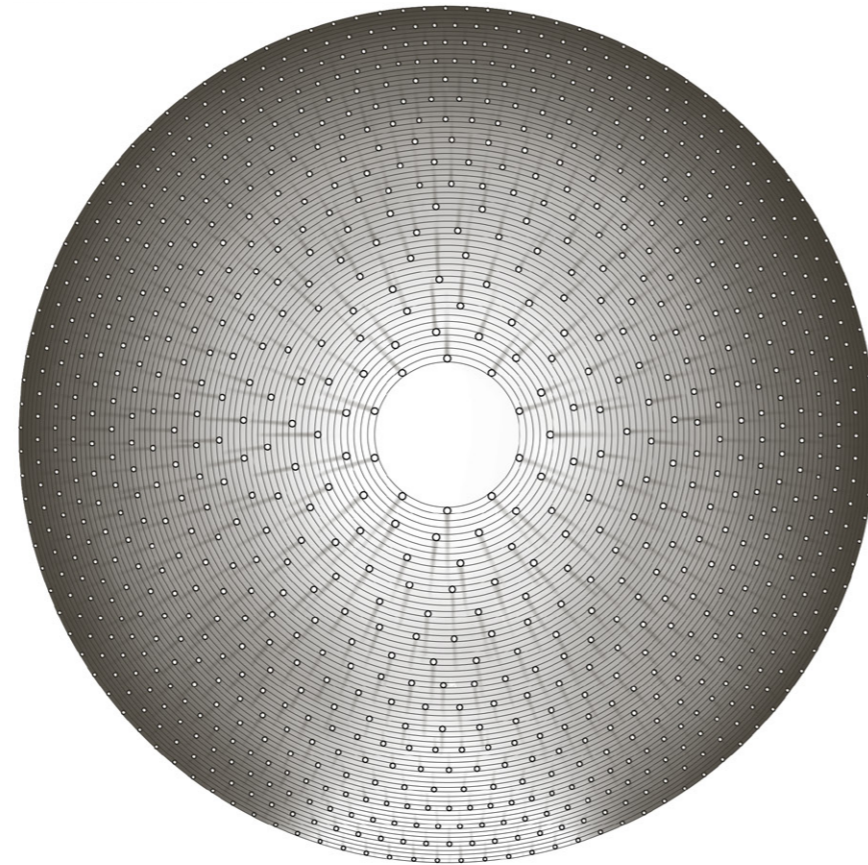
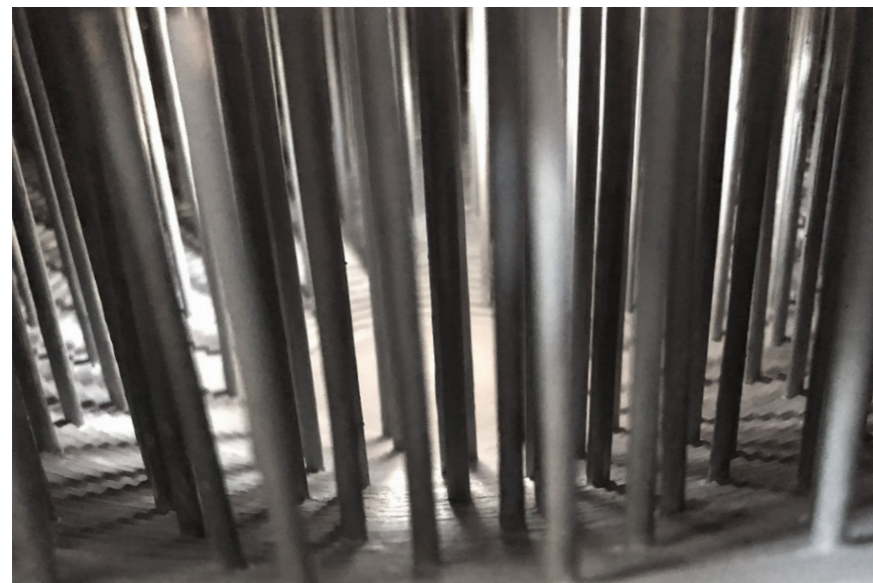
I have tested different openings to find the light that I wanted. This roof has small openings over every pillar. The whole room get a similar light. There are clear dot shapes from the openings. This roof maybe would have worked better if the pillars went through the openings instead of ending under them.



This roof has small openings over every pillar, and a central opening with a mirroring funnel on top of it. The centre of the building is brighter than the edges, but the dots are still very visible.



This roof has a central opening. With this design the center of the building is always lit up, but never with direct sunlight, since the sun is never that high on the sky. The direct sun light is always shining on the stairs in a clear circular shape.



This roof has a central opening with a mirroring funnel on top of it. With this design the light always comes down in the middle of the building and spreads out in every direction, with no shapes from the opening. This is the roof I have chosen for my building.

Conclusion

The light spot phenomena in the spruce forest has a big contrast between light and dark. The light comes from one point and fades out among the trees. It is an inviting light that you want to follow to see where it leads you.

The first roof gives a big contrast between light and dark, but puts no focus on the middle of the building. The whole building get a similar light. The following two roofs put a focus on the center, but also on other places in the building since the openings created clear shapes of light.

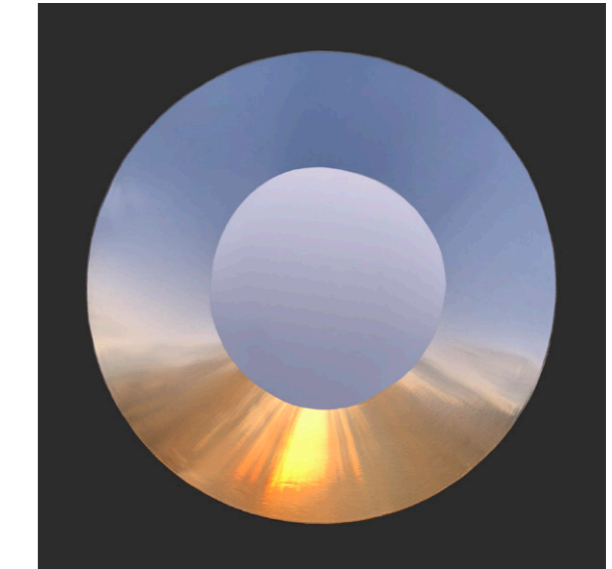
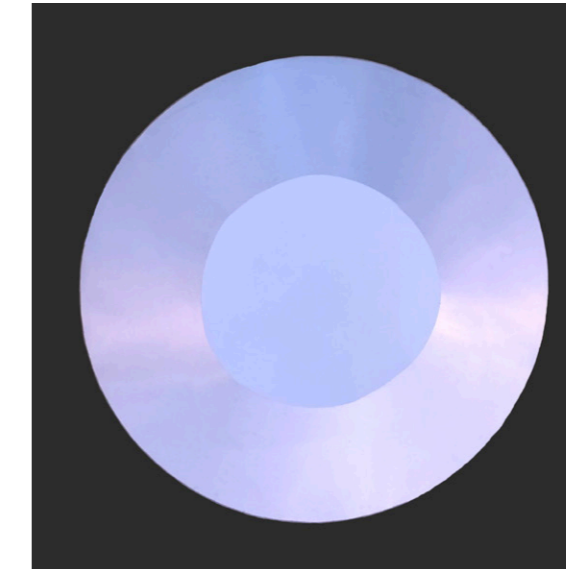
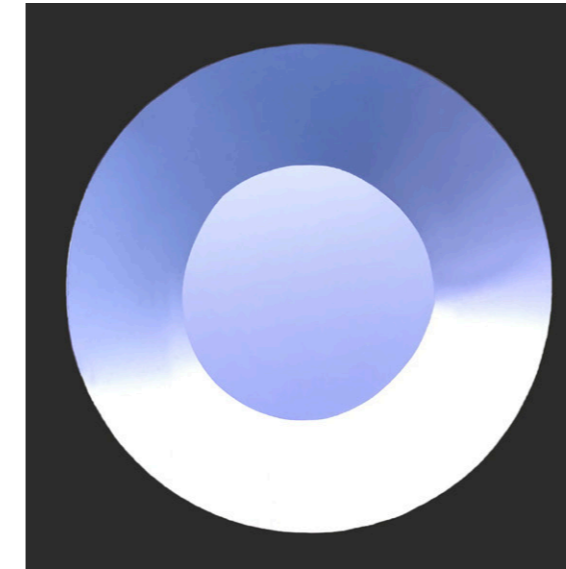
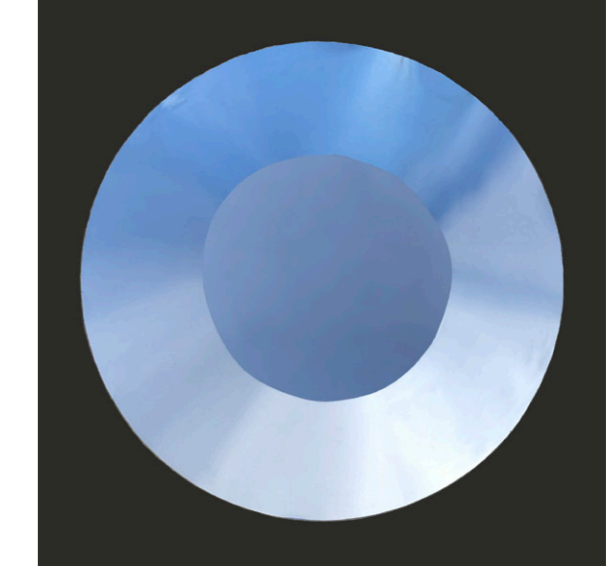
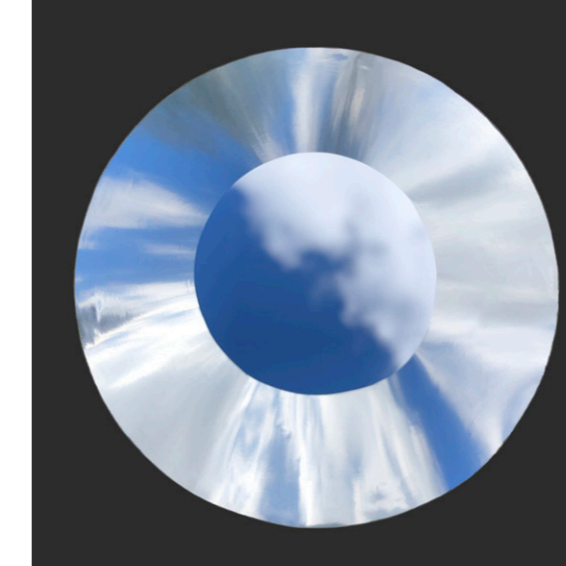
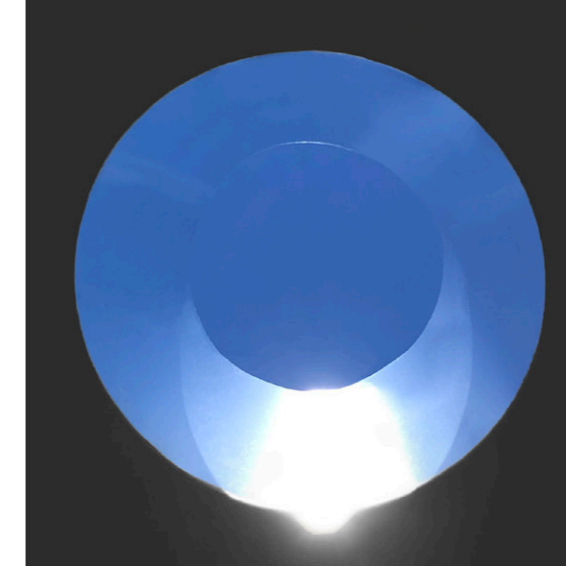
The last roof puts a focus on the middle of the building and has no clear shapes from the opening. I hope this light will increase the feeling of interiority since it light up the center of the building and the light fades out in all directions and, together with the dense pillars, hides the end of the forest. The idea is to create a light that you want to follow, just like I did in the forest as shown on page 19, to lead the visitors to the center of the building so they feel enveloped both by the building and the light.

The framed sky

As mentioned earlier, one ingredient for a contemplative space is the relationship between natural and built space. This is meant to enhance the connection between the human and the cosmos by framing natural space with built space.

The design with the mirror funnel will create a reflection of the sky. When you look up at it from inside the building, you will see a little part of the sky through the funnel, framed by the reflection of the whole sky. These pictures show different skies and how the mirror reflects more of the sky than you see through the opening. In the evening for example, the sky you see through the opening may be blue, but it is framed with a pink or orange sunset sky.

The light spots



The light spots

The water



The second soft fascination I have worked with is the forest stream. As stated in the beginning, one ingredient to a contemplative space is to increase or decrease certain visual, tactile or aural qualities. And for this I think water is a very good element to work with. Because the presence of water reduces stress, increases feelings of tranquility and lowers heart rate and blood pressure (Terrapin Bright Green, 2014). And the benefits from the water increase if you can both see, hear and touch the water, so I have worked with all these three things.

The reflection of light



In the beginning, I wrote that the light spots in spruce forests might lead you to open places, sometimes with water reflecting the light. So in the back of the building, there will be water running down to the middle, creating a reflection of the sun light from the opening in the roof, that you can follow when you walk down in the building.

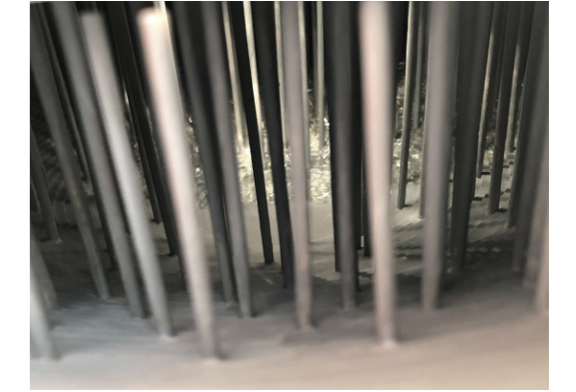
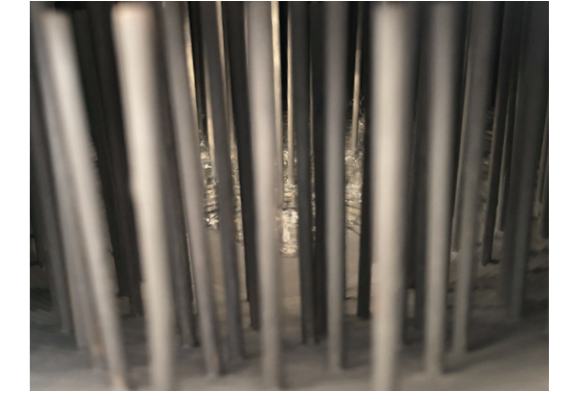
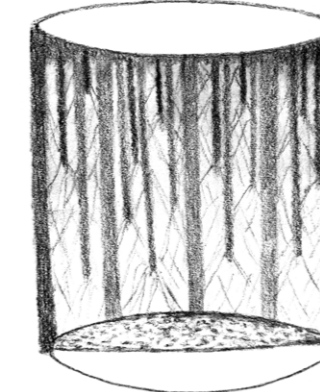
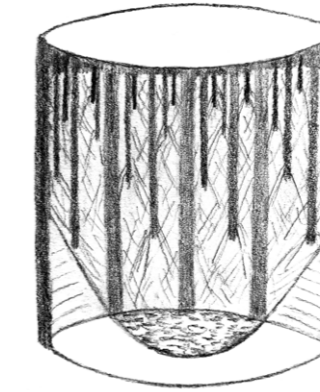
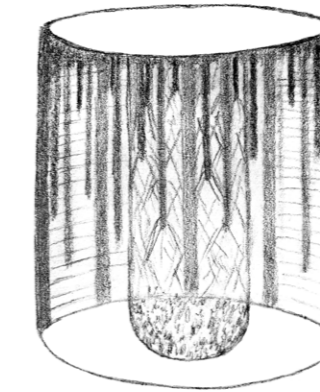
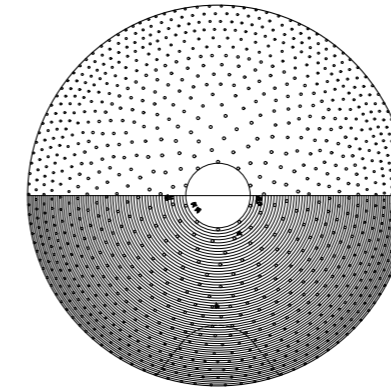
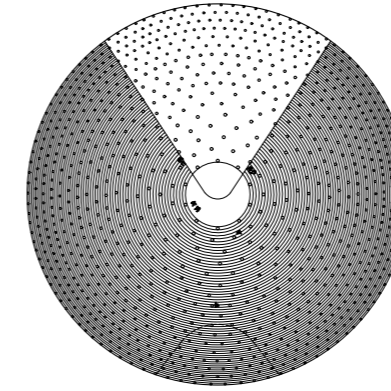
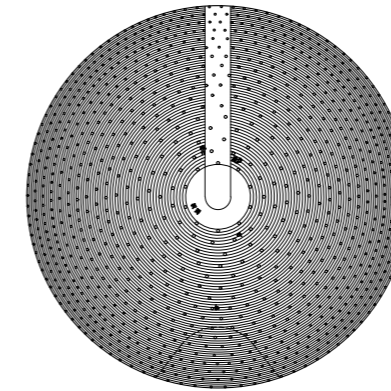
The shape of the water

I have tested three different shapes of the water to see what effects they have on the room.

I started with a shape similar to a forest stream. Here you get a circular shape of water in the center of the building, that will reflect the light and draw attention to the middle. But the stream is only about tree meters wide so it covers a very small part of the building. With a wider shape you could get more light play in the building and come closer to the water no matter where you are in the building.

So in the second version, I made the stream wider by giving it a v-shape. There is still a focus on the center of the building, but here there is also a focus of the back of the building.

In the third version I left the idea of the stream and let the water cover half of the building. Here, the whole back of the building is reflecting the light. There will be a lot of light play in this version and the sound of the water will be more prominent. This is the shape that I have chosen for my building.



The sound of water

The water flowing down the building will create a sound. I have visited different streams to find a nice sound to bring into my building. Different movements of the water have different sounds. I wanted a sound that is loud enough to be heard a bit away from the water, but low enough for people to feel that you should speak in a low voice in the building. Because how loud people talk is affected by the general noise level in a room.

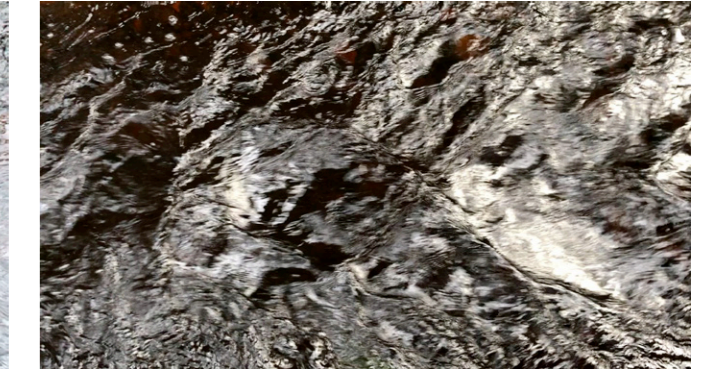
The first stream has a lot of movement which creates a rather loud noise that can be heard from far away. The second stream has a very calm movement and is therefore very quiet. You have to be very close to the water to hear it. The third stream has a movement somewhere between the first two. The sound is loud enough to be heard from a distance and low enough to encourage quiet or no talking.



Too loud



Too quiet

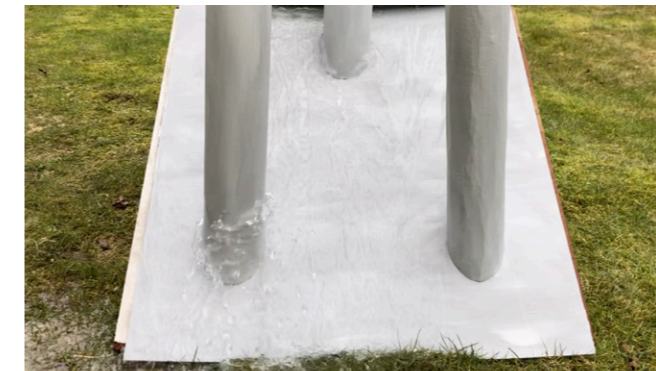


Just right

The sound of water

These two models were made to recreate the sound from the forest. I wanted to compare the sound between water flowing on the stairs and water flowing on a flat surface. I thought that the difference between the two designs would be bigger, and that one would be better than the other. In the staircase it is mostly the steps that create the sound and in the flat version it is the pillars, but the sounds were quite similar. These tests showed that the most important factor is how much water there is. A wild and jumpy movement like in the first two pictures creates a loud sound. In the second two pictures the water follows the surface and therefore, sounds almost nothing at all. In the last two pictures there is a small vertical movement of the water, which creates a pleasant sound.

The water



Too loud



Too quiet



Just right

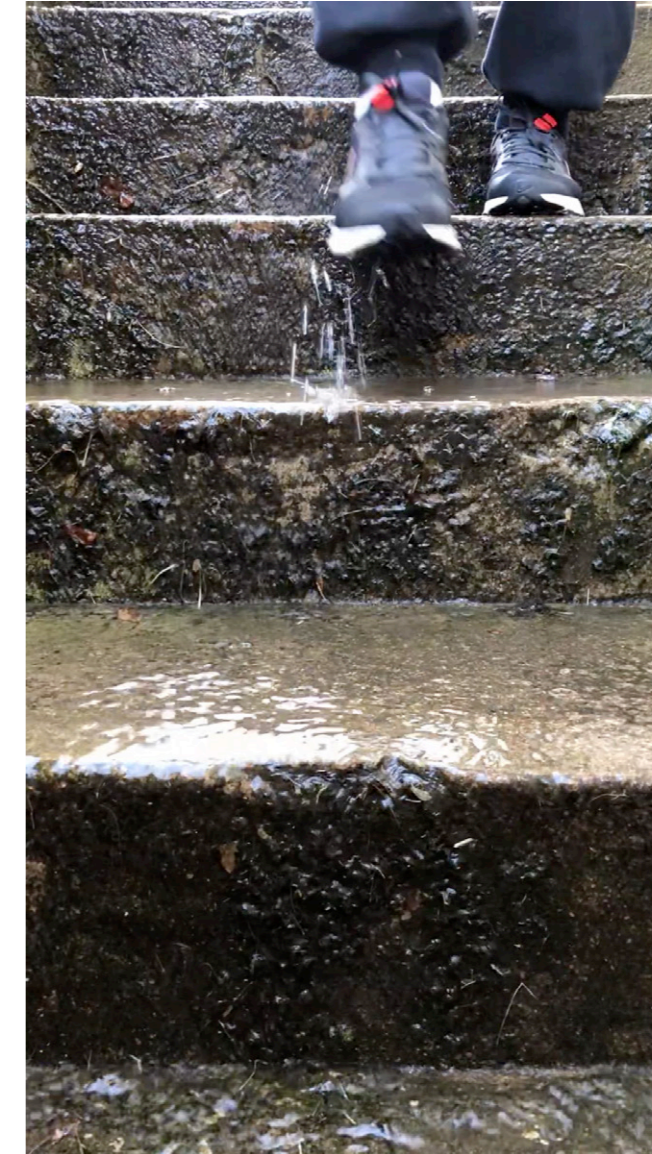
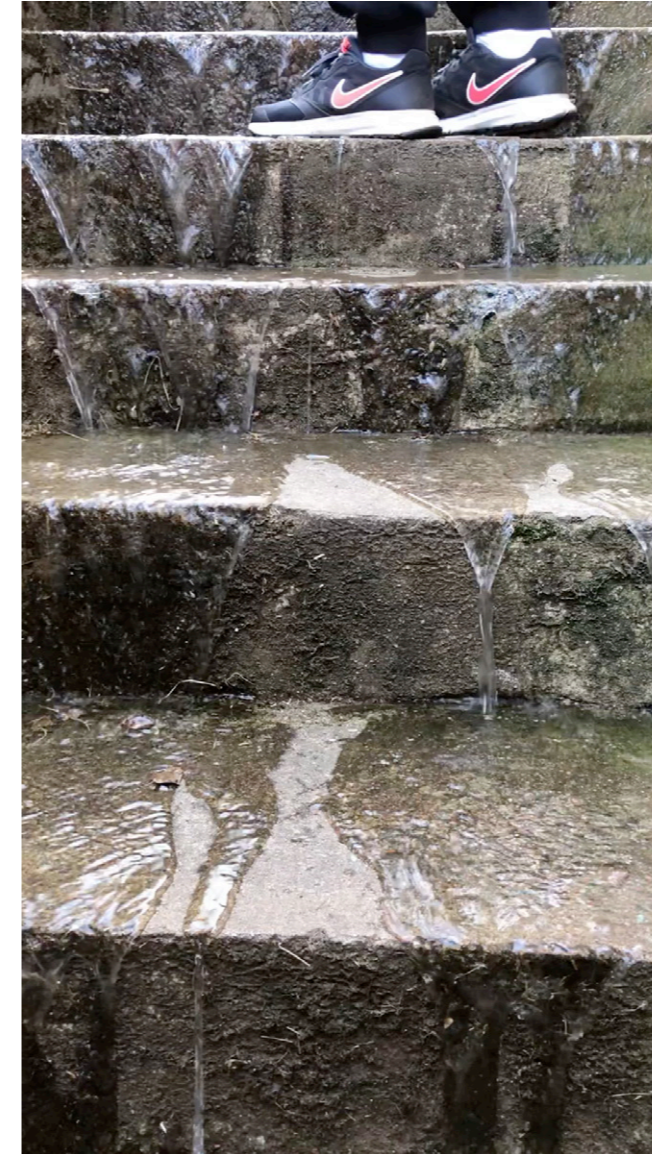
The water

Walk on the water

Since the two different alternatives: the staircase and the flat surface, worked just as good when it comes to sound, I looked at other qualities when I decided which one to choose. And as stated earlier, the benefits from the water increase if you can both see, hear and touch the water. So I decided to go with the staircase. Because if it flows on the stairs, you can even walk on the water.

These tests are made in basement steps. The buckets represent the pillars in the building, which will have a slight impact on the water movement.

I think the akt of walking on the water brings you closer to it than just walking beside it. You get a connection to the water, even though your shoes stay dry. You change the direction of the water when you stand in its way and you create sounds when you walk on it. And since the water covers half of the building you can be surrounded by the water which I think improves the experience of it.



The material

Here are some materials from the forests that I have visited during the project. The materials are hard, resistant materials with beautiful patterns and neutral colors. These materials are the inspiration for the choice of material and color in my building. The material in the building should have a neutral color so that the light appear more clear. It should be quite rough to get a big contrast to the reflective water, and it must withstand water. It should give the impression of being able to last forever just like a tree in the forest can stand for hundreds of years.



Spruce

Beech

Spruce

Stone

Birch

Spruce

Spruce

Built materials

When I chose material for the building I wanted it to visually relate to the ones I found in the forests, and meet the criteria stated on page 44. Most of the materials that inspired me in the forests were trees. But when I looked for built materials with similar characteristics I found concrete, stone and brick materials. These materials are also hard, resistant materials with rough surfaces, nice patterns and neutral colors, similar to the ones in the forests. They age beautifully and are not negatively affected by water.

The material



Concrete

Concrete

Concrete

Brick

Stone

Concrete

Brick

The material

The final material

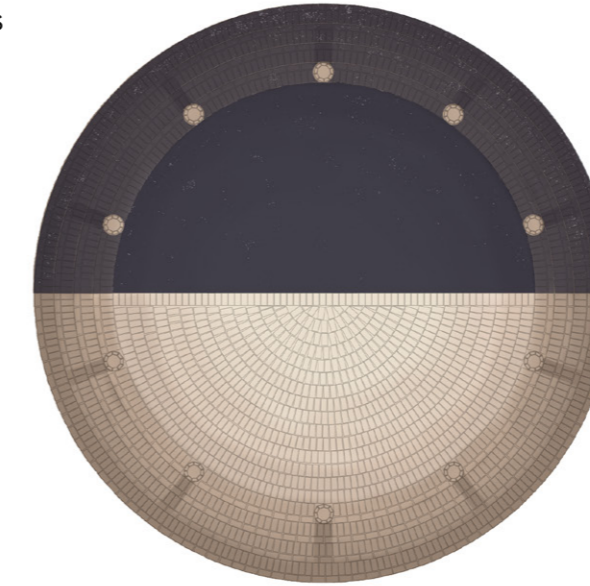
I picked my favorite built materials from the previous page and tested them in plan and perspective sketches. The material will be the same on the floor, stairs, pillars, and ceiling.

The sand colored bricks have a warmer color than the concrete and a more prominent and regular pattern.

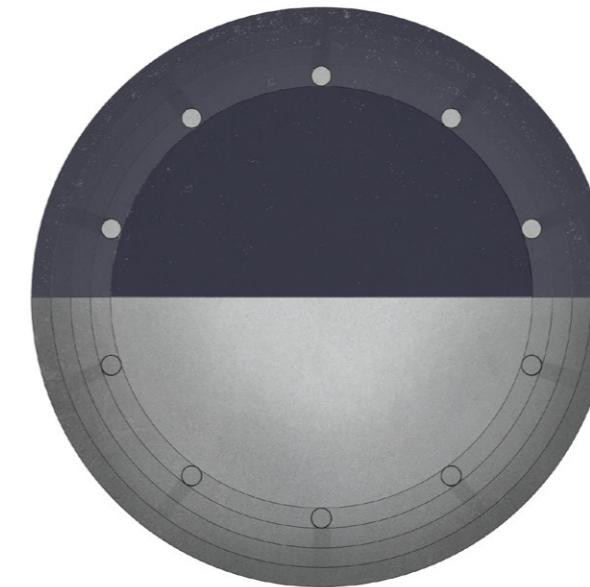
The concrete is a bit more neutral when it comes to pattern and color. It might draw less attention to the material and make the light and water more prominent. When the concrete gets wet by the water it will become dark grey and make the contrast between the water and the dry parts in the building bigger. The concrete is the material that I have chosen for my building.

The material

Sand colored bricks



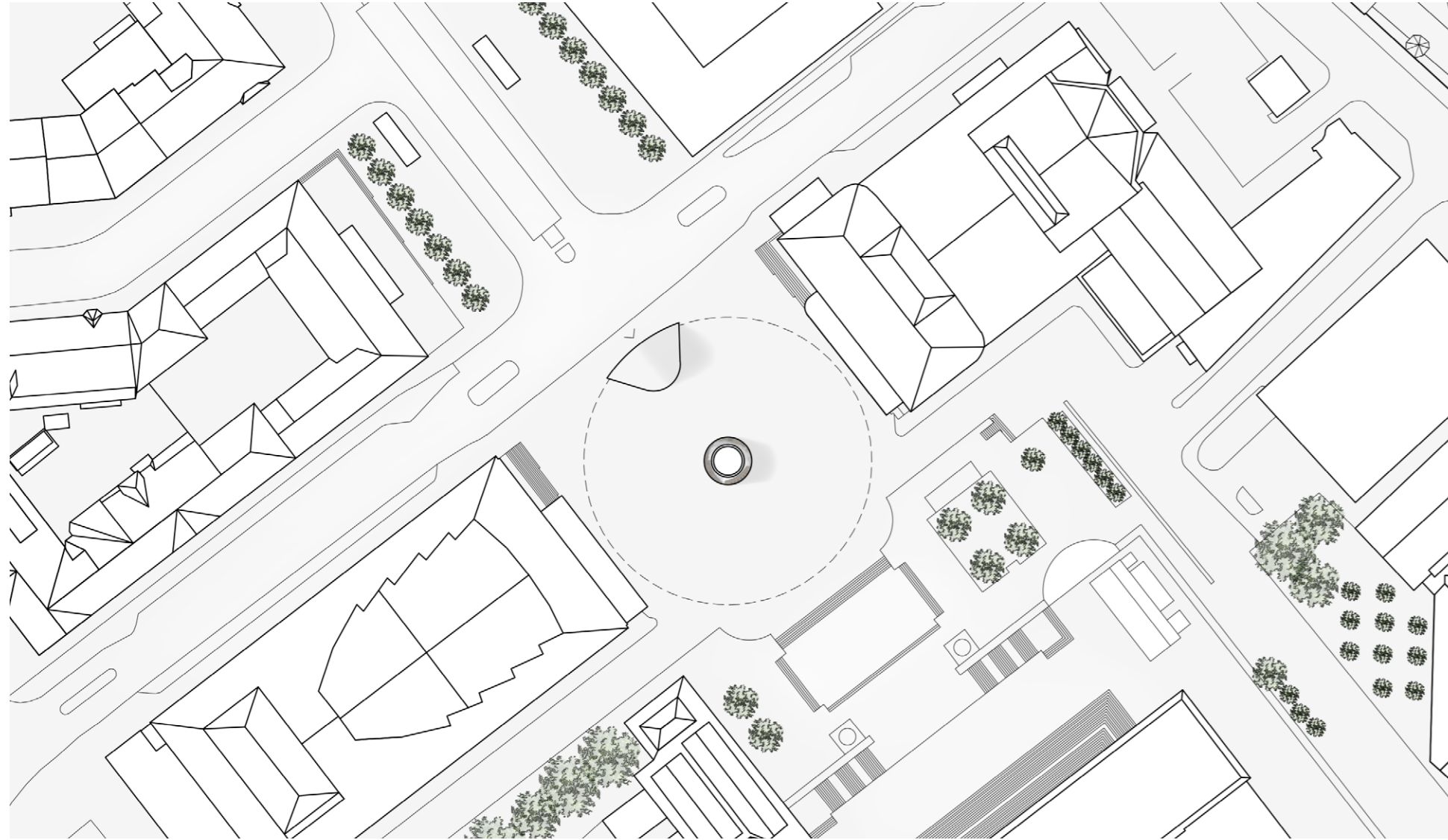
Concrete



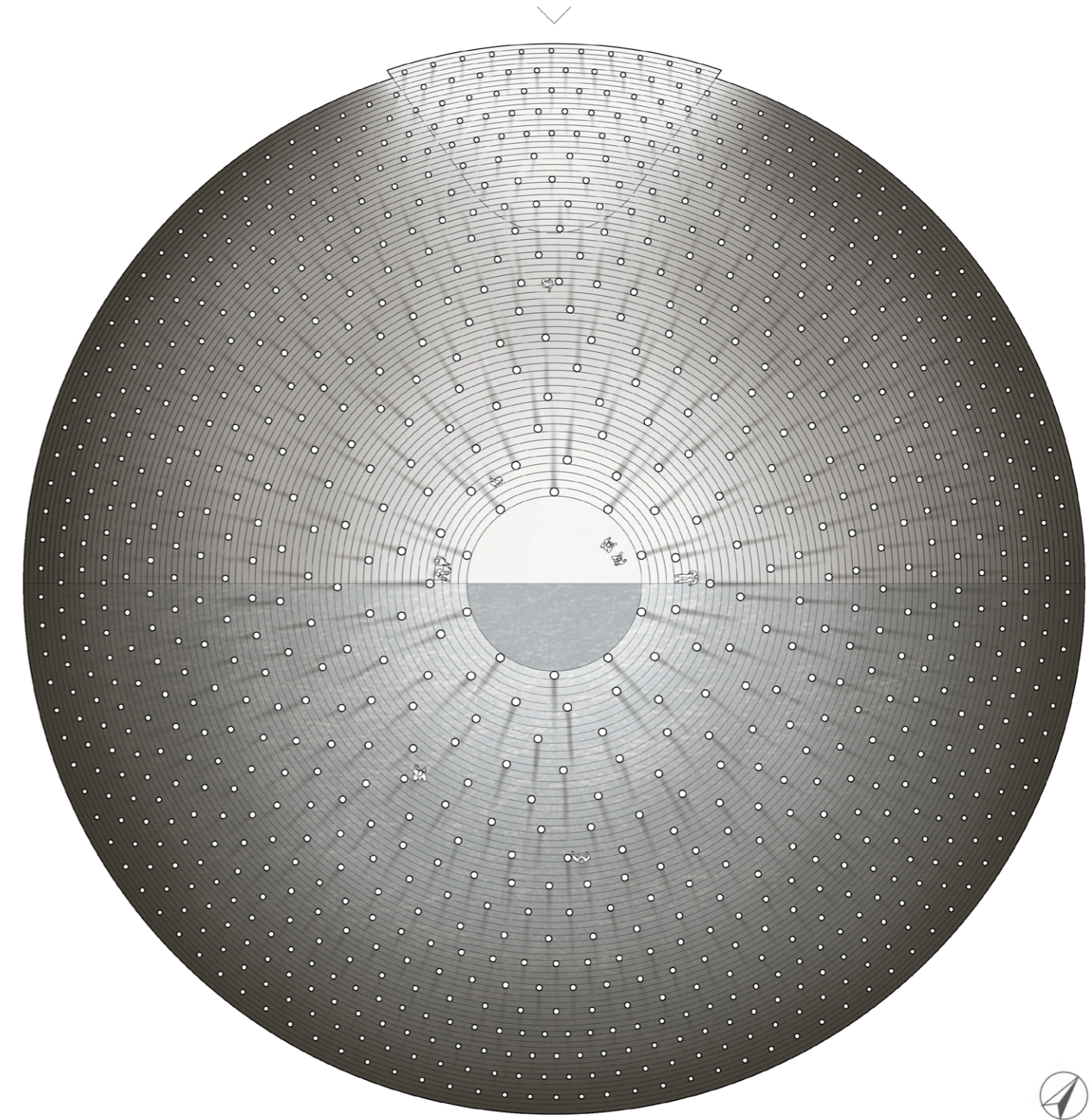
The material



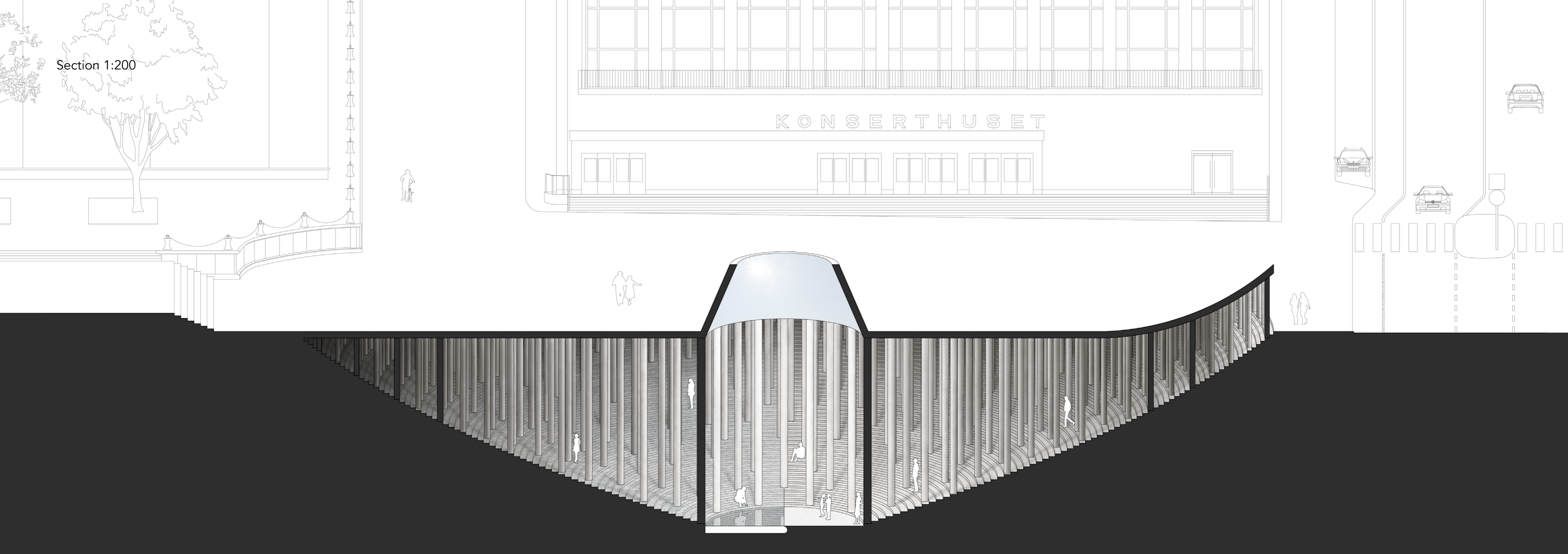
Site plan 1:1000



Plan 1:400



Section 1:200



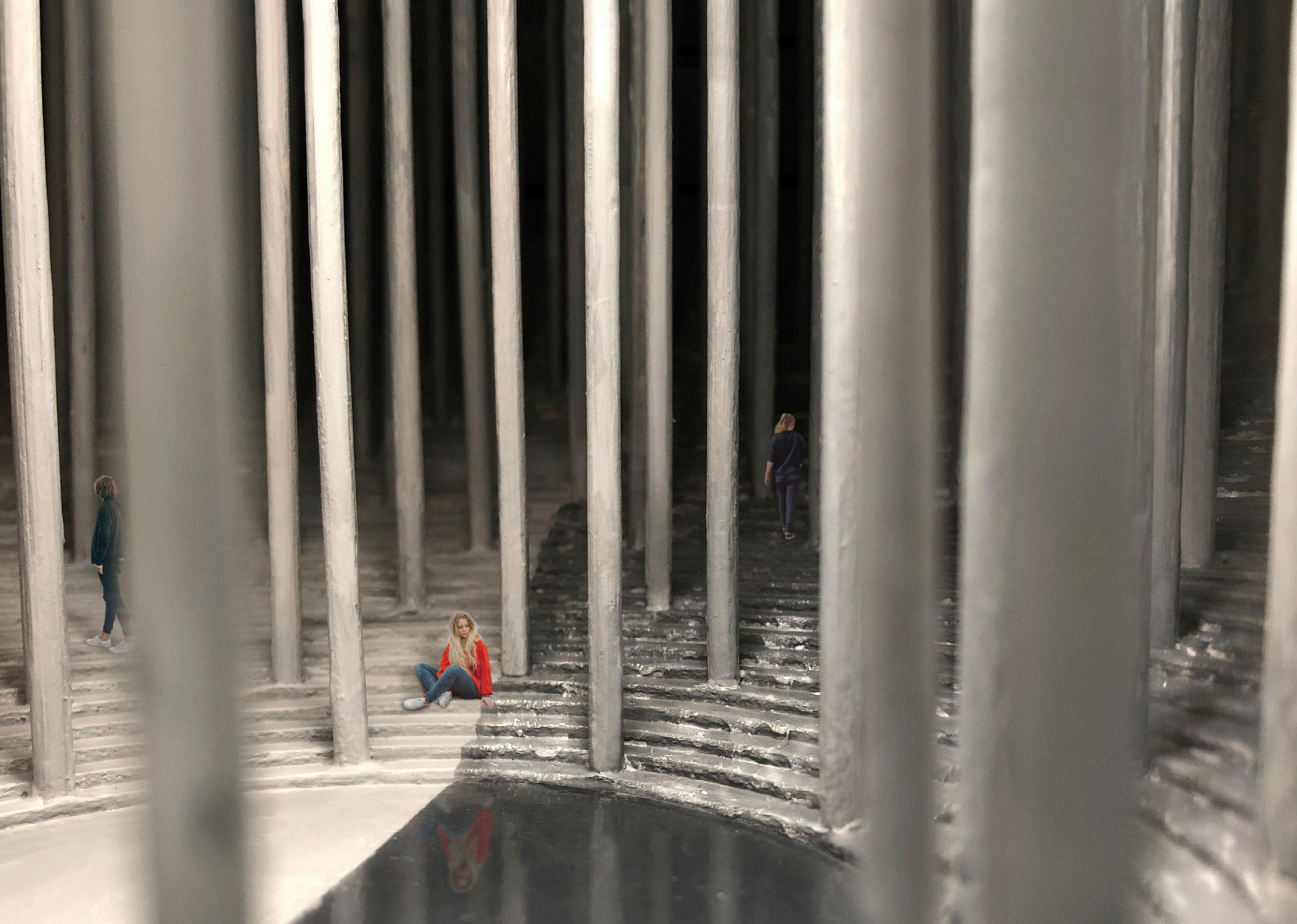
Perspectives

This is what the building looks like from Avenyn. Poseidon is replaced by the mirror funnel. From the outside you don't see any light from the building.



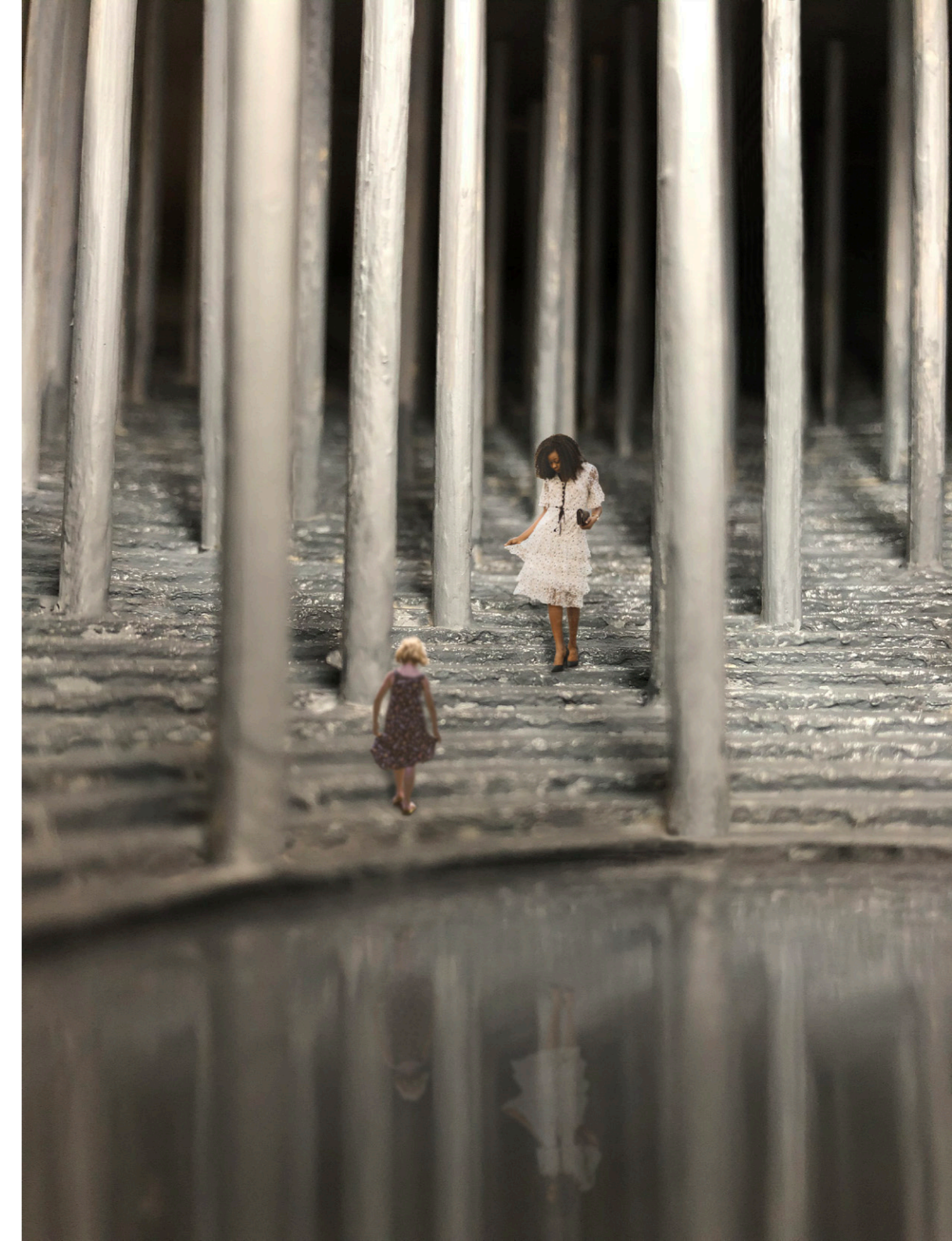
When you have taken a few steps into the building, you can begin to follow the light down to the center. Here you also see the water and hear the sound from it.





You can sit anywhere in the staircase but next to the water may be the nicest place, where the light play and the sound is most prominent.

The experience of the water increases when you come closer to it. When you walk on it, you are surrounded by the sound and the light play from the water and you affect the movement with your feet.





When you stand in the middle of the building and look around, you will not see the end of the pillar forest that surrounds you.

When it is time to leave the building you follow the light from the entrance, that will appear when you have taken a few steps up from the center of the building.



Discussion

To answer the research question "How can soft fascinations in nature be used as inspiration to create a contemplative space in the city?" the soft fascinations were explored with photos, films, sketches, models and tests in different scales to find the essence of the soft fascinations. The building was design through the exploration of the soft fascinations and with the ingredients for contemplation always in mind. The ingredients are: interiority, increasing or reducing visual, tactile or aural qualities and the relationship between natural and built space.

In my light studies the inspiration was a phenomena where the light comes from one point and spreads out among the trees, and where the contrast between light and dark is big. In my explorations I discovered the importance of the tree trunks to get this light phenomena. That is one of the reason why there are so many pillars in the building. The other reason is to increase the feeling of interiority. The light phenomena is used to attract the visitors down in the building and, together with the dense pillars, create a feeling of interiority, by hiding the end of the building and get the impression of an infinitive pillar forest.

The second ingredient is to increase or reduce visual, tactile or aural qualities. The forest inspired filtered light is a visual quality in the building. This light phenomena is increased by the large amount of water that reflects the light and creates a light play in the building. The water also has aural and tactile qualities.

The exploration of the water in scale 1:1 led to the function of the water went from just being a source of light and sound, to becoming something to interact with, by touch or even walk on.

The third ingredient is the relationship between natural and built space. Here the built space is supposed to frame the natural space. The opening in the roof, together with the mirror funnel create a view of the sky from the building.

Investigating the light in physical models has made me realize how complex daylight is, it varies a great deal depending on the surroundings, weather conditions and time of day. The tests with the light have taken up a lot of time, but to test the light in physical models has given me so much compared to what I would have gotten from a digital model.

This thesis shows an alternative way to design a contemplative space, free from specific programs, religions and traditional buildings. By searching for inspiration in nature instead of an other contemplative building, the design of the space became like no other contemplative building. The source of inspiration, the forests, were visited many times during the project, and the visits together with analogue tests, models, and sketches became important tools to explore the phenomena. This is a way to get inspiration from nature where the nature is not mimicked, but where the essence of specific natural phenomena; the soft fascinations, are used to shape the space.

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