ATMOSPHERE

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The assignment of the dwelling graduation studio 'At home in the city' of the faculty of Architecture at the TU Delft mainly concerns 'the development of new spatial configurations and sustainable typologies as well as attractive and imaginative architectural designs suited to 21st century living.'

The developments within the society, like the social and the cultural change, demands for a new dwelling typology. The usage of the dwelling is increasing, this is partly due to the flexibilisation of the labor market. This means people do not need to go to their work anymore, but they could work at home. Another aspect of the intensification on use of the dwelling is the transition towards the digital age, people are able to be social within a zone of the dwelling, even when they are alone. A great part of their social life occurs on the internet. People do not need to leave their dwelling anymore. They even can do their shopping online. The activities are increasing inside the dwelling instead of outside of the dwelling compared to the 20th century.

This more intensive use of the dwelling demands for different living conditions. The dwelling of the 20th century is composed by rooms; for instance a bedroom and a living room, while the dwelling of the 21st century needs a completely different approach. According to van der Woude these dwellings demands for zones instead of rooms; the activity decides where the dweller would like to stay instead of the function. These zones can include different scenarios, since the dweller is able to make his or her own choice where to accommodate a particular activity. Van Dorst states that the physical surrounding needs to be flexible in use and adjustable for future conditions.
The challenge for the designer is to create zones which can provide varies of scenarios. These scenarios can be realized by different atmospheres. This research is to understand how scenarios can be created in dwellings by the use of atmospheres.

[1] *(M&C, 2014)*
[2] *'De gebruiker richt zich steeds meer op verblijf in eigen woning, dit creëert woonverblijven.'(Woude, 2012, p. 22)*
[3] *'De mate van sociale interactie en activiteiten in de buitenruimte veranderen in de tijd,*
*hiervoor moet de fysieke omgeving flexibel zijn in het gebruik en voorbereid zijn op*
*aanpassingen in de toekomst. Ontwerp niet alleen een vorm, maar ontwerp ook scenario's.'(Dorst, 2005, p. 310)*

# INTRODUCTION

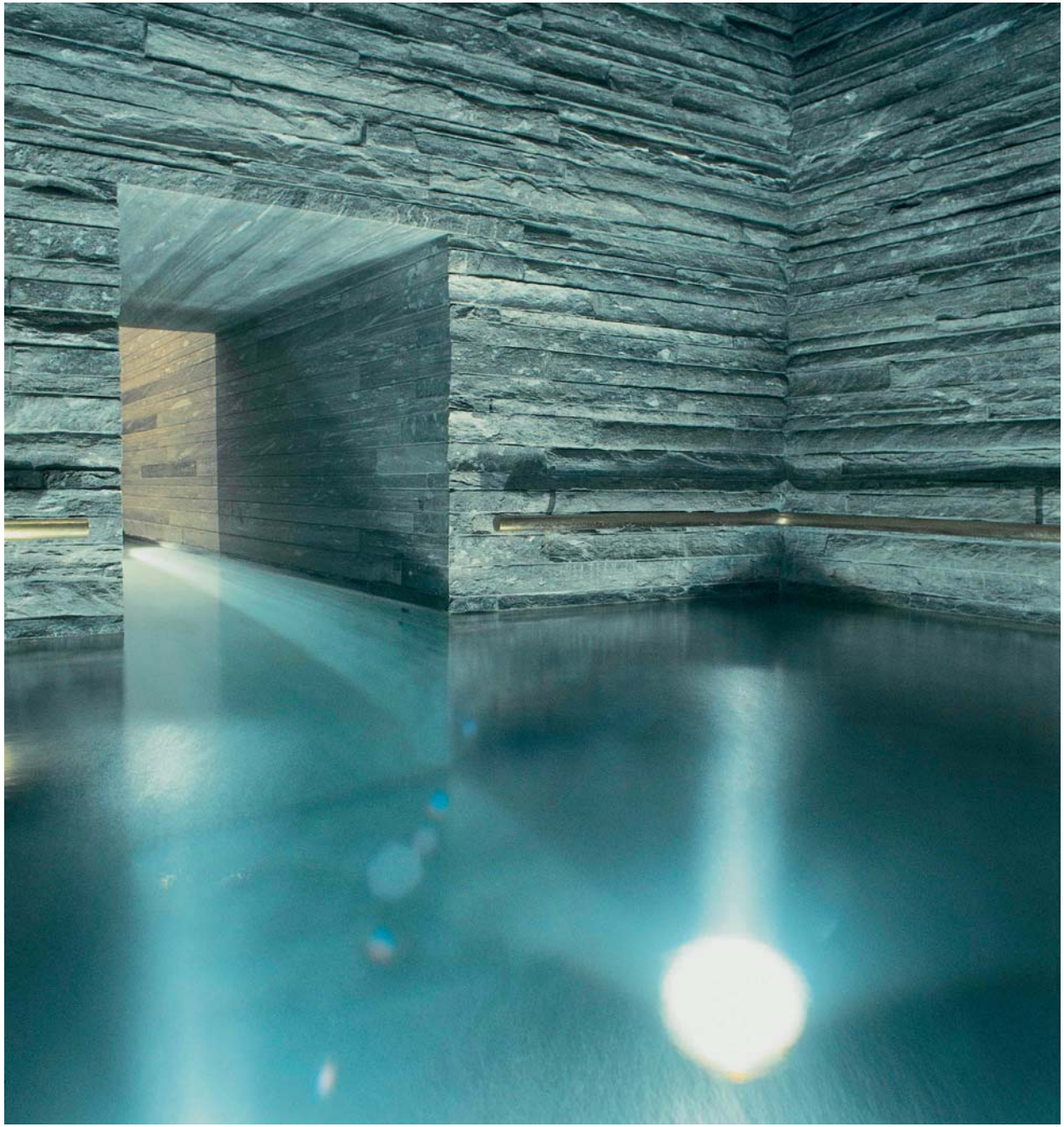
As mentioned in the preface, we are searching for a new type of approach about how to design dwellings. In other words, what is the design approach of the dwelling of the 21st century? Already stated in the preface there is a need to search for new ways of living; we have to think in scenarios instead of rooms. These scenarios can be realized by creating different atmospheres.

## ATMOSPHERE

Atmosphere is a term which is hard to grasp within the discipline of architecture. There are various attempts to define the term. Pallasmaa defined atmosphere in Encounters 2 as 'the overarching perceptual, sensory and emotive impression of a setting or a social situation'. In OASE #91, atmosphere is defined as 'something personal, vague, ephemeral and difficult to capture in text or design'. Mainly because of this 'personal' aspect, in other words the 'personal perception' of space, we think this fits the new way of dwelling. That is why the research is about atmosphere, with the focus on the aspects that influences atmosphere.

The research question therefore is:
***How can we control atmosphere in order to use it in our design?***

This research question will provide an understanding of atmosphere and at the same time gain knowledge about how to get grip on atmosphere in order to apply it in our design.
The sub questions (in order to broadening the



research question) can therefore be divided in two types. The first three will give us answers to this 'understanding' and the last two about the 'applicability' of atmospheres.

The subquestions are:
***- What is atmosphere?***
***-What aspects creates atmosphere?***
***-How can these aspects be applied in architecture? (What tools?)***
***-How to get grip (or control) on creating atmospheres?***

## RESEARCH GOAL

The actual goal of this research is to gain knowledge about the aspects which influence atmospheres. This knowledge can be applied in our design projects in order to have control in designing specific atmospheres.

The goal for the research is therefore to get a clear overview of (architectural) tools which can be used to create different atmospheres.

## RESEARCH STRUCTURE

The theme 'atmosphere' is actually very hard to analyze. There is not just one single research method which is perfectly suitable to find the answers for well-founded conclusions due to the fact that atmosphere is a personal perception. In order to dó get some grip on this theme, the research will be done in different ways with different methods. Because of that, this research is divided in the following structure:

Chapter 2 - Architecture and Atmosphere
First the term atmosphere is placed in the discipline of architecture. To what level are architect able to influence the atmosphere with their architecture? What are the aspects architects need to take into account when designing atmosphere?
Finally a short summary is given of a few leading architects and their perspective on atmosphere in architecture.

Chapter 3 - Research methodology
In this chapter we explain the different methods which are used and what the purpose is of this approach. It will elaborate on the reason why different methods are used and create a framework per method to frame the research. This chapter will end with a scheme including different aspects which need to be researched and how these aspects can implemented in products. The purpose of this scheme is to collect equal data which later can be compared in the final chapter (conclusions).

Chapter 4 - Qualitative research
The qualitative research is the first step of the research. In this chapter a broad selection of interesting projects (related to atmospheres) will be made. The emphasis in this chapter will be on projects which includes different atmospheres created by several architects. The used sources are only photographs and explanatory texts. The photographs are abstracted, based on the predetermined aspects.

Chapter 5 - Comparison sheets
In this chapter we will try to find similarities between the different atmospheres, by comparing the predetermined aspects. This, so called 'case comparison', will give us knowledge of the value of the different aspects in view of controling atmospheres.

Chapter 6 - Individual evaluation
In the 'individual evaluation' the writers of this research evaluate the research so far. This in order to develop their architectural position as regards to the theme atmosphere.

Chapter 7 - Research by design
This part of the research is characterized by the 'what if..'. What if some (architectural) elements (or aspects) will be changed? In what way does these (mostly simple) changes effect the atmosphere? With this chapter we try to get comprehension about the effect of changing the aspects related to atmospheres. In order to do this research, a physical study model will be made on the scale 1:20.

Chapter 8 – Conclusions
The goal of this chapter is to find answers for our aforementioned research question and sub questions. Shortly we will evaluate the relevance of the research in relation to our predefined problem statement.

# ARCHITECTURE AND ATMOSPHERE

## ABOUT THE ARCHITECT

Swiss architect Peter Zumthor is born on the 26th of April in 1943 in Basel. Zumthor is famous due to the application of material, precise detailing and studious proportions. In 2009 he won the Pritzker Architecture Prize.

After his studies at the Kunstgewerbeschule in Basel and the Pratt Institute in New York, he first started working as an architect at the cantonal preservation between 1968 and 1978. In 1979 he started his own office in Haldenstein. The skills that Zumthor gained from his education of joiner, has always been visible in his architecture.

Zumthors later projects show a lot of affiliation with the minimalism, whereas the relation between the building and the environment is very important. Zumthor is shaping this relation by the leading role of the environment in his designs.

In all of his designs Zumthor gives attention towards the perception of space; by touch, smell and sound. Zumthor is continuously occupied with the search to the appropriate experience that he would like to achieve with a building.

Atmosphere is an essential concept for the Swiss architect. In his publication Atmospheres (1996), Zumthor identified a series of themes that play a role in his work in achieving architectonic atmosphere. He directly uses atmosphere as a guiding principle in his architectural practice.

German philosopher Gernot Böhme argued that atmosphere may be a conjunction of personal and emotional impressions of space, but this conjunction is reproduced by the objective assembly of materials, spatial proportions, the aging of the materials, the connections of the materials and the connections to the place or other buildings, rhythms, light, etcetera. Atmospheres, Böhme continues, are 'characteristic manifestations of the co-presence of subject and object'. The way we experience atmosphere is determined by many aspects, and therefor scarcely definable. What can be concluded is that atmosphere is first and foremost a total experience, not a mere accumulation of constituent aspects.

"If atmospheric quality can be achieved in buildings embedded in a powerful landscape, such as is the case with Taliesin West, or in sacral buildings, we wondered whether attempts to build atmosphere have any chance in more mundane assignments like social housing, where only limited budgets are available and the landscape or urban context does not offer much to hold on to." (OASE #91, pg.9)
"Words like atmosphere and mood inevitably come to mind when faced with Zumthor's architecture." (Zumthor, Atmospheres, pg. 7)

Zumthor has found several aspects, which concerns him in order to generate a certain atmosphere into his buildings. These are highly personal according to Zumthor himself, he believes that they are the products of sensitivities themselves, making him do things in a particular way. These aspects are elaborated in his publication "Atmospheres". (See next page for a short summary.)

Besides Zumthor, more architects are trying to get grip on atmospheres within the discipline of architecture. A few leading architects in this are Steven Holl, Frank Lloyd Wright, Louis Kahn, Kengo Kuma, Alvar Aalto and Valerio Olgiati. The projects of these architects, togehter with some projects of Zumthor, will form the base of our research.

1. Body of architecture

The body of architecture is basically the skin and the frame, which could be seen as anatomy. Zumthor explains that this contains the material presence of things in a piece of architecture. It could be seen as bodily mass, a membrane, a fabric, a kind of covering, cloth, velvet and silk for instance.

2. Material compatibility

Zumthor elaborates on the use of different materials. The importance of this aspect in his buildings is the material composition, the radiance of material, presence and weight of material. By combining certain materials, with the right amount of radiance and composition, Zumthor is able to generate a certain level of atmosphere. While designing, Zumthor is working with large physical models in order set the right atmosphere.

3. The sound of a space

According to Zumthor, the sound of a space accommodates a certain feeling, mostly created from memory. For instance the absorption of sound in a living room, due to the soft surface of materials or the echo in hallways, due to the shape of the space and the surface of materials. Sounds could be amplified and transmitted by shape peculiar to the room and the surfaces of materials.

4. The temperature of a space

Cool and warm temperatures could help to achieve a certain atmosphere in a space. Different materials help to gain a certain temperature. For instance steel will drag the temperature down and wood would extract warmth.

5. Surrounding objects

A part of the creation of atmosphere is created by the impression of several objects, being impressed by the things that people keep around them. For instance a piano in the middle of the room would help to achieve a certain feeling to that space.

6. Between composure and seduction

Architecture involves movement, it could seduce and direct people. Zumthor is trying to create a voyage of discovery by creating guidance, preparation, stimulation, the pleasant surprise and relaxation to stroll through the building.

7. Tension between interior and exterior

The almost imperceptible transition between interior and exterior helps to gradually change atmosphere of a certain space. Using a certain level of thresholds and crossings could create this transition.

8. Levels of intimacy

The level of intimacy, according to Zumthor, is separated into different configurations: just one person, a person in a group or a person in a crowd. Distance and proximity helps to define the intimacy.

9. The light on things

Artificial light and daylight have different effects on light. The surface of the material will also have different effects; for instance the amount of reflection and absorption.

## STEVEN HOLL

*Born*
December 9, 1947

*Nationality*
American

Steven Holl has always emphasized the perceptual experience of his architecture and the transcendental role played by light in this experience. He is one of the contemporary architects who has paid closest attention to this essential component and handled it more carefully." - El Croquis okt 2011

## FRANK LLOYD WRIGHT

*Lived*
June 8, 1867 - April 9, 1959

*Nationality*
United States of America

Frank L. Wright was known for his ongoing quest for balance in architecture. Both in terms of materialization, proportions and light. In order to achieve this, he pursued for 'organic architecture'. As a result, he had great interest in openly visible structures and new materials and techniques. (D. Watkin, 1986 "De Westerse Cultuur, een geschiedenis" p. 564-575)

## LOUIS KAHN

*Lived*
February 20, 1901 - March 17, 1974

*Nationality*
United States of America

Louis I. Kahn states that shadow is a part of light. In fact, light elucidates the level of darkness. He says: "A plan of a building should be read like a harmony of spaces in light. Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is. Each space must be defined by its structure and the character of its natural light." (T. Schielke, 2013, "Light Matters: Louis Kahn and the Power of Shadow")

## KENGO KUMA

*Born*
1954

*Nationality*
Japan

Kengo Kuma is uses the influence of light, transparency and materiality in his architecture. This architect applies materials from the local environment. "I try to catch the atmosphere of the place where we build the house. We try to find out how the people live there and what kind of materials they use. After we find out the atmosphere of the place, we will think how we can relate that with the architecture."

## ALVAR AALTO

*lived*
February 3, 1898 - May 11, 1976

*Nationality*
Finland

Alvar Aalto draws by instinct, because he states that all the innumerable elements which often conflict cannot be unravelled in a rational or mechanical way. These drawings are sometimes resulting in a childlike composition, which forms an abstract basis or in other words an 'universal substance'. Assumable is he referring to an atmospheric cohesion or intuitive feeling instead of conceptual, intellectual or formal idea. (Tuukkanen-Beckers & Alvar Aalto Museum, 1994, pp. 14-17)

## VALERIO OLGIATI

*Born*
July 18, 1958

*Nationality*
Swiss

Valerio Olgiati is known for strong shapes, where his buildings are designed as a whole, a unity, like monoliths. He wants his project act or react like one thing, an organism where all the parts in an orderly sense are dependent on each other. Olgiati works a lot with concrete, in his opinion this is the best material to work on this idea of making one thing. The atmosphere in his projects could be perceived as one thing, a monolith.
(jacques lucan, Nexus, n.37 Valerio Olgiati;
https://www.youtube.com/tch?v=XHp1y0GMDzk)

# METHODOLOGY

## CHAPTER 3.1 INTRODUCTION

In order to get a grip on atmosphere we divided this research into two research methods. The first method is a qualitative research, where a photograph of a certain space will be analysed on several aspects. The spaces on these photographs are from an architectural project of an architect which is decribed in chapter two. These architects are familiar to define atmospheric scenes and they define this in different ways.

The second part of this research is the transformation of the gathered information of the quantitative research into the 'research by design' part. This part is the most interesting part of this research since we are trying to create similar atmospheric scenes; therefor the photographs and their analysis from the qualitative research are essential. By creating a large physical models, scale 1:20, we are able to define several aspects, the fall of light , scale and proportions, materialisation and the temperature of the space.

The first method applied is the qualitative research. Atmospheric research can be done by seeing, hearing, touching, feeling and smelling. This qualitative research is focused on the seeing aspect. Projects of different well known architects, as described in chapter 2, are used for this observation. The research is about the observation of a particular space of a project by using a photograph.

## QUALITATIVE RESEARCH

The space will be observed by the abstraction of varies of aspects. The aspects which are being used for the analysis are introduced by Peter Zumthor, however we create our own aspects from his list of 9 aspects to define atmosphere. Due to the fact that we are abstracting the space, we are bound to only use our eyes, therefore we are unable to define aspects which need other senses to understand.

What we will be analyzing throughout this photographs are the following topics:

Spatial scheme
- The frame of the space;
- The proportions of space; scale and dimensions;
- Abstraction of the scene; elements;

Material
- The direction of the material;
- The roughness of the material;
- The weight of the material (visible);
- The color of the material itself

Light
- The temperature of space;
- The relation with interior and exterior space;
- The fall of light; artificial, natural or shadow.

Use
- The movement inside the space; guiding or not;
- Specific use of objects and elements;

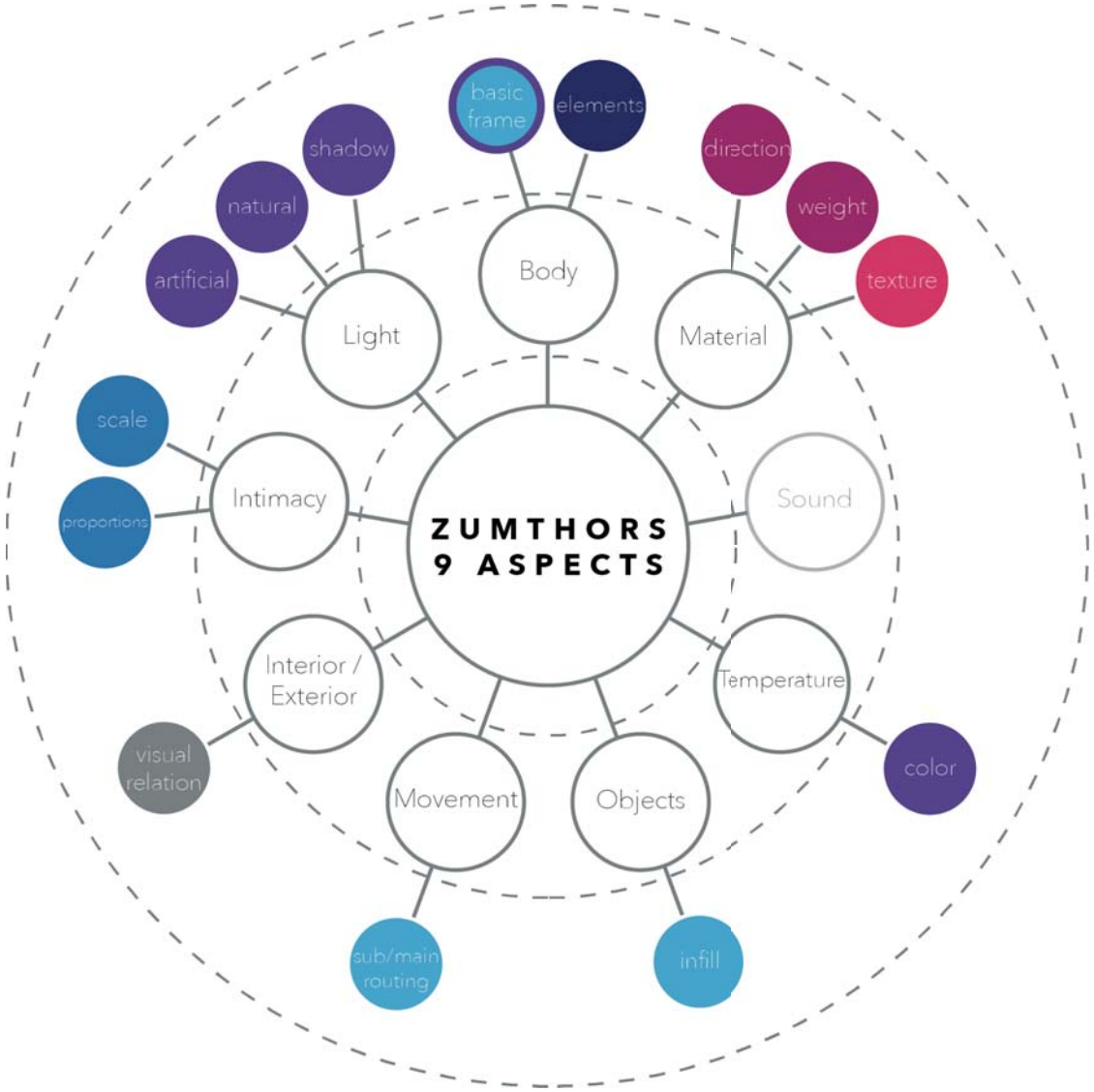
To compare all the different abstracted projects it is important to have a particular way of elaborating for every theme or combination of themes. Therefore we made a scheme, shown in figure 3.2.1. This scheme is improved by the use of a basis case, project Therme Vals of Peter Zumthor (chapter 4.1).

## ELEBORATION

The projects will be elaborated by the same products. Depending on the most important theme of the project, the stress will be different in the products. The aspects of Zumthor are divided in our subaspects. Those aspects can be elaborated in different ways for instance with lines by line weight, color, continuous or dotted lines.

The abstraction of aspects will result in different products. The first product created is an abstraction of the photograph where the subthemes basis frame, main route and sub route are observed. The second product is a section of space to elaborate on the proportions and distance or scale. Continuing with an exploded view whereby the elements of the space are shown. The fourth product consist of an edited picture to show the temperature and light; artificial, natural and shadow, of the space. Followed by the fifth product an abstraction of the basis picture showing the material; direction, weight and texture, which can be combined with the last product, a detailed picture of the used material to show the texture. The reference will be shown in the general picture.

With all these products we research all the 9 aspects of Zumthor except sound, supplemented with our subthemes to comprehend atmosphere by finding common grips or rules to create atmosphere by only observing one particular space in a project.




ABSTRACTION

SECTION

EXPLODED VIEW

LIGHT TEMPERATURE

MATERIALISATION

DETAILED PICTURE

In the qualitative research we try to find out what (architectural) aspects influence the atmosphere of spaces. The structure of that research is guided by the nine aspects of Zumthor, previously described in chapter 2.1. After comparing the projects we will highlight the aspects of which we think have the greatest impact on the atmosphere. These aspects are further explored in the chapter 'Research by Design'.

## RESEARCH BY DESIGN

This chapter, the 'Research by Design', aims to get grip on these elements/aspects by controlling them. In this way we are able to give them a value judgment. To what extend are they (individually) influencing the atmosphere of spaces?

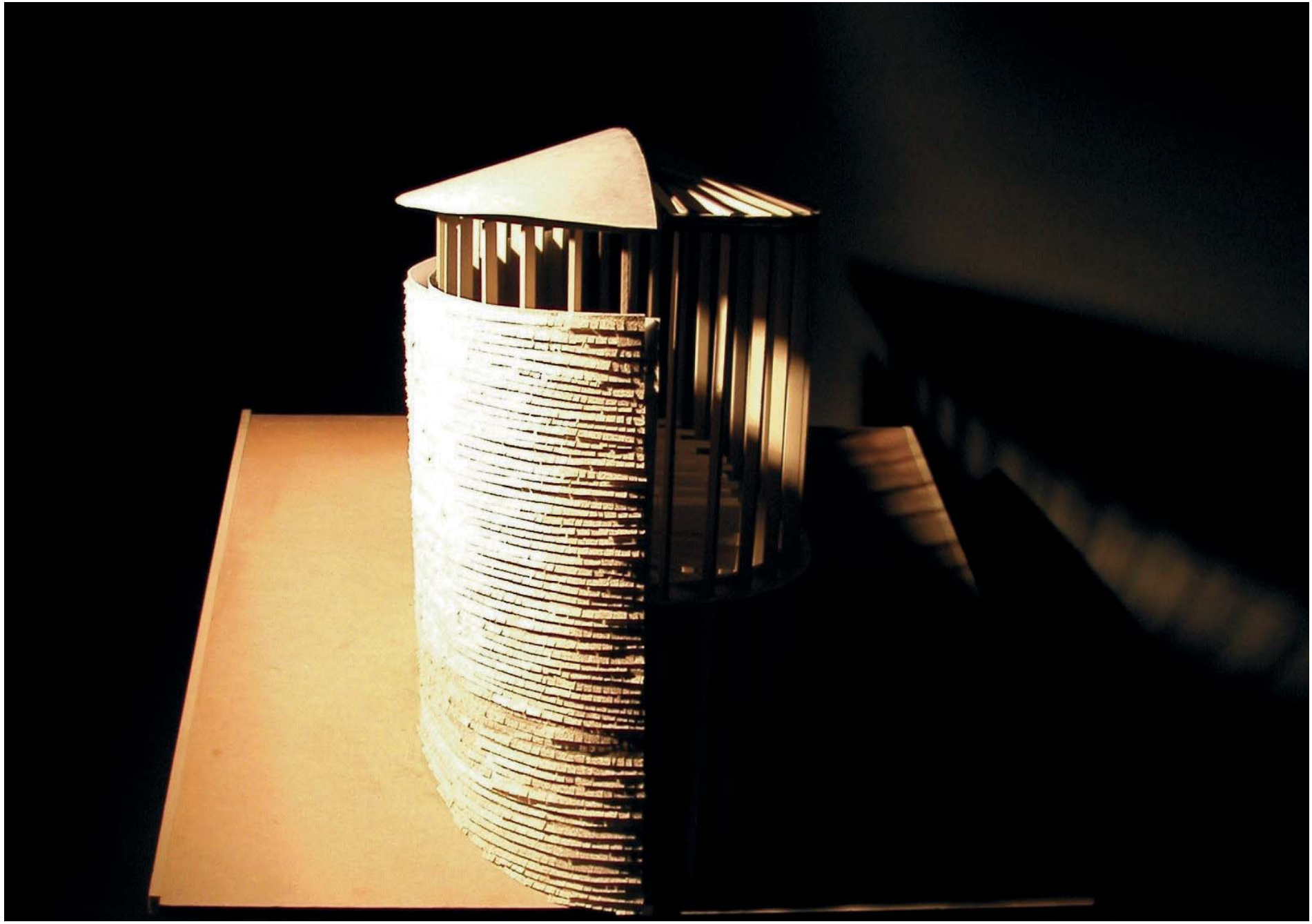
We will figure this out by making a large scaled model (in scale 1:20) which we can adjust to various compounds and assemblies. This model will be made in such a way that it is very flexible in creating differenct settings (different height, depth etc. as well as changing materials and controlling the fall of light). The research structure will be in a way that we focus on one aspect each time. So for example, we create a space with certain fixed values in which we take one value as a variable. In that way we can control the situation and by that see what the influence is of the variable as regards to the atmosphere of the space.
Then we are able to compare the different compounds with each other in order to find out the influence of these different aspects on the atmosphere of the space.

## APPROACH

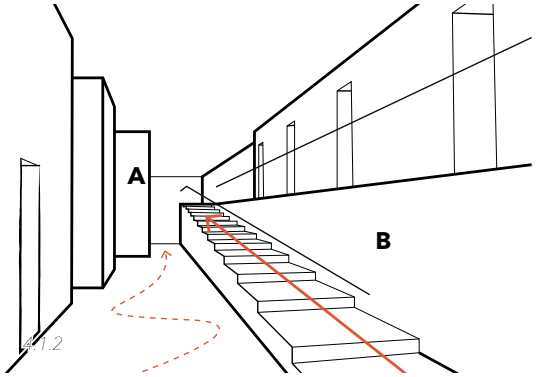
The chapter consist of three parts. The first part is building a spacious model in scale 1:20. This will be a so called 'neutral space'. The neutral space is chosen to test our findings of this research in a neutral setting, so the focus lies on the changing aspects.

The second part is the actual research. This research is a so called 'Research by Design', which means controlling the various aspects and elements by changing them. The outcomes will be recorded by a camera. The angle of the camera will be fixed due to a reference point.

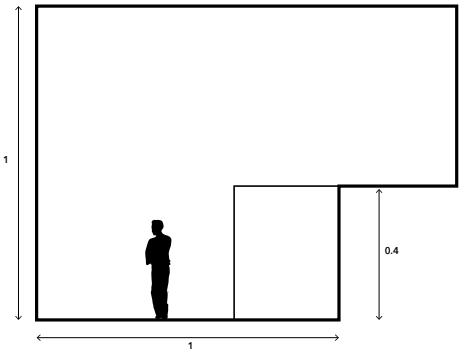
The third part of this chapter encompasses evaluating the results by comparing them. In this way a value judgment can be linked to the aspects.



# QUALITATIVE RESEARCH


4.1.2

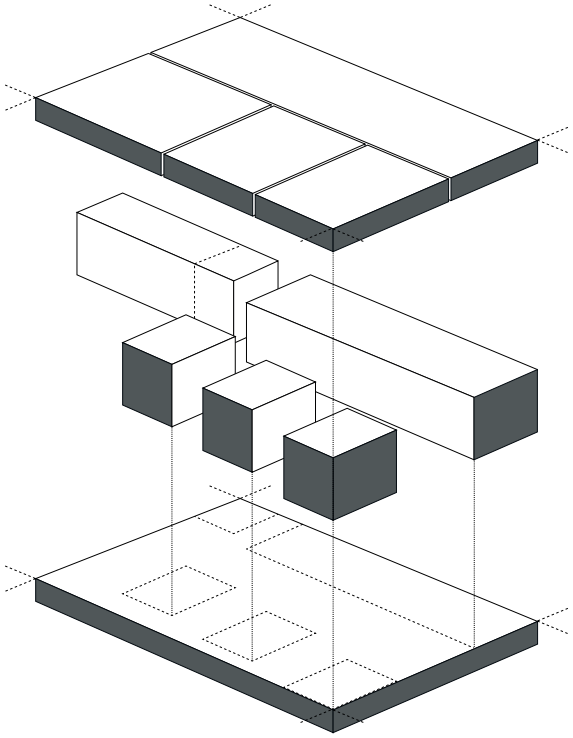



4.1.3

| | |
|---|---|
| Project: | Therme Vals |
| Location: | Vals, Graubünden, Zwitserland |
| Architect: | Peter Zumthor |
| Year: | 1996 |
| Function: | Spa |

Peter Zumthors design idea for the thermal bath included giant, hollowed out stone blocks, see figure 4.1.4. To achieve the desired effect of the monolithic look of our blocks with a sort of "stone textile", and have designed a joint pattern, which allowed us to join the stones together to make a homogeneous looking wall. The joint pattern finally developed in many work steps is based on the principle layering thin stone panels in three different heights: 31, 47 and 63 mm.

The full range of finishing possibilities for Valser quartzite has been used in the Therme: split, milled, sawn, ground, stacked, polished, broken but always worked with absolute precision. In this way the whole project has the same materialisation, but could create different atmospheres, see 4.1.2.



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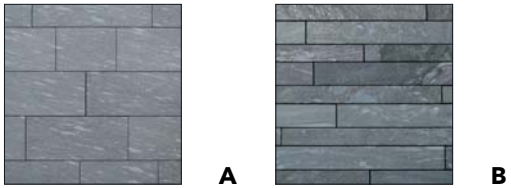


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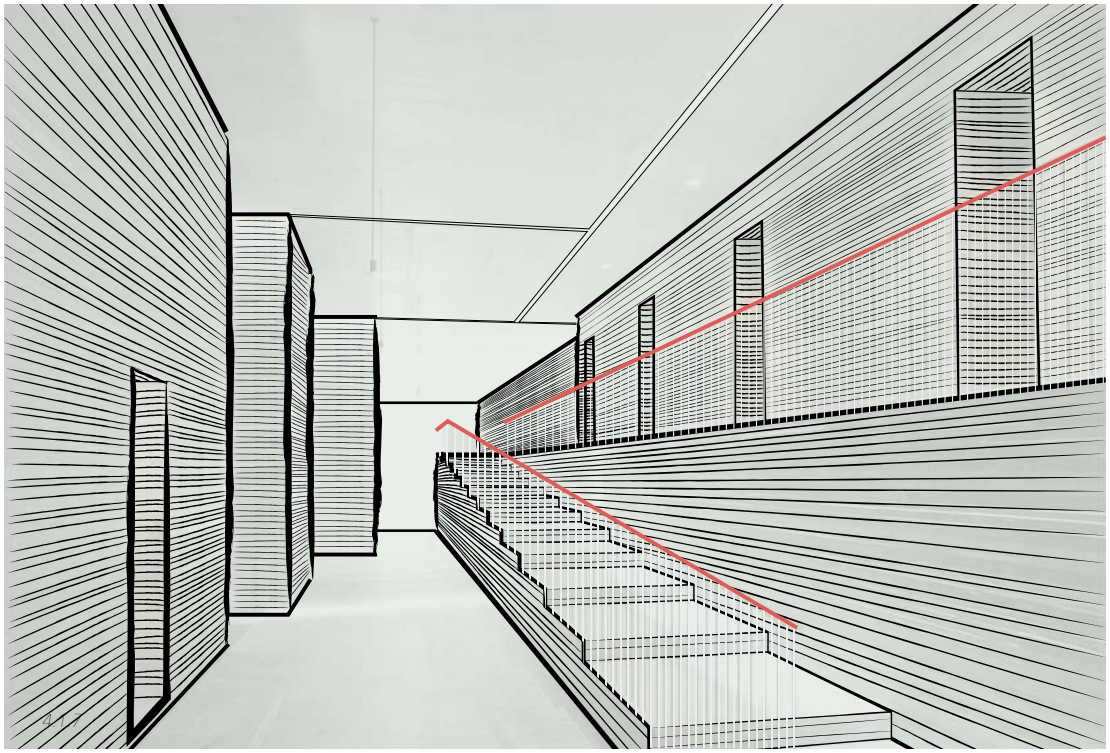


4.1.4

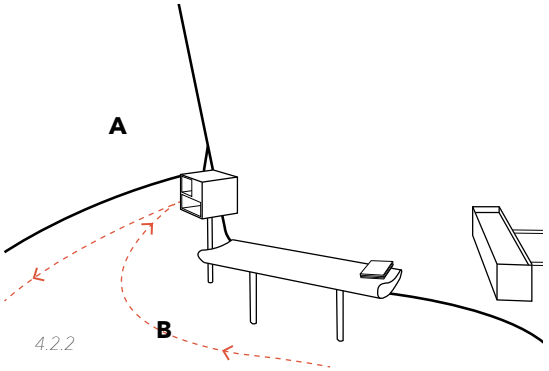
The used finishing of the walls and the floorslab are presented in figure 4.1.5. There is a clear disiction in the two finishes, created from the horizontal and vertical axis.

The articulation of the elements in this space represent the different movement. The straight stepwise stair is a guiding route whereas the setbacks of the volumes on the left in figure 4.1.2. creates a more free movement.

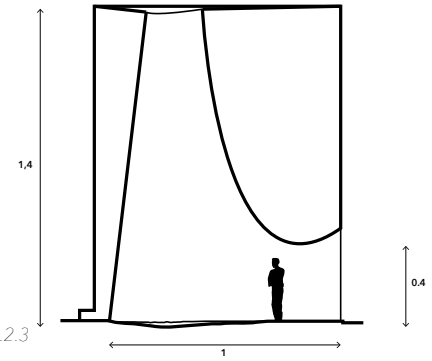
As seen in figure 4.1.4, the skin of this case study consists of several large volumes, each with a hight of 5 meters, this is an proportion out of human scale. With five meter high units, the architect designs a landcape of allignments of volumes out of scale with human size.

Figure 4.1.6 illustrates the fall of light. Its clearly visible that there is a natural lightsource at the end of this picture. Zumthor also created lines in the ceilingslab where natural light could enter, these lines emphasize the feeling of being inside a cave.

Artificial light is being used inside the volumes to indicate a certain entrance or to emphasize a certain mood, blue for cold, red/orange for warm, these colours are also linked towards the temperature inside the spa. The temperature, colour of light (artificial or natural), the finishing of the material creates different scenario's which creates different atmospheres.


4.2.2

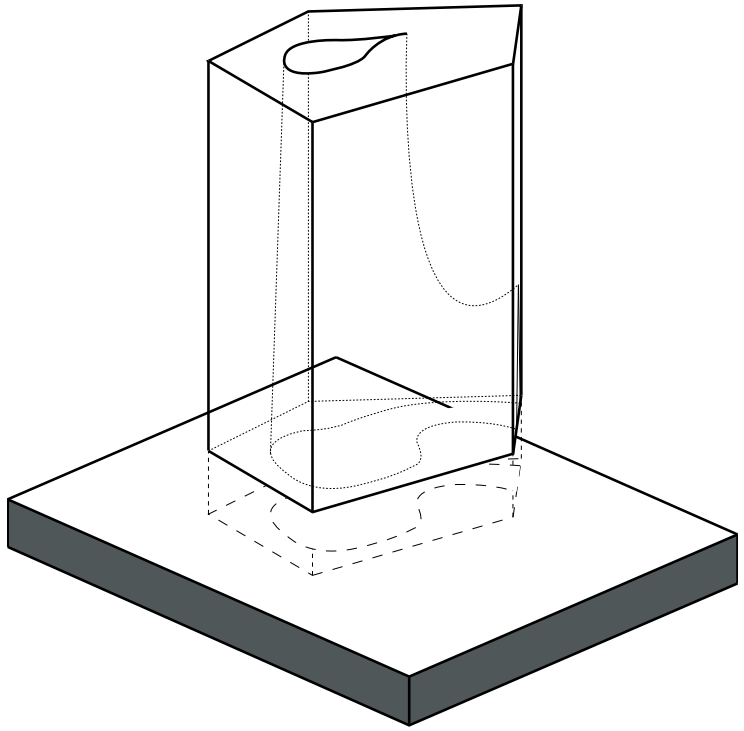



4.2.3

| | |
|---|---|
| Project: | Bruder-Klaus-Feldkapelle |
| Location: | Wachendorf, Eifel, Germany |
| Architect: | Peter Zumthor |
| Year: | 2007 |
| Function: | Religion |

Bruder-Klaus-Feldkapelle is a small chapel in Wachendorf, Germany. The chapel is designed at the request of farmer Hermann-Josef Scheidtweiler in honor of the fifteenth-century saint Bruder Klaus. The farmer read the name of the architect in a local newspaper as the architect of the Arch-bishop Diözesanmuseum in Cologne. He then sent him a letter asking him to design the chapel.

The chapel looks like a watertower of grain silo from a distance. The angular exterior is in great contrasts with the surrounding landscape, which are sloping meadows. This undulating interplay of lines continues inside the chapel as you can see in the section (figure 4.2.3). This is achieved by using thrunks as a formwork for the shell of the chapel, leaving an upper opening in the roof.

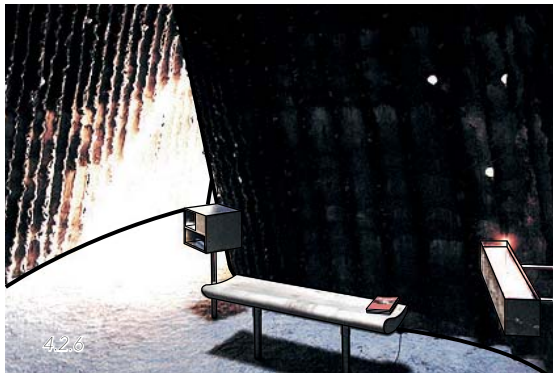


4.2.4

A

B

4.2.5



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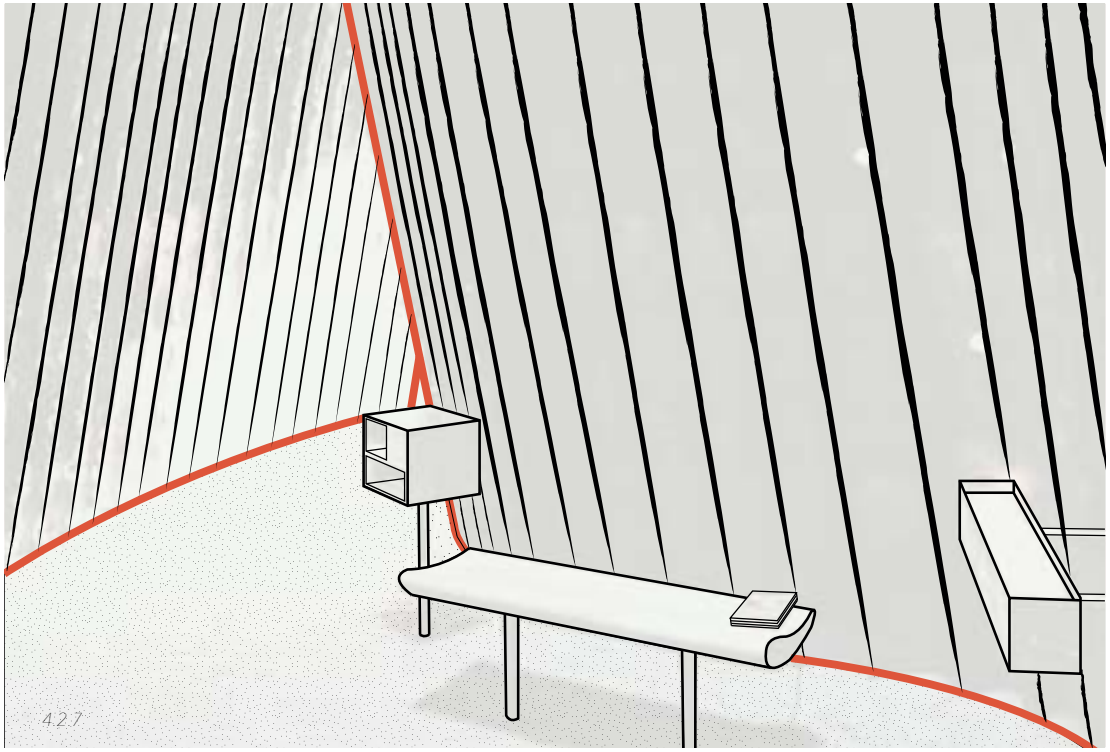


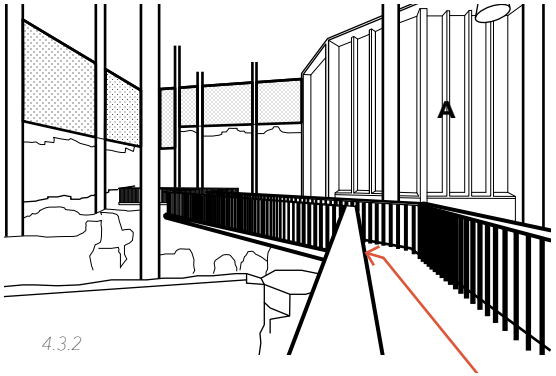
4.2.7

This formwork is lateron removed by burning it. This gives the inside a rough burned appearance (figure 4.2.5A)

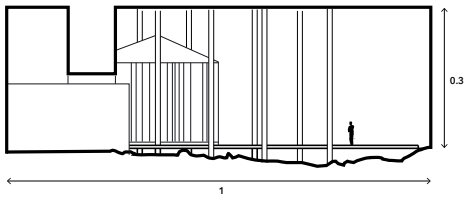
The slanted walls provide the space of a continues route. By walking through the door there is a natural flow through the space (see figure 4.2.2). Because of the absence of corners the space feels pleasant and quiescent.

The small openings in the mostly solid shell provides the space of interesting experience of daylight. Almost spiritual. The light falls across the rough concrete walls where it accentuates the texture (see figure 4.2.6).

The scale and proportion of the space has great influence on the intimacy of the space. First you enter the room through a small and low opening (the door). After that the space revealed itselfs by it's height which is more than tripple the hight of the opening (see figure 4.2.3).

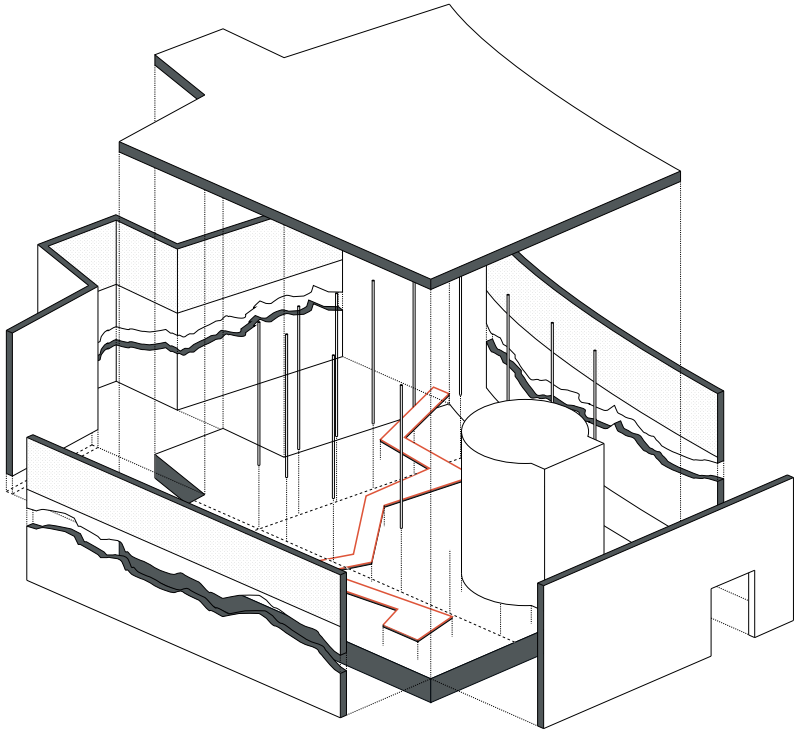

4.3.2



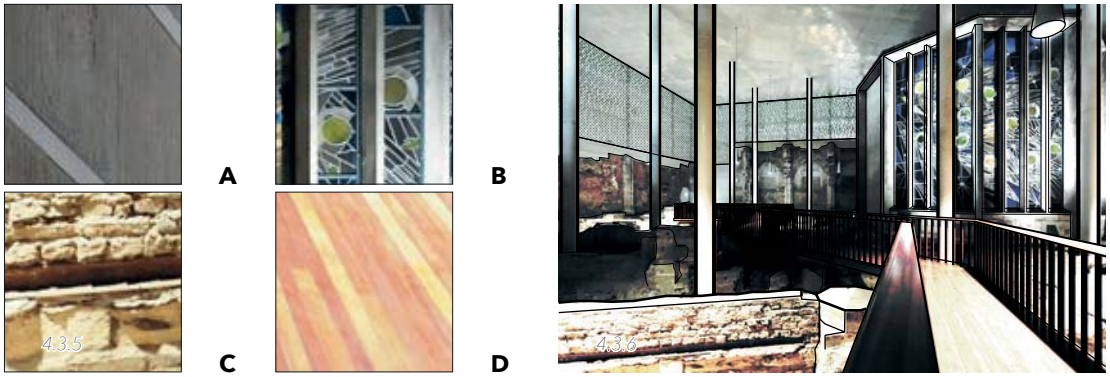

4.3.3

| | |
|---|---|
| Project: | Kolumba Art Museum |
| Location: | Cologne, Germay |
| Architect: | Peter Zumthor |
| Year: | 2007 |
| Function: | Museum |

The Kolumba Art Museum is situated in Keulen, Germany. The museum is mainly built on the ruins of a large Gothic cathedral, the st. columba church. The ground floor forms a collage of the remains of this churche, which Zumthor has tried to integrate into its design.
The churche (which is bombed during the second world war) is reminded by the half walls, blackened windows, crumbling foundations and some lonely ruin vaults.
After the bombing, amidst the smoldering rubble, one statue remained undamaged. This was the wooden Madonna statue. Gottfried Böhm, an architect from Cologne designed a small chapel (between 1947 and 1950) around this statue. This chapel, with stained glass windows is integrated in the design of Peter Zumthor.



4.3.4







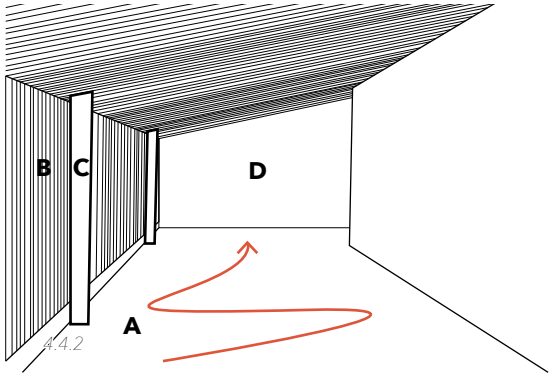

Besides the ruins, the Museum provide shelter to the an art collection.

Peter Zumthor has left the ruins in their value by using contrasting materials for the 'new elements'. In this way you see a sharp line that separates the old from the new (see figure 4.3.5 en 4.3.6).

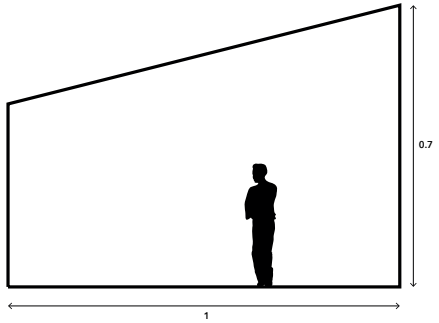
Artificial light is used in order to create a unique atmosphere. In order to accentuate the roughness and dilapidated of the ruins he placed hanging spotlights (very low) in the space. This illuminates the ruins strongly, but also creates a dark shade (see figure 4.3.6).

By creating a (for the eye) floating path, Zumthor let the ruins untouched and thereby in their value. This path is also used as an architectural tool to exercise 'control' over the user. By the different directions of the path, the architect is able to create focus points. In this way, the space can be experienced exactly the way the architect wants (see figure 4.3.7).

Furthermore the scale of the space is ineresting. The great height for example is created in order to experience the former height of the church. You are able to get a feeling of the original scale the ruines used to had.


4.4.2




4.4.3

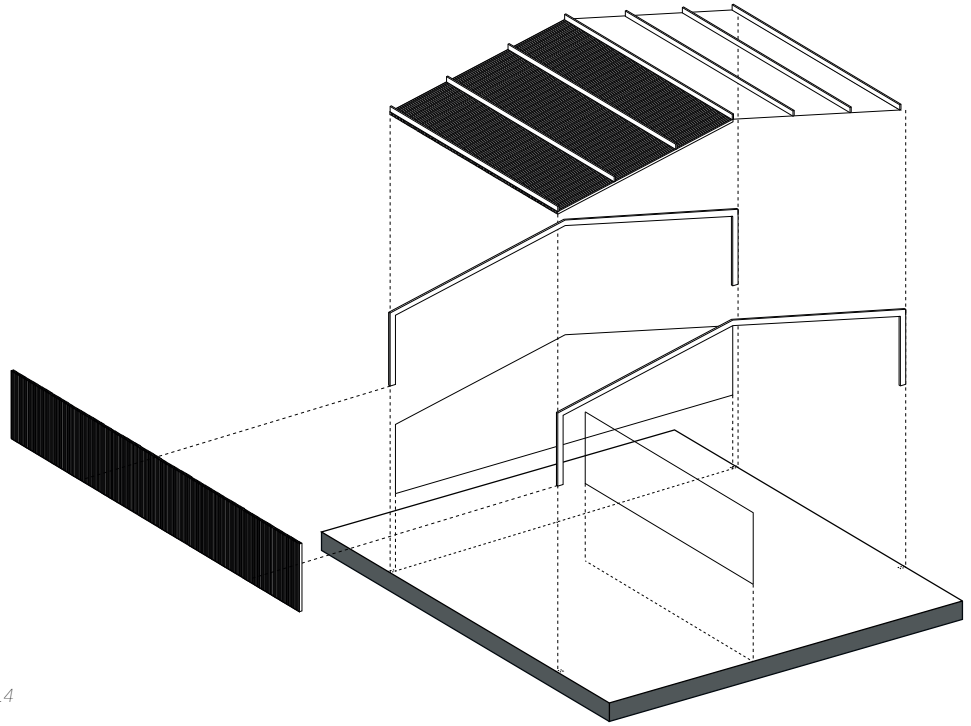
| | |
|---|---|
| Project: | Ando Hiroshige Museum |
| Location: | Tochigi, Japan |
| Architect: | Kengo Kuma |
| Year: | 1996 |
| Function: | Museum |

The whole museum is wrapped in latticework made of local Yamizo cedar, so that the lighting in the museum continually expresses itself in different ways, in accord with the time of day. Local materials are also used in the interior; the walls are covered with Karasuyama washi handcrafted paper, and the floors are made of Ashino-ishi stone.

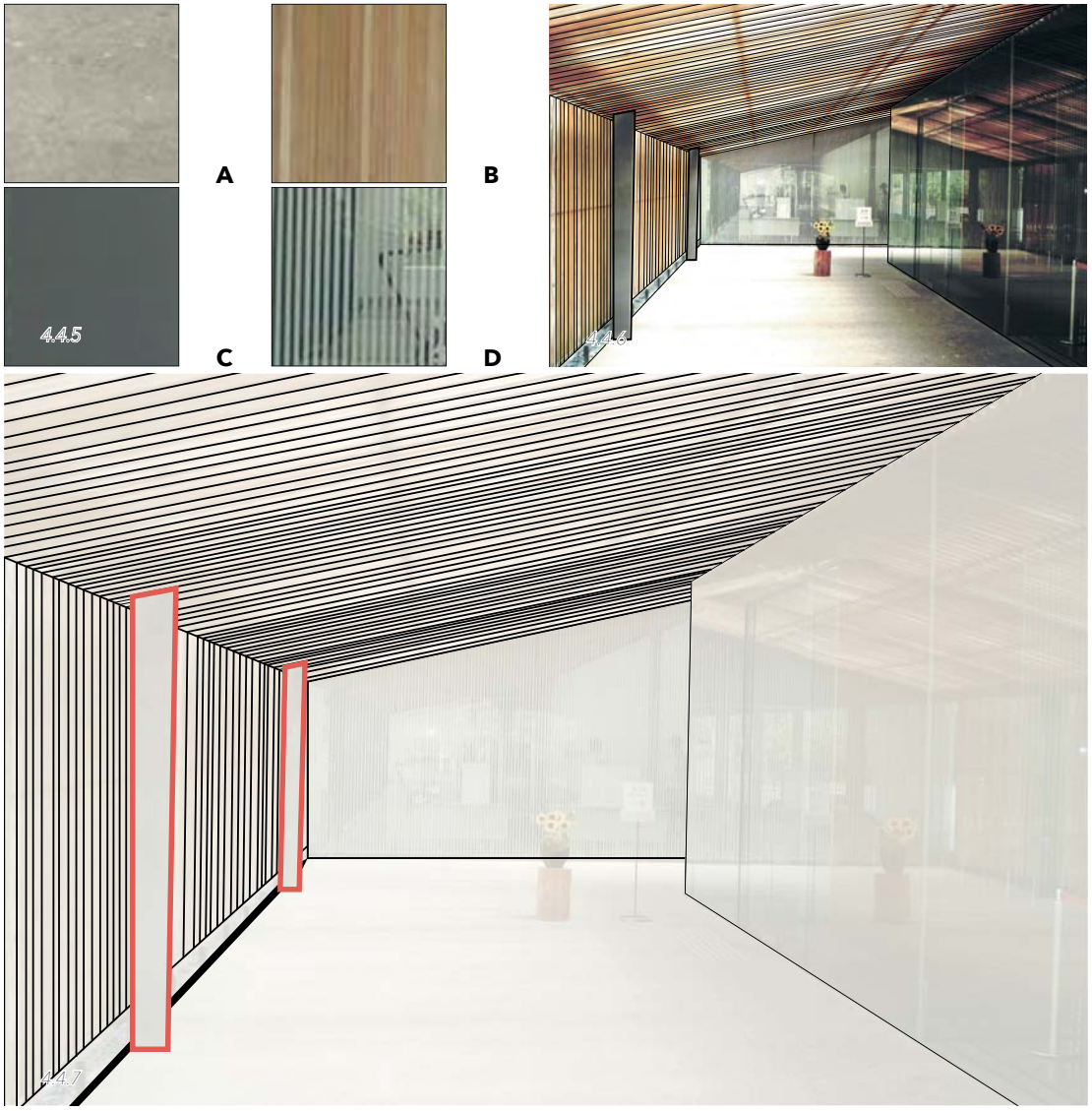
http://www.hiroshige.bato.tochigi.jp/batou/hp/index_e.html

The textures of these materials could be seen in figure 4.4.3.

The picture that has been analysed is taken in an open gallery which is situated next to a courtyard on the left and a exhibition space on the right.



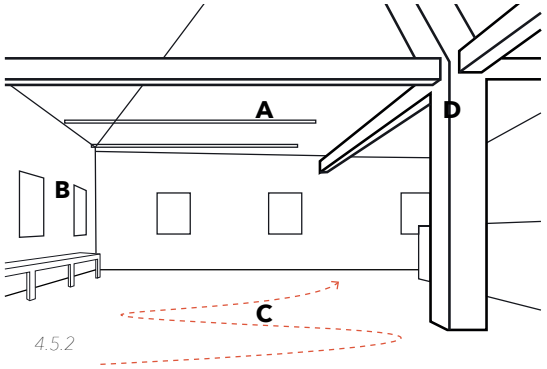
4.4.4



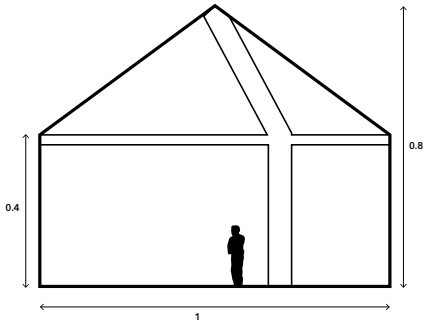

In figure 4.4.5 you can see the exploded illustration of the building, which consists of a concrete slab with a three-hinge frame. Local wood is placed on the beneath the horizontal beams of the roofslab to create a seemless perforated sloped slab. The horizontal part of the three-hinge frame is visible, this creates a division in this open gallery and reduces the repetition. The reflecting glass will connect different spaces and strengthen the combination of different materials in this space. The glass panels are orientated in way that enables free movement through the space and when you will look directly through the glass you are able to see the other exhibition space.

Kengo Kuma used human scale proportions (figure 4.4.4) but applied the material (figure 4.4.7) in such a way that there is a seemless space, for instance the glass panels which look like they lack orientation, and for instance the wooden beams which creates a large slab of repetition.

The way light will enter this room is interesting, see figure 4.4.2, because the wooden beams will diffuse light and will create a natural and welcome atmosphere. The temperature of the materials are also different, glass and stone are cold but the wood is warm and due to the high repetition and the reflection of the glass, this space will feel warm while the sun is shining. When the weather is cloudy, this space would entirely feel different, much darker and cold, this is also due to the minimalistic use of objects and details. So natural light is very important in this project.


4.5.2



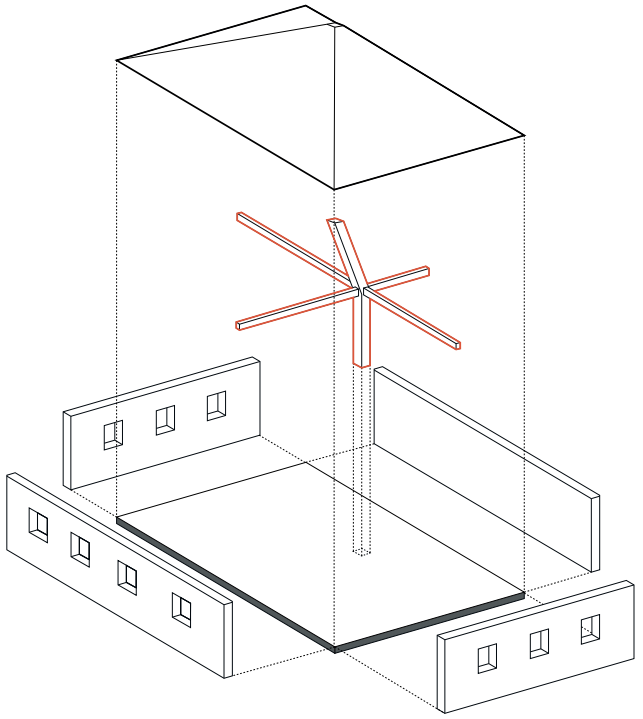

4.5.3

| | |
|---|---|
| Project: | Gelber Haus |
| Location: | Flims Dorf, Switzerland |
| Architect: | Valerio Olgiati |
| Year: | 1999 |
| Function: | Museum |

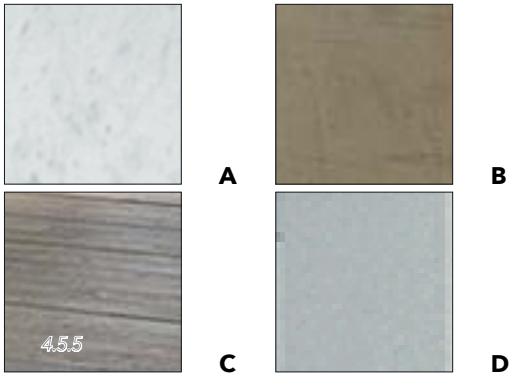
This clean and open space is on the top floor in the Gelber Haus project from Valerio Olgiati. The abstraction of materials and details is quite high in the architecture of Olgiati. Pure forms and hard shapes are always present in his designs. The elements used to create this space are also quite simple, as seen in figure 4.5.5.

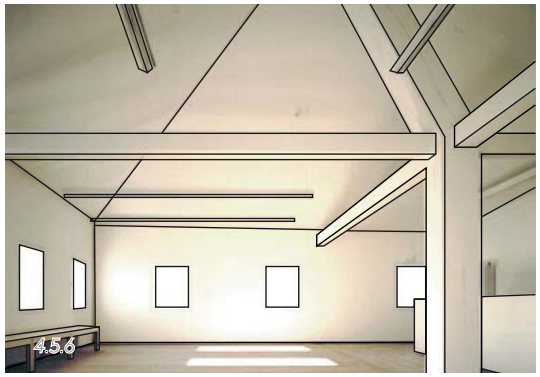
The function of this space is an gallery, therefor the space is open and allows free movement around several objects. Dominant in this room, despite it's colour, is the angled column. This column is slightly placed out of the middle, which creates a different angle on the top of this structure. (figure 4.5.3)

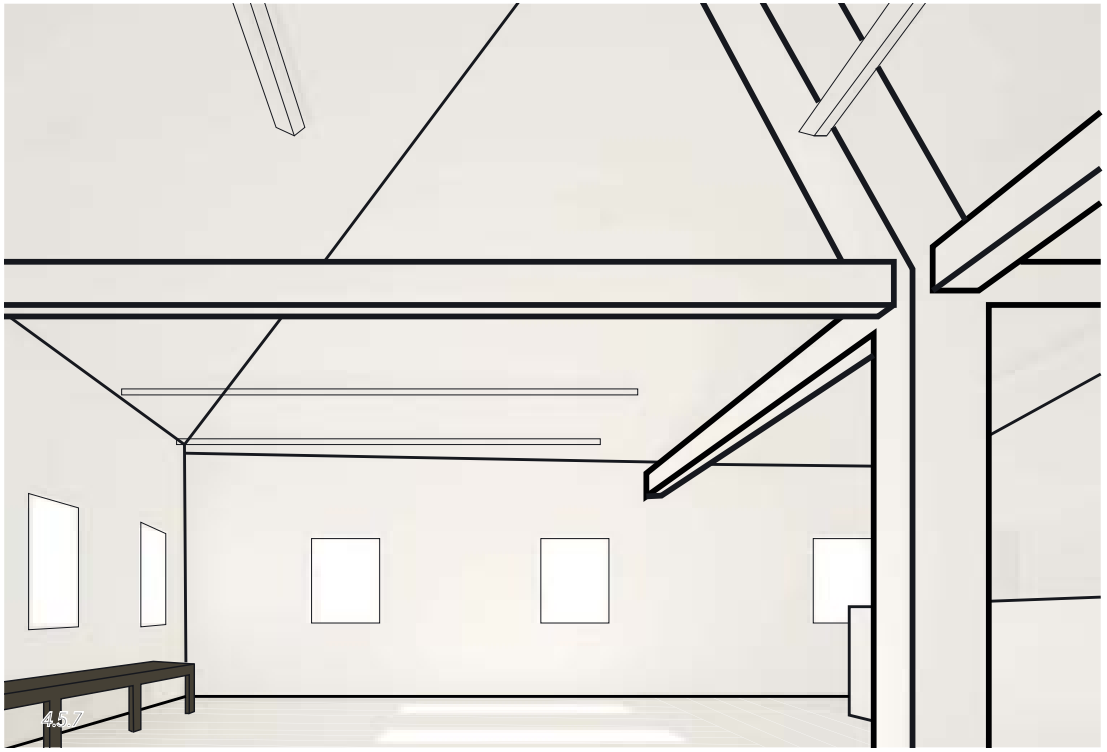
There are only three different colours in this space, the structure, and exterior skin is covered in white,



4.5.4



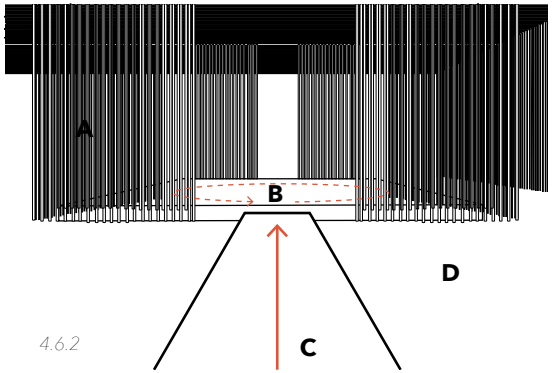



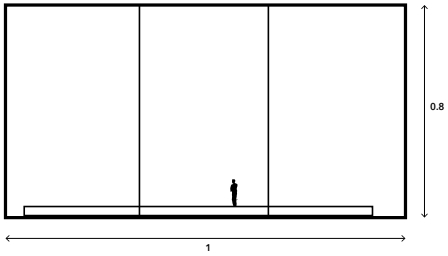

the horizontal floor slab is finished of wood. This wooden finish on the floorslab is divided into squares with different directions of allignment, this creates a subtle division in the materialisation and space. Other objects are materialized with a warmer and darker wood, in this way they are still in the same family of the floorslabs but slighty different.. The abstraction of colour will insist on the emphasisis of gallery objects. (figure 4.5.4)

The use of these light colours enables this space to feel bright and open whilst it is actually quite closed when you compare the openings with the enclosed facade. Artificial light is available, however the natural light provides enough light in this bright room, this creates a natural embraced atmosphere, see the enstrengthened figure 4.5.2.

Due to the windows there is a slightly recognisition of human scale, if these would not be available the human proportions would be hard to define. The angled structure is unfamiliar creates a large and less strict space, which disorientate the human scale, see figure 4.5.6.


4.6.2

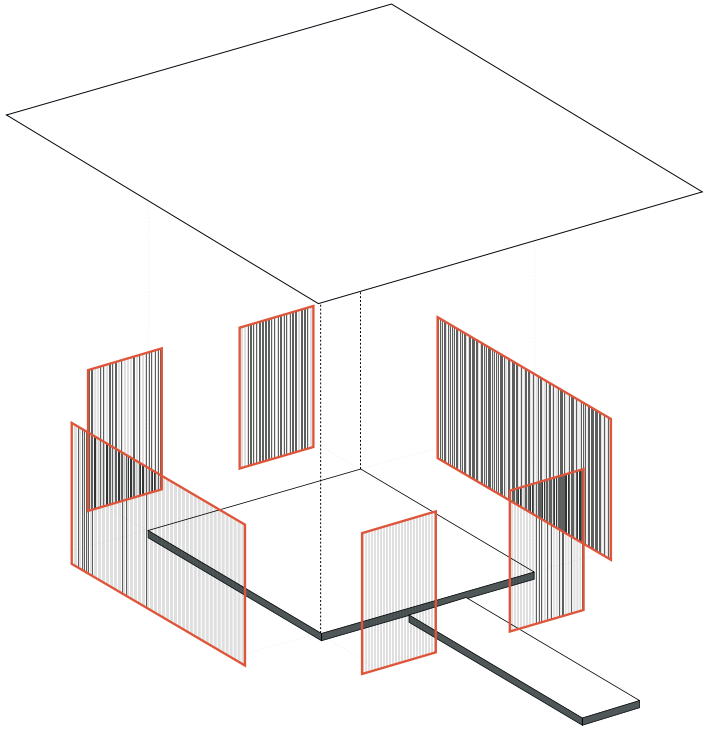



4.6.3

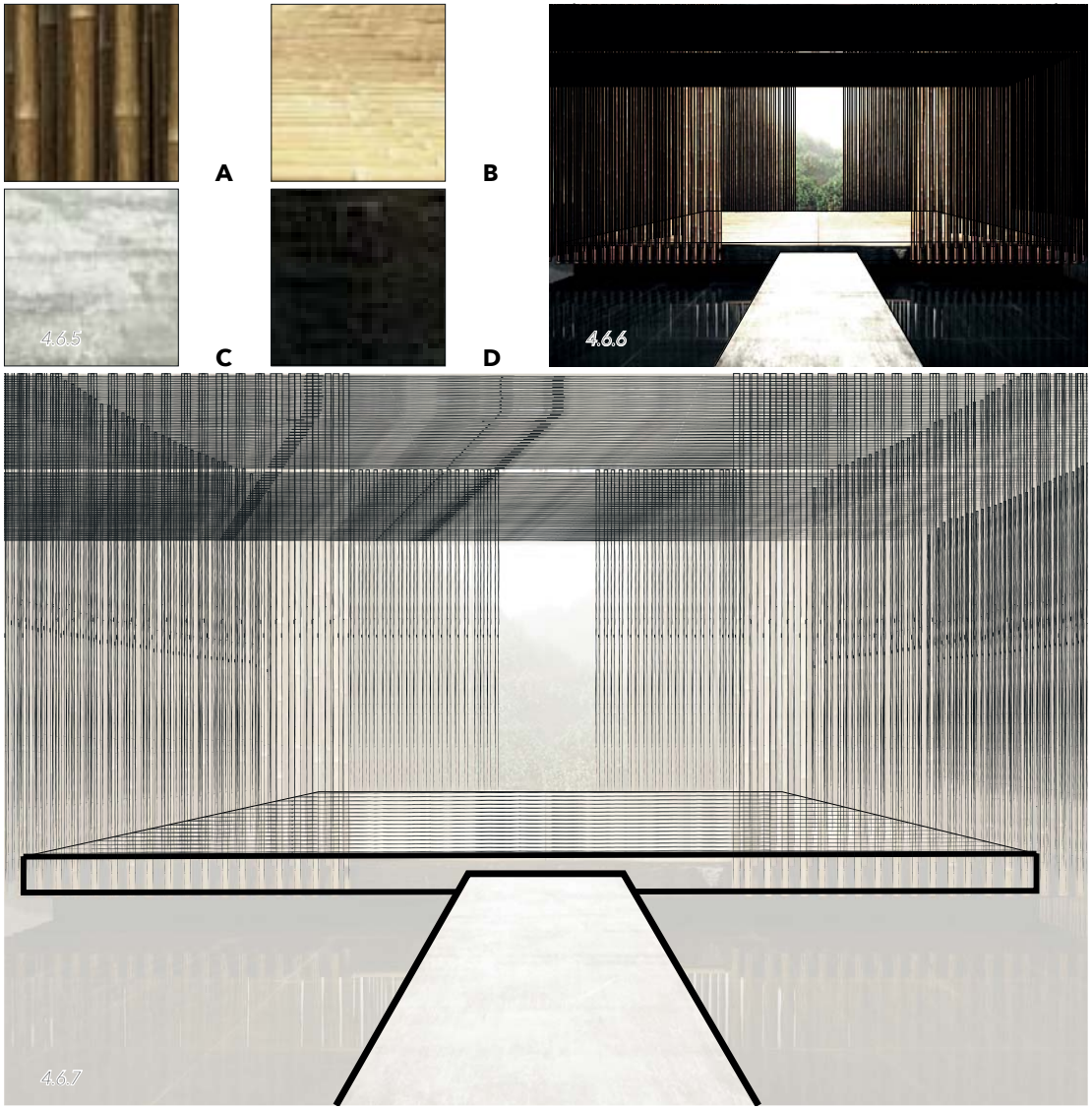
| | |
|---|---|
| Project: | Great Bamboo Wall |
| Location: | Beijing, China |
| Architect: | Kengo Kuma |
| Year: | 2004 |
| Function: | Resident |

It is almost unbelievable that this is a space inside a residential villa, due to the view of nature and integration of natural elements. The choosen material bamboo for instance creates this strong link with nature, especially in Chinese and Japanese culture. The density of bamboo and the diameter of the bamboo offers a variety of partioning in space.

This division is creating a different space inside another space. Together with a directed pathway, the open and free moveable square will feel totally different, probably more enclosed and more concentrated towards the exterior view. This pathway and square is surrounded by water which indicates that there is no other way to acces this space.



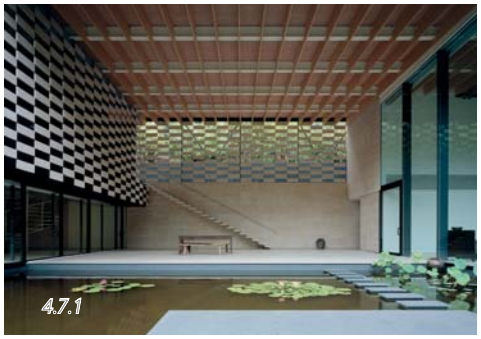
4.6.4

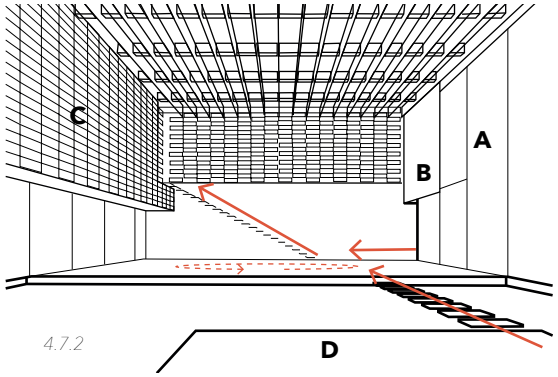



The finishing on the pathway and the square is also different, the square is finished with bamboo, the pathway has a stone finish. (figure 4.6.3.)

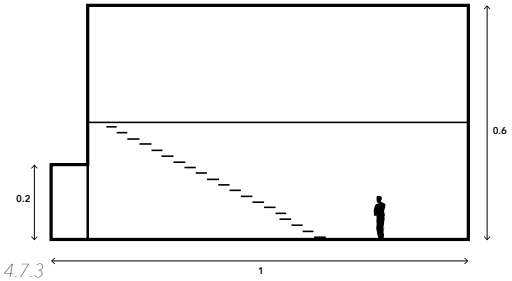
The proportions of this space is quite large (see figure 4.6.6), especially for a resident. Due to these proportions, the link with human scale is lost and the link with nature is established even stronger.
The natural elements are supported with the use of natural light for this scene, this light is filtered through the bamboo roof and walls and creates a nice diffuse and subtle bright space. The amount of light outside the square is a bit lower, and the temperature also seems a bit cooler, this is a contrast created by the application of different materials, allowing the user to access a complete different atmosphere, see 4.6.3 and 4.6.4.

This space has a simple construction, it consists of several walls and slabs, which are purely materialised. In that manner I mean that the materialisation does not only support the entire structure but also strengthens the ideas of the architect, see figure 4.6.7.




4.7.2



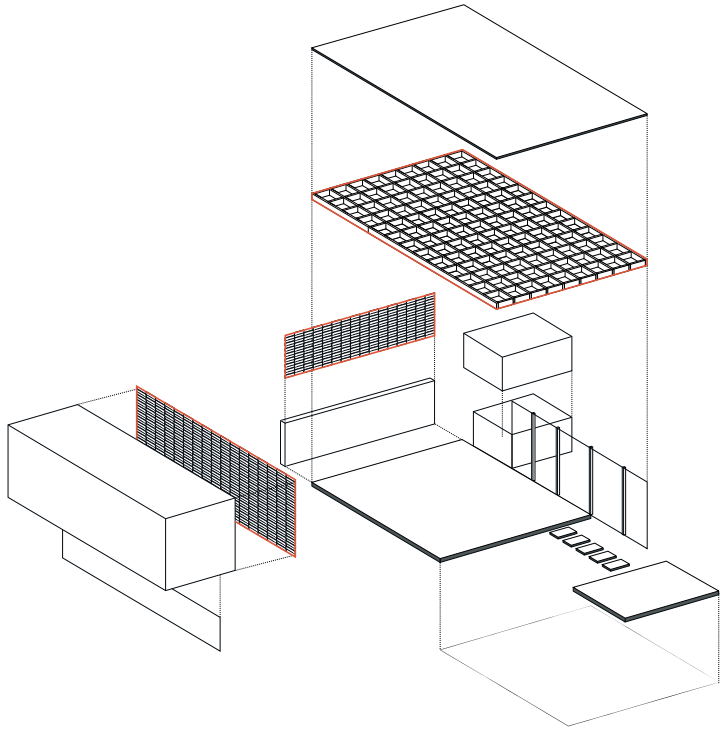

4.7.3

| | |
|---|---|
| Project: | Lotus House |
| Location: | Eastern Japan |
| Architect: | Kengo Kuma |
| Year: | 2006 |
| Function: | Residential Villa |

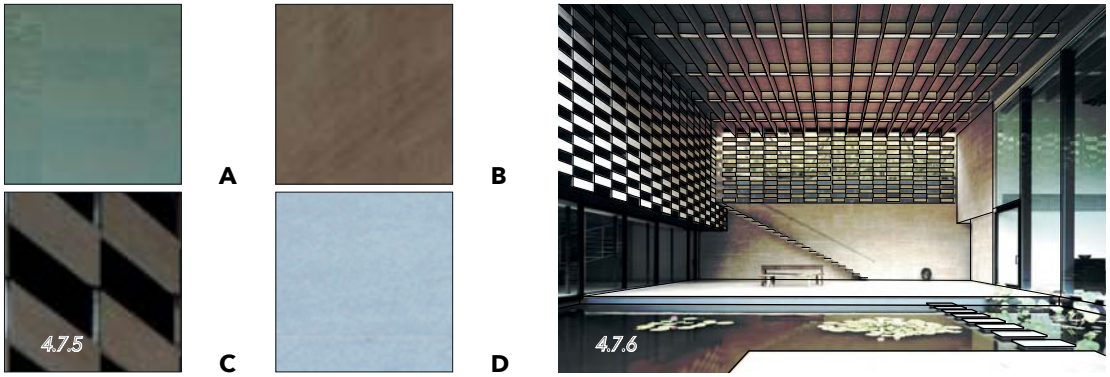
Another residential project van architect Kengo Kuma, again unbelievable that this is a resident. This resident is located nearby a quiet river, deep in the mountains. Kengo Kuma wanted to connect this villa with the water. By planting the lotus he could convey to the river and continue the villa into the woods on the other side of the river.

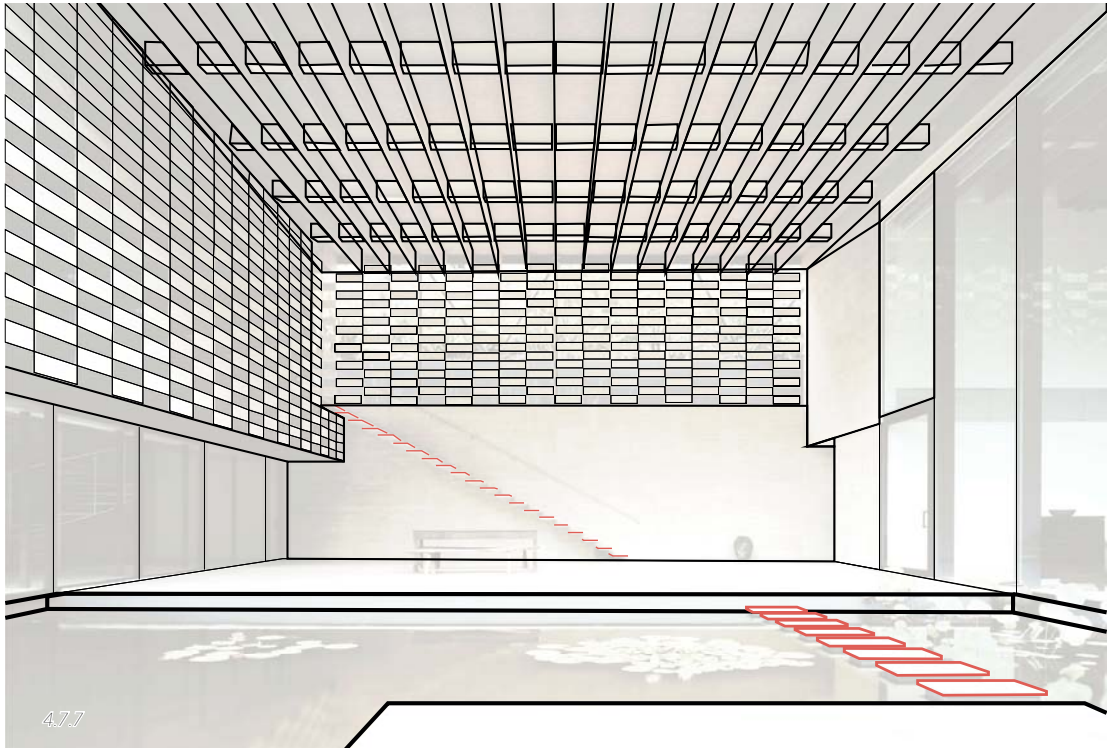
The architecture itself is basically composed of holes. It is divided into two wings, with the hole-shaped terrace in between serving to connect the wood in the back of the house with the woods on the opposite bank. Wall surfaces are also designed as countless holes.

http://kkaa.co.jp/works/architecture/lotus-house/



4.7.4



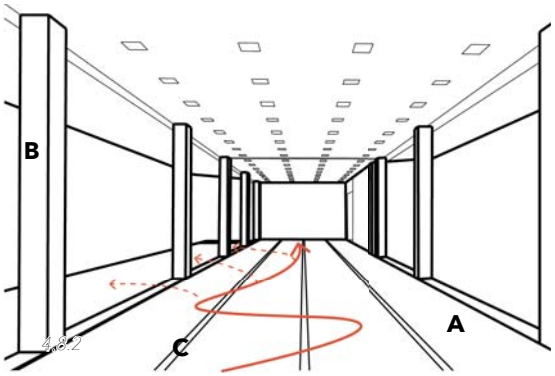




A lot of local materials are being implemented in this design, a feature that Kengo Kuma finds very important for his architecture. The different elements, which could be seen in figure 4.7.6 are only slabs and walls to created larger volumes and spaces. This space is quite large and Kengo Kuma softened the space by deviding several elements, like the roof and two walls. The huge pond in the center of the space creates a intense link with water, the large windows which are designed till the water also support that design feature.

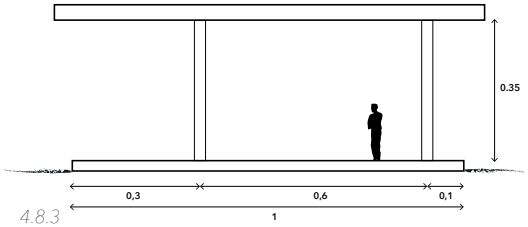
Just like project number 4.6, the great bamboo wall, the proportions of space are also very large, figure 4.7.5., again this will detach human scale from this space and creates a better link with nature, due to the application of natural elements like water and materials like wood. When leaving this space trough the stepping stones, the space will become less warm, this is due to the material colour and light absorbtion and the hardness of the material. The stepping stones are harder, cooler and this creates another effect than the warm sense of wood. (figure 4.7.4.)

Artificial light is not clearly visibile in this space, the natural light will provide enough daylight, even when it is filtered throughout the division of holes in the walls, see figure 4.7.3.

4.8.1




4.8.2

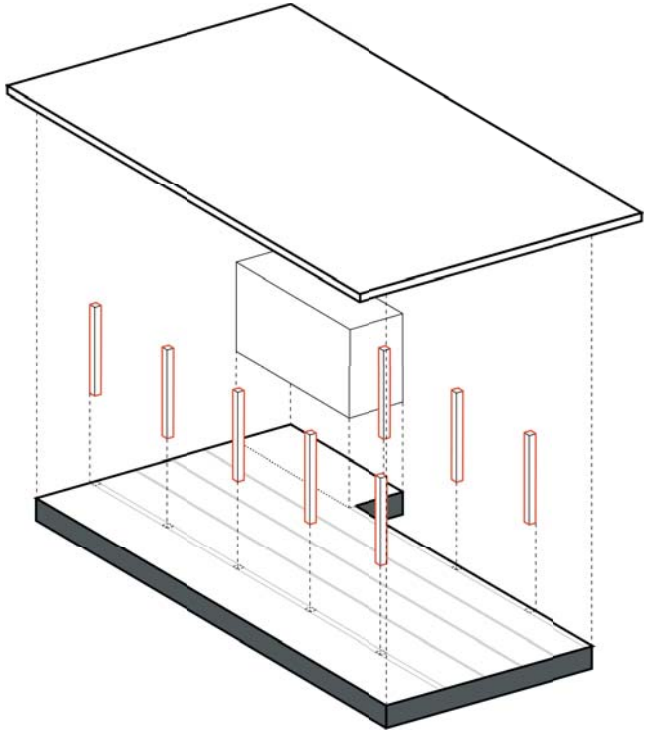



4.8.3

| | |
|---|---|
| Project: | Noh Stage in the forest |
| Location: | Toyama, Japan |
| Architect: | Kengo Kuma |
| Year: | 1996 |
| Function: | Accomodate the audience |

The building of Kengo Kuma in Toyoma is located in the middle of a forest. It functions as a Japanese ancient form of theater. The space where the picture was taken accommodates the audience, which is focused on the stage on the other side (on the left side of the picture). According to Kuma architecture needs to be erased. The space between the stage and the audience needs to disappear. Therefore the fundamental concept of this project was to integrate with the wooden environment.

The material which is used in this atmospheric space can be related to the concept of the integration with the wooden environment. The difference between inside and outside is very minimalistic due to the great experience of openness of the



4.8.4

A

B


C



space. Between the columns window frames can be added to physical closing the space. The experience of this space will be totally different, due to the different feeling of proportions. The terrace is now part of the space, but when closing the space between the columns the terrace is not part anymore of the space which creates a different width of the space.

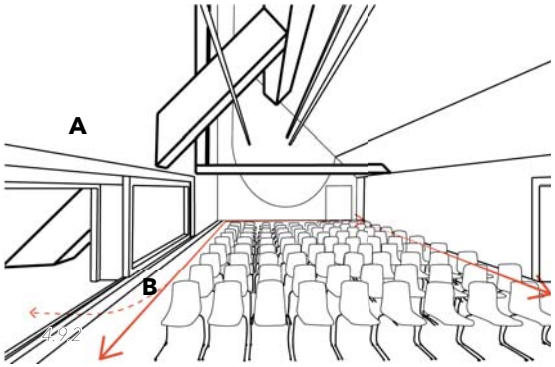
Wood, which is used for the columns, the floor of the terrace, element and window frames stresses the concept too. The material continuous in the outside environment. It creates a warm and welcoming feeling for the audience (figure 4.8.6.). The textile covering on the floor amplifies this feeling too.

The texture of the material creates a direction of the material which leads to the outside environment, shown in abstraction 4.8.7. Whereby the user is stimulated to look outside the space as well.

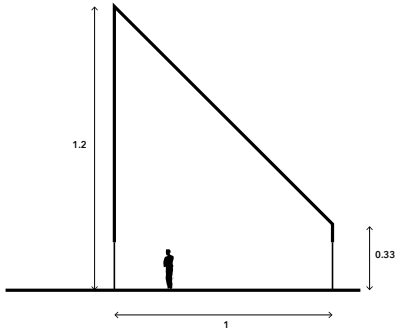
The routing within this space is not continuously. The user can enter this space at the same location as leaving the space.

As well the texture as the material itself as the direction of this material is supporting the concept of Kuma of integrating with the wooden environment.

4.9.1




4.9.2



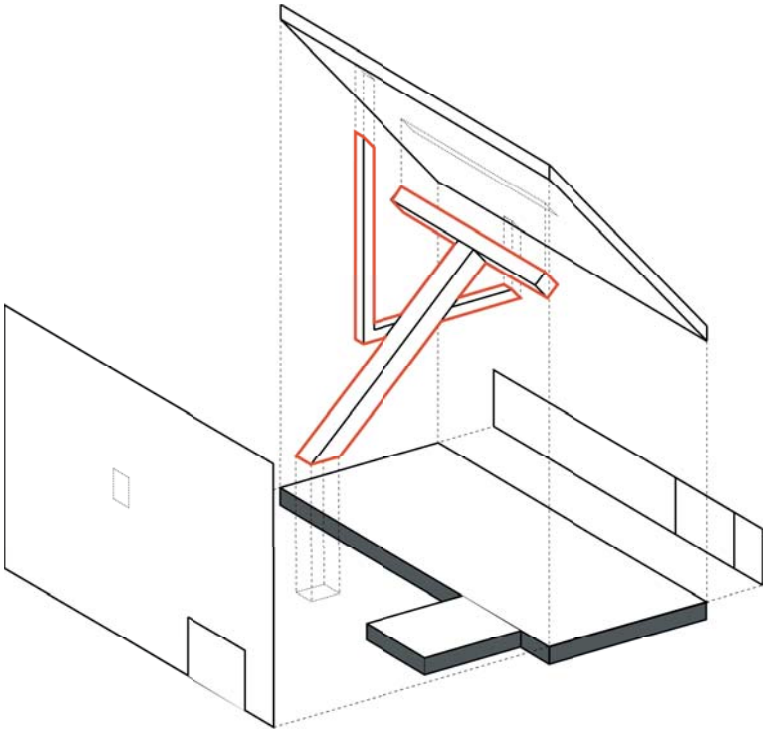

4.9.3

| | |
|---|---|
| Project: | Plantahof Auditorium |
| Location: | Landquart, Switzerland |
| Architect: | Valerio Olgiati |
| Year: | 2010 |
| Function: | Auditorium |

The Swiss architecture Valerio Olgiati designed a new auditorium for the Plantahof agriculture school. The building consist of sharp pitched roof with on one side a low wall and the other side a wall which is more than three times as tall.

The monotonous use of the material merges the building into one readable object. The in-sito concrete creates a dark space. The color of this concrete is grey with a texture of the cast which is used to frame the poured concrete. The direction of the material is all vertical to stress the height of this space.

This auditorium can accommodate up to 180 students to follow a lecture. The professor is will be on the spot where the photographer took this

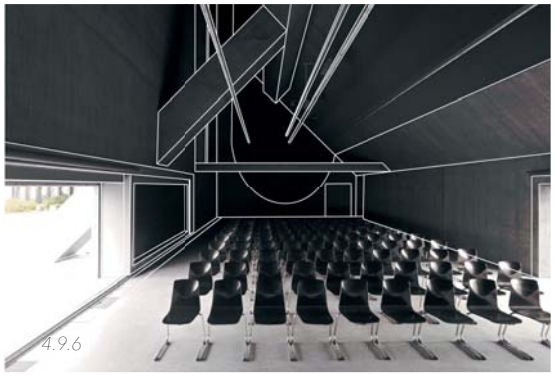


4.9.4

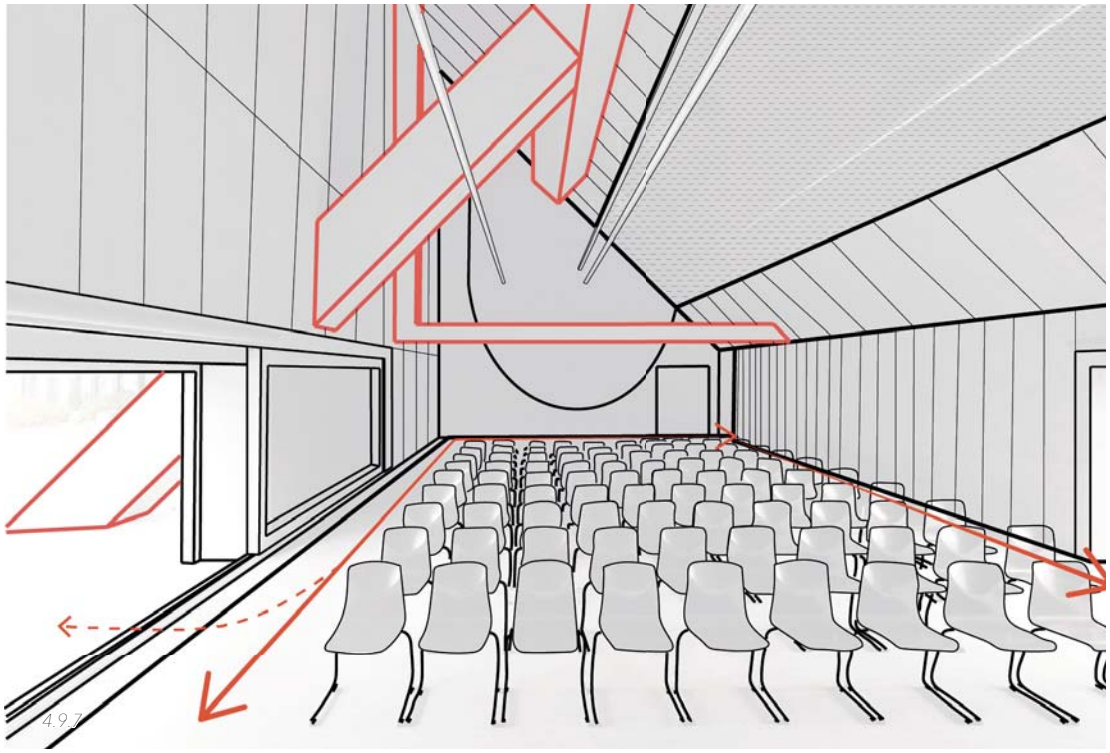
A

B

4.9.5



4.9.6



4.9.7

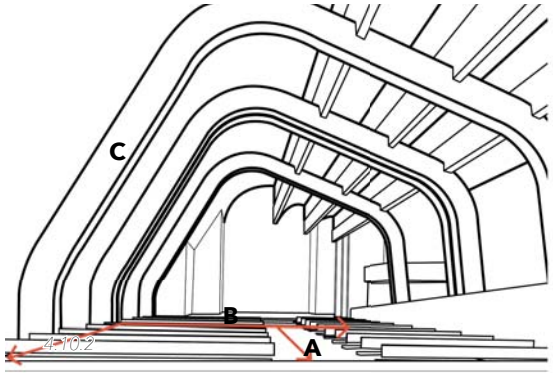
picture.

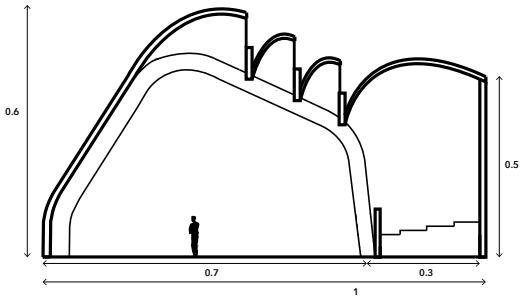
The low and width openings on the bottom of the space creates a contrast between inside and outside. These windows are facing each other in front of the space. And are directing natural light towards the speaker. Therefore the focus will be on the speaker in this space by using big differences between dark and light.

The window frames are made of grey painted steel. The color of the used materials is kept more or less the same.

The window frame on the left side of the picture can be opened totally. Therefore the routing can be continued to a square on the outside.
The structure continuous to the outside of the space too and forms a unity with the total of the space by the use of the same material. It combines a frame and a solid construction.

The used contrast between dark en light is used to stress the main focus of the space, the speaker. The listeners are not disturbed by any movement from outside even not disturbed on the inside by a very rigid space, therefor the concentration of the listener will be high.


4.10.3

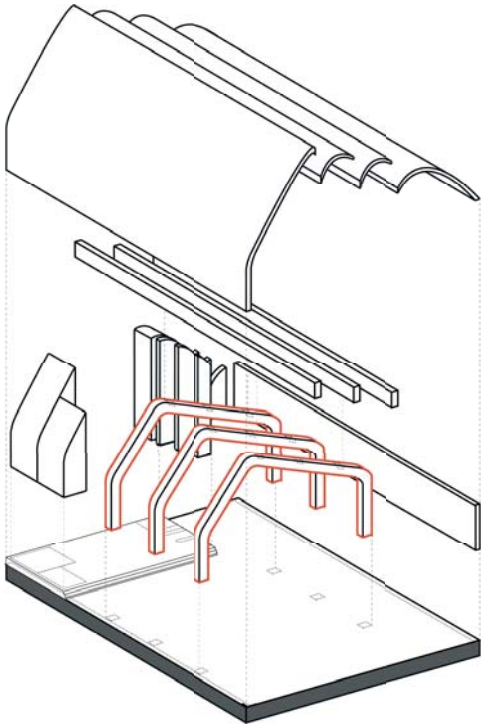
| | |
|---|---|
| Project: | Riola Parish church |
| Location: | Grizzana, Italy |
| Architect: | Alvar Aalto |
| Year: | 1978 |
| Function: | Church |

The architect Alvar Aalto has designed in 1978 this church. On one side the church is located next to other building while on the other side is consist a green area.

The main shape of this building is derived from the contours of the Italian landscape.

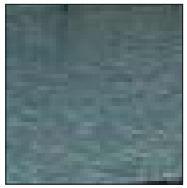
The space itself consist of different zones. Zones for the movement, seat for audience and priest. The whole space consist of the same color except the floor. This color refers to the atmosphere of a holy space as Aalto it describes.

The structure of this church need to function as 'ribs'. The basis for a body. Those ribs are creating a majestic grid of soft and fluent lines. On top of



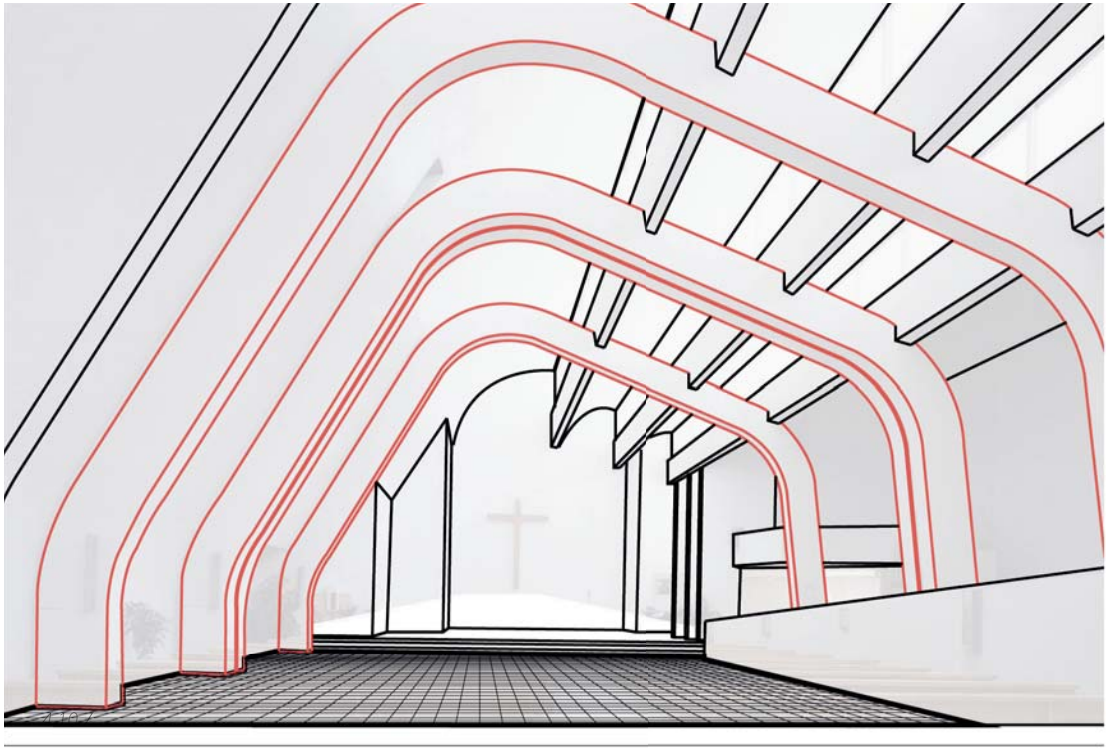
4.1.4

A



B


C

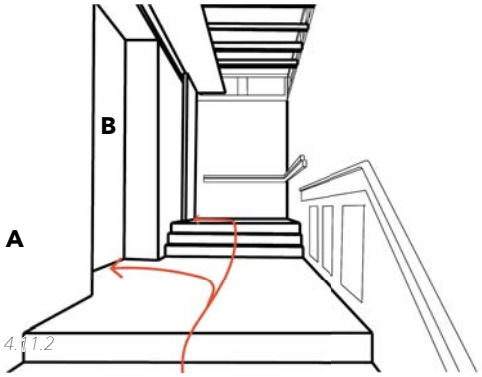



those ribs beams are positioned. Between the beams and the shelved roof window frames are situated. These openings are letting light inside the church at the top of the space. This light is entering above the user thence it feels like a holy space.

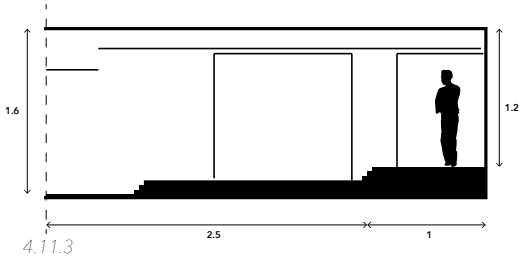
The user does not have a relation with the outside. The inside is totally sheltered except the roof.

The zone for the priest is raised and designed with natural stone instead of tiles. This raising of this floor creates a certain stress in the space. Only the floor has a certain direction in the material. The material of the floor is mostly in the length of the space an leading to the priest.

The space is composed out of a lot of different elements. Due to the color and material use it does not feel like a lot of different elements when experience this space.


4.11.2

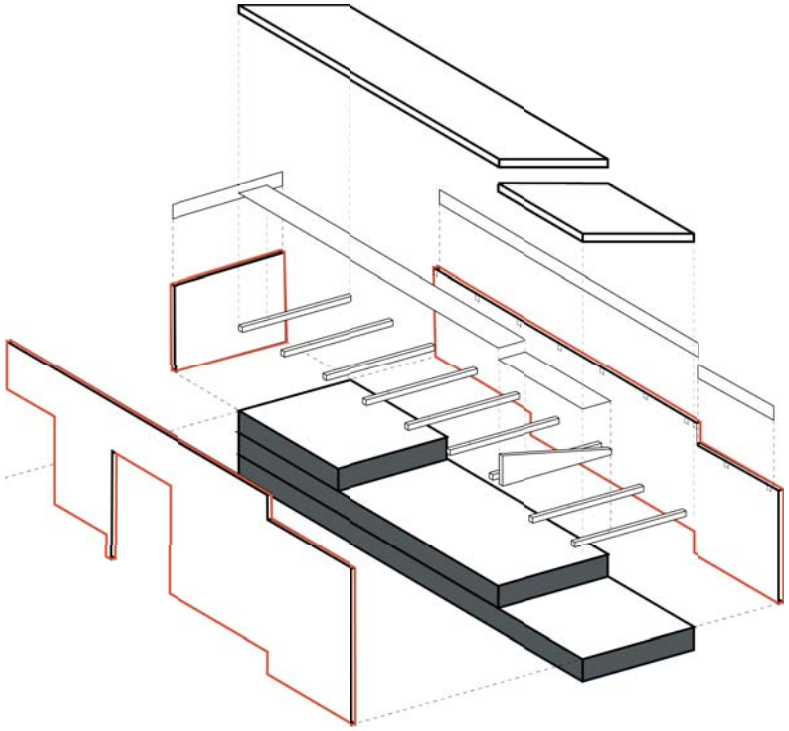



4.11.3

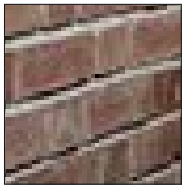
| | |
|---|---|
| Project: | Saynatsalo town hall |
| Location: | Säynätsalo, Finland |
| Architect: | Alvar Aalto |
| Year: | 1951 |
| Function: | Multifunctional building complex |

The project is situated around a courtyard and can be entered by two big stairs toward the courtyard. The designed project of Alvar Aalto consist of a lot of different functions. One of the functions is a town hall. The space on the picture is purely a space to move and is located on the second floor of one of the buildings.
This hall contains different floor levels and therefore creates different levels of intimacy by changing the proportions in one space. The floor is made of red brick which have dominant lines in direction of the end of the hall.

The brick of the floor is used in the wall as well. The use of the same material breaks the boundaries of what is outside and what is inside. At first sight the space can be experience as one unity by the same



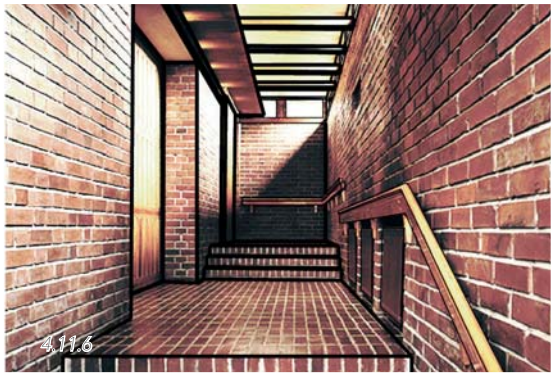
4.11.4



A

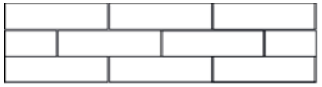
B

4.11.5




used material, but noticeable are the different bonds in the wall. The left wall on the picture contains heads and stretches. The wall on the right side of the picture only contains heads. And the wall on the backside contains only stretches. The bond is visible in figure 4.11.7.

The light is entering on the right side of this space just underneath the ceiling. At the height of the first steps the level of the window openings is changing to a higher level. The natural light creates a flooding ceiling. There are no visual relations with the outside which makes that the user totally can experience the space itself. The use of a wooden structure is amplifying the warmth of the atmosphere in the space by the use of the color of the brick. The natural light makes this space an interest space due to shadows created by the bricks and the elements shown in figure 4.11.5.

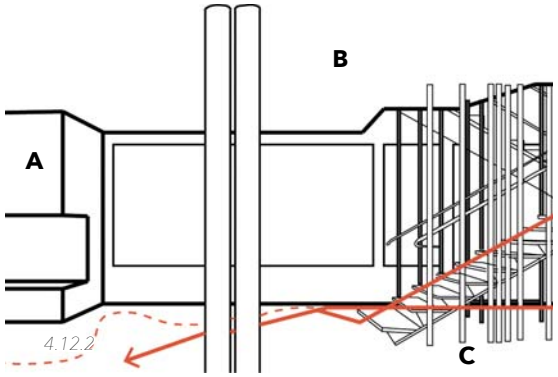


1

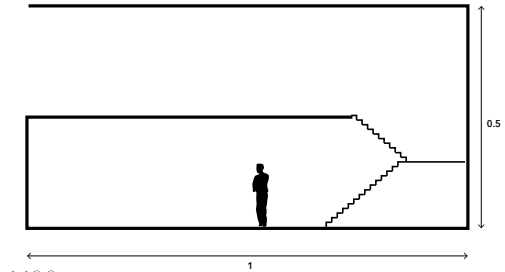
2

3

4.11.7

4.12.2



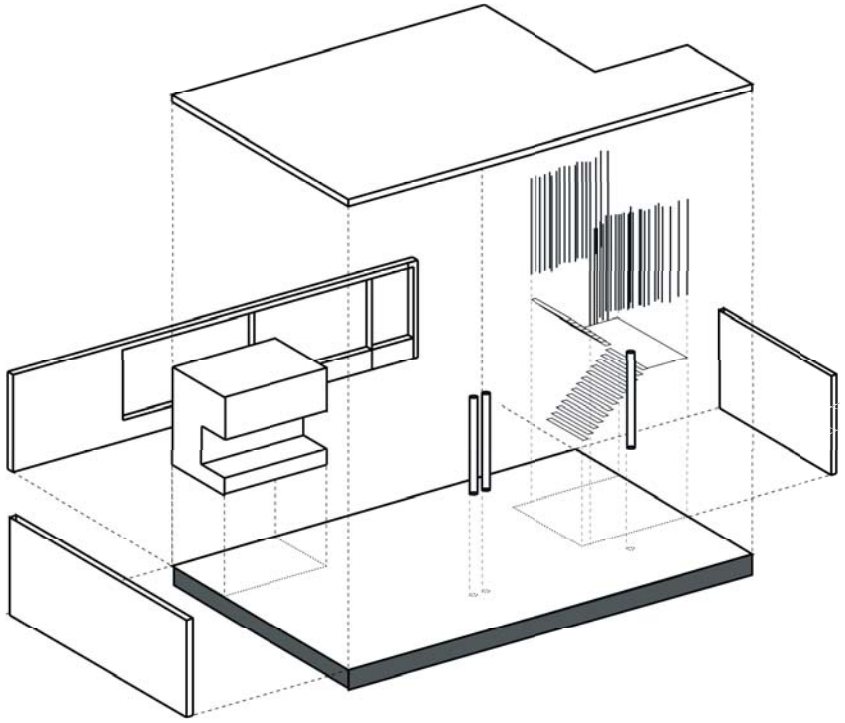
4.12.3

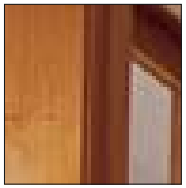
| | |
|---|---|
| Project: | Villa Mairea |
| Location: | Noormarkku, Finland |
| Architect: | Alvar Aalto |
| Year: | 1939 |
| Function: | villa |

Alvar Aalto designed this villa for the wealthy Gullichsen family. According to them Aalto should regard this villa as an experimental house. The villa contains a L shaped plan. This L separates the family accommodation from the courtyard.

The living room, shown on figure 4.12.2., is one of the spaces of the villa Mairea whereby Aalto experiments with different architectural applications. One of his application was de readability of the structure. He varies the dimensions of the structural grid in both directions and therefor it looks like the columns are randomply placed. The structural and spatial organization of the space becomes a discovery.

The applied material of the structure is mainly

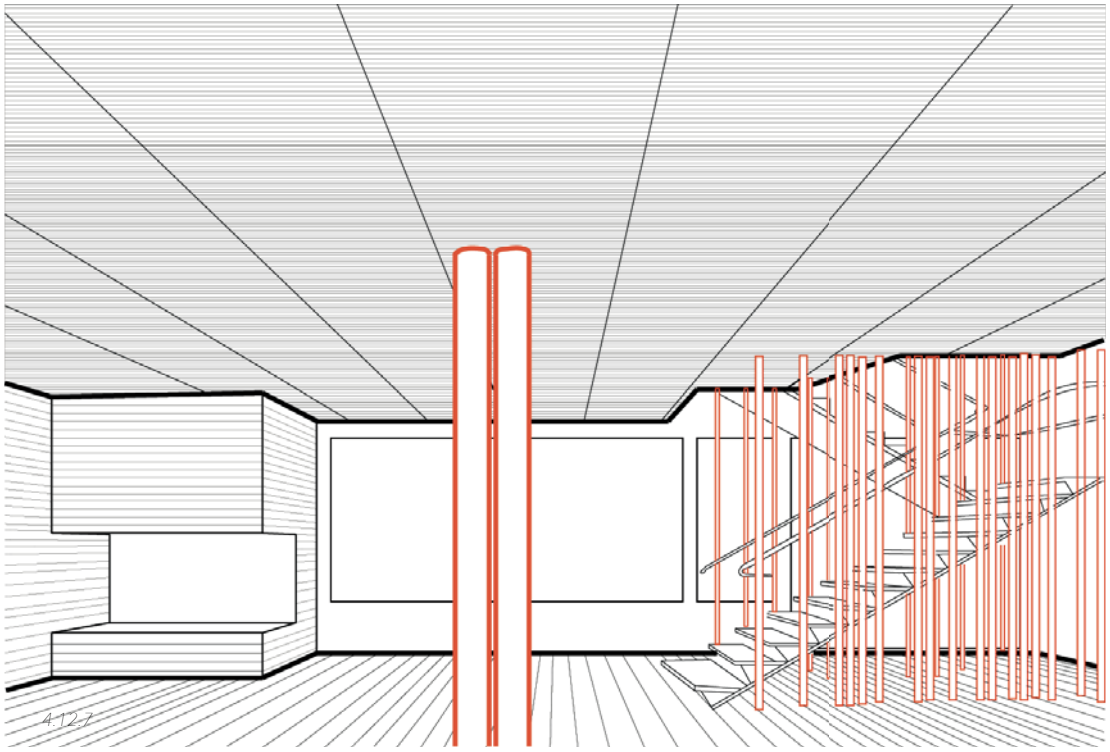

4.12.4



A

B


C

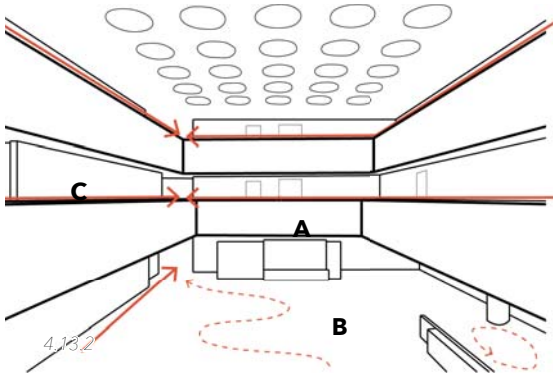




steel. The circular steel columns are tripped clad with wooden strips or bound with rattan. On the left side of figure 4.12.7. brick is applied and painted white. Around the staircase wooden pillars are added. These pillars does not functions for the structure of the building. Wood is also applied in window frames and panels on the ceiling. The floor consist brownish floortiles. The combination of the color of the wood, tiles and wall makes that the space feels warm. It feels comfortable as shown on figure 4.12.5. The texture of the material as shown in figure 4.12.7 are a combination of vertical and horizontal lines.

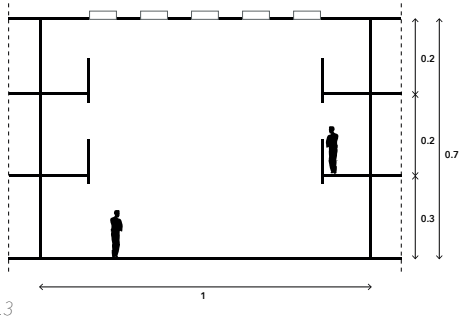
Daylight is entering from one side in this space by big openings. On the left side of the space the corner in front of the fireplace is a little bit darker to create a more intimate zone in the space. The space is divided in different zones to create different feelings of proportions. The dimension of the whole space are then divided.

Figure 4.12.6 shows the elements which are used in this space. Striking is the stair element which is a really important element in the space for the division in zones. The combination of the applied material with their color and texture, the incoming light and the elements creates an atmosphere to stay by creating a varying route.

http://eng.archinform.net/projekte/299.htm


4.13.2

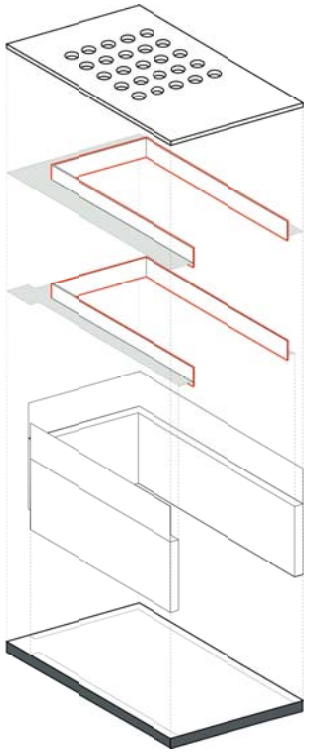



4.13.3

| | |
|---|---|
| Project: | Rautatalo |
| Location: | Helsinki, Finland |
| Architect: | Alvar Aalto |
| Year: | 1955 |
| Function: | shopping mall and offices |

Rautatalo or Iron house is built in 1955 in the middle of the city center of Helsinki. The space which is shown at figure 4.13.1 is the Marble court or as called by Alvar Aalto self the Marble Hall. The hall functions as a shopping area as well as offices. These offices are situated on the top second first and second floor. This dovered courtyard is the architectural en functional heart of the building.

The space consists of different elements. Boxes for the shop on the ground floor, on the first en second floor a balustrade with on the second floor a wall which is put rearwards. This increases the width of the path on the second floor. Underneath or on the the floor of the gallery the human scale is added. Therefore this zone feels comfortable due to the human scale. Whereas the gallery is small,



4.13.4

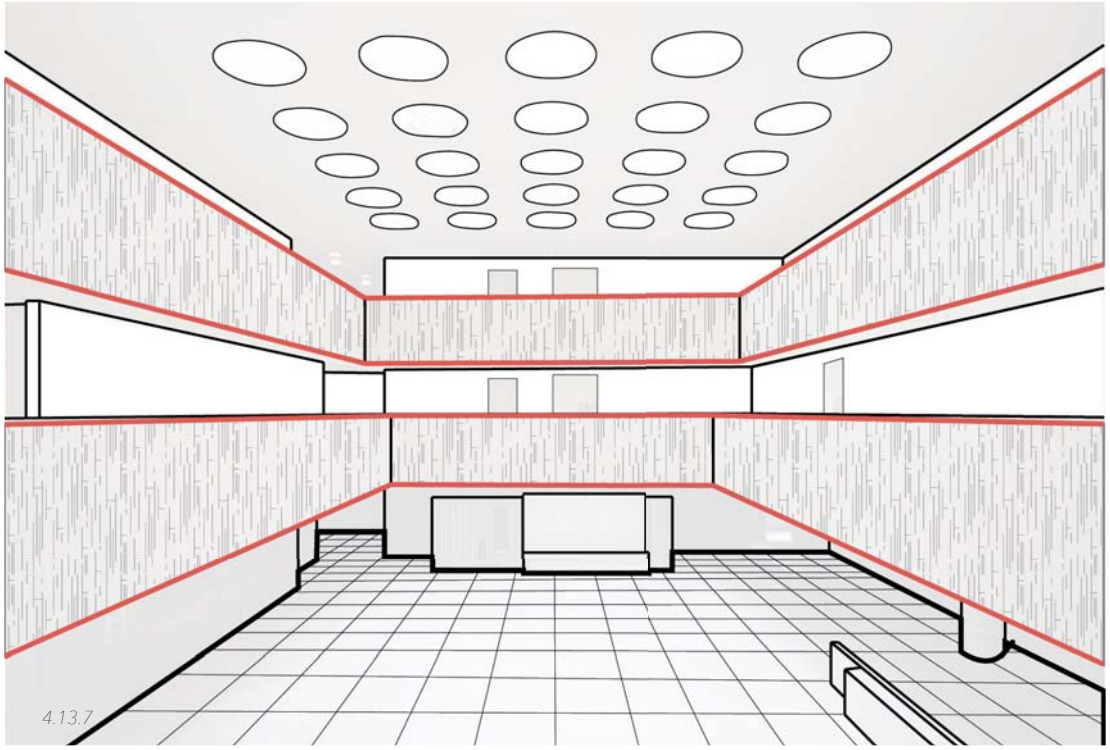
A

B

4.13.5

C

4.13.6



4.13.7

long and high is the courtyard itself with long and high. In the middle of the courtyard the space consists totally different proportions.

The floor of the courtyard is made with greyish white Carrara marble. The squared tiles are creating horizontal lines in the length as well as the width. The balustrades of the gallery is clad with yelowisch travertine. This material has a composition of color but also in texture. The overall used color in the space is very light. Therefor the space feels a little bit frigid. The incoming natural light makes different zones more intimate.

The natural light from above which creates shadow and the used color of material emphasize the pragmatic feeling of the atmosphere.

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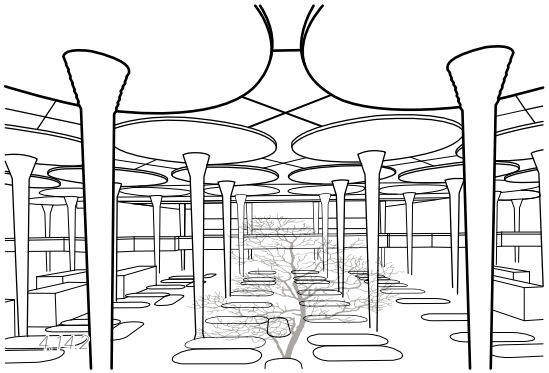
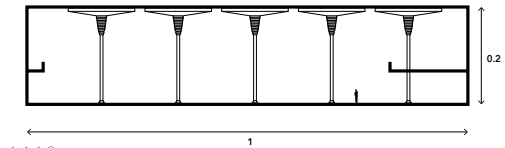

4.14.2



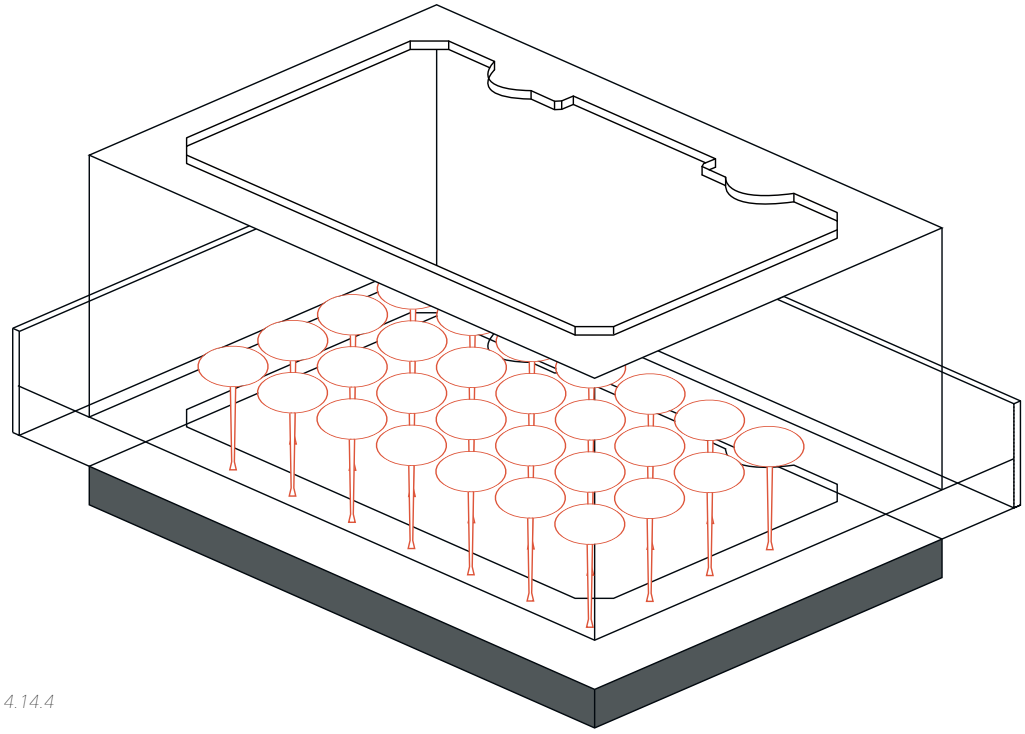
4.14.3

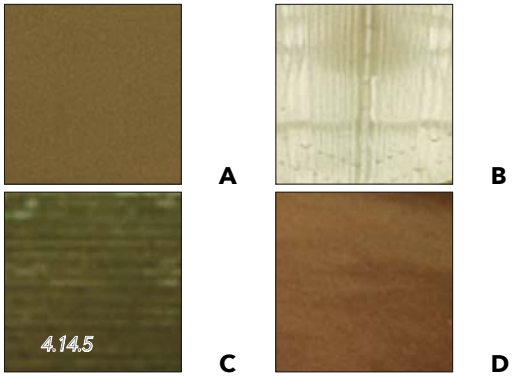
| | |
|---|---|
| Project: | Johnson Wax Headquarters |
| Location: | Racine, Winconsin, USA |
| Architect: | Frank Lloyd Wright |
| Year: | 1936 |
| Function: | World Headquarters and Administration Building |

The Johnson Wax Headquarters (or Johnson Administration Building) is situated in Racine, USA. In this design, Frank Lloyd Wright worked with great rhythmic circular bands of brick. These bands are continued in the interior spaces. In between these bricks bands glazing is placed.

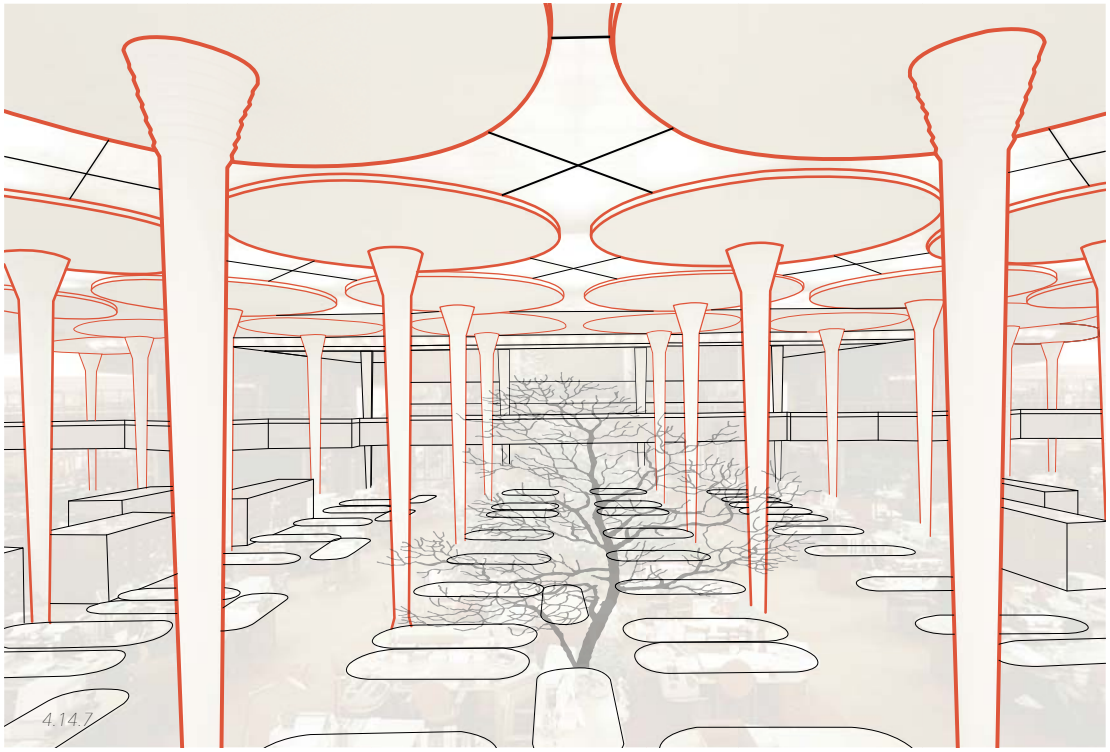
The space which is analyzed is the so called "Great Workroom". It should represent the atmosphere of 'under water'. The lily shaped columns cover almost the entire roof at the top (which, in turn, repesent the surface of the water).

The scale of the space provides the employee both a free and spacious feeling as well as an controlled feeling. This controlled feeling is because of the


4.14.4

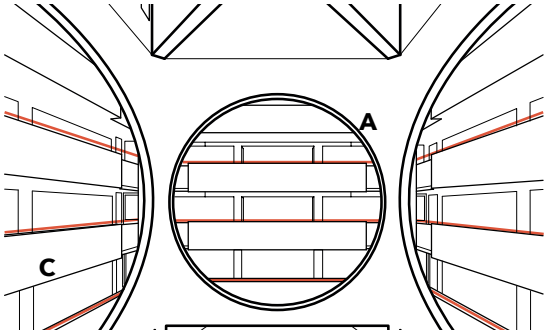




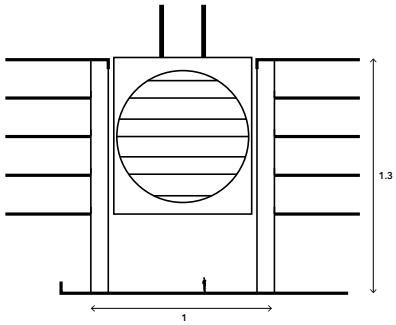



higher situated surrounding balcony (see figure 4.14.3).

Despite the fact that the surrounding walls are completely closed, the space looks very light and spacious. This is mainly because of the natural light that enters the space through the roof (see figure 4.14.6).
It produces a feeling as if there is no roof at all but the lily shaped columns. As if the columns are free standing and the space is an outside space. This feeling is strengthened by the plants inside the space and the use of natural colored materials (see figure 4.14.5).


4.15.2



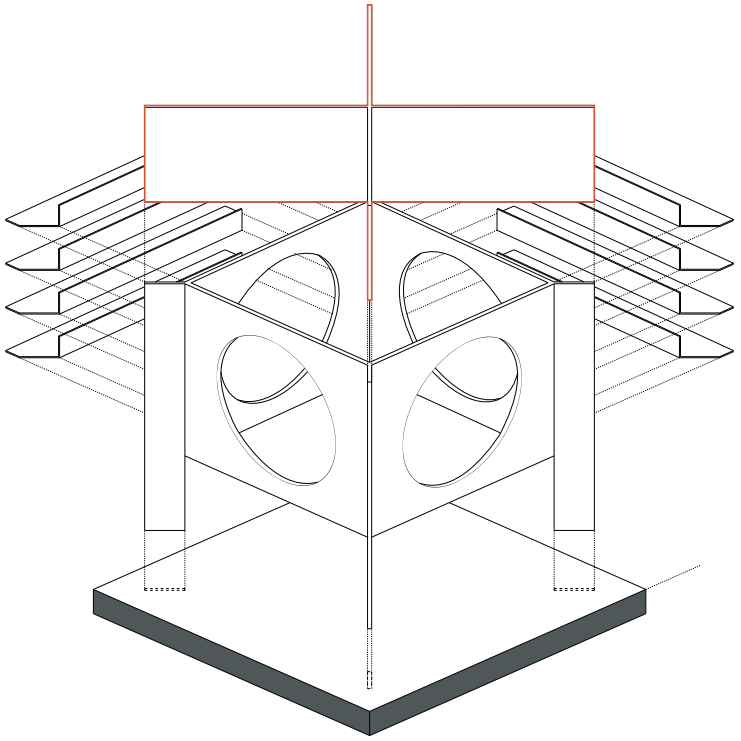

4.15.3

| | |
|---|---|
| Project: | Philip Exeter Academy Library |
| Location: | Exeter, New Hampshire, USA |
| Architect: | Louis Kahn |
| Year: | 1972 |
| Function: | Library |

The Philip Exeter Academy Libriry is the largest high school library in the world. The library building has received many awards and is considered one of the icons of American architecture.
To the outside the buildings looks not especially exciting, but even more so on the inside. The use of geometric shapes and the strong contract in materials give the spaces a special and unique character.

The spaces which is analyzed is the central hall of the library. It's a 16-meter high space, provided with circular openings on several floors, which offers space to workstations for clerks and typists.

The use of scale and proportion is to indicate the intimacy of the spaces. The large space (central

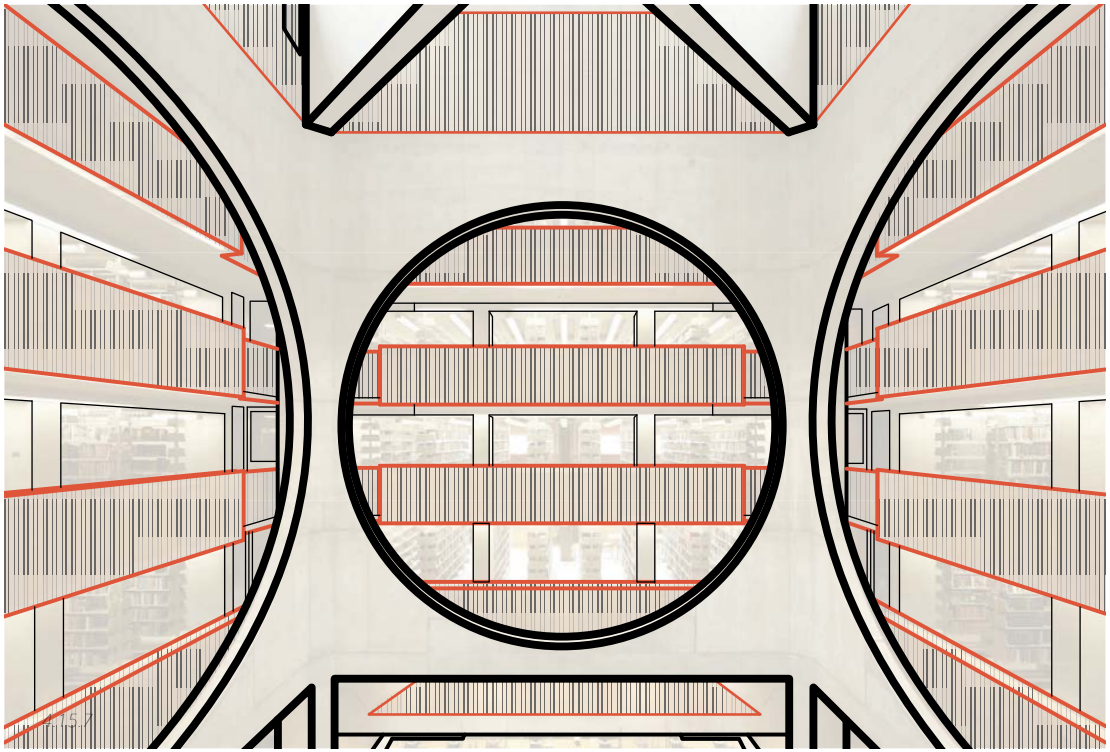


4.15.4

A

B


C

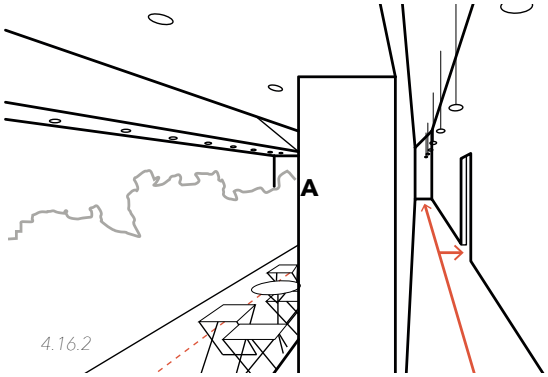




hall) is the reception area, while the small spaces (on the different levels) are used for studying and reading (see figure 4.15.3 and 4.15.4).

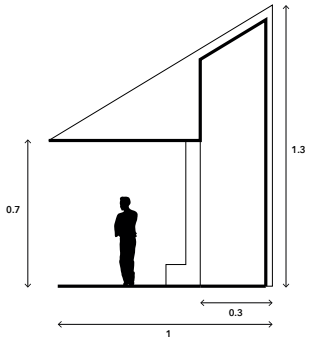
The materialization also indicates these levels of intimicy. The large spaces are characterized by uge concrete walls, while the more intimate spaces are materialized with nicely detailed wood (see figure 4.15.5 and 4.15.6).

This dichotomy in intimacy (and by that atmosphere) is also found in the use of light. The large central hall is mainly enlighted by natural light coming through the roof, while the study areas are mainly enlighted by artificial light (see figure 4.15.6).

So actually you see this dichotomy emerge in all or most aspects that determine the atmosphere of the spaces.


4.16.2



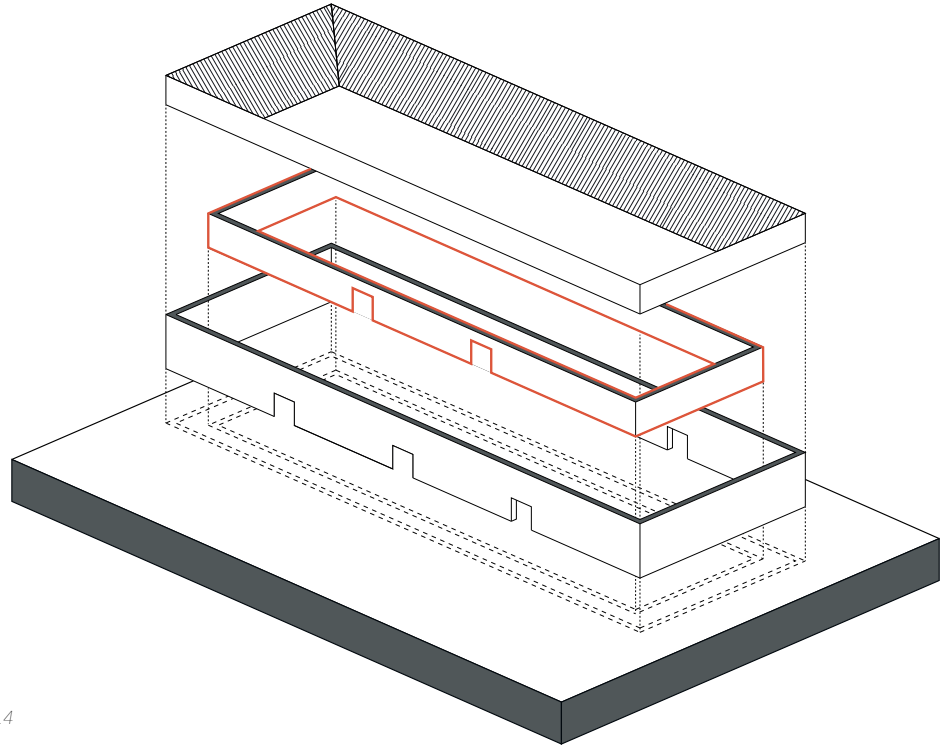

4.16.3

| | |
|---|---|
| Project: | Pavillion |
| Location: | London, England |
| Architect: | Peter Zumthor |
| Year: | 2011 |
| Function: | Gallery |

The Serpentine Gallery Pavilion by Peter Zumthor was opened from july 2011 and closed in September 2011. The design consisted of a garden within a garden and is designed in collaboration with the Dutch garden designer Piet Oudolf.

The clear shapes of the elements makes the design very legible. The walls devide the pavilion into three spaces, the outside space (outside the pavilion), the in between space (the surrounding corridor) and the inner space (the courtyard).

The space which will be analyzed is both the corridor and the oourtyard (see figure 4.16.1). The picture of these spaces shows the different atmospheres of both spaces as well as the transition between them.

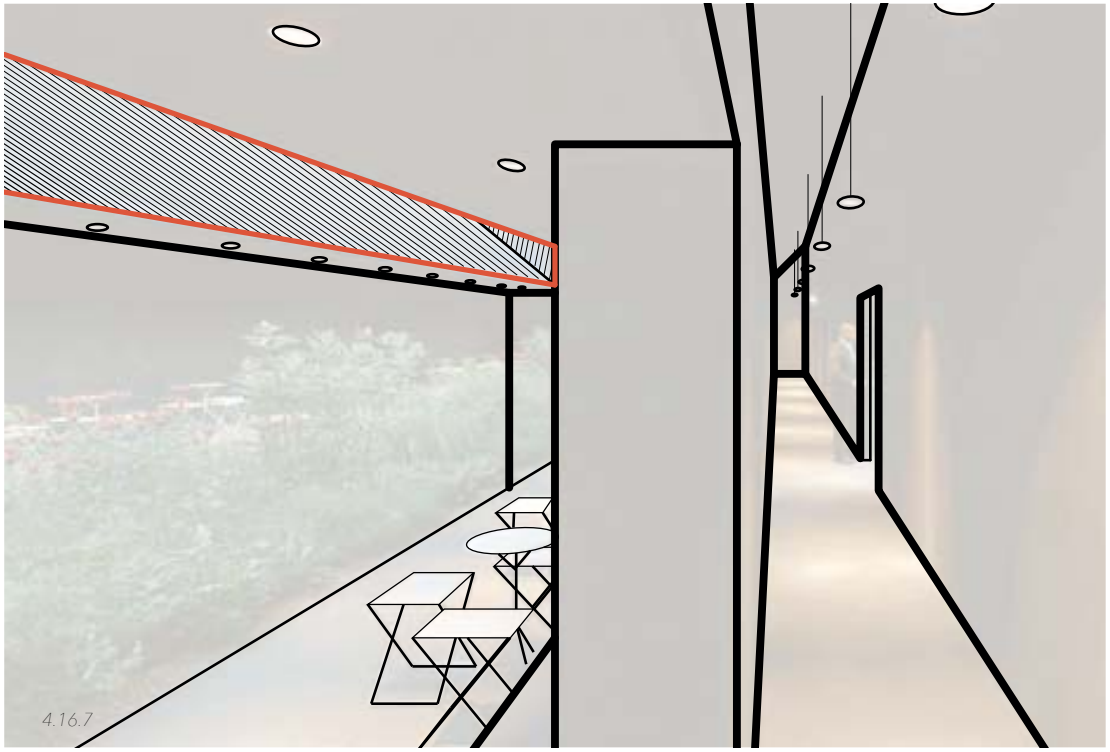


4.16.4

A

4.16.5

4.16.6

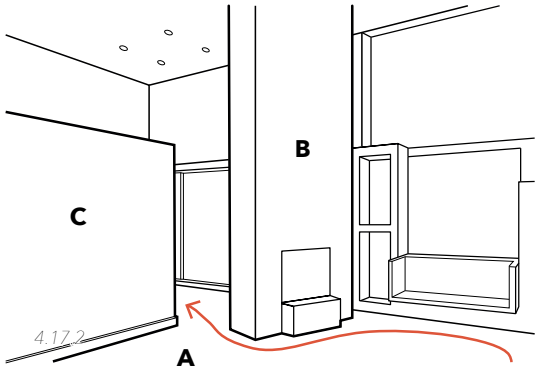


4.16.7

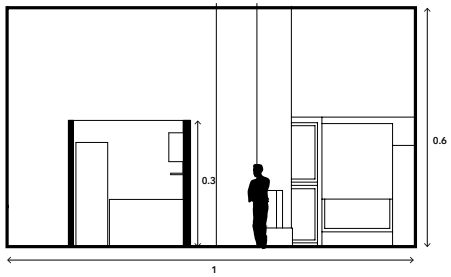
What immediately is striking is the use of material. All the walls consist of concrete, as well the inside as the outside of the building (see figure 4.16.5). This monotonic use of materials makes the building more difficult to read and in that way more exciting or mysterious.

The routing on the other hand guides the user through the pavilion. The sharp frames of the pavilion separates the building into two different flows. The flow in the corridor on the one hand is straight and continues. The flow in the courtyard is less continuous, because it is interrupted by infill like plants and garden furniture (see figure 4.16.2).

The use of lights is well thought about. The artificial lights for example are situated on the same height inside the in between space (corridor) as on the inner space (courtyard). He uses artificial light (in the corridor) in order to reduce the space by feeling. The corridor is in fact almost nearly twice the height of the canopy at the courtyard. But by placing the same spots at the same height, he creates a uniformly feeling (see figure 4.16.6 and 4.16.7).


4.17.2



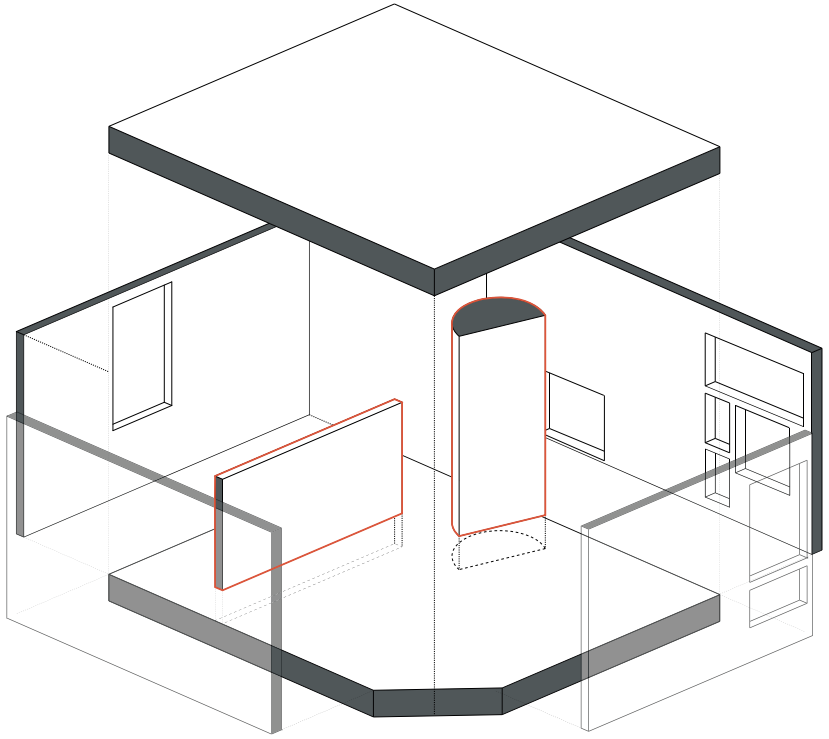

4.17.3

| | |
|---|---|
| Project: | Fisher House |
| Location: | Hatboro, Pennsylvania, USA |
| Architect: | Louis Kahn |
| Year: | 1967 |
| Function: | Residential Building |

This dwelling, the Fisher House, was designed as commissioned by the Fisher family in a forest in Hatboro, USA.
The dwelling consist of two cubes grabbing into one another. The use of contrasting materials makes this design recognizable as one of Louis Kahn.

The space which will be analyzed is the first floor of one of the cubes where all these different materials are clearly situated in different types of objects and elements.

You will immediately notice the 'unknown' of the room. With this I mean the space behind the lower wall. This lower wall reveals that the room is larger than what you see at first sight. But what is behind



4.17.4

A

B

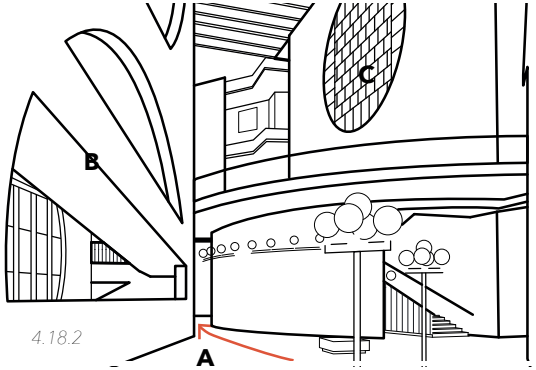

C



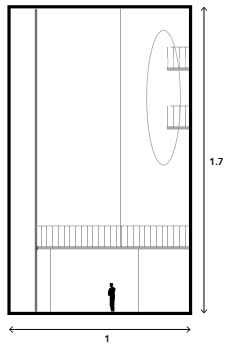
the lower wall is completely unknown (see figure 4.17.1).

The route is undetermined, with the exeption of the transition to the 'unknown' space behind the lower wall. This transition is characterized by an object (the fireplace ) which stands in the way (see figure 4.17.2). It leads the user throught a small passage to the other side of the wall. This is accentuate by giving the fireplace an other type of materialization (rough stones). This material stands out to the other (much more fine) materials (see figure 4.17.1 and 4.17.7).

In this project the relation with the outside is important. Thats why there are large openings created in the exterior walls. These large openings bring, in their turn, lots of natural daylight into the space. This natural daylight accentuates the different types of materials (see figure 4.17.5 and 4.17.6).


4.18.2



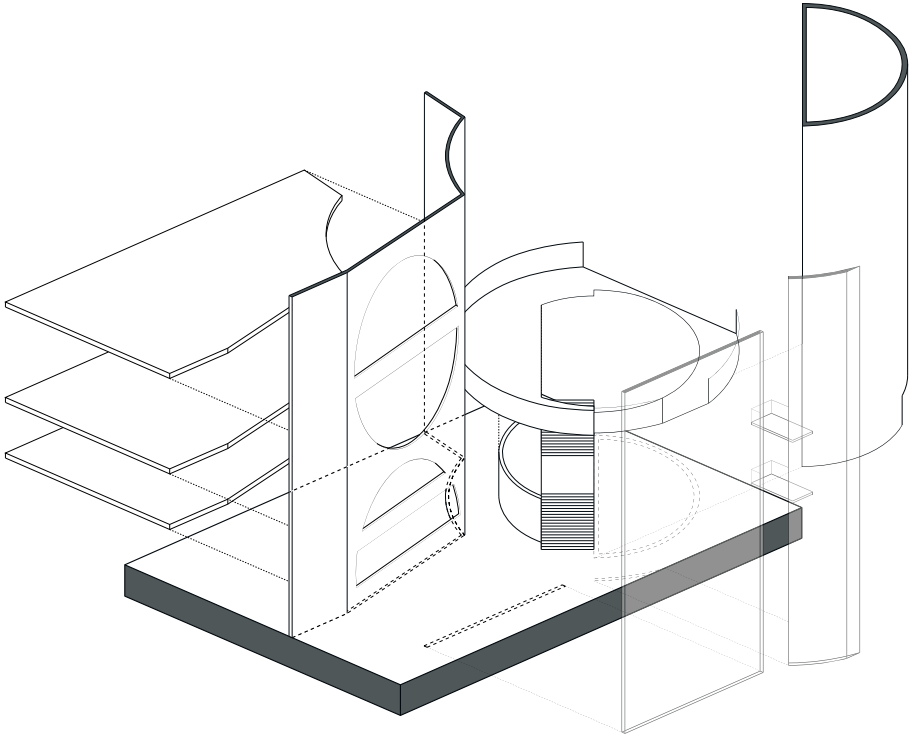

4.18.3

| | |
|---|---|
| Project: | House of the Nation |
| Location: | Dhaka, Bangladesh |
| Architect: | Louis Kahn |
| Year: | 1982 |
| Function: | Parliament House |

The House of Nations is one of the most famous project of architect Louis Kahn. It houses the Parliament of Bangladesh and is located at Sher-e-Bangla Nagar in the Bangladeshi capital of Dhaka. With its 800,000m² it is one of the largest buildings in the world.

The space which will be analyzed is part of the ciculation route around the main conference room.

The measurements (scale and proportions) make it seems as if the space is an outdoor area (see figure 4.18.3 and 4.18.4). Even the use of elements like streetlights are used in order to create that image. High walls and large openings makes the user feel very small. It give the user a feeling of inferiority to the building (and by that the parliament of



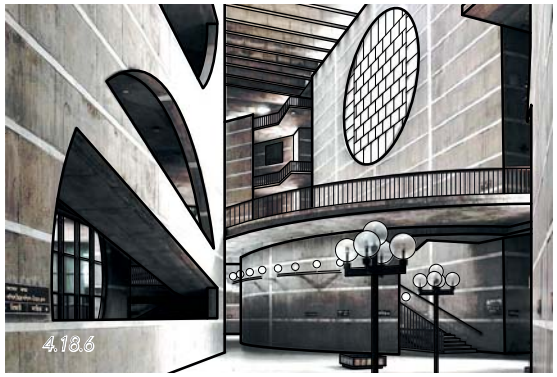
4.18.4

A

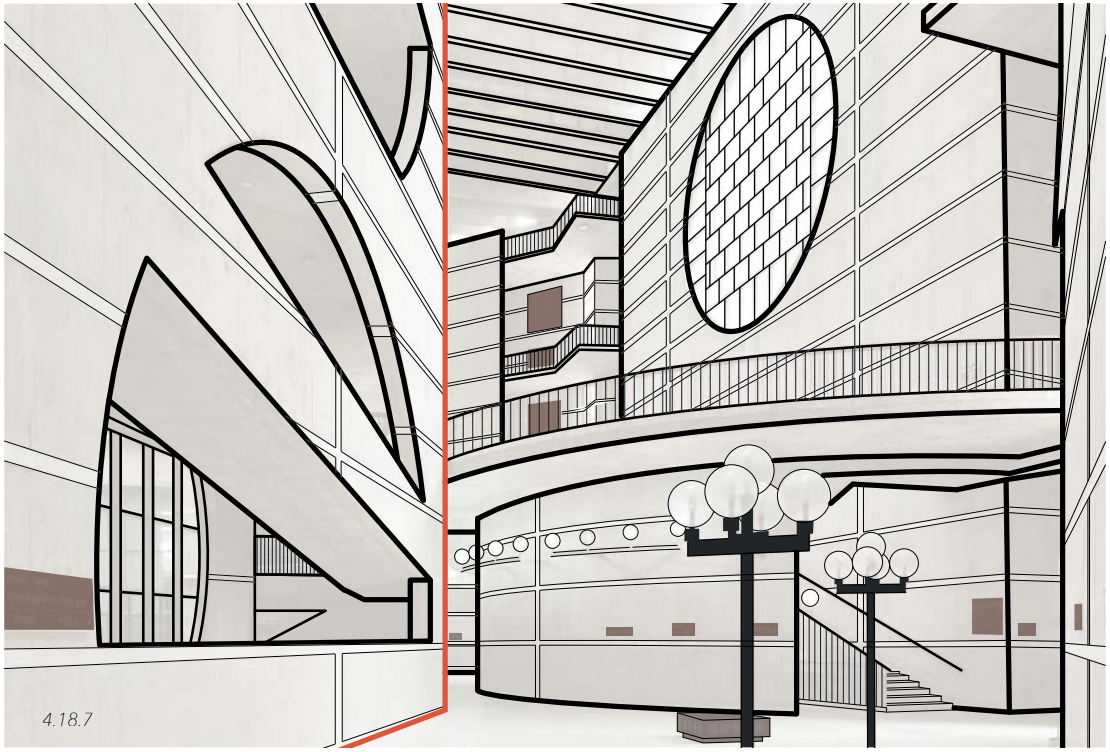
B

4.18.5

C



4.18.6



4.18.7

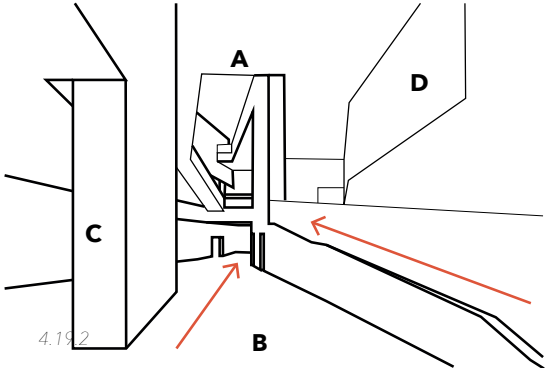
Bangladesh). The buildings shows in that way its authority to the user.

The materialization (which is completely consisting out of reinforced concrete) contributes to this position. It creates distance between the user and the building (see figure 4.18.1 and 4.18.6).

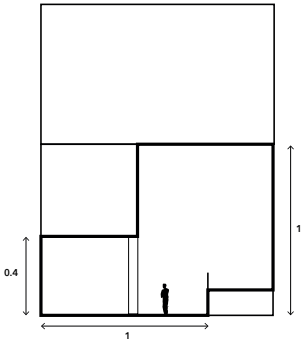
The uge openings in the walls provides natural light to enter the space. This natural light (which is cold light) strengthens the cold material and in that way contributes to the distant feeling of the building (see figure 4.18.6).

The main route is indicated by the wide 'street'. When you turn off the main route the spaces becomes smaller which indicates that you just left the main route (see figure 4.18.2 and 4.18.4)

4.19.1



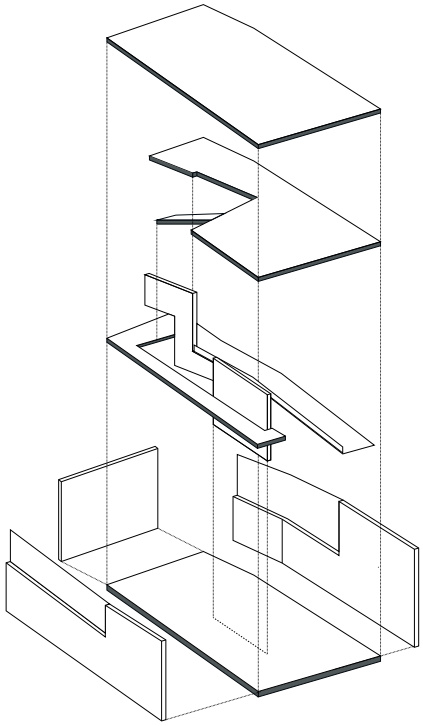

4.19.2



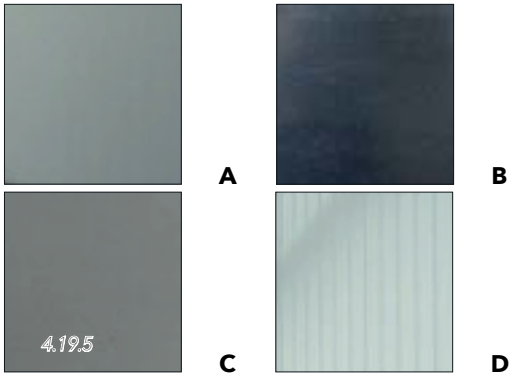

| | |
|---|---|
| Project: | Nelson Atkins Museum of Art |
| Location: | Kansas City, MO, USA |
| Architect: | Steven Holl |
| Year: | 2007 |
| Function: | Museum |

The expansion of The Nelson Atkins Museum of Art fuses architecture with landscape to create an experiential architecture that unfolds for visitors as it is perceived through each individual's movement through space and time. As visitors move through the new addition, they will experience a flow between light, art, architecture and landscape, with views from one level to another, from inside to outside.

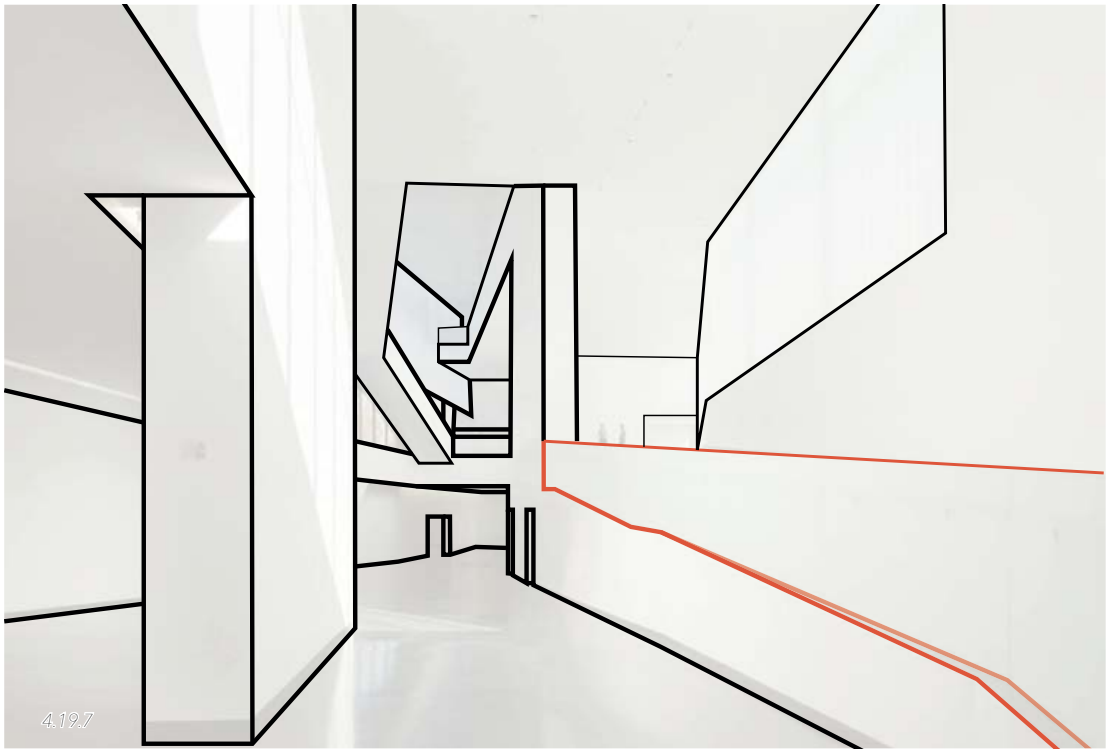
The space inside the picture is the lobby with the museum store on the left. This huge space is covered by a high amount of daylight, which is occasionally being diffused, which creates a filtered light effect. The slopes are integrated in this design to fluently access other space and to refer to landschape architecture. The slopes allow the



4.19.4








visitor to gradually experience other spaces and to experience other views, either inside or outside.

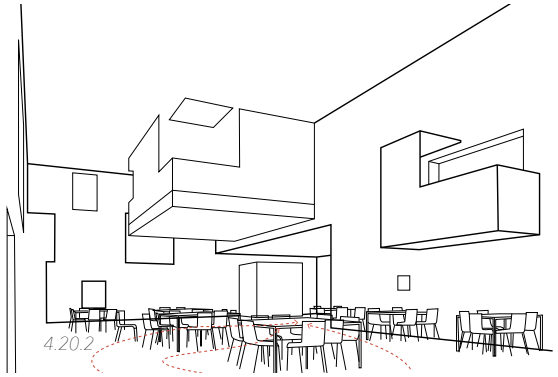
This minimal detailled space only occupies a few different materials, semi-translucent glass for the balustrades, translucent glass for the windows (complete or semi), a dark equal surface material on the floor and the rest of the space is entirely white, this will cause extra reflection, which will led to more light inside the building.

Due to the reference towards landscape, this space is quite large compared to the human scale, this creates a feeling inside the space that is not intimate at all.

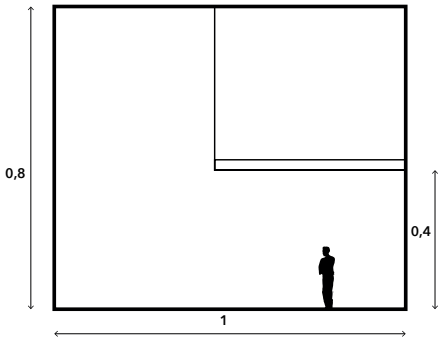
The routing in this museum is established as meandering, however these hard shapes and guiding lines will guide the visitors somehow.

The amount of elements used in this space is also quite high, there are a lot of horizontal slabs, which are transformed in a way to allow more daylight and to create more depth inside the space. These slabs are configured on different levels, which enables the visitors to see where they are able to go.

4.20.1



4.20.2

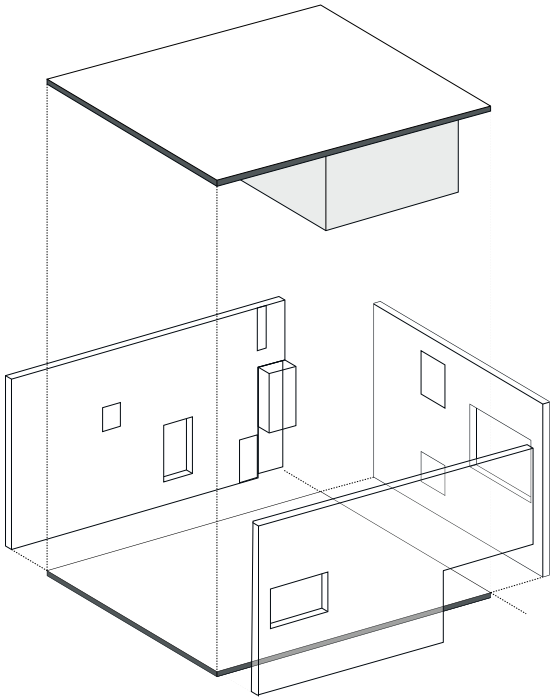



4.20.3

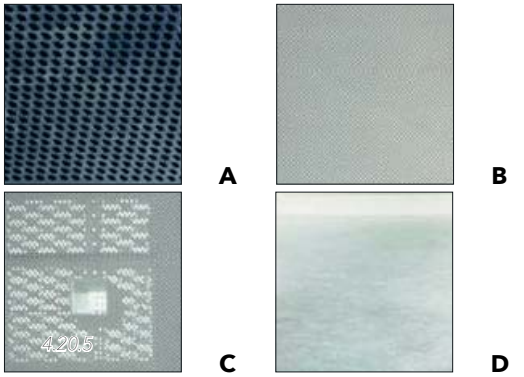
| | |
|---|---|
| Project: | Office Sarphatistraat |
| Location: | Amsterdam |
| Architect: | Steven Holl |
| Year: | 2000 |
| Function: | Office |

The office building from Steven Holl in the Sarphatistraat, Amsterdam, is an extension to an old building. In complete contrast, this building is materialised on the outside with perforated copper plates. The interior of this building is very abstract and uses the same type of perforation of materials. The mix of perforated and non perforated plates inside this space enables the architect to create different types of light, diffused, non-diffused. Together with a mix of large windows, the amount if light inside is quite high for this space.

The function of this space is an exhibition or restaurant, therefor the proportions are quite large, this enables to focus more on objects inside the space and to gather with other people.



4.20.4






Perforated materials are visible in illustration 4.20.7, the light grey hatched surfaces are perforated plates with glass panels beneath them. The blue hathed surfaces are transparant glass. A dark but reflective material on the floor will reflect light, which will cause a higher light inside the space.

By applying different materialisation to other volumes, the architect creates a clear distinction inside the space.

The elements used in this space are vertical perforated walls, with different types of perforation. Volumes are also used in this space, again perforated or closed. Perforated volumes do not create a clear depth inside the space but they will diffurse light in a different way.

The movement inside this space if meandering because there is no clear guiding by certain elements or signs.

# COMPARISON SHEETS

## 5.1.1 INFILL

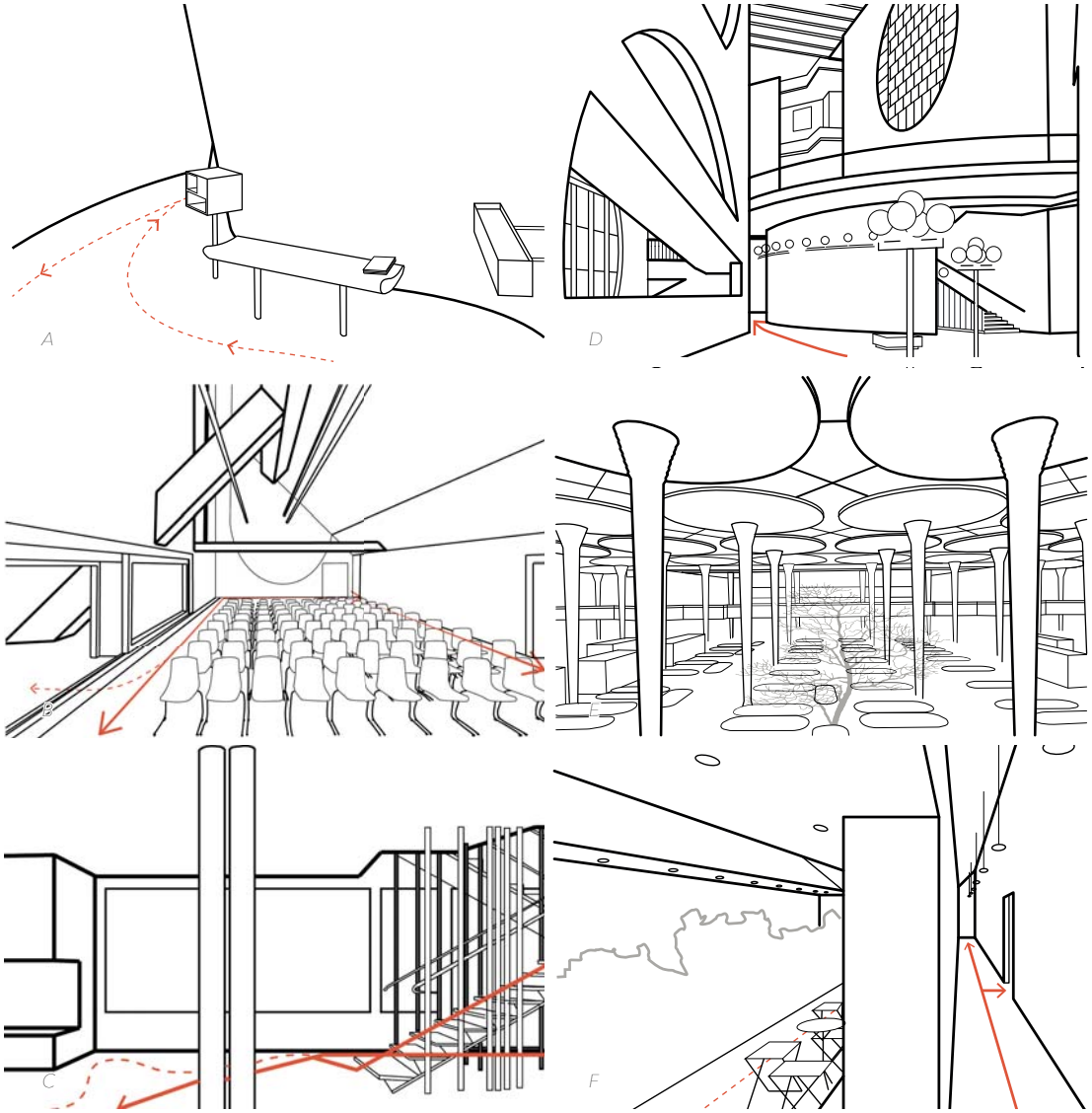
One of the products made to compare different atmospheres of a space is the abstraction. The first subject of this product is the infill of the space. These are the removable objects, this infill is to support and to strengthen the atmosphere of the space in different manners.

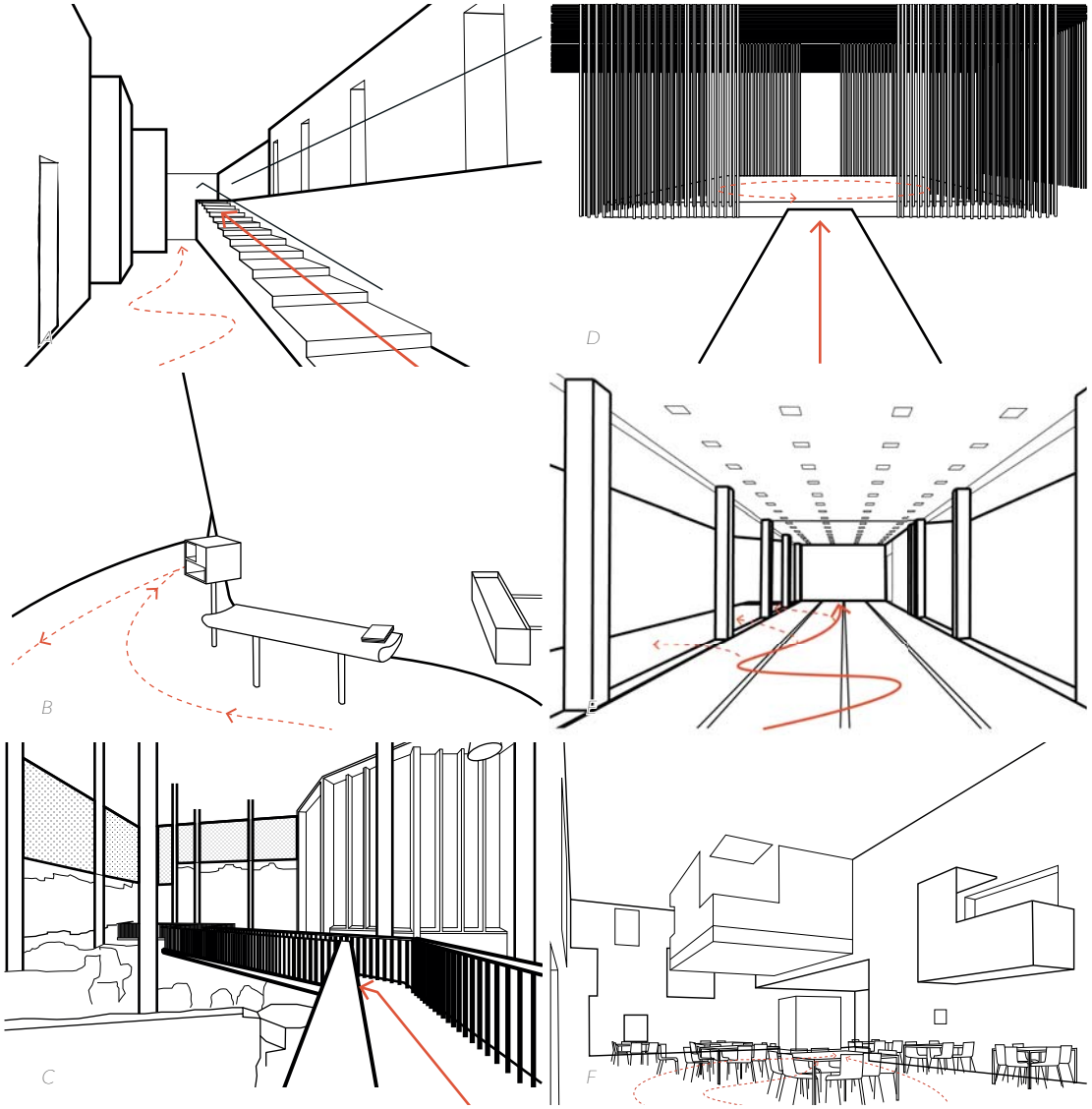
The objects could be used to divide the space in different zones. Visible in figure D are the artificial lights with next to it a bench.

The infill of the space could lead to the use of the space by creating different speed of movement. In figure A this forms the main reason to really experience the atmosphere of the space.

The third reason of applying an infill is to suggest the function of the space. Which is clearly visible in figure B. The seats are all in the same orientation whereby the remaining space is used for the movement. This suggest a typical function, auditorium.

According to the design the infill of the space is one of the scenarios an architect can create for the user.






## 5.1.2 BASIC FRAME

The second subject of the abstraction includes the basic frame of the space. The basic frame of a space defines the boundaries and can lead the user through the space. This can be done by the use of different volumes, for instance figure A whereby the protruding volumes are emphasizing this feeling of curiosity.

Another possibility is applied in projects in figure B, D and E. Here does volume sets the boundaries for a space. In figure D the bamboo poles are creating a curtain around a zone within the space, this boundary is created vertically. In figure E the boundary of the space is only done horizontally which encourage to experience the wide surrounding. The atmosphere is partly based on on relation with natural surroundin.

In figure F there is no clear basic frame of the space which creates an interesting atmosphere. The use of elements whereby it is not clear if it is used for constructions or just as a separation wall is leading to a kind of curious feeling to discover the space. Figure C is showing the body of the remains of an old church with on top a new body, this combination is creating a guide lined body through the old atmosphere. The body creates a level of intimacy that is inseparable connected to an atmosphere in a space.

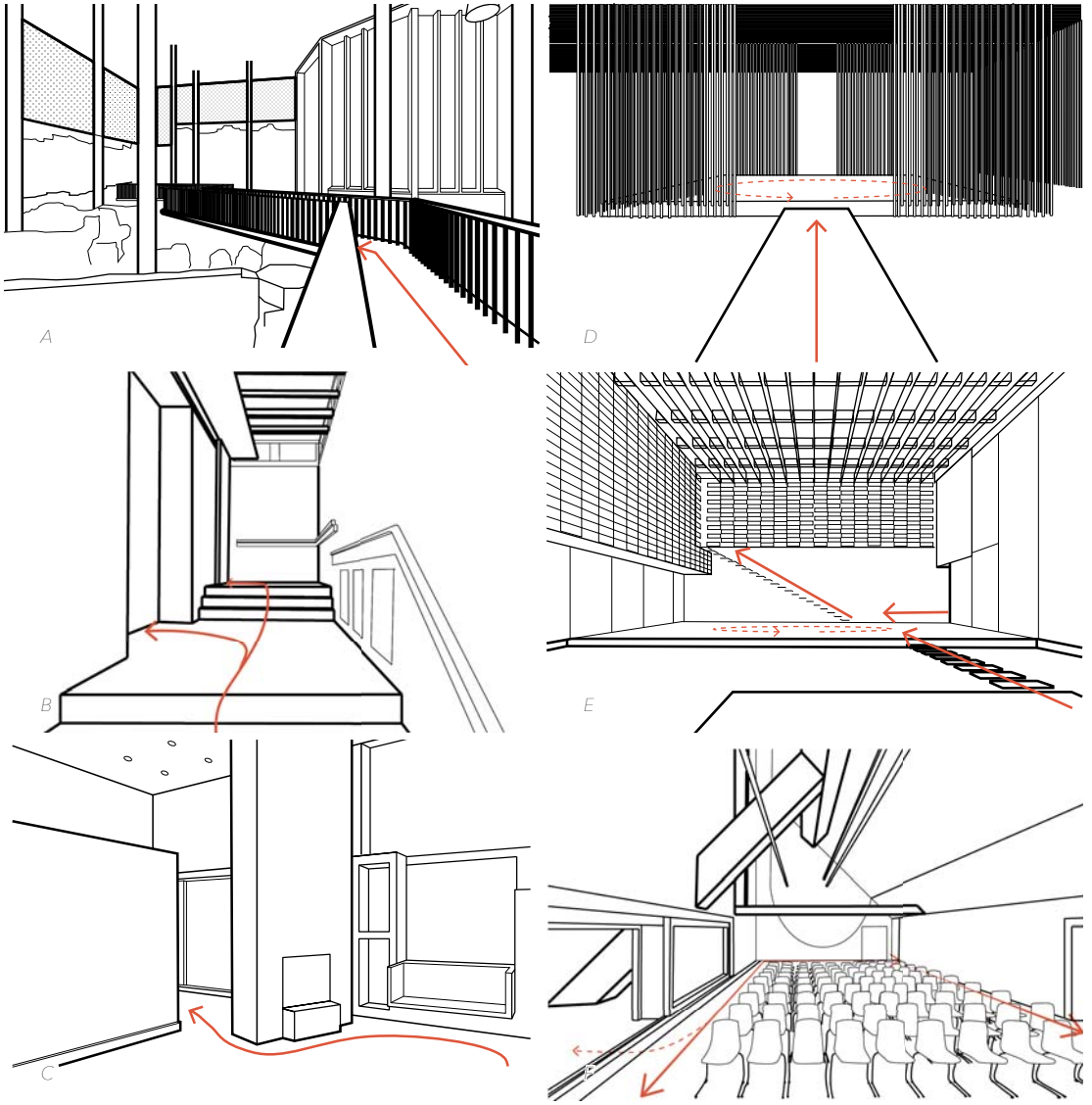
## 5.1.3 ROUTE

The routing is divided in main routing and sub routing. The main routing is a guiding is route created by the placement of elements. The main routing can be continued by the sub routing. This extra movement in this space can be necessary to experience the atmosphere of the space the most. Sub routing is allowing the user to explore space in unguided multiple directions.

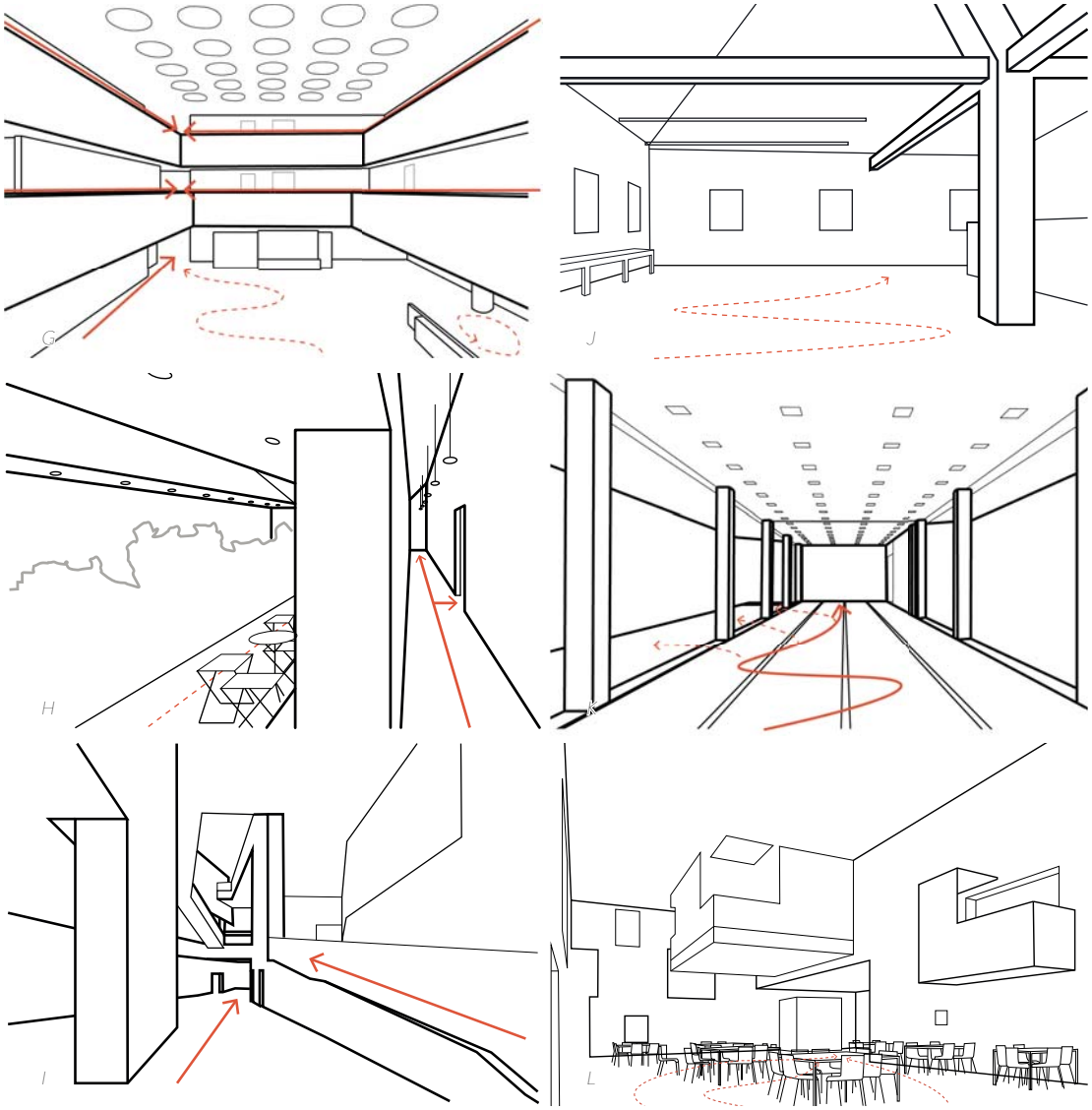
The spaces in figure A till C showing the main route only. In figure B the user has more control in which route to follow. The route allows the user to go to another type of space, see figure C.

The pictures of the space which consist only the sub routing, see figure J, K and L, are spaces whereby the user can stay for a while and wander around within the space. The movement continues is slow due to the unguided path, which creates the opportunity to absorb the atmosphere in the space. The users could be more aware of a certain atmosphere due to the slow movement.

Figures D till figure I contain the main and sub routing, which creates interesting interactions between the different movements of the users. The user has the opportunity to be guided or to stroll through the space.



The type of routing is an influence for a certain activity of the space. Different types for routing enables the architect to let the users admire the atmosphere in different ways.

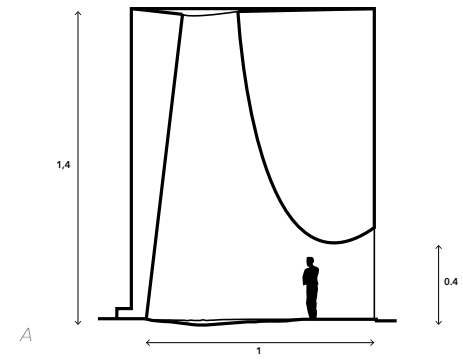


## 5.2.1 PROPORTIONS

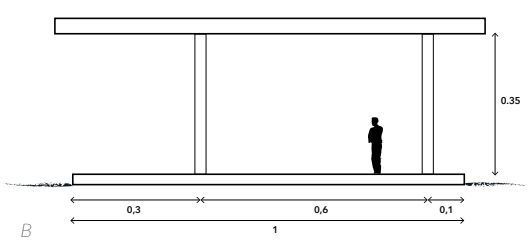
The aspect proportions are visible in the section product of the quantitative research. Proportions between the vertical and horizontal plane will be compared.

Examples of vertical boundaries are the applications of ceiling and floor. The varying distance between the ceiling and the floor are creating different proportions in the space. For instance in figure A and C the difference in distances is clearly visible. The proportions of the space of figure A are changing due to the change in the ceiling. In figure C the height of the ceiling is kept the same, but in this case the floor level is changing. Which creates more awareness of the different proportions since it takes a larger effort moving through the space by using the stairs. Figure F contains a combination of different changes by slabheights.

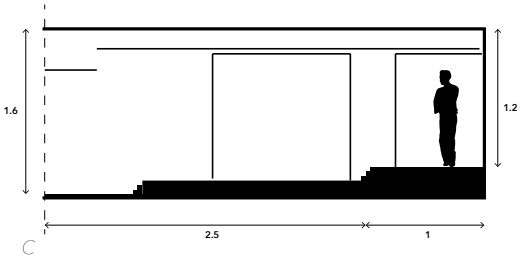
It is also possible to vary with the horizontal boundaries. For instance in figure B whereas the horizontal boundaries within the space are created with equally placed columns. Within the space three different proportions can be experienced. The proportions can also be divided by an object like a stair, see figure D. The change in proportions within a space is important to enhance and emphasize a particular feeling of atmosphere. High proportions could cause loss of human scale, which eventually leads to another experience.



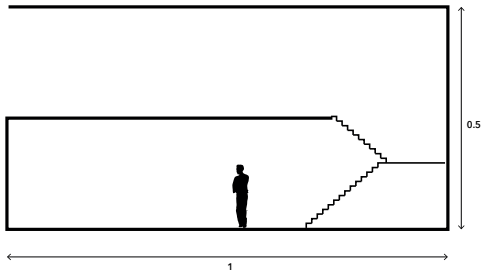
A



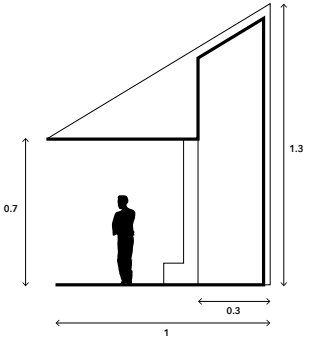
B



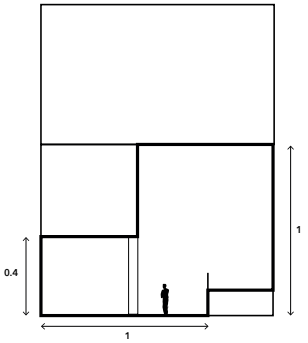
C



D



E



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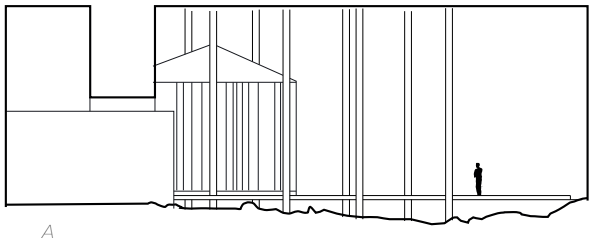
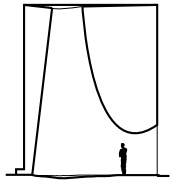
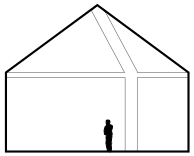


A



G



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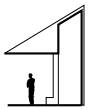
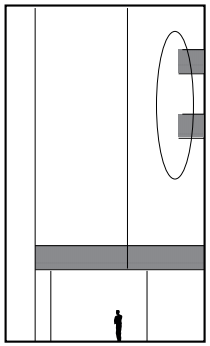
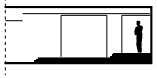


D



B



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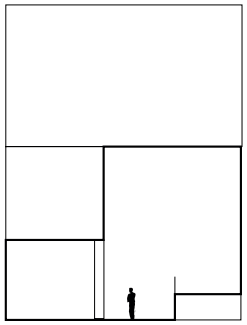
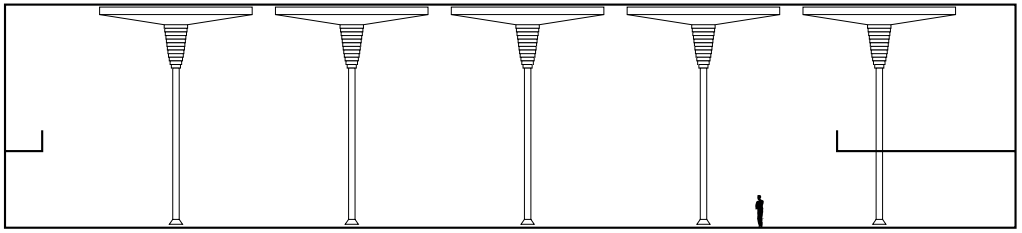


F

I



C

## 5.2.2 SCALE

Scale is an important factor in order to create intimacy. To compare the different cases of the quantitative research the sections are on the same scale in this comparison sheet.

The biggest space is showed in figure C, the Philip Exeter Academy Library of Louis Kahn. Intimacy is barely noticeable, due to the fact that the user is relatively small compared to this space. Compared with figure C the space of figure E will feel much more intimate. The user is more surrounded with boundaries instead of a very open space.

The space of figure G is changing in scale, this creates a variation in intimacy leading to a more interesting space since more scenarios can be created.

The use of material has influence on the intimate feeling as well. This will be compared in chapter 5.5 materialisation.

## 5.3.1 ELEMENTS

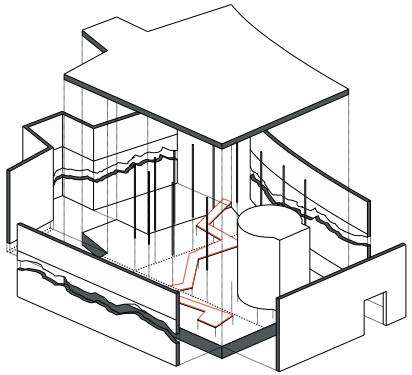
To compare the elements of the different cases of chapter 4 exploded views are used. The elements which are the most striking and important elements and colored red.

Five of the nine showed most interesting cases are elements which are functioning as the construction of the space, see figure B, E, F, G and H. The attention will be on the used striking shaped elements since this creates attraction.

Figure A consist a lot of different elements, different ages and states. A combination of elements form a guided path through the older elements.

The placement of elements is also important, the architect is able to create different sightlines, which could attract discovery and curiosity.

Elements can also be used to separate the space in different zones, shown in figure I. By placing the elements not exactly next to each other the user will be triggered by the feeling of curiosity to take a look around the corner and to create an more intimacy zone on the other side of those elements. Elements are important tools to use in a space for instance to divide a space or to create an interesting attention within the space itself.



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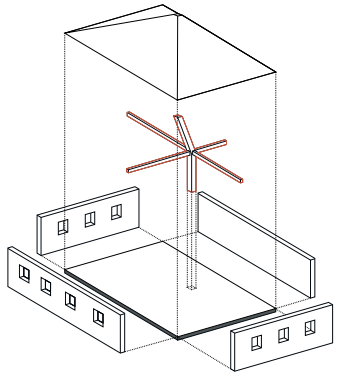
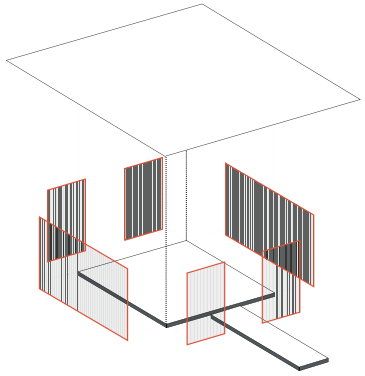
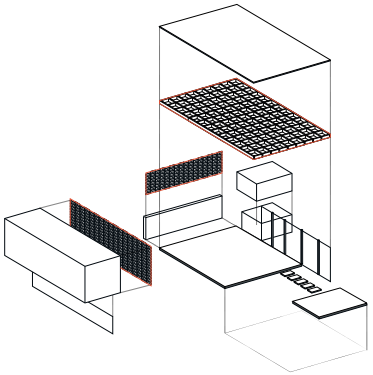


B



C



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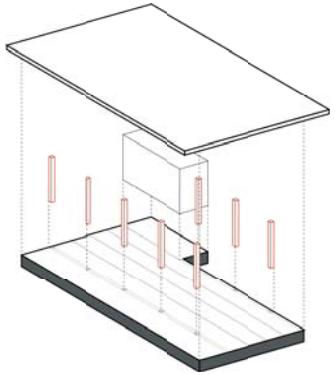

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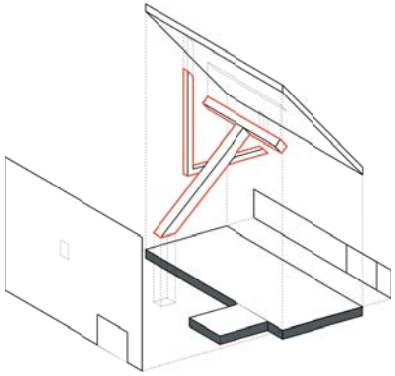

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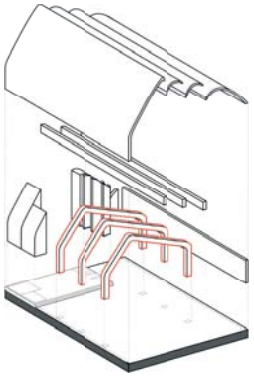

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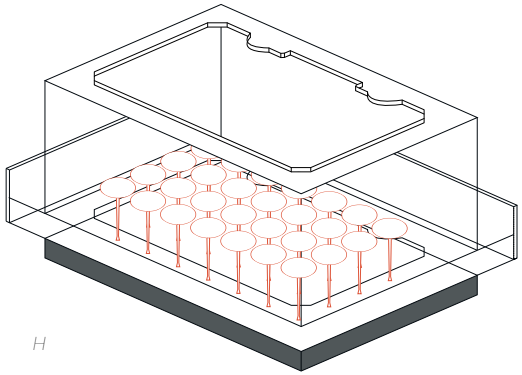

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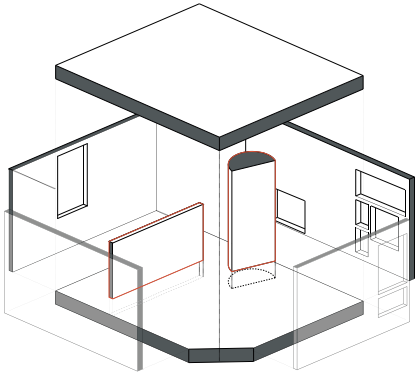


I

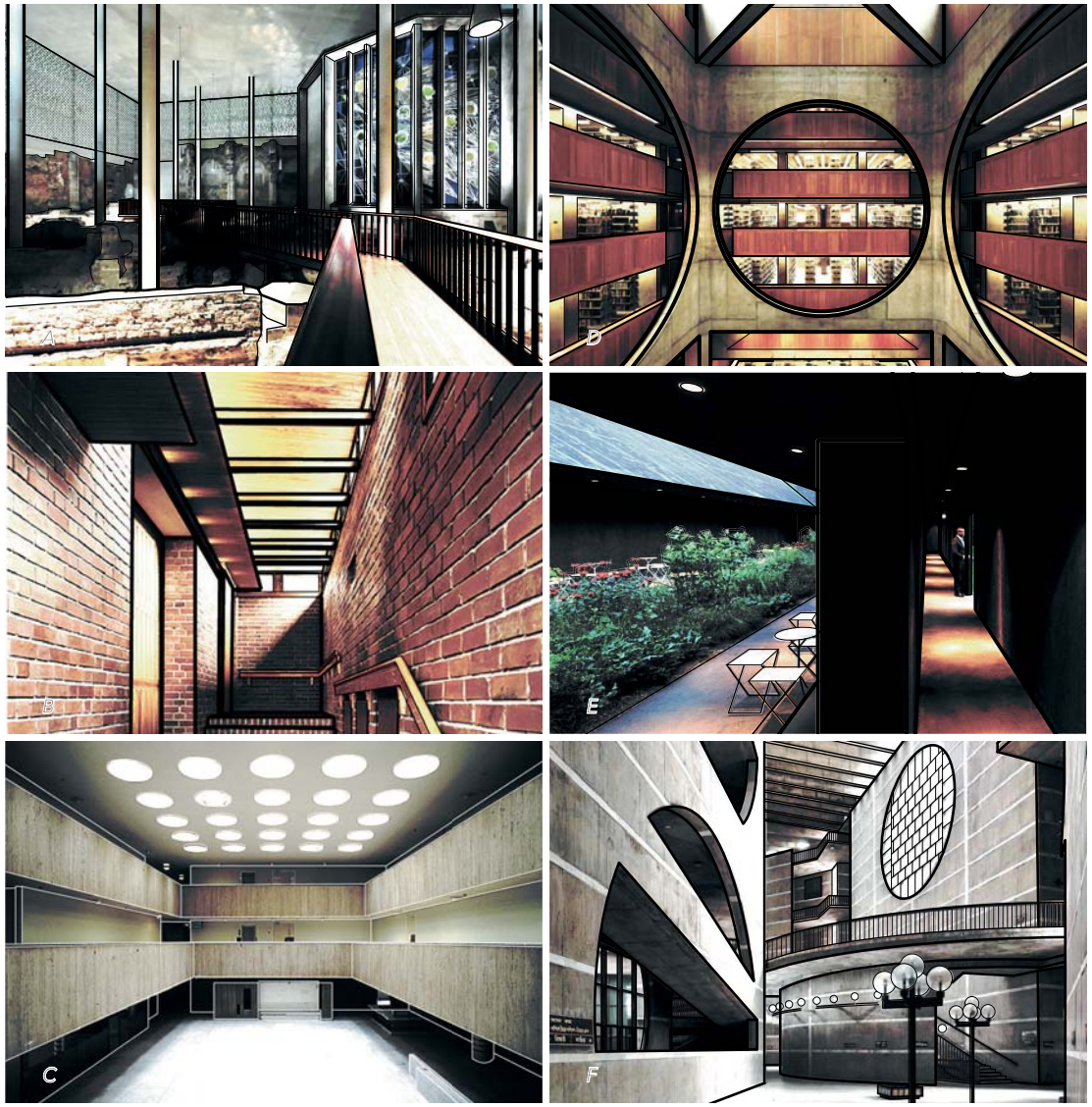
## CHAPTER 5.3 EXPLODED VIEW

The elements could be abstracted and categorized in slabs with different angles or beams with different angles.

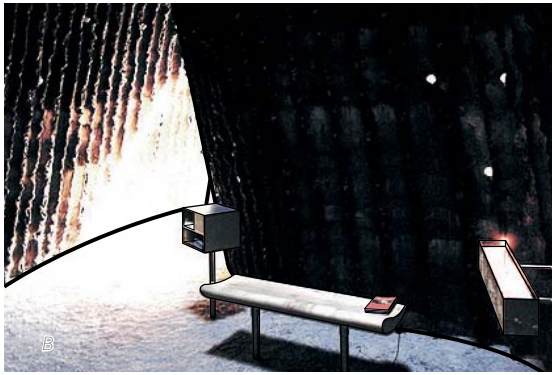
Narrow placement of columns creates less physical transparency than wider placement, but more physical transparency than a wall. This also counts for the vertical slabs, shells and beams. Elements could also be perforated somehow, but with the contribution of other materials the architect has the opportunity to create visible effects, for instance glass for visible transparency.

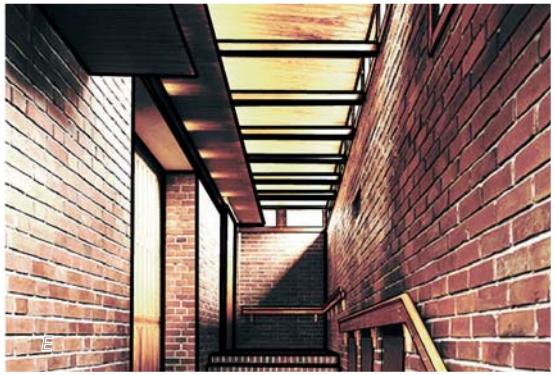
## 5.4.1 ARTIFICIAL LIGHT

Artificial light is an important tool for the architect in order to create a certain 'feeling'. In the first figure (A) we see a project by Peter Zumthor, the Kolumba Art Museum in Cologne. In order to accentuate the roughness and dilapidated of the ruins he placed hanging spotlights (very low) in the space. This illuminates the ruins strongly, but also creates a dark shade. Alvar Aalto uses artificial light in his design for the town hall in Saynatsalo (figure B) in order to create distances between different materials. From the upper right corner there is lots of natural light, which mainly enlights the space. But the darkest corner (because of this natural light) is the upper left corner. By placing some spots there it provides a counterbalance in terms of light. Another interesting use of artificial light is the Serpentine Gallery Pavilion by Peter Zumthor. He uses artificial light (in the corridor) in order to reduce the space by feeling. The corridor is in fact almost nearly twice the height of the canopy at the courtyard. But by placing the same spots at the same height, he creates a uniformly feeling.









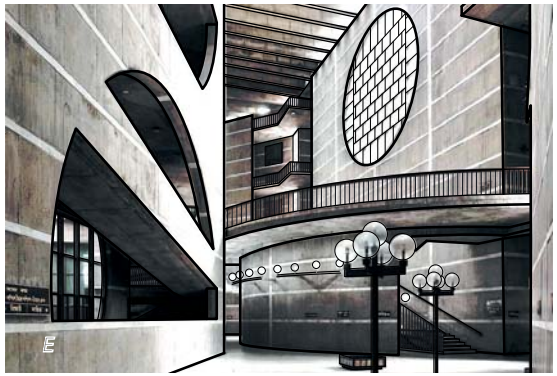

## 5.4.2 NATURAL LIGHT

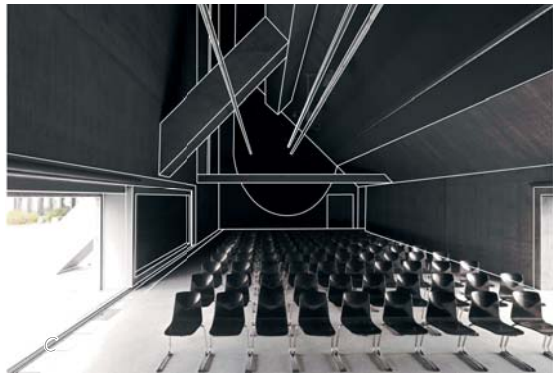
Besides artificial light, natural light can also play a very important role in the creation of a certain atmosphere. First of all we need natural light for our biological clock. People feel much better if they have a feeling of time. But natural light can be applied in many ways, in most of these projects the natural light comes indirectly into the space. The source of the light (the environment outside the building) is not visible from the inside. An example of a project where the source is visible is the 'Great Bamboo Wall' by Kengo Kuma. It provides a direct link with the surrounding landscape. You can say that it brings the atmosphere of the surrounding environment into of the space. The spaces in the projects where the source is not visible creates an new atmosphere, isolated from the surrounding environment. In that case, the light can be used to accentuate an entrance (figure A and B) or to show that there are no more floors above the space (figure D and E). In the town hall in Saynatsalo (figure E) the natural light lights up the wooden roof, in order to decrease the weight of the roof. It feels like a space without a roof, which gives a very open feeling, while the space actually is very much enclosed.

## 5.4.3 SHADOW

Shadow (off course created by light), provides more dynamism to the space. It can accentuate the roughness of materials (figure D), strengthen the depth of the space (figure C) or dramatize the materials/objects like the ruins in the Kolumba Art Museum (figure B).

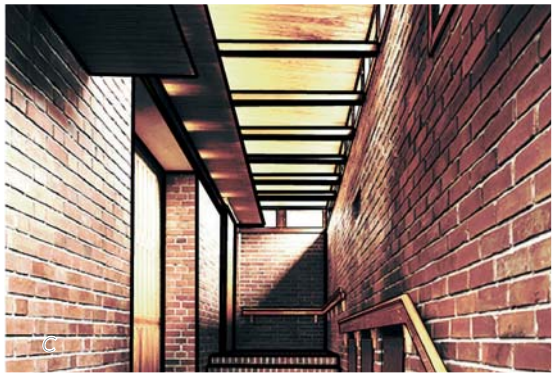








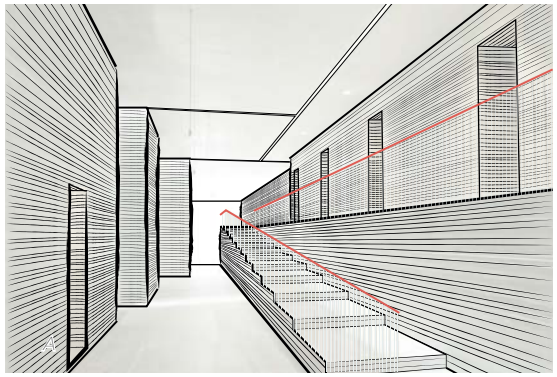
## 5.4.4 COLOR

The temperature color of light (which means warm or cold light) also affects the perception of space. Normally the color is determined by the light outsite the space. On a sunny day, the color is warm (yellow/red), while on a cloudy winter day the color is cold (white). So normally it (mainly) depents on the wether outside. But the architecture has also influence on the color of the space. Especially when the light falls into the space indirectly (through the reflection on a material). This is clearly visible in the town hall of Saynatsalo. The warm color of the wood (and bricks) reflect the light and makes it warmer. So even on a cloudy day with cold light outside, the space would give the feeling of a warm day.

## 5.5.1 DIRECTION

In most of the projects the (structure of the) materialisation is used in order to create direction (and in that way accentuate movement) inside the spaces.

For example the stones in Therme Vals by Peter Zumthor (see figure A). They accentuate the concept of carved rock, but this layering also triggers the horizontal movement by the horizontal lines in the stone walls which are situated at the 'outside' of the (what appears to be) volumes. Another great example is the Bruder-Klaus-Kapelle (figure B) by Zumthor. These vertical lines in the concrete walls (created by a formwork of wooden trunks) point upwards towards a small opening in the roof. And because of the fact that the lines are vertical instead of horizontal, the space looks smaller (and in that way more inimate). They now accentuate the small opening above instead of the broader space below. But the opposite is also possible. In 'Noh Stage in the Forest' by Kengo Kuma (figure C), the length of the space is accentuated because of the lines in the pattern in the floor. They pull you, so to speak, inwards. Furthermore the positioning (or formation) of materials can emphase the different components of a space (and by that the movement). As you can see in the Saynatsalo Town Hall (figure F) they used mostly bricks as material. But because of the different way of positioning the bricks they mark the different components.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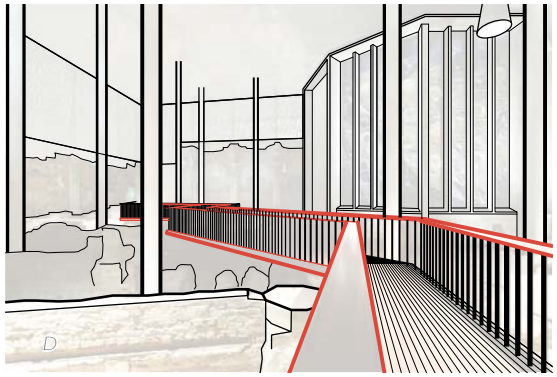
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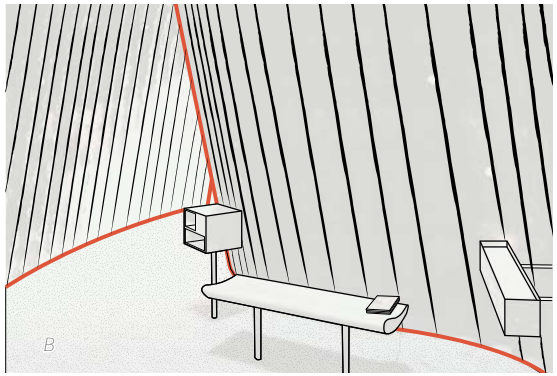
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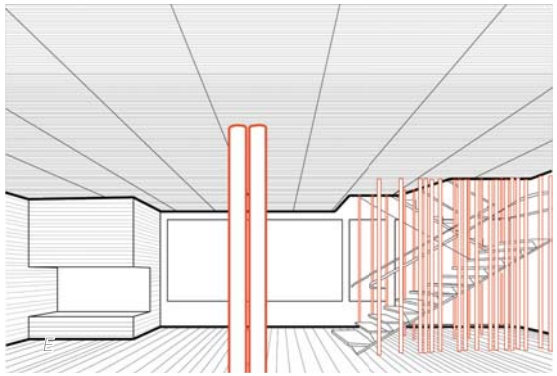
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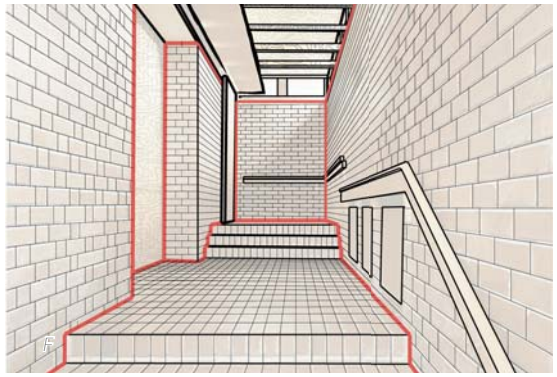
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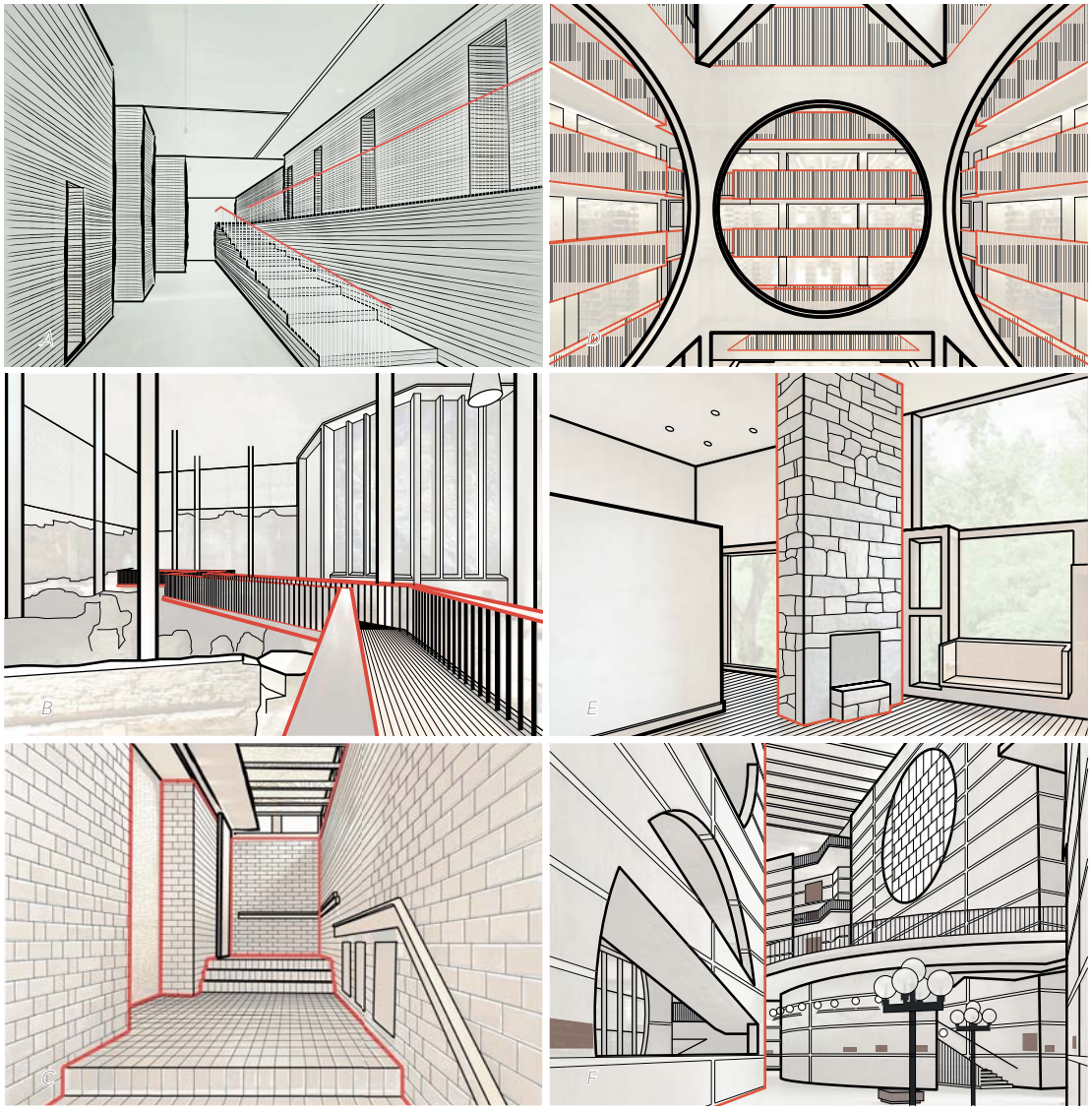



## 5.5.2 WEIGHT

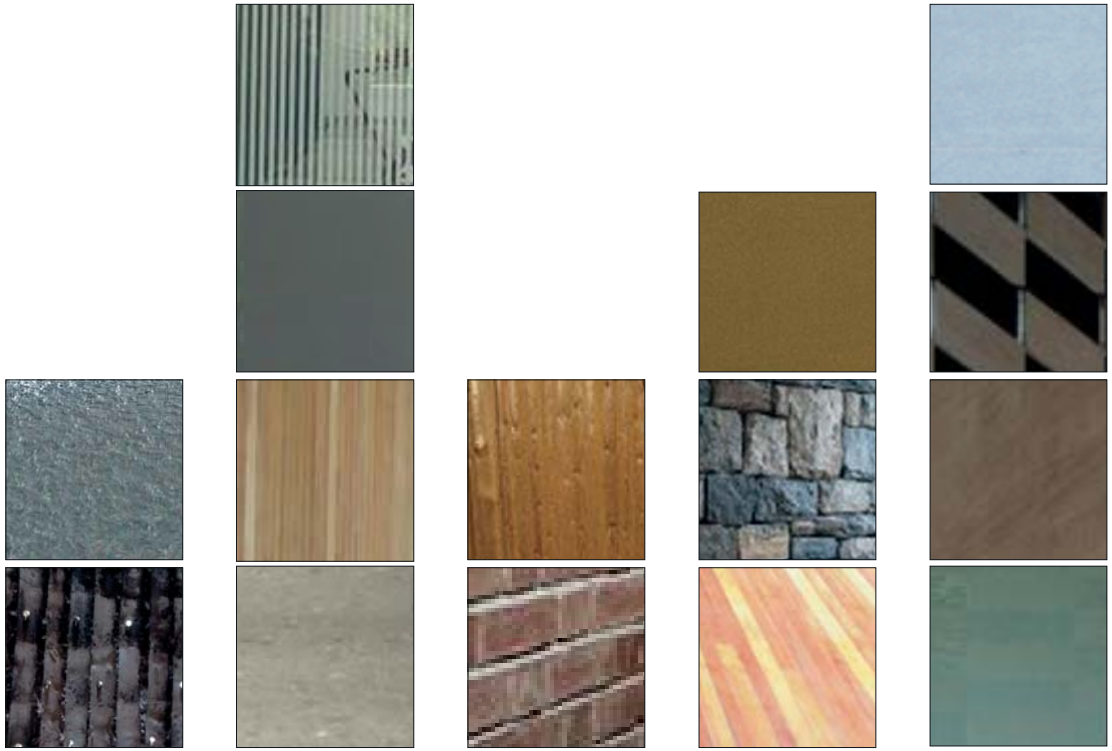
Materials also plays a major role in the 'weight' of components or objects. They can, for example, give much more weight to an object by using a 'heavy' material, like stone or concrete. An example of this can be seen in the Fisher House by Louis Kahn (see figure E). The fireplace is more than just a simple object, it looks like a heavy component in the space, beause of it's materialization. The roughness and choice of material give it a significant role in the space. Compared to the smooth and soft (other used) materials this one stands out.

In the Philip Exeter Academy Library he used the same contrast in materials (figure D). The concrete frame makes the hall to a large anonymous space, while the use of wood provides a much more intimate feeling in the rooms behind.

The House of the Nation in Bangladesh (also by the hand of Louis Kahn) needed a different approach. In order to exude authority, the architect used a cold tough material (concrete) without using soft warm materials (for example wood) for the contrast. This creates (along with the size of the space) a distance between the visitor and the building.

## 5.6.1 TEXTURE

The texture is one of the most important aspects which influence the atmosphere of spaces. Most of the foregoing paragraphs have a direct link with the texture (The paragraphs of light, elements, materialization and even the scale).
With the texture you create all kinds of feelings. Outdoor/indoor, natural/synthetic, dynamic/static, warm/cold, public/private etc. So the choice for materials (with it's texture) is very important. And further on, the combination of materials is significant for the space. Combining cold materials (like concrete) with warm materials (like wood) can distinguish different types of spaces, like what happend at the Philip Exeter Academy Library by Louis Kahn. The concrete is used mainly in the big open spaces, while the wood indicate the more private workspaces.



BRUDER KLAUS KAPELLE

ANDO HIROSHIGE MUSEUM

SAYNATSALO TOWN HALL

FISHER HOUSE

LOTUS HOUSE

VILLA MAIREA

PHILIP EXETER LIBRARY

PLANTAHOF AUDITORIUM

HOUSE OF THE NATION

# INDIVIDUAL EVALUATION

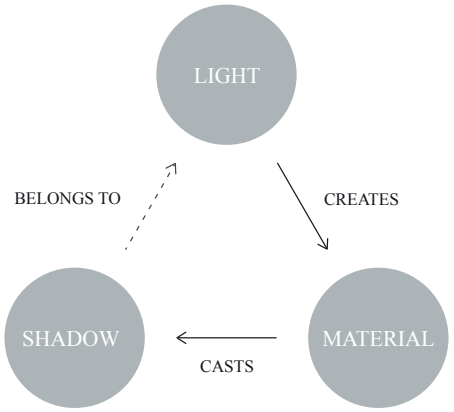
Mentioned in the third chapter (Methodology), the quantitative research is about the 'seeing' aspect of sensory perception. To understand why we feel the 'wow' when we see (a picture of) a space which touches us. Why does one space feels like home and exudes the other authority and distance? In order to answers these questions we have to look back at our research goal, namely "to find tools for our design projects in order to create a certain atmosphere". Or in other words, having control over the (to be created) atmosphere with the use of (architectural) tools. The usefulness of this individual evaluation is to find the ***tools*** which I can use in my graduation projects while being aware of their impact on the atmosphere.

As a starting point for this research, we used the nine points/aspects to generate a certain atmosphere by Peter Zumthor. With the exception of the third aspects, the sound of space, all aspects were covered in this research.

## PRELIMINARY COGNITION

In order to understand more about the nine aspects and their mutual relation I will first elaborate it by some cognition of Louis Kahn which I noticed. Actually almost all the aspacts that occur in the quantitative research has a direct link to light. Louis Kahn describes it as follows: "All material in nature, the mountains and the streams and the air and we, are ***made of Light*** which has been spent..", and he continues: ".. and this crumpled mass called material casts a shadow, and the shadow belongs to Light" (T. Schielke, 2013, "Light Matters: Louis Kahn and the Power of Shadow"). So actually what he tries to say is:

"***Light*** creates ***material***, casts ***shadow***, belongs to ***light***.."




*"The significance of light"* (drawn by the author)

So Louis I. Kahn states that shadow is in reciprocal relation with light. In fact, light elucidates the level of darkness. He says: "A plan of a building should be read like a harmony of spaces in light. Even a space intended to be dark should have just enough light from some mysterious opening to tell us how dark it really is. Each space must be defined by its structure and the character of its natural light." (T. Schielke, 2013, "Light Matters: Louis Kahn and the Power of Shadow")

What I'm trying to emphasize is the importance of light in architecture. It has an direct link to almost all the aspects which influence the atmosphere. Only the sound, smell and touch of spaces are independent from the light, but that's not addressed in the quantitative research, because it is focussed on the 'seeing'.

## NINE ASPECTS

Consisting the ***Body of Architecture***, I noticed the importance of elements in a space. Showing the construction of a building gives a feeling of understanding the space. You (figurely) know where you stand in the building. It gives a kind of calmness if you knows how a building is constructed, it extracts the tension.
In ***Material Compability*** we focussed on three items, namely the 'direction', 'weight' and 'texture'. All these items are of great importance consisting the experience of the space. With the direction, the architect can guide people through his building, while the weight of material indicates the wether an object is an major element or just an addition to the space.
The color of light is determined not only by the wether, but also by materials. In ***The Temperature of a Space***, we see that materials play a major role in the thermal experience of light. Materials can make a space appear warm, while the actual temperature is much colder.
The ***Surrounding Objects*** of a space, which includes the 'infill', is actually not architecture at all. Defined as 'moveable objects' it is competely controllable by the user.
In the aspect ***Between Composure and***

***Seduction*** we focussed on the movement within a space. I think it's important to be clear about the movement. A clear movement provides a well-defined space and gives a clear response to the activity.

The scale and proportion of spaces are studied in ***Levels of Intimacy***. Conclusions about them is that the proportion is of major importance in order to achieve the right atmosphere. The same applies to the scale; different atmospheres requires different scales.

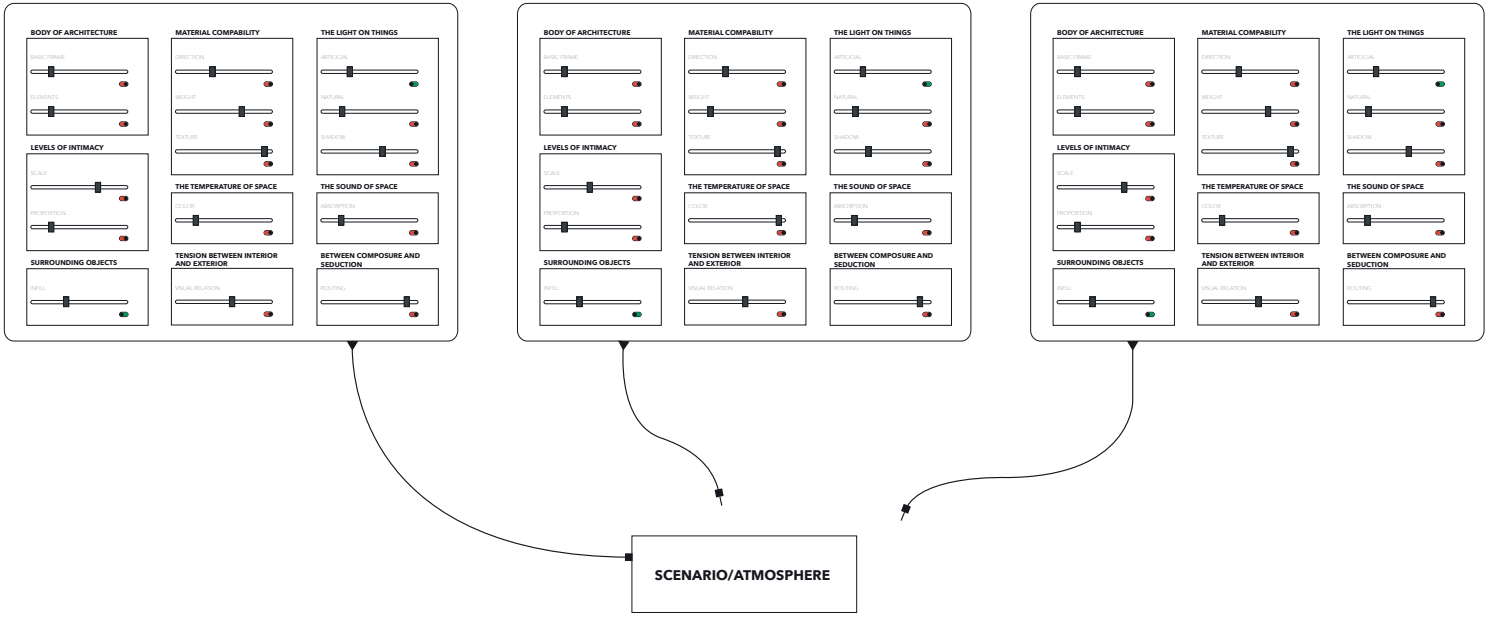
Finally the last aspect, called ***The Light on Things***, which I believe is the most important aspect for the architect to take into account is focussed on artificial light as well as natural light, together with the shadow they create. Light causes the materials to show themselves the way we see them.Different types of light have different effects on the materials and objects. The shadowin turn is a result of the light together with the material/object. Finally, indirect light does the space appear to consist of different individual objects.

## TOOLS FOR THE ARCHITECT

The researched aspects of the quantitative research were branched into different items, for example the 'Basic Frame'. All of these items can be controlled by the architect in order to create a certain scenario (or atmosphere).

I see the atmosphere of a space as a one of the possible scenario's which can be made. This scenario is a combination of the items, or simply said a code. The scenario therefore can be changed. The job of the architect is to create one or multiple scenario(s) for a space.

The user, in turn, is able to change a scenario to a limited degree. Mainly these changes are about the (amount of) light or infill of the space. For my design I want to focus on multiple scenarios for the spaces in the dwelling. In that way the user can change a scenario from one to another.



The conscious designed atmosphere allows the architect to somehow create a space, which could contribute to support the activity of the user and to help them achieve their goal. In most optimal condition, the conscious designed atmosphere should create a "wow-effect", and in order to create this effect, I believe that this atmosphere is gained from the purity of the space. This purity is gained from the combination of several important aspects, which are always in connected.

The main feature in atmosphere is the temperature colour of the space, because this instinctively triggers a certain mind-set of the user, like comfort or discomfort. This temperature can be achieved by the proper configuration of materials and lights, which are subdivided into more detailed aspects.

Next to this temperature of the space is the configuration of the space with certain scale and proportions. The scale and proportions give opportunity to create certain activity and thereby different experiences. Passive or active activities could be linked to the scale of a space, however this does not suggest that this is obligated. The spatial relation with other spaces, either inside or outside could trigger another experience of the space. Inventory and objects are able to contribute activity and experience

The essence of the generation of a certain atmosphere is in the fine-tuning within the combination of these aspects.

Temperature of the space is determinative in order to generate a certain mood or mind-set through atmosphere, the temperature can be influential in light and materials this temperature could be achieved through the use of different materials, cold or warm, reflective or absorptive and the use of different types of light, natural, artificial, sunlight or regular daylight. I believe that cold temperature is indirectly linked to reflection and warm temperature is indirectly linked to absorption.

Light generates different atmospheres on materials, due to absorption, reflection and texture. Natural light changes the atmosphere through time due to different temperatures of the space and different intensity levels of light. Architects are not only able to use natural light generate enough daylight to support a certain activity, but they could emphasize a certain object in space and therefor play with different effects of light. It is also possible to use filtered light, natural light without a visible source creates a soft tone to the space. The opportunity to play with different amount of lights is very interesting, high amount of light allows more observation time due to higher visibility of details and darker spaces or shadow shows les detail, therefor observation time is lower but curiosity could be higher, since not everything is visible. Artificial light allows the designer to create other light effects, for instance with color of light and the temperature of light.

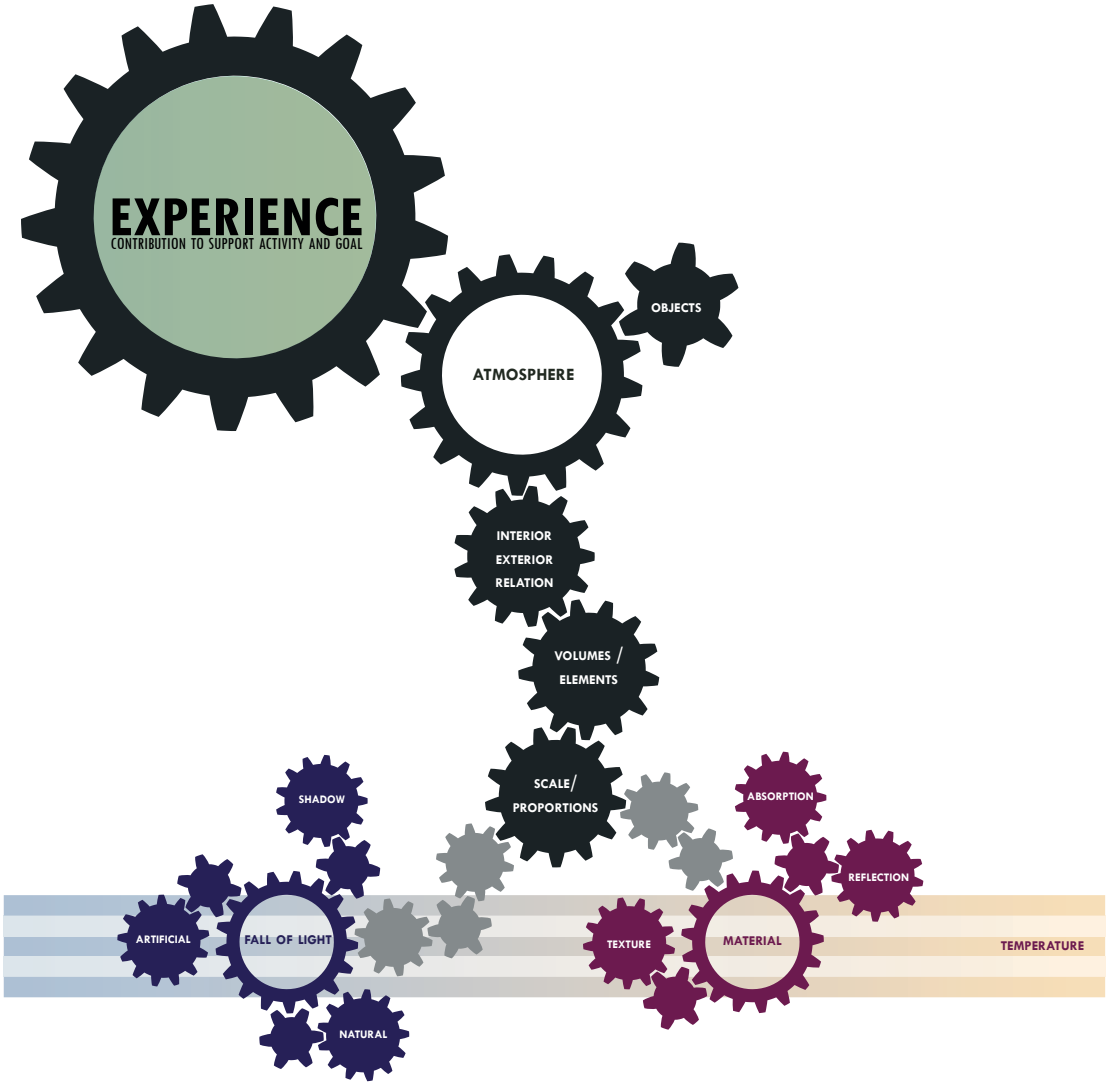
Next to aspects within the fall of light, is materialisation. The materials could absorb or reflect the fall of light in different ways, depending on the texture, softness or roughness of the material. The weight of the material could also support a certain atmosphere; the proper application and combination of materials is also important for a certain experience. Unpleasant spaces could occur when using a certain material in the wrong way, unless this is the goal of the architect.

The addition of certain objects could activate an activity, for instance a bench will allow people to sit, observe. Especially in dwellings, the objects inside the space will determine their activity, however, the objects will contribute to a certain experience, but I believe that they are unable to generate a certain experience by themselves; therefor they can only contribute to a certain atmosphere.

The placement of certain elements inside a space can determine movement inside the space; movement could be guided or could allow meandering. Guided movement is basically designed to travel more efficient from A to B, whereas meandering movement could create a small journey due to slower pace and freedom in movement. Curiosity and discovery are triggered due to absorption and more time to observe when using slower pace.

The scale of a space could support an activity; this could be an active or passive activity for a single person, small group or large group. The level of intimacy is determined by the scale of the space, the smaller the space, the more intimate the character of the space.

To support the activity of the user and their goal is difficult with setting up the appropriate atmosphere, because nobody is controllable. However this is not the goal of this study, the goal of this study on atmosphere is how to design a certain atmosphere to optimize their experience. The diagram shows several stages of relevant aspects in order to generate a certain atmosphere. These aspects however intertwined with each other, so adjusting an aspect will have causes for other aspects. The combination of these aspects could allow the architect to be aware of creating several atmospheres. The ability to create pleasant or unpleasant spaces is difficult, so the architect should think like the user in order to configure the a good atmosphere.



In order to the quantitative research done by photographs, a personal evaluation of the different aspects will be made. According this research we made a selection of aspects which arise from the nine themes of Peter Zumthor. Both the selection of aspects and the nine themes will be evaluated.

The use of the space is related to the atmosphere of the space. This atmospheric experience is based on the general frame which includes the proportions and scale of the space as well as the applied materials with all their properties, openings, elements, relations, light and movement.

One of the nine themes of Peter Zumthor is the body. This theme is divided in basic frame and elements. This basic frame is giving shape to the space, as the aspect is saying, it forms the basis of the space. The frame surrounds the space when the space is meant to be more intimate. When the focus is on the routing different volumes are used to make the user curious, since the view lines do not show the endpoint of the route. And when to focus on the surrounding, the ceiling and the floor will be used as a boundary. This creates an open view outside the designed space.
Another aspect of the body are the elements in the space. Striking is the use of the construction to function as an important element in the space. Those elements are creating different zones within the space as well. In this aspect I think it is important that the used element forms a unity even if it consists different parts. In my opinion it is important to know where the focus need to be within this space, since the body of the space partly determined how the space will be used. The particular use of the space creates a certain atmospheric experience.

The intimacy is hard to measure, therefor the division of this theme consist scale and proportions. Starting with the proportions. In my opinion the most interesting projects are the projects were the proportions are changing within the space. A very interesting project with the change of proportions is the design of Nelson Atkins museum of art of Steven Holl. The space is divided, see section on page 72 figure F, into three different zones. The floor or the ceiling is kept at the same level by transition to the next zone. This project consist a very hard transition between the zones through suddenly change of level. Contrary to this hard transition is the project of Peter Zumthor, Bruder-Klaus-Feldkapelle, this design consist a very fluent transition. Therefor the user is not aware of those different zones only when the person is already in another zone and he or she can compare it.

Continuing with the movement within the space. This movement theme is divided in sub and main routings. Gathered from the quantitative research, the spaces with only a sub route are spaces to stay without direct activity of other users. This space can be more intimate than the spaces with only the main routing, because they are often circulation space and do not need a condition to stay. The combination of those routings are the most interesting spaces since the user has a choice in what to do, continuing with their movement or answering the curiosity feeling and/or stopping for a while. This subroutine can be emphasized by the objects or infill of the spaces, see chapter 4.2, the bench suggest a place to stay.

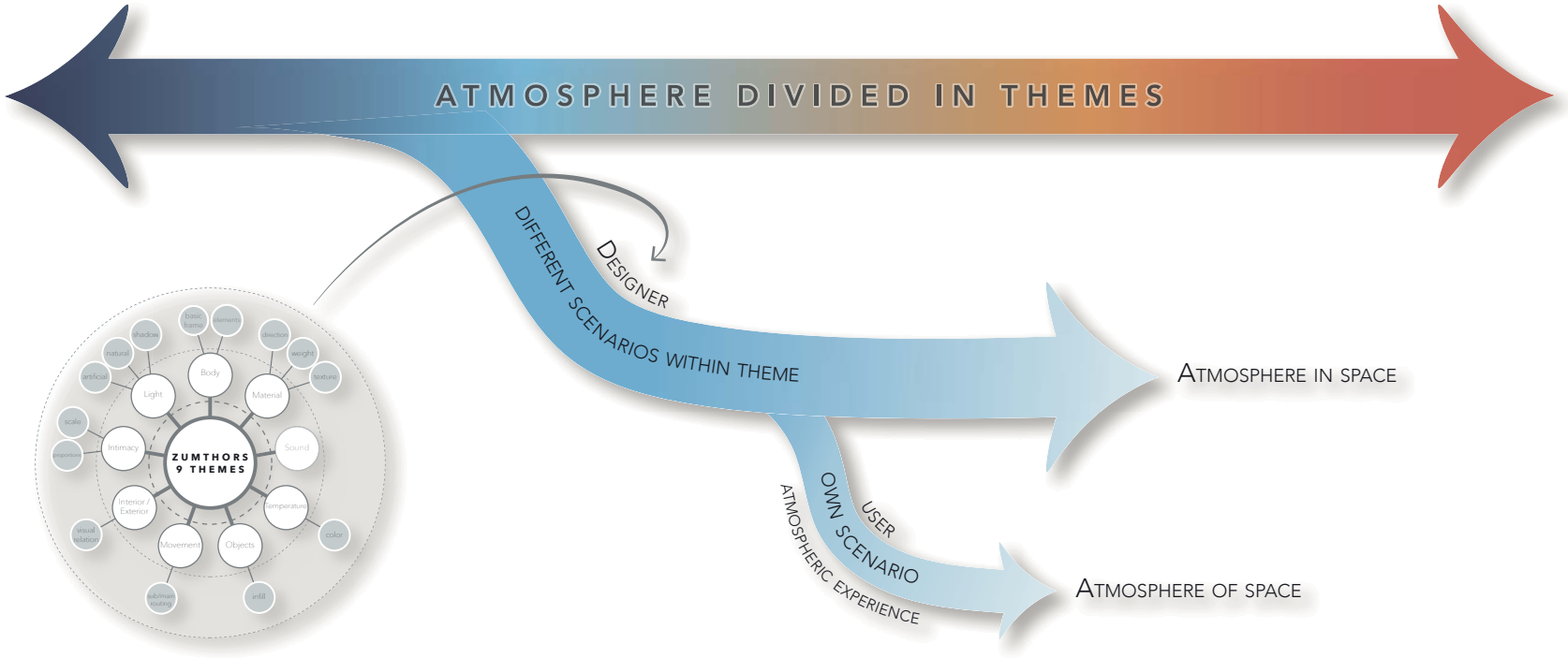
Still it is very difficult to divide the atmosphere theme in different theme and aspects, since they are all related to each other. For me the main themes are the material and the light to create the most of the atmospheric experience.

The combination of material, the texture of material, the color of material (visual temperature of space) and the direction of the material can create so much differences already in for instance the level of intimacy. Using a warm color like red, orange, brown in combination with a soft texture the space feels very intimate and creates a total other experience then using a cold color like blue, grey or white in combination with a very fine texture without any direction included in the material whereby the user is feeling detached from the space. The user is subordinate to the architecture. Of course this depends partly on the scale and proportions as well, but is subordinate to the use of material.

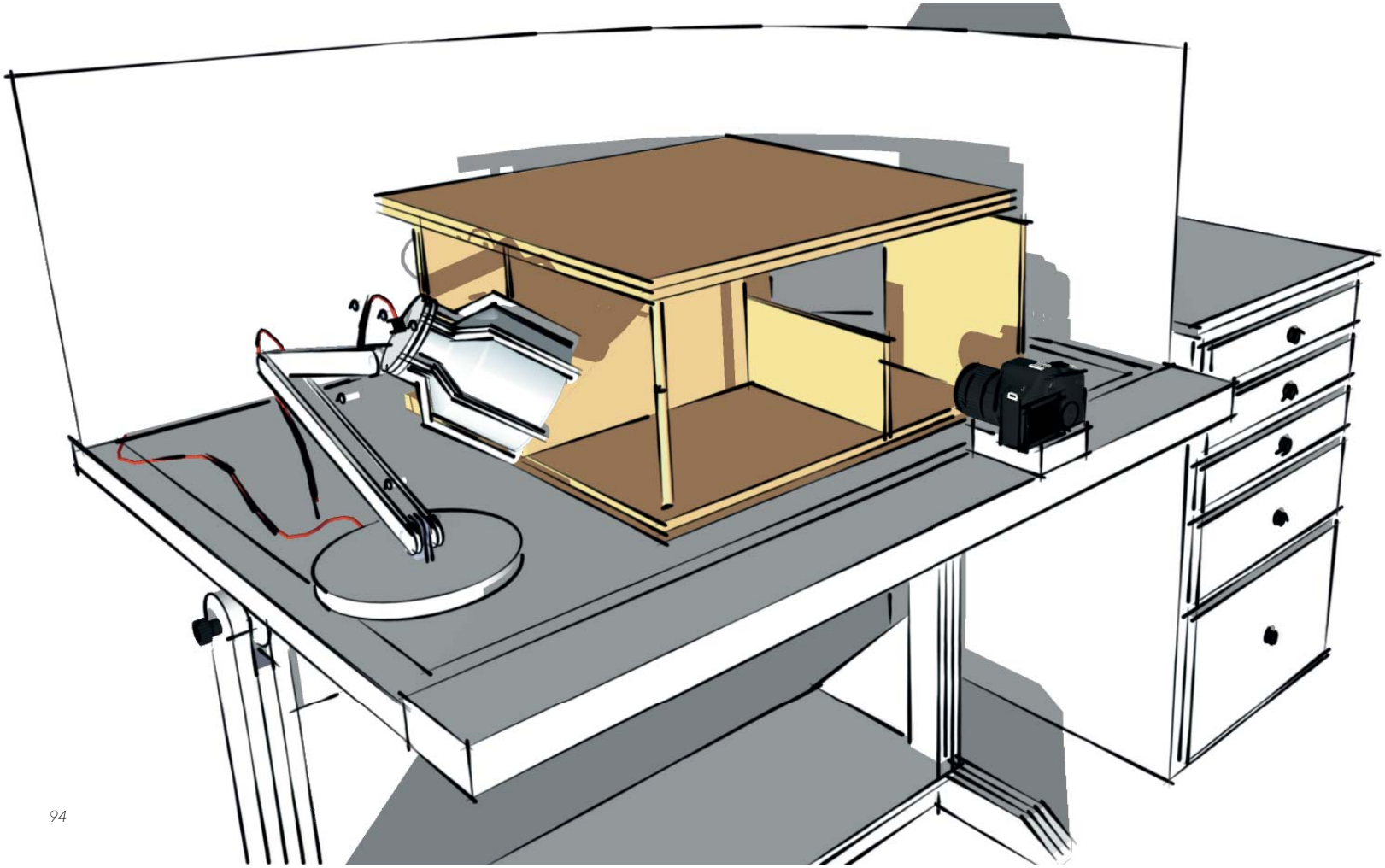
The feeling of intimacy can be arranged by the light too. The light can be made with artificial light and natural light which can create shadow and contrast of light within the space. The use of light can highlight things like elements, material and directions, but it can also be used to enlarge the space. Natural light is in many spaces necessary since the user needs to have an idea of time. Gathered from the quantitative research, if applied

natural light in a project where the source is not directly visible the atmosphere in that space is strengthen by the increase of a mysterious feeling. Followed by the use of shadow or contrast it can provide a reduced space and it both can emphasize the texture of the material.

So, what is atmosphere to me? Atmosphere is the total evoked feelings of a space which can be determined by a designer within certain given boundaries of the experience. Those certain given boundaries are general feelings or types of atmosphere since the designer needs to take into account different future users. The designer creates in various scenarios the atmosphere in the space. This can be created with the combination of particular themes and/or stressed theme(s). In my opinion the main themes, as discussed before, are the light and material theme. The user has their own specific feeling in the space, the atmosphere of space. Every user experiences the space different and need to have, to a certain degree, their own influences to create their scenario.



# RESEARCH BY DESIGN



For the 'research by design' chapter several "atmospherically determined" aspects are being tested.

Fall of light, scale and proportions and materialization of the space is being photographed into a continuous set up.

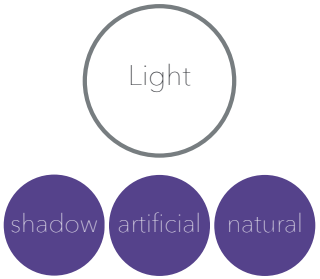
The aspect light is displayed in six different position of the light source, in our case a spotlight. The positions of the light source is divided into a summer and winter simulation. And within, in three different time periods which are representing the morning, afternoon and evening time period. In this way we will test different angles of the light source.

Openings are needed in order to let the light enter the space. For this model we have tested different vertical openings (facades) and horizontal openings (roof slabs). These facades and walls all have different types of openings, these will filter the light in different scenes.

The different roofs are: closed, single strip in the back, double strip, roof with gap, horizontal strips and vertical strips.

The facades are divided into: perforated, horizontal low, horizontal middle, horizontal high stroke, vertical small, vertical wide and often closed.

The aspect materialization is applied in the research just to get an impression of what for influence material has on the space in combination




Positions light:
summer morning, summer afternoon,
summer evening, winter morning,
winter afternoon, winter evening

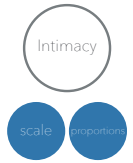
Horizontal openings (roofslabs)
-Closed
- single strip
- double strip
- squared gap
- horizontal strips
- vertical strips

Vertical openings (facade)
-perforated
-horizontal low,
-horizontal middle
-horizontal high stroke
-vertical small
-vertical wide
-often closed

with a light source. The applied material gives an impression of different textures which can be used. We should emphasize that this aspect is just a setup for further researches. The same applies for the aspect proportion and scale. We just made small differences in width of the space together with the aspect light. The height and depth has not been researched.

In the appendix all the pictures we have made are categorized. These categories are organized in the aspects within the different openings which are applied.

This part is focusing on a few important particularities which are selected by findings during this research by design. The selected photographs are representing the main conclusion of this part.

## SUMMER MORNING
## MIDDLE STROKE

This basic opening is probably the most applied opening. This opening is framing the view to the outside. Depending on the detail of the window frame it can emphasize this frame which can create the importance of the view.

The space itself feels like a box in this picture due to no continuation of floor, ceiling or side walls. Therefore the relation between the space and the outside is weaker.

## SUMMER MORNING
## LOW STROKE

This setup the floor feels extended which creates a stronger relation with the outside. The width of the opening influences this relation as well. The wider the opening the less difference in contrast between light and shadow is visible.

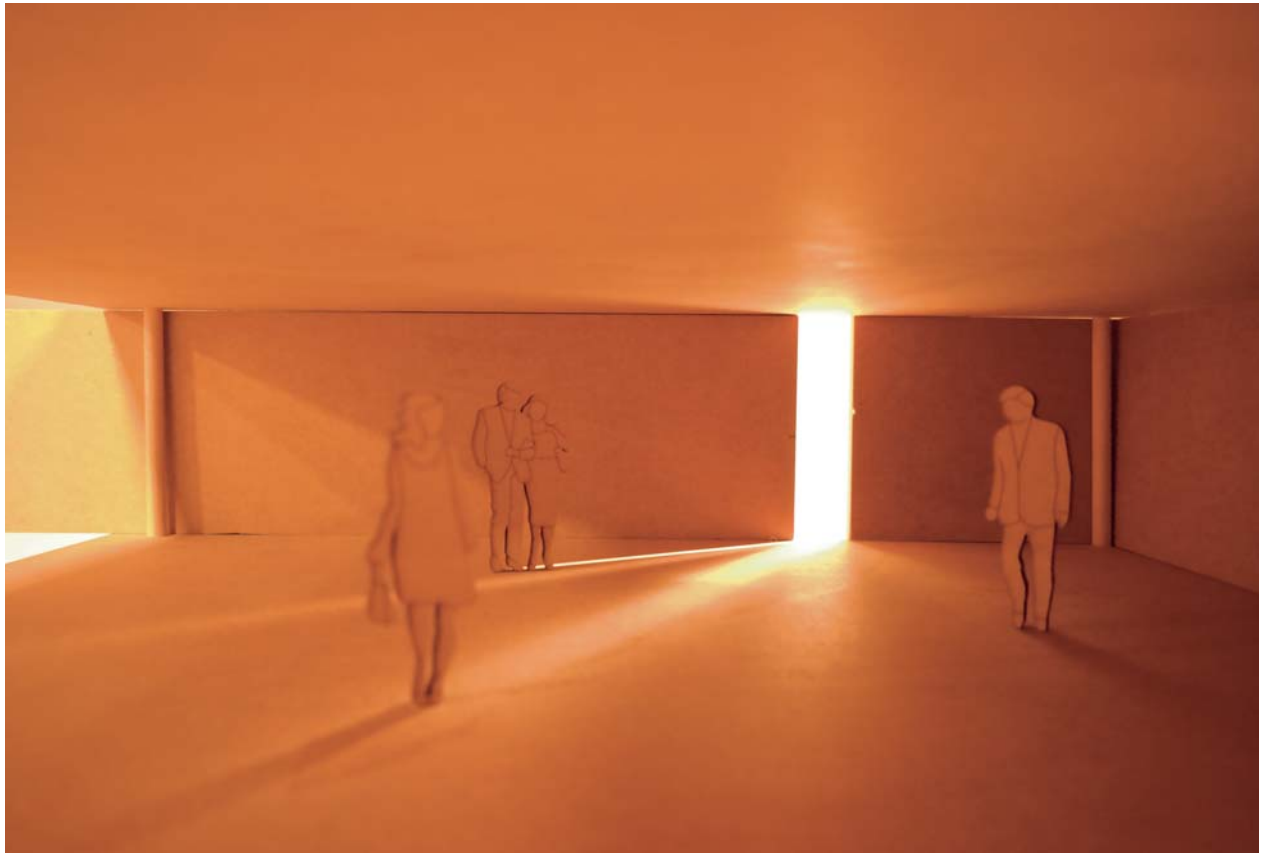
Since the floor is lighted and the ceiling is in shadow the space feels lower and thus more intimate.

## WINTER AFTERNOON
## SMALL STROKE

On this picture the distance between the user of the space and the opening is important. The stroke is too small to have directly a clear view to the outside. Therefor this opening creates a curious feeling by the user.

The small opening also takes care for a great contrast between light and shadow. This contrast can be out of balance if the proportions of the space are too big, so too much shadow. In this case the amount of privacy is huge.

The relation between the outside and the space is almost none.



## SUMMER EVENING PERFORATION

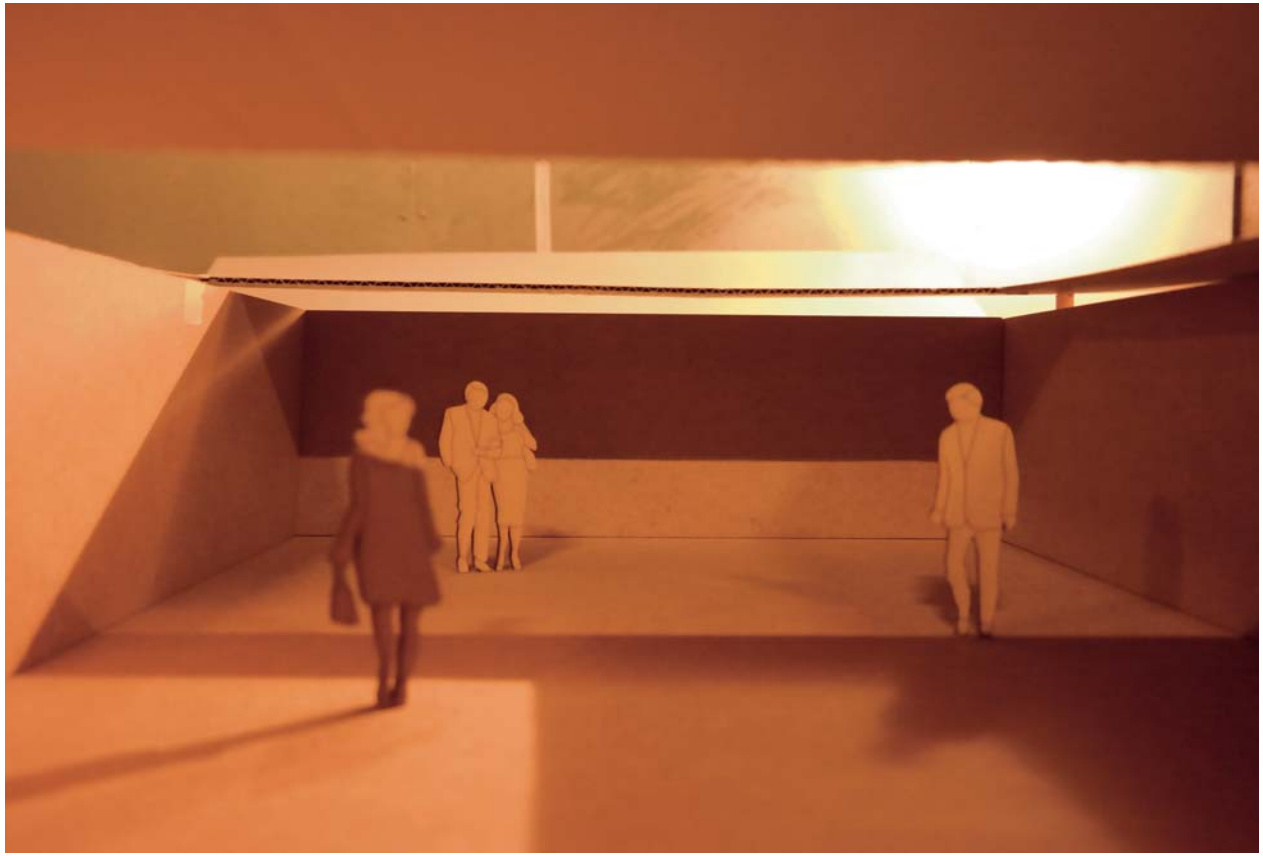
Compared with the picture on the left page the openings are still small, so the distance is still important in this space.

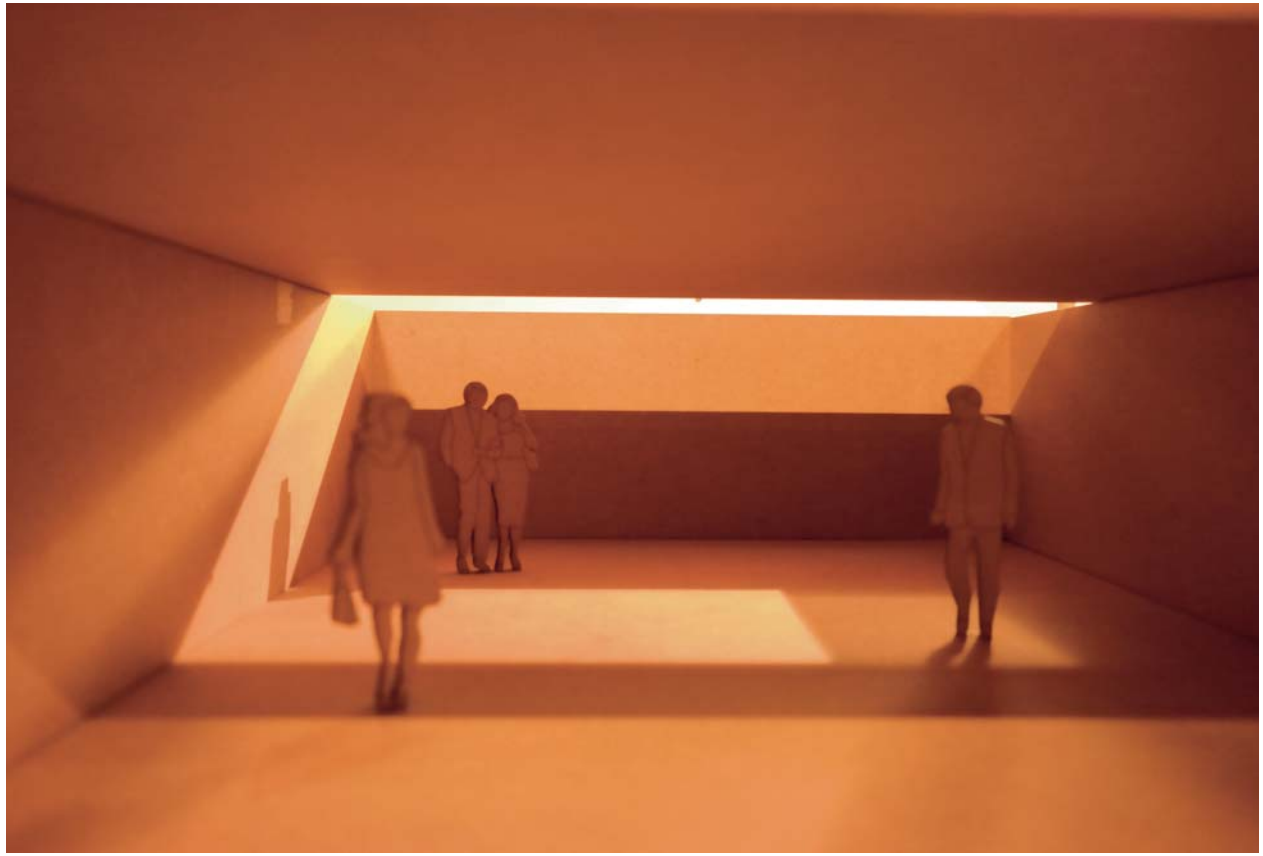
The higher amount of daylight is spread equally in the facade. Despite the small openings the space feels less intimate that the space on the previous page.

## SUMMER AFTERNOON
## OPEN ROOFSLAB

In this situation there are no visual relations toward another space or to the outside. When the opening is closed with a transparent material the space can feel as outside. Of course depends this feeling on the size of the opening in the roof.

The location of the opening is also of great importance since the daylight can emphasize a zone within this space.





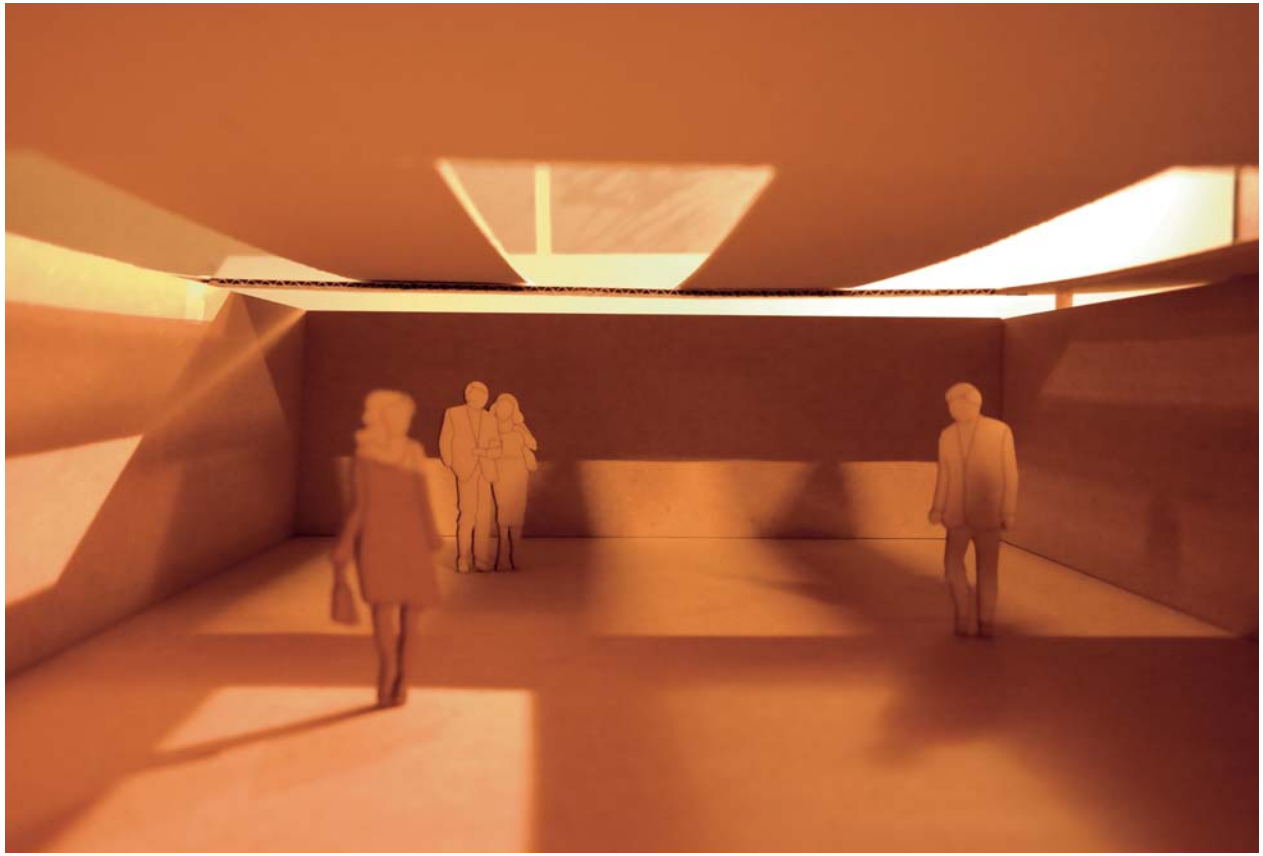
## WINTER AFTERNOON
## LEVITATED ROOFSLAB

The incoming light attracts the user. The light is lightening the facade and the wall as well, therefor the space feels bigger then it actually is.

Similar to the previous page there are no visual relation with the outside, only above. Hence it can feel very oppressive or just very intimate. This feeling depends on the proportions of the space. In this case the space feels intimate since it is not too small.

**WINTER AFTERNOON**
**PARALEL STROKE**
**CLOSED FACADE**

Different openings in the roof creates different zones in the space. Those zones are changing every hour. This creates a lot of different spatial conditions. Hence it is preferable that the space can be used in different ways, a multifunctional space.



## SUMMER EVENING
## PERPENDICULAR STROKE
## SMALL STROKE

In this part we have researched some combinations as well. In this case the combination is made between a stroke in the roof and a vertical stroke in the facade.

Striking are the differences in intensity of the light. The direct sunlight creates a more intense incoming light. In this space there are a lot of zones created only by the aspect of light.

## MATERIAL
## TILES AND WALLPAPER

To research how to apply different material it is hard to apply different material on scale and still to awake the same feeling. Therefore we used one facade with two different openings; transparent material and frosted material and variation in texture of wall and floor.

The incoming light trough the transparent material is less intense then the incoming light trough the frosted material. This because the frosted material consist of a white color which reflects the surface.

## WINTER AFTERNOON
## WOODEN FLOOR
## WALLPAPER

Comparing these two different configurations the floors are creating a different atmosphere in the space by different partitions and color. The glossiness is not referable to the real appearance of the material.

The incoming light through the two openings reflects different on the material. On the left page it feels more as one floor while the picture on the right floor is showing a more fragmented floor. This fragmented floor is creating a more intimate feeling.

**MATERIAL**
**WOODEN FLOOR**
**TEXTURED WALLPAPER**

The last comparison of this part is between two simulations with different material on the wall. The first was has a very rough texture which is visible by the fall of shadow. The second applied material is a reflecting material.

**MATERIAL**
**TILES**
**REFLECTIVE WALL**

On the left page the wall is emphasized by the incoming light. We did not test the difference if we swap the two openings, but we assume that the incoming light was not as far as it is now on the texture wall.

The wall of the right page is, because it is reflecting surface, almost not visible in comparison with the left page. This surface is reflecting the light more towards the inside of the space. This creates the feeling that this space is wider than it actually is.

# CONCLUSIONS

Throughout this research, the aspects (described on p. 21) related to control atmosphere is getting perspicuous. Since controlling atmosphere is difficult due to the non-verbal communication of the sensuality of space. The architect is able to define a certain atmosphere. However this atmosphere could be interpreted differently by various users, due to the personal interpretation on the sensuality of the space.

For the part "research by design", a physical model with the scale 1:20 was used. This model is used to research and design light, proportions and scale, however the fine-tuning of these aspects in combination with materialization was not possible. With the model several configurations could be created, each with a certain configuration of scale, proportions and fall of light. Followed by different applied materials, but these combinations are infinite.

Due to the graduation project of the dwelling studio, this research ought to be linked to the activities inside a dwelling. The grip on atmosphere could therefor be applied on our own dwellings. The activities of the dwelling are similar in other countries and cultures, however, the configuration of the space could be totally different. Therefor a research based on the activities inside a dwelling is necessary to understand why these configurations are different in order to gain more knowledge on atmospheres inside dwellings.

The configurations to create a specific atmospheres are endless, due to the fact that all aspects, related



to control atmosphere, could have different properties. Hence this research should be seen as a base for a further research on atmosphere and other aspects related to atmosphere. In order to get a grip on all aspects within this research of atmosphere, different research methods should be applied and actually be combined to be able to fine-tune that specific space.

# DWELLING ACTIVITIES

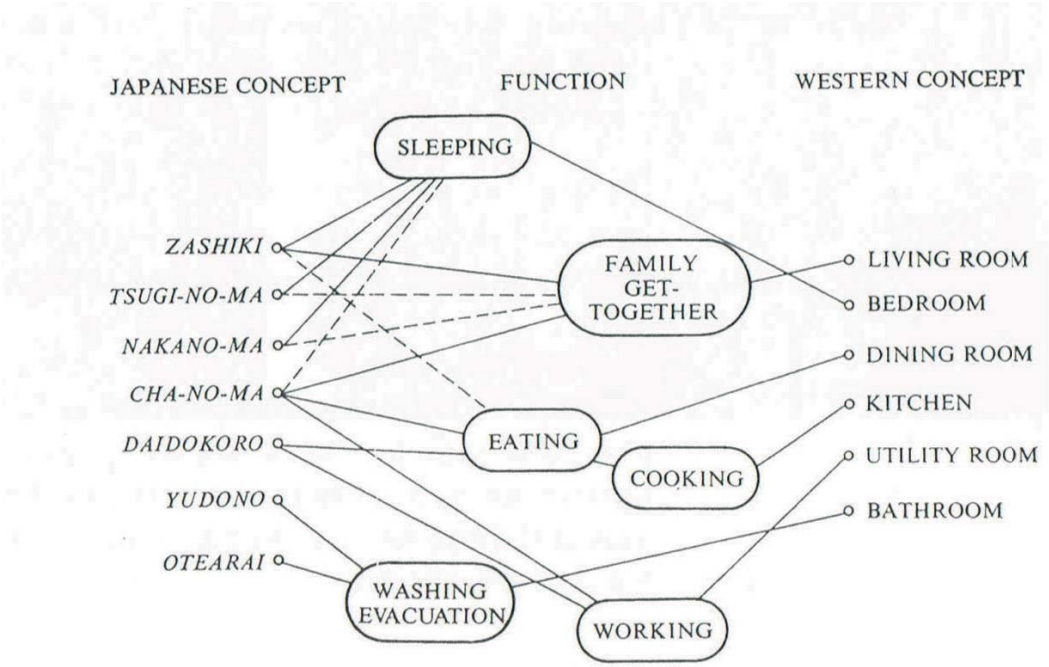
## THE DWELLING

Before we start to design dwellings we must be aware of the different types and interpretations of them. As a general interpretation the dwelling is a kind of shell which creates a separation between the uncertain world outside and the controllable world inside.

The different cultural backgrounds all over the world are resulting in different demands of the organization of this controllable inside world. All these different inside world can all be called dwellings. The dwelling may consist of different compositions like a portable tent, shelter, fixed structure and so on.

So there is an infinite variety of different dwellings partly due to the different climates or ways of life etc. However the social development has a huge impact on the ever-changing requirements of dwellings too. Think about the requirements the dwellers have for their living area outside the dwelling, the size of the dwelling and the technical quality.

According the dictionary a dwelling is 'a building or place or shelter to live in'. So living is the keyword to create a dwelling. Everybody creates their own dwelling by redrawing themselves from the (uncertain) outside world. This appropriation of the dwelling, which can be done by movable objects or activities, is creating the feeling of 'at home'.




*7.1.1*

## DWELLING ACTIVITIES

A dwelling is caused by living and appropriating a particular space. This way of living can be divided in human activities. According to Leupen all these different activities can be categorized by a few basic activities of living like sleeping, being together (with family, friends and so on), eating, cooking, washing and working for almost all different cultures. All these basic activities consist sub activities for instance washing can be divided in clothes, dishes and body. All these activities can be situated in a single space. This is what mainly happens in the Western concept. These spaces are then monofunctional, like the (Western) bedroom for example. In the Japanese concept, most spaces are multifunctional, which means that multiple activities take place in one room. For example the 'Daidokoro' space is used for both eating and working. But besides that, the other way around

also happens in the Japanese concept, one activity which occur in multiple spaces, like for example the activity of 'eating' which take place in both the 'Zashiki' as well as the 'Daidokoro' space (see figure 7.1.1).
These two dwelling concepts have been developed by two different (cultural) views on how to live inside the dwelling. And besides these two concept, there are of course endless dwelling concepts created by cultural differences. But besides the cultural aspect, there are more reasons why people create different dwelling concepts. For example the aspect of climate is also a very essential. It's easy to understand that people in the desert requires different dwelling properties than people who live in Alaska. The properties are mainly in combination with the technical requirements a dweller need. Most inhabitants in the Netherlands are requiring a dwelling which has a adaptable climate.
But besides differences like culture and climate there are also differences created by time. People nowadays requires different dwellings then the people who lived a few centuries ago or even a few decades. This because of the different ways of living (due to social and cultural changes) and contemporary technology which has been improved a lot in the last decades.

## IIVING OF THE 21ST CENTURY

The developments within the society, like the social and the cultural change, demands for a new dwelling typology. The demand for more differentiation of the dwelling is partly due to the individualization and more variants of households.

The usage of the dwelling is increasing, this is partly due to the flexibilisation of the labor market. This means people do not need to go to their work anymore, but they could work at home. Another aspect of the intensification on use of the dwelling is the transition towards the digital age, people are able to be social within a zone of the dwelling, even when they are alone. A great part of their social life occurs on the internet. People do not need to leave their dwelling anymore. They even can do their shopping online. The activities are increasing inside the dwelling instead of outside of the dwelling compared to the 20th century.

This more intensive use of the dwelling demands for different living conditions. For instance the family dwellings are asking for a greater living surface. Common is the demand that every family member requires to have their own zone within the dwelling.

The dwelling of the 20th century is composed by rooms; for instance a bedroom and a living room, while the dwelling of the 21st century needs a completely different approach. According to van der Woude these dwellings demands for zones instead of rooms; the activity decides where the dweller would like to stay instead of the function. These zones can include different scenarios, since the dweller is able to make his or her own choice where to accommodate a particular activity. Van Dorst states that the physical surrounding needs to be flexible in use and adjustable for future conditions.

The challenge for the designer is to create zones which can provide varies of scenarios. These scenarios can be realized by different atmospheres. This research is to understand how scenarios can be created in dwellings by the use of atmospheres.

[2] *'De gebruiker richt zich steeds meer op verblijf in eigen woning, dit creëert woonverblijven.'(Woude, 2012, p. 22)*

[3] *'De mate van sociale interactie en activiteiten in de buitenruimte veranderen in de tijd,*
*hiervoor moet de fysieke omgeving flexibel zijn in het gebruik en voorbereid zijn op*
*aanpassingen in de toekomst. Ontwerp niet alleen een vorm, maar ontwerp ook scenario's.'(Dorst, 2005, p. 310)*

# SOURCES

## 10.1 LITERATURE


Alvar Aalto Foundation. (2005). Alvar Aalto Villa Mairea. Tokyo: TOTO Shuppan.

Böhme, G., Zumthor, P., Pallasmaa, J. (2013). *OASE #91 Building atmosphere*. Rotterdam. nai010 Publishers

Dorst, M. J. v. (2005). Een duurzaam leefbare woonomgeving fysieke voorwaarden voor privacyregulering Online resource. Delft: Eburon.

Ghlringhell, N., Kokufuda, D. (21 march 2012). Retrieved july 2014, 2014, from http://www.archdaily.com/218434/plantahof-auditorium-valerio-olgiati-architect/

Kuma, K. (2012). Kengo Kuma complete works. London: Thames and Hudson.

M&C. (2014). Retrieved 11-7-2014, 2014, from http://www.tudelft.nl/en/study/master-of-science/master-programmes/architecture-urbanism-and-building-sciences/architecture/programme/specialisations/architecture-and-dwelling/

Pallasmaa, J. (2012). *Encounters Vol. 2*. Malcolm . Rakennustieto

Pallasmaa, J. (2012). Understanding architecture a primer on architecture as experience. London: Phaidon.

Reijndorp, A., Kompier, V., Haas, L. d., & Gemeente Rotterdam Dienst Stedebouw en Volkshuisvesting. (1997). Leefstijlen; wonen in de 21e eeuw. Rotterdam: NAi Uitgevers.

Schildt, G. (1978). Sketches Alvar Aalto. Cambridge, Mass.: MIT Press.

Tuukkanen-Beckers, P., & Alvar Aalto Museum. (1994). Alvar Aalto: points of contact. Jyväskylä:

Villa Mairea . (2014). Retrieved july 2014, 2014, from http://www.villamairea.fi/en/villa-mairea/architecture

Alvar Aalto Museum.

Woude, H. v. d. (2012). Community architecture in Nederland. Bussum: Thoth.

Zumthor, P. (2006). *Atmospheres*. Birkhäuser.

Page 4
http://www.pinterest.com/barbarafmt/peter-zumthor/

Page 8
http://hotspa.wordpress.com/2007/04/19/therme-vals/

Page 12
http://www.archreport.com.cn/list-15-16-1.html

Page 14
http://storiesofhouses.blogspot.nl/2006/04/stretto-house-in-dallas-by-steven-holl.html
http://www.biography.com/people/frank-lloyd-wright-9537511
http://www.npr.org/templates/story/story.php?storyId=4531474

Page 15
http://archpaper.com/news/articles.asp?id=5870#.VG9CzvnF8qI
http://artekstore.com/products/alvar-aalto
http://www.tdgimmobilier.ch/larchitecture-archaique-nous-ramene-a-lessentiel.html

Page 18
http://www.labiennalechannel.org/locator.cfm?PageID=3866&contest=1208

Page 23
http://filipamarquesneto.wordpress.com/ms/chapel-zumthor/

Page 26
http://www.pinterest.com/barbarafmt/peter-zumthor/

Page 28
http://www.dearchitect.nl/projecten/2007/12/Wachendorf+Zumthor+Kapel/Wachendorf+-Zumthor+Kapel.html

Page 30
http://www.kolumba.de/?language=eng

Page 32
http://eijimaruta.blogspot.nl/

Page 34
http://europaconcorsi.com/projects/17017-Valerio-Olgiati-The-Yellow-House

Page 36
http://www.cgarchitect.com/2012/06/great-bamboo-wall

Page 38
http://architizer.com/projects/lotus-house/

Page 40
https://www.flickr.com/photos/arhuang/2824033255/

Page 42
http://www.archdaily.com/tag/valerio-olgiati/

Page 44
http://quizlet.com/10661855/arch-final-set-1-flash-cards/

Page 46
http://www.kimzwarts.com/Alvar-Aalto

Page 48
http://www.villamairea.fi/en

Page 50
http://www.kimzwarts.com/Alvar-Aalto

Page 52
http://www.scjohnson.com/en/company/history.aspx

Page 54
http://www.urbantvguide.nl/eerder-op-tv/radio-ole-bouman/

Page 56
http://www.dezeen.com/2011/07/06/serpentine-gallery-pavilion-2011-by-peter-zumthor-photographed-by-hufton-crow/

Page 58
http://www.realtor.com/news/louis-kahn-a-melange-of-the-midcentury-master/

Page 60
http://www.rupho.com/index.php#mi=2&pt=1&pi=10000&s=8&p=0&a=2&at=0

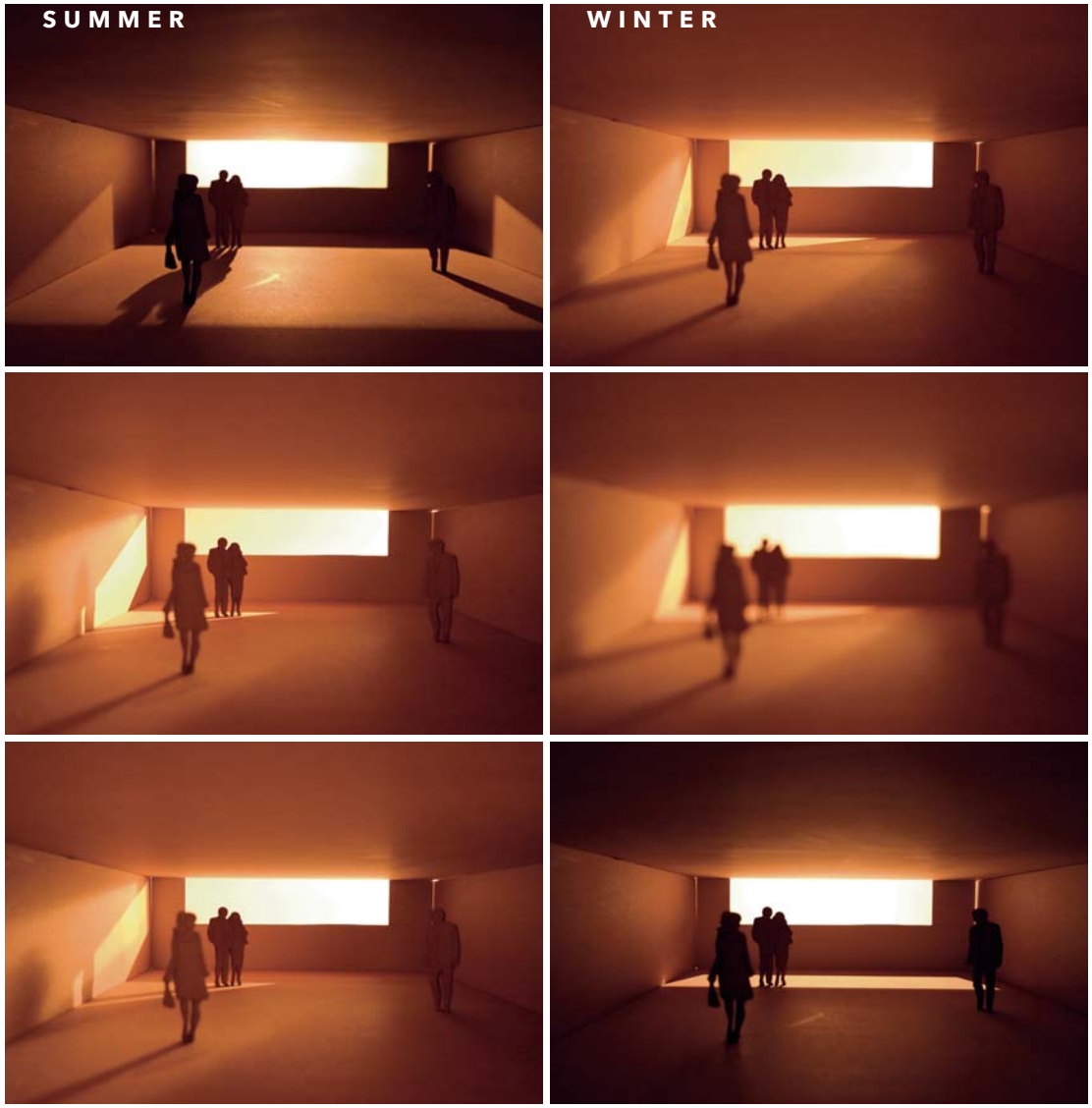
Page 62
http://www.stevenholl.com/project-detail.php?id=19

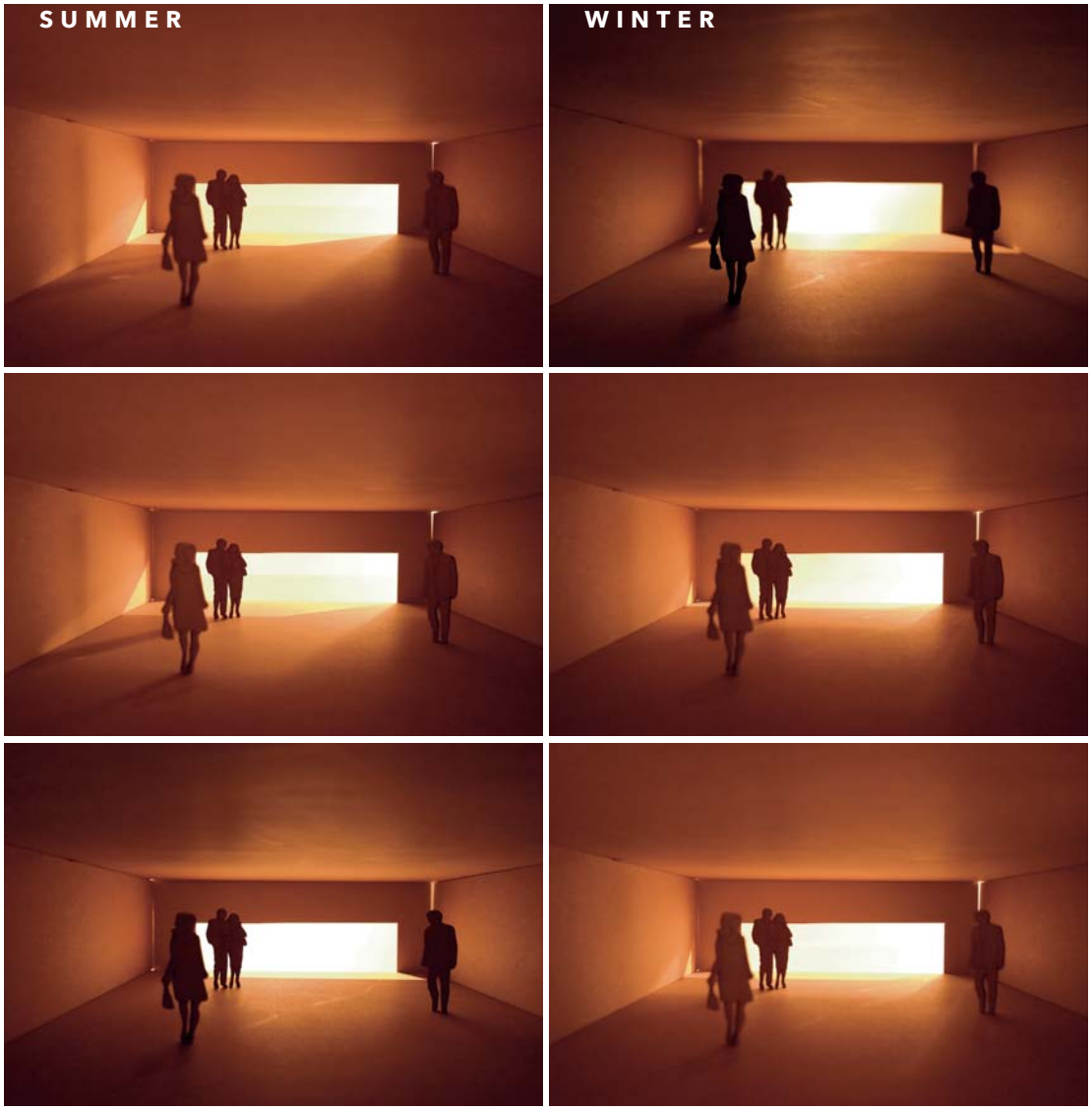
Page 64
http://www.stevenholl.com/project-detail.php?id=41&worldmap=true

Pictures consulted in july and august '14

# APPENDIX

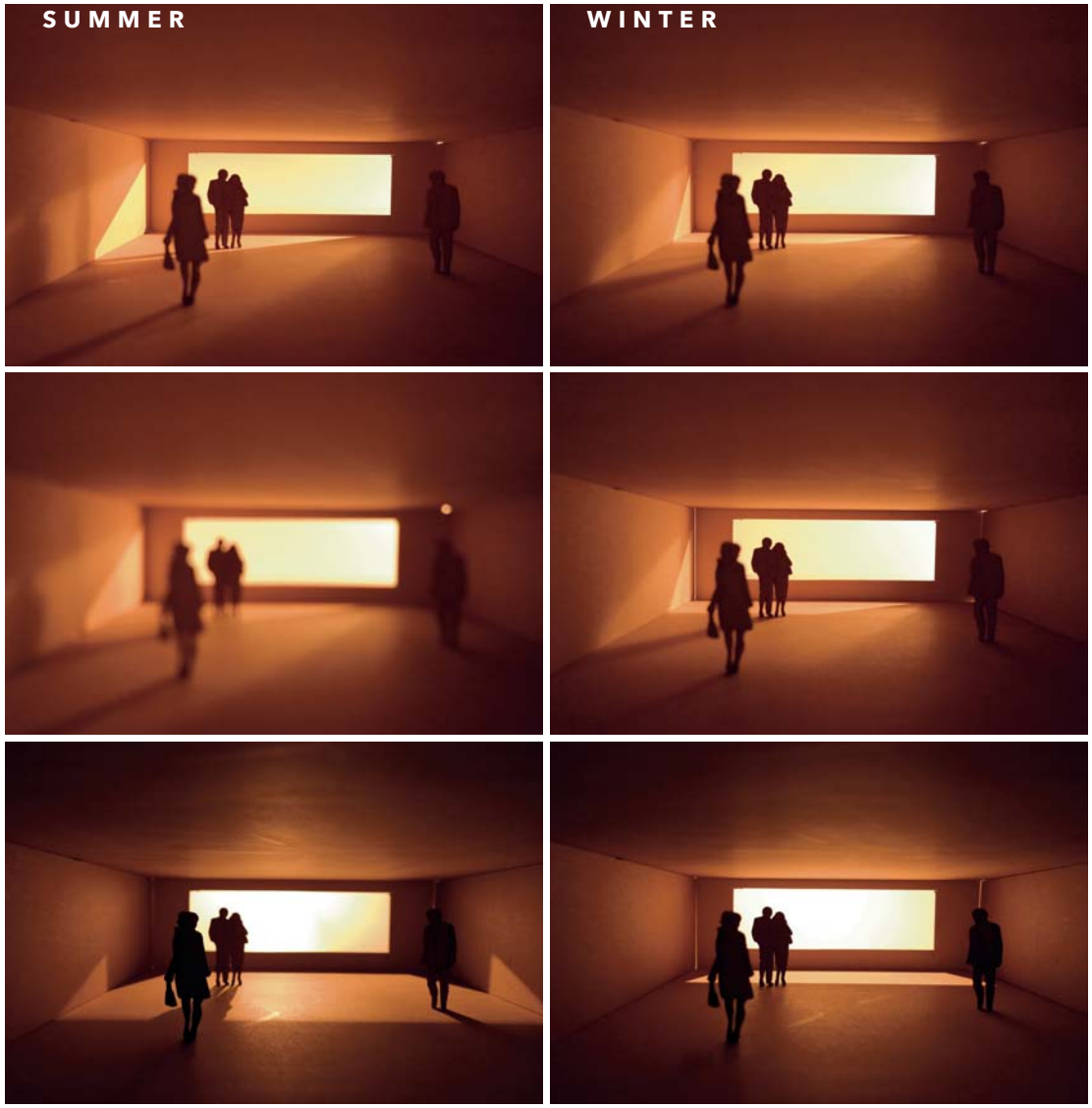
**CLOSED ROOFSLAB**
**HIGH STROKE**

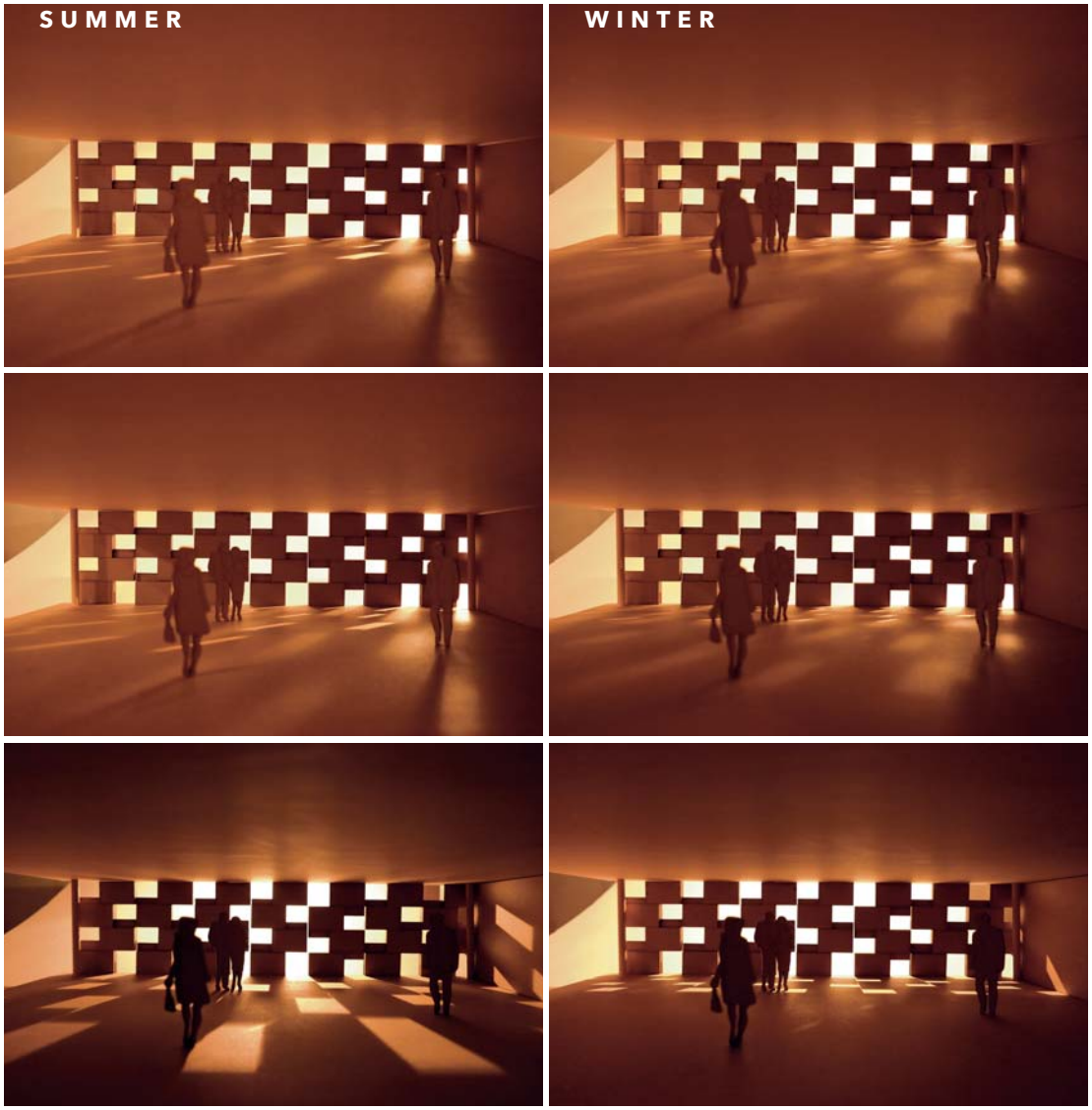





**CLOSED ROOFSLAB**
**LOW STROKE**

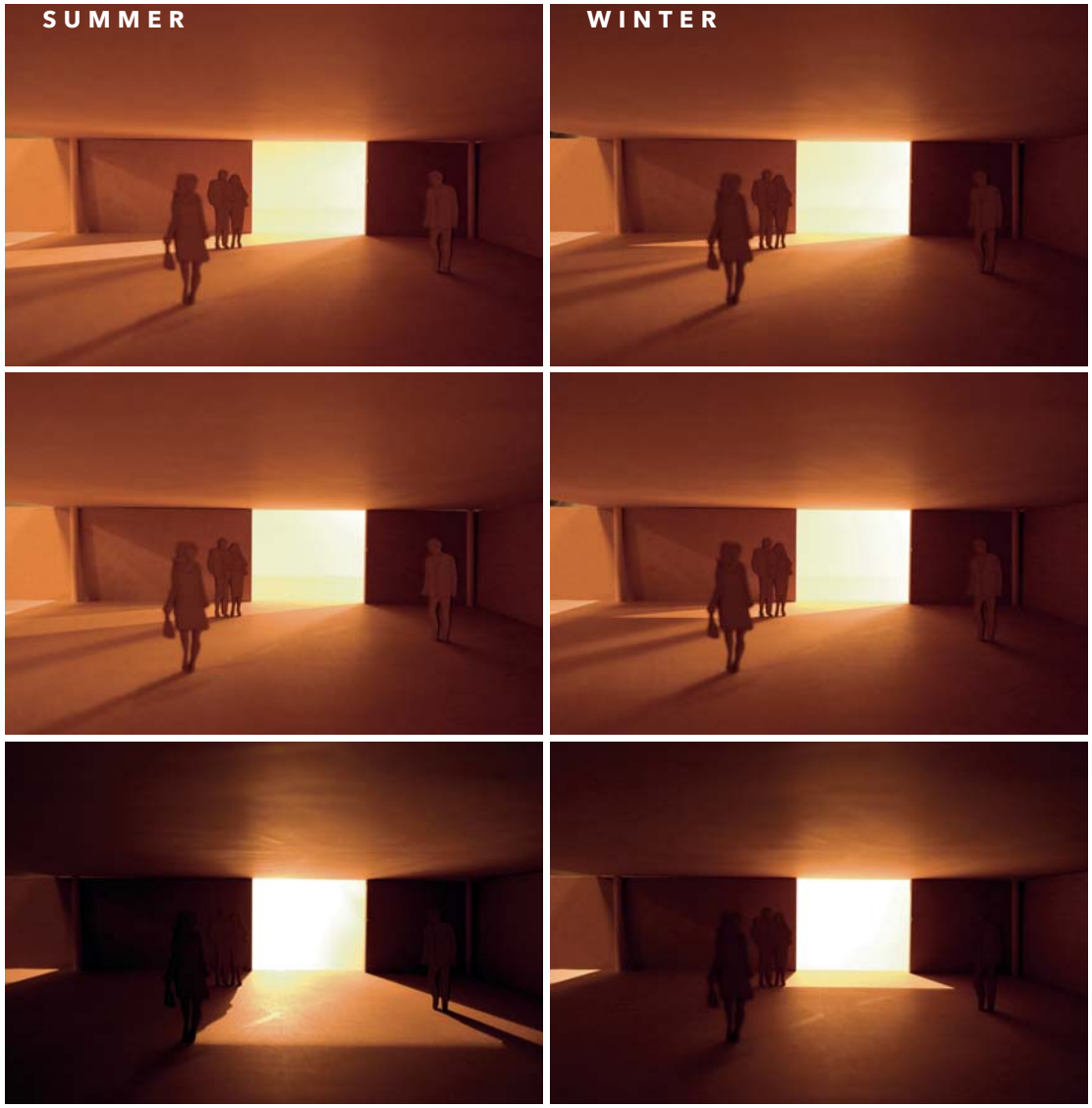
**CLOSED ROOFSLAB**
**MIDDLE STROKE**





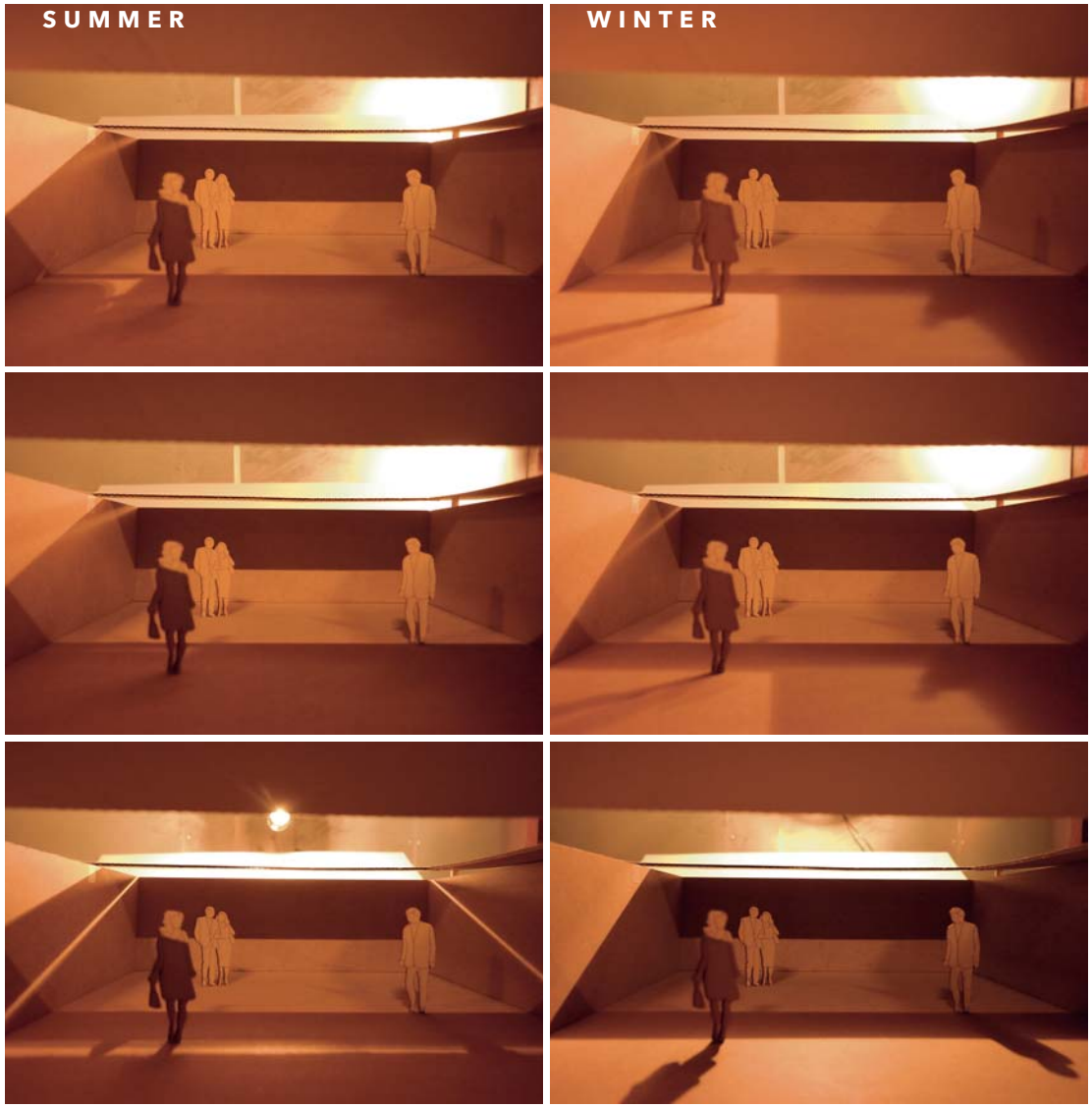

**CLOSED ROOFSLAB**
**PERFORATION**

**CLOSED ROOFSLAB**
**WIDE STROKE**



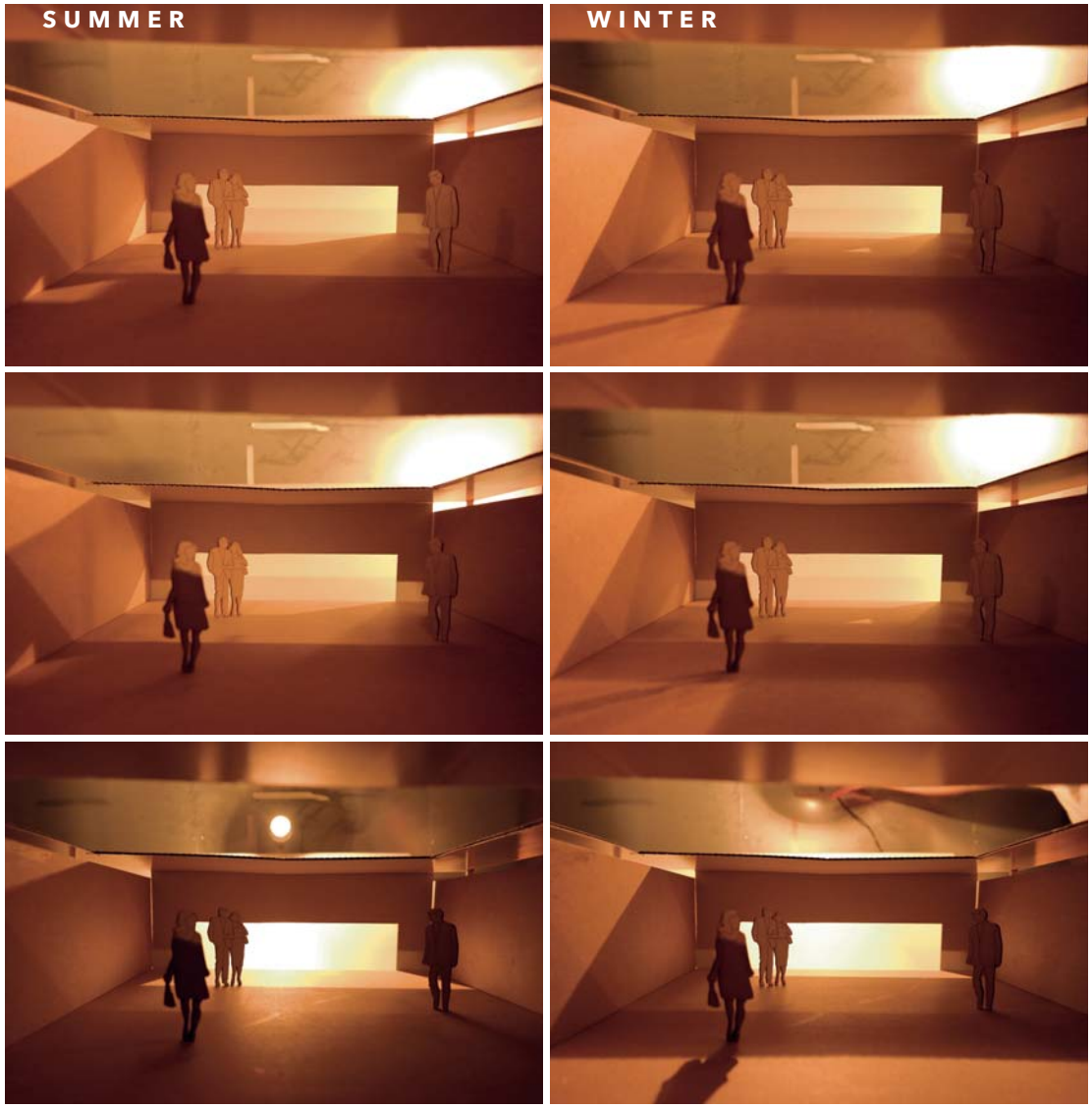

**CLOSED ROOFSLAB**
**SMALL STROKE**

**OPEN ROOFSLAB**
**CLOSED FACADE**



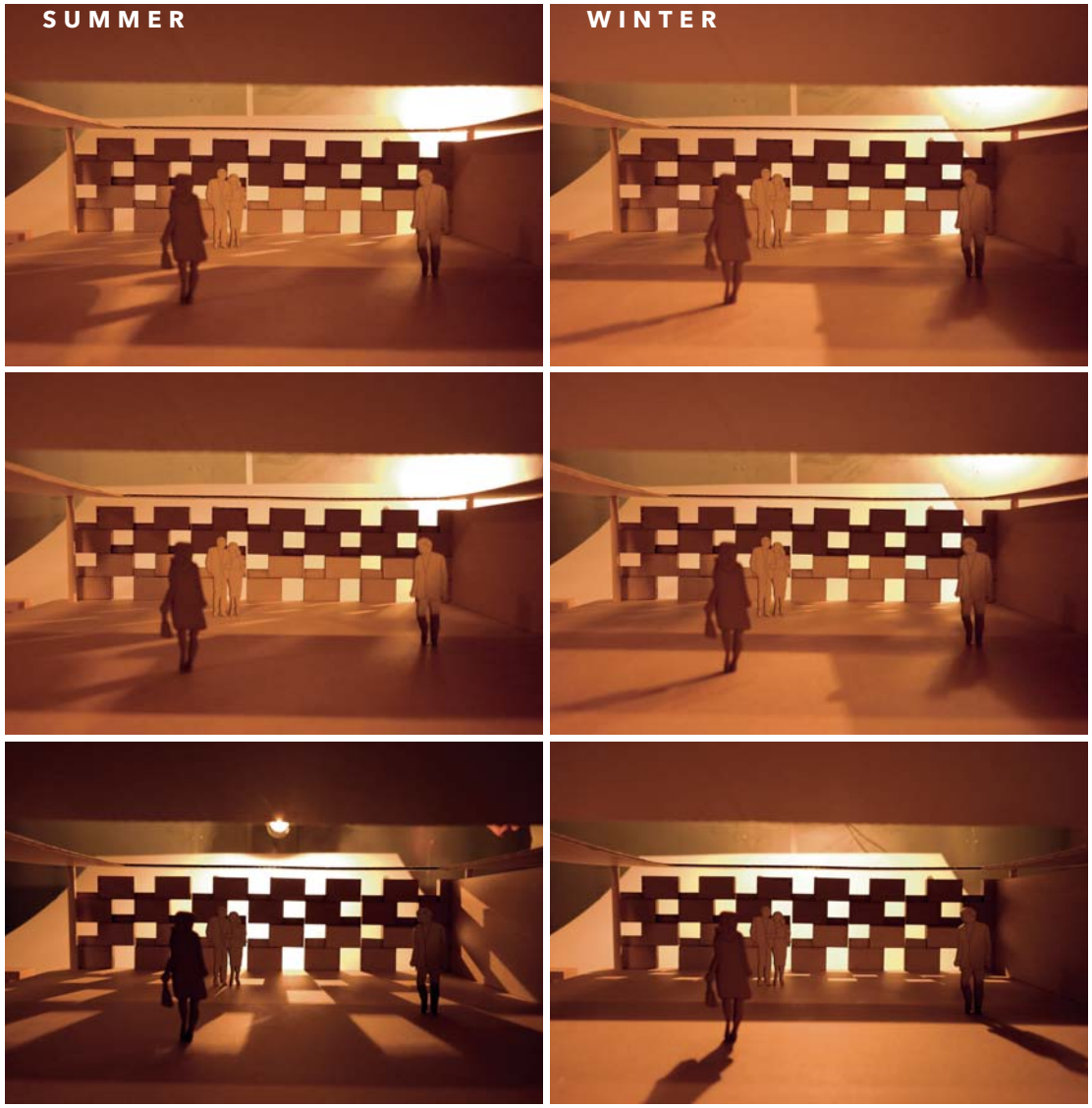

**OPEN ROOFSLAB**
**HIGH STROKE**

**OPEN ROOFSLAB**
**LOW STROKE**



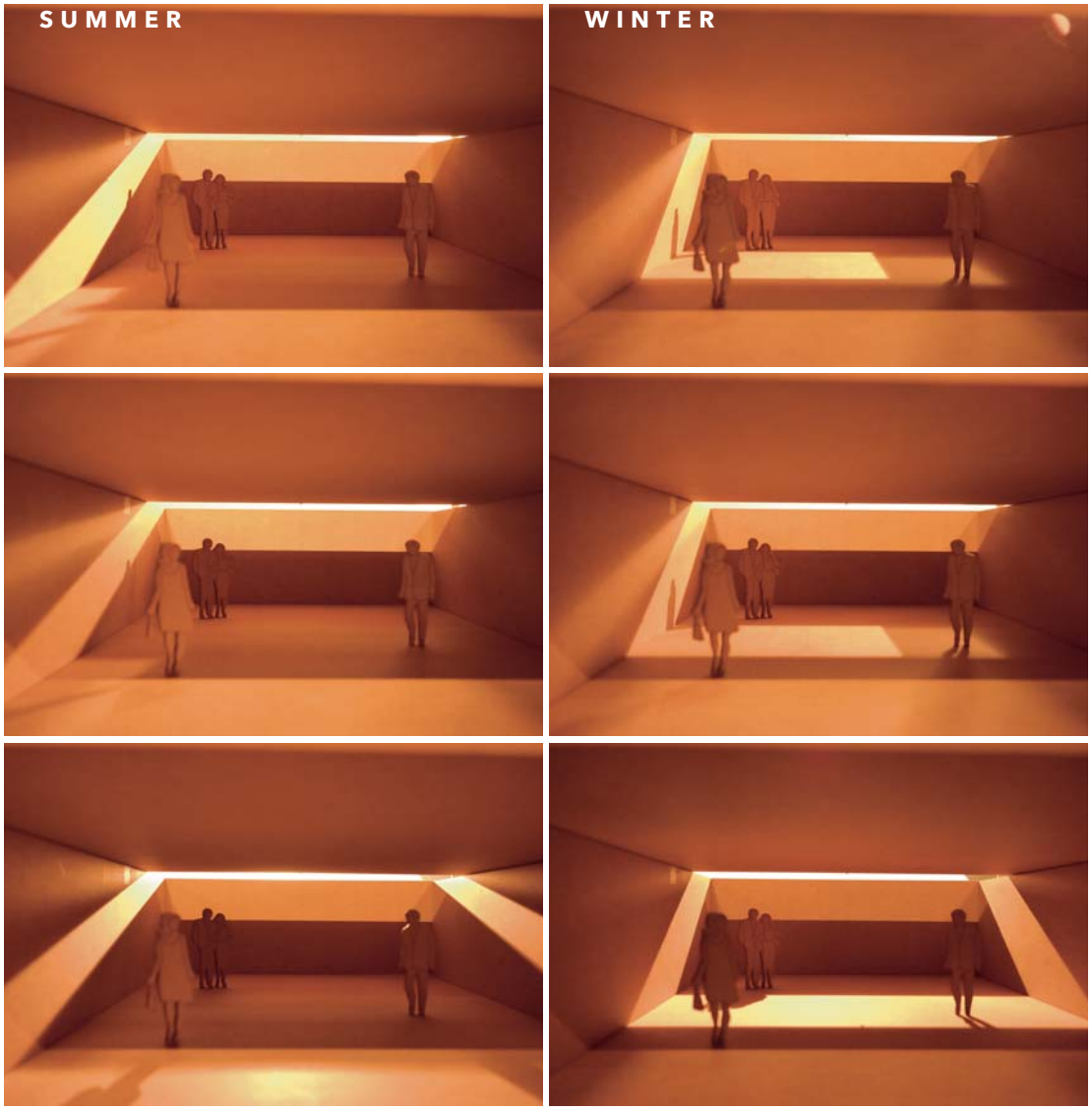

**OPEN ROOFSLAB**
**MIDDLE STROKE**

## OPEN ROOFSLAB PERFORATION



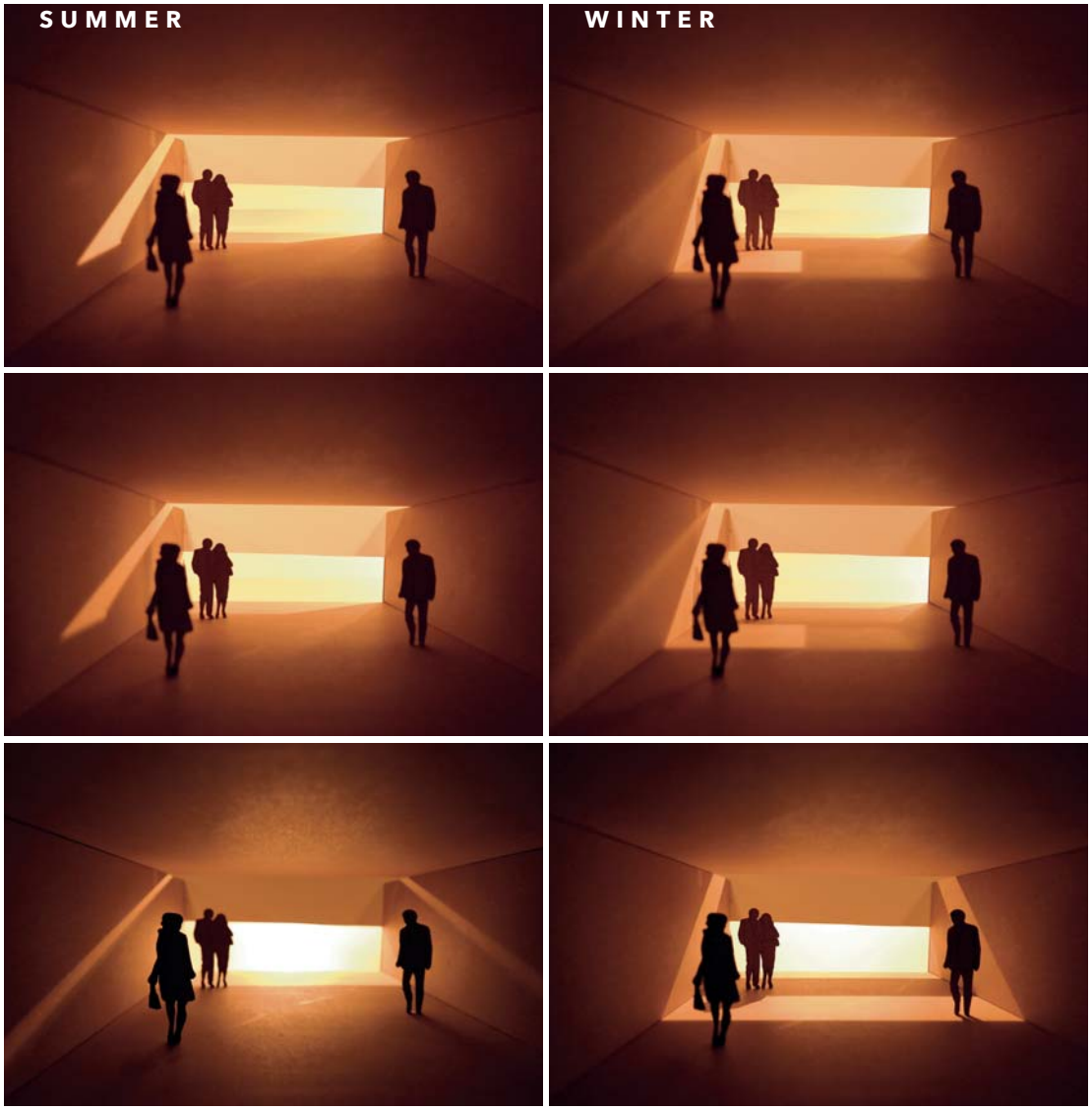

**CLOSED ROOFSLAB**
**WIDE STROKE**

**CLOSED ROOFSLAB**
**SMALL STROKE**



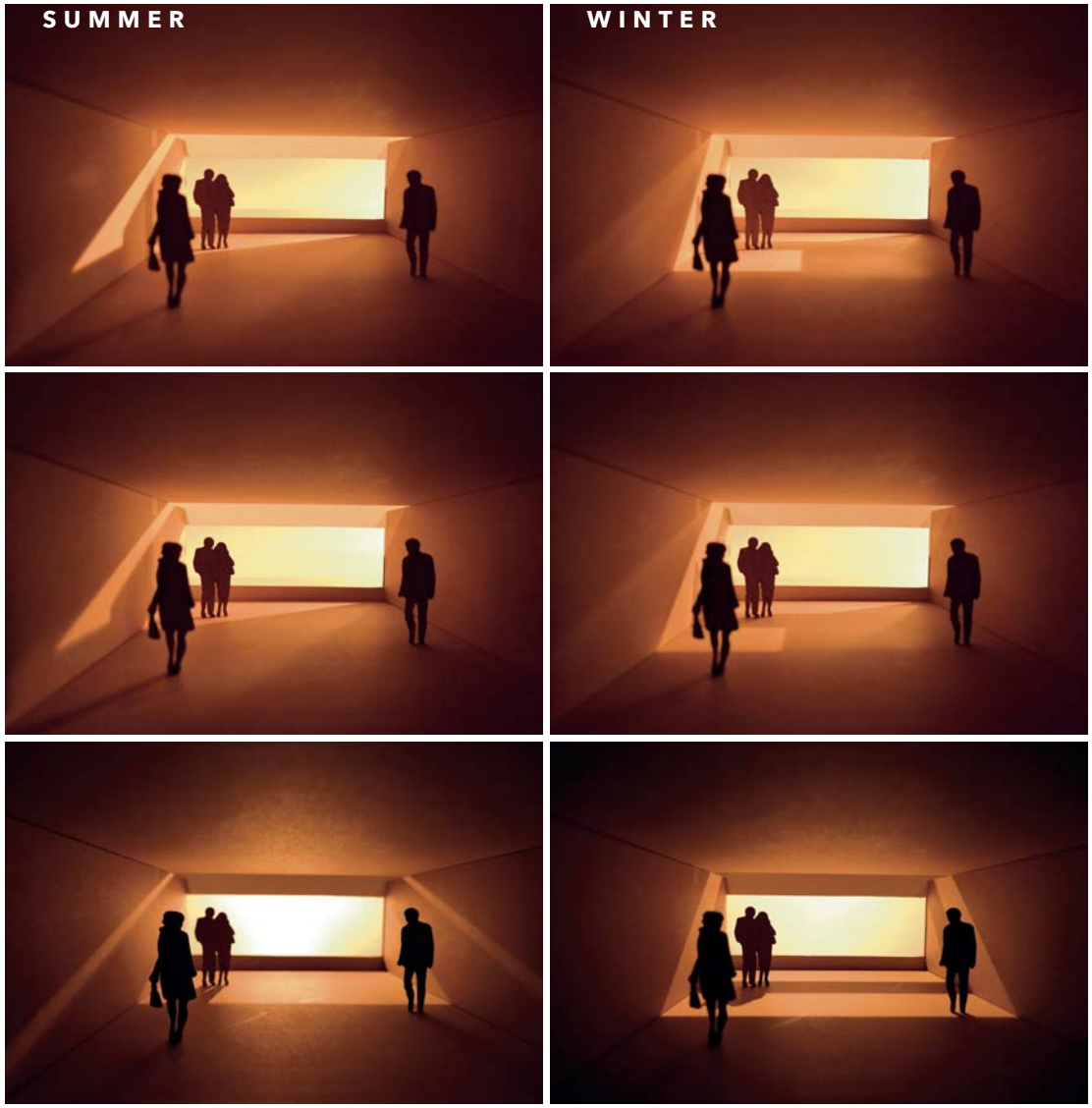

**LEVITATED ROOFSLAB**
**CLOSED FACADE**

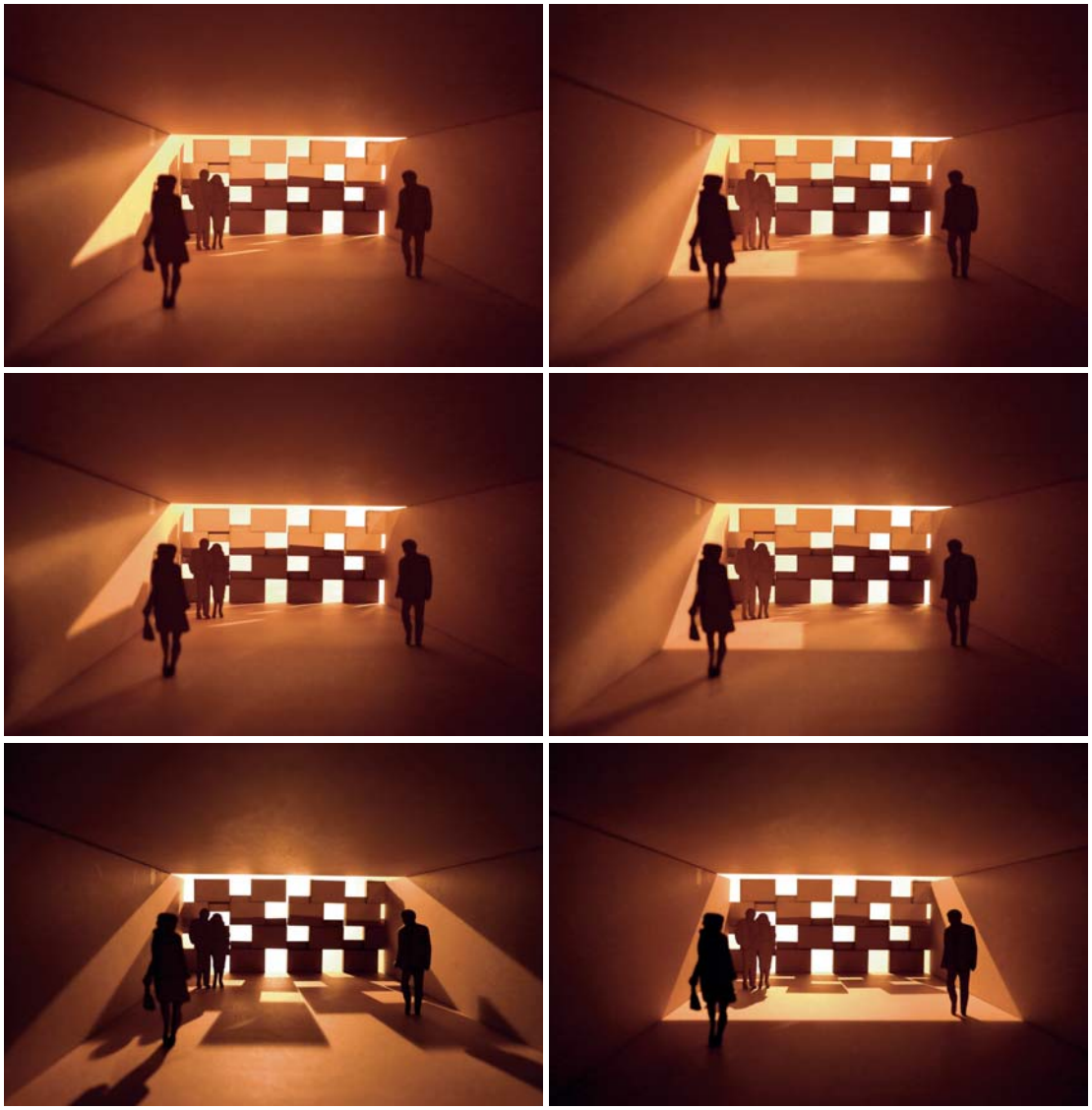
**LEVITATED ROOFSLAB**
**HIGH STROKE**




**LEVITATED ROOFSLAB**
**LOW STROKE**

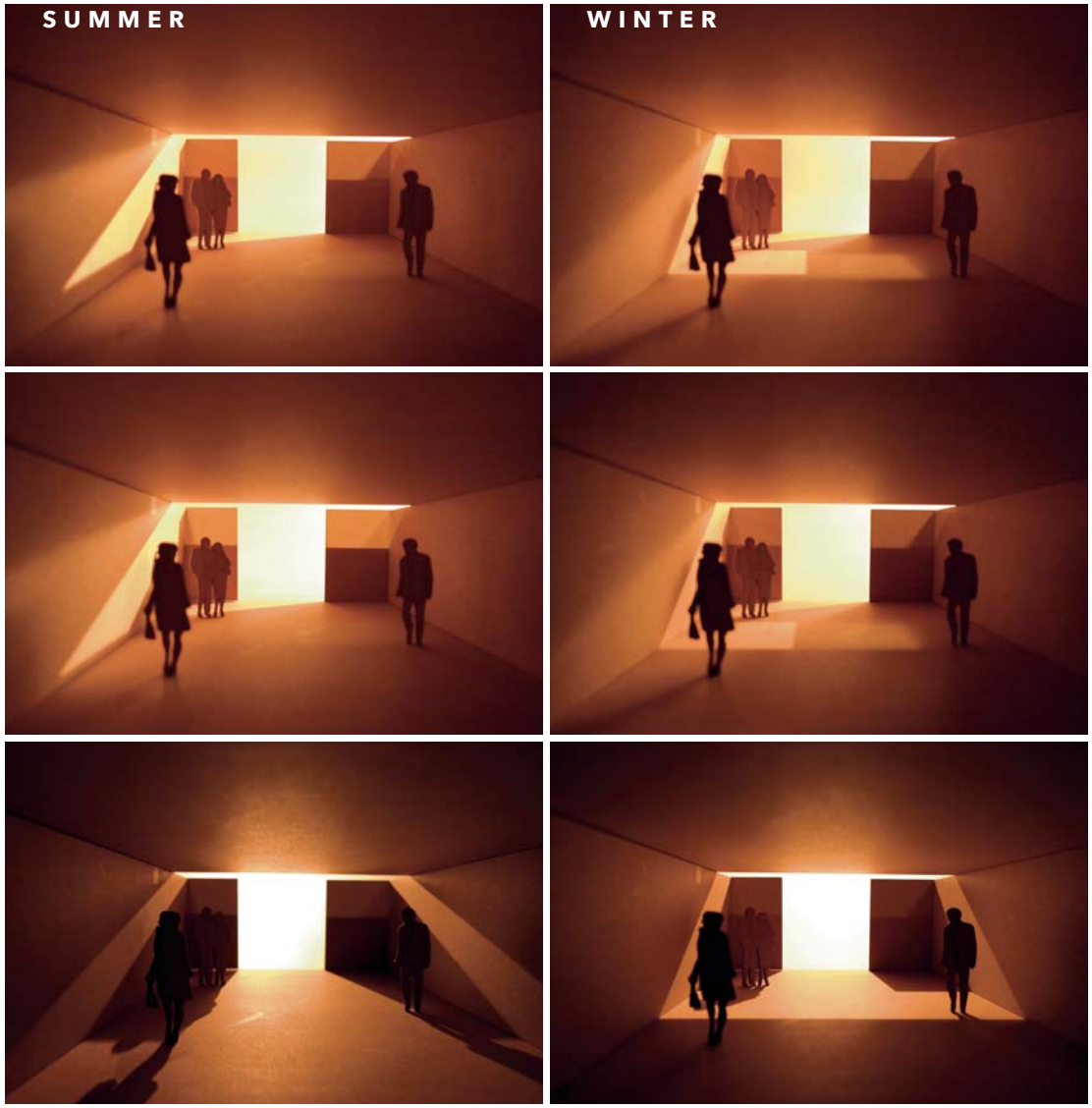
## LEVITATED ROOFSLAB
## MIDDLE STROKE

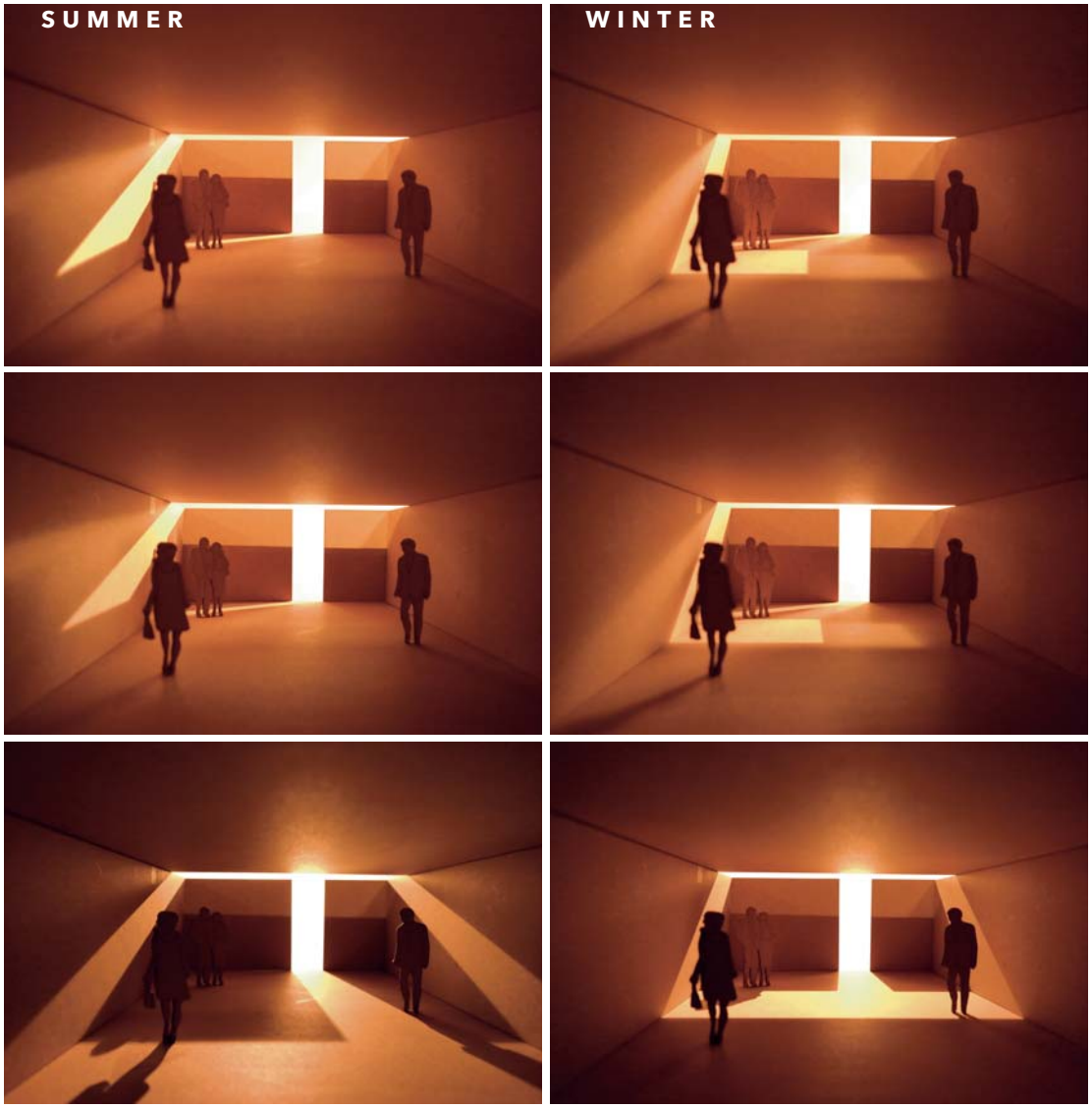




**LEVITATED ROOFSLAB PERFORATION**

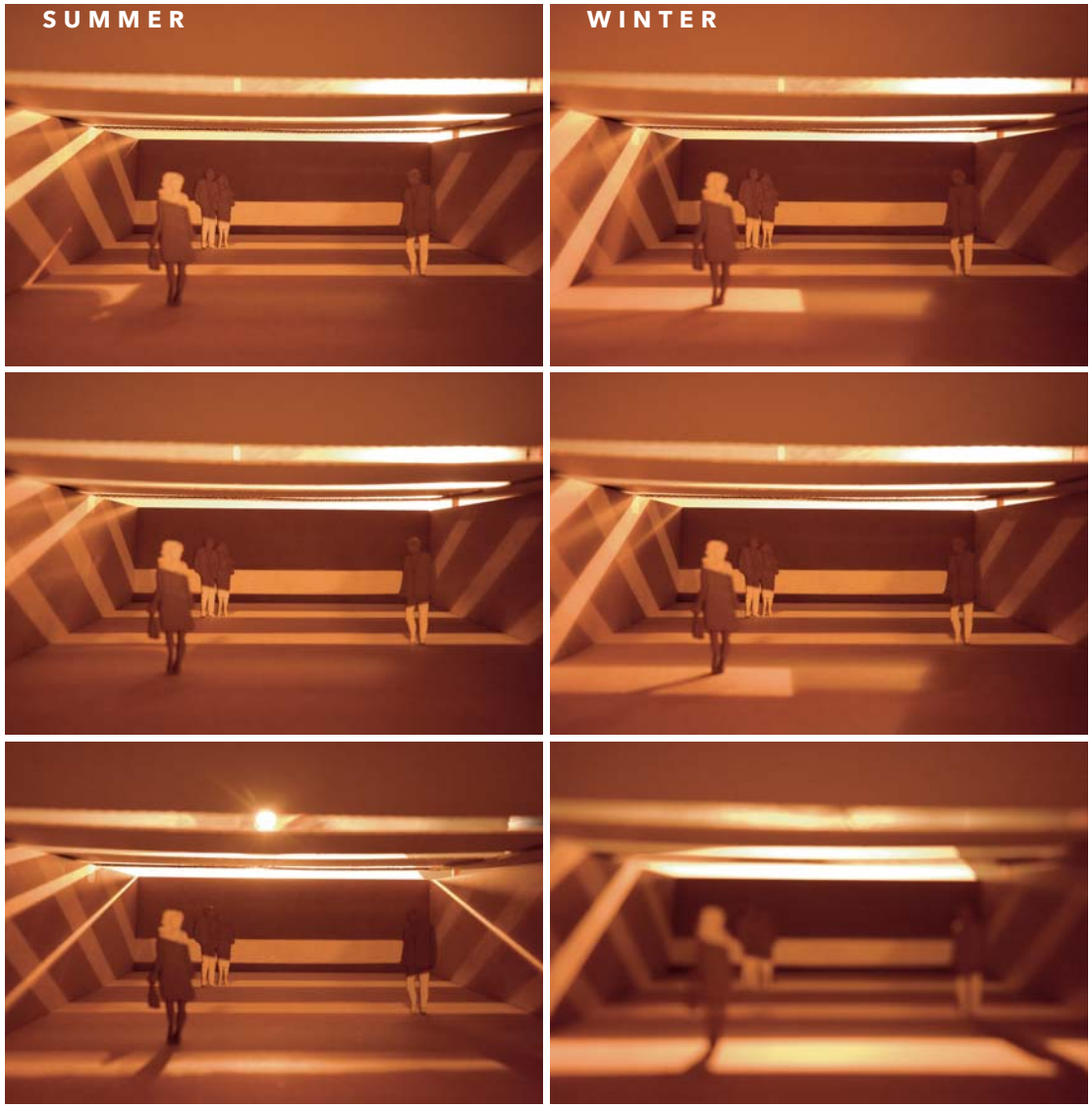
**LEVITATED ROOFSLAB**
**WIDE STROKE**

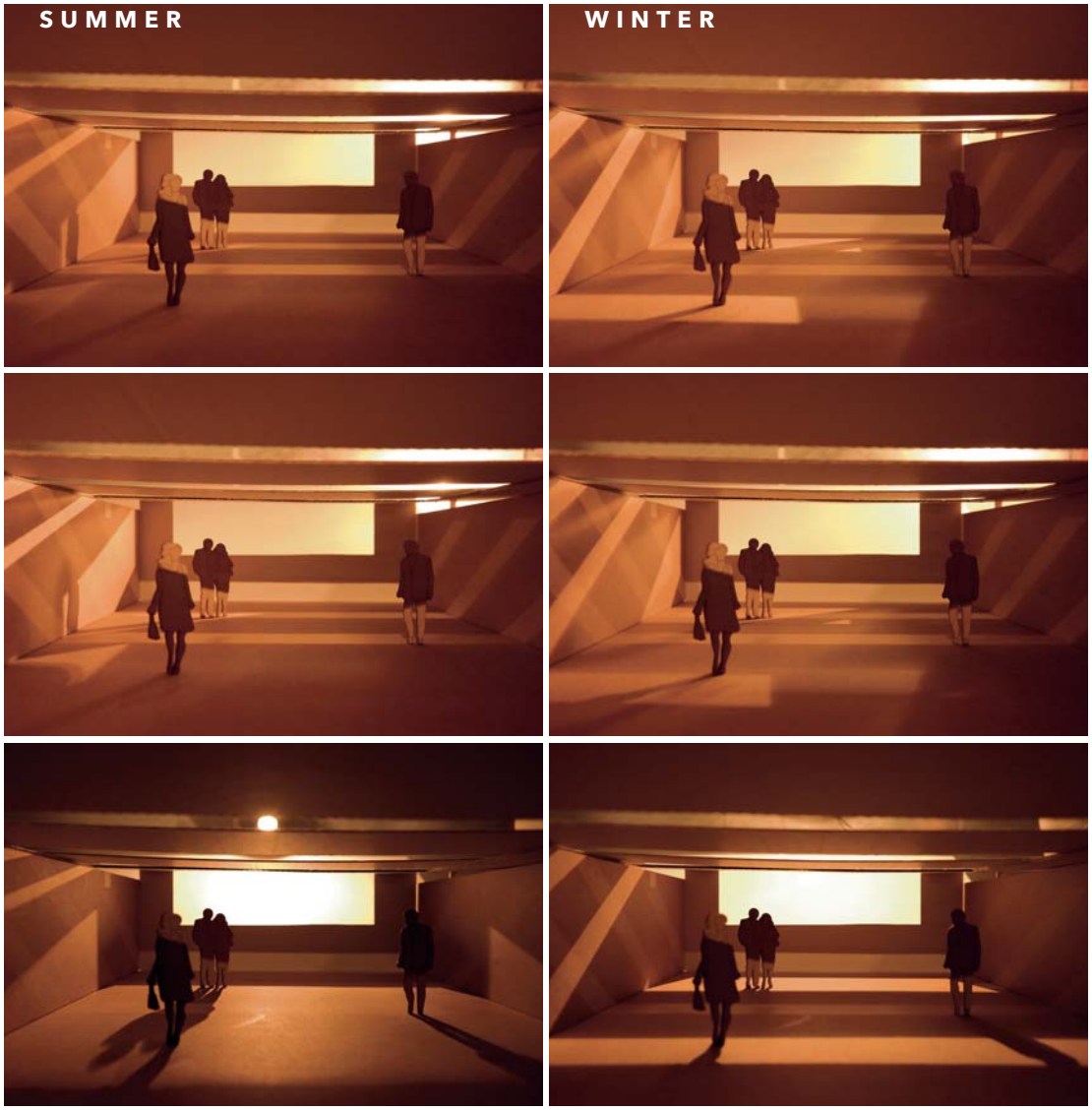





**LEVITATED ROOFSLAB**
**SMALL STROKE**

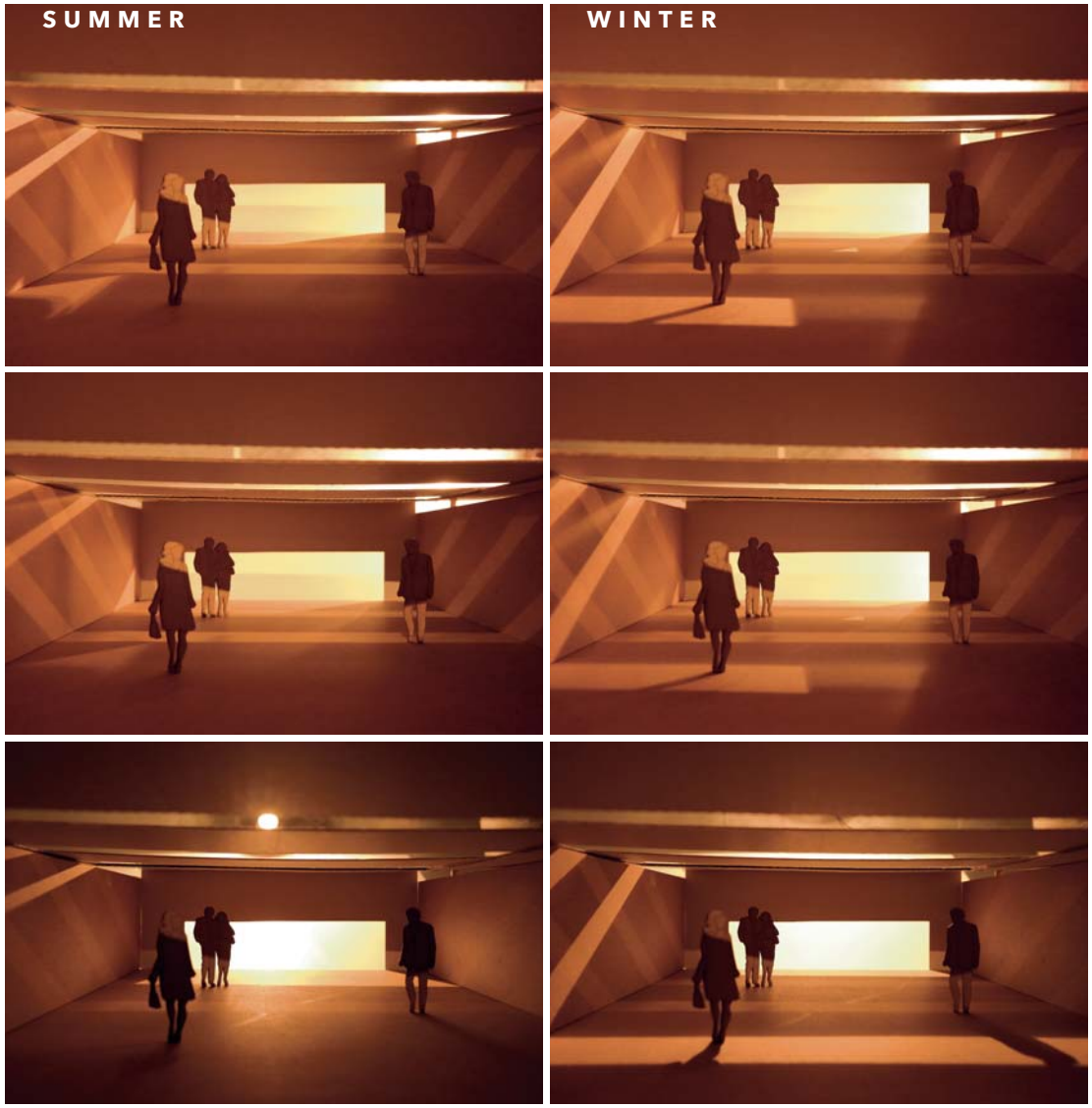
**PERPENDICULAR STROKE**
**CLOSED FACADE**

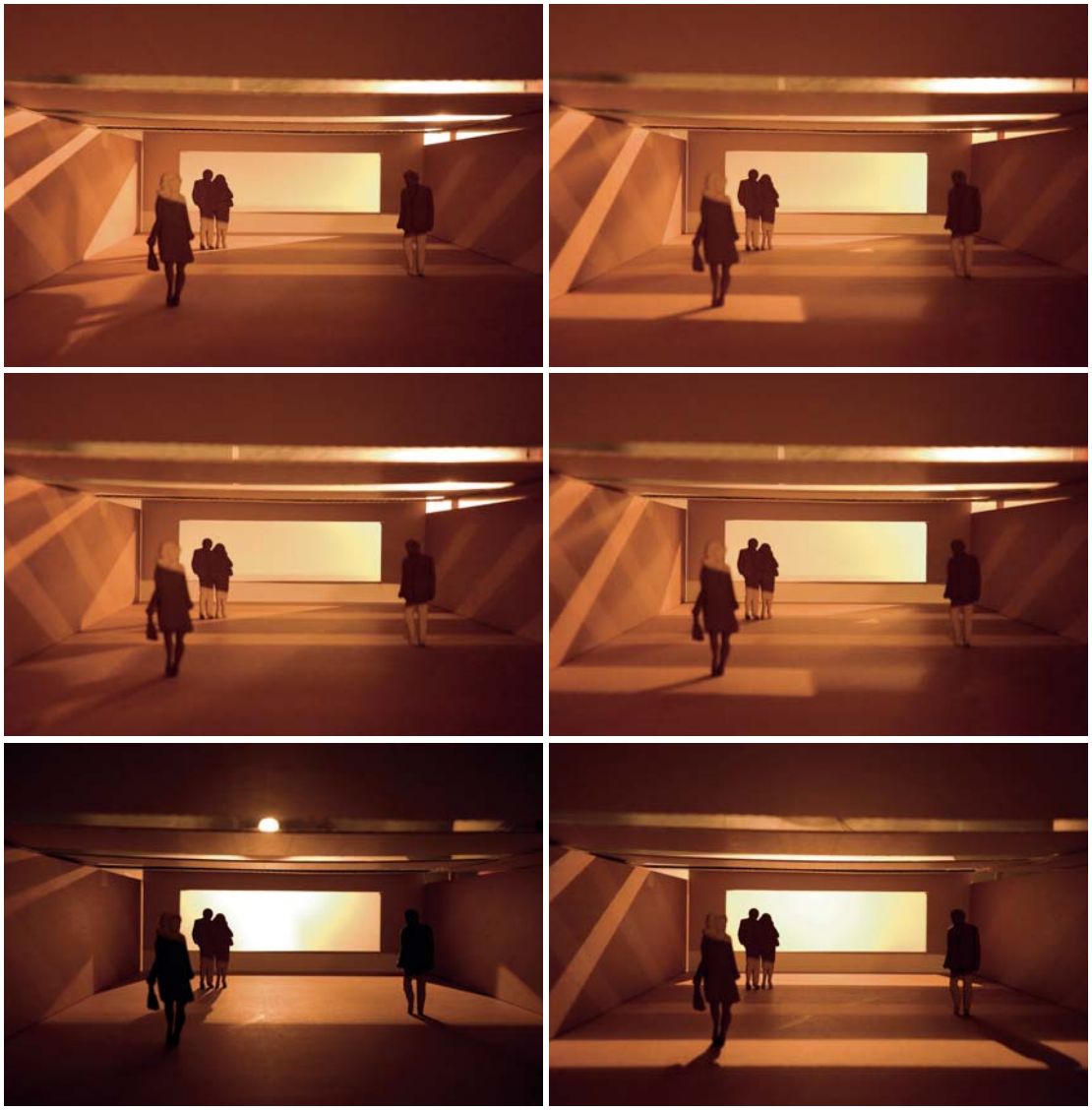





**PERPENDICULAR STROKE**
**HIGH STROKE**

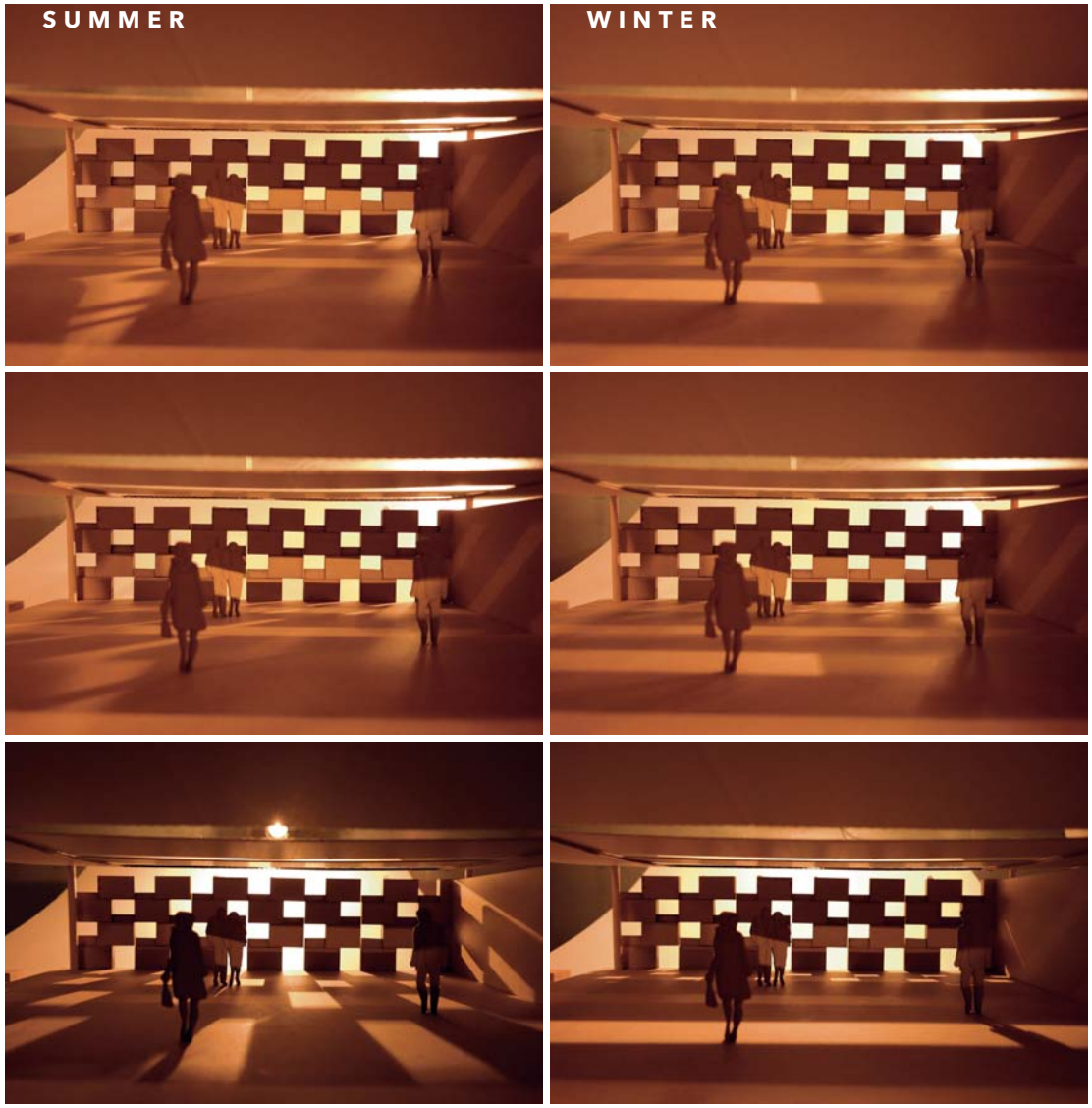
**PERPENDICULAR STROKE**
**LOW STROKE**





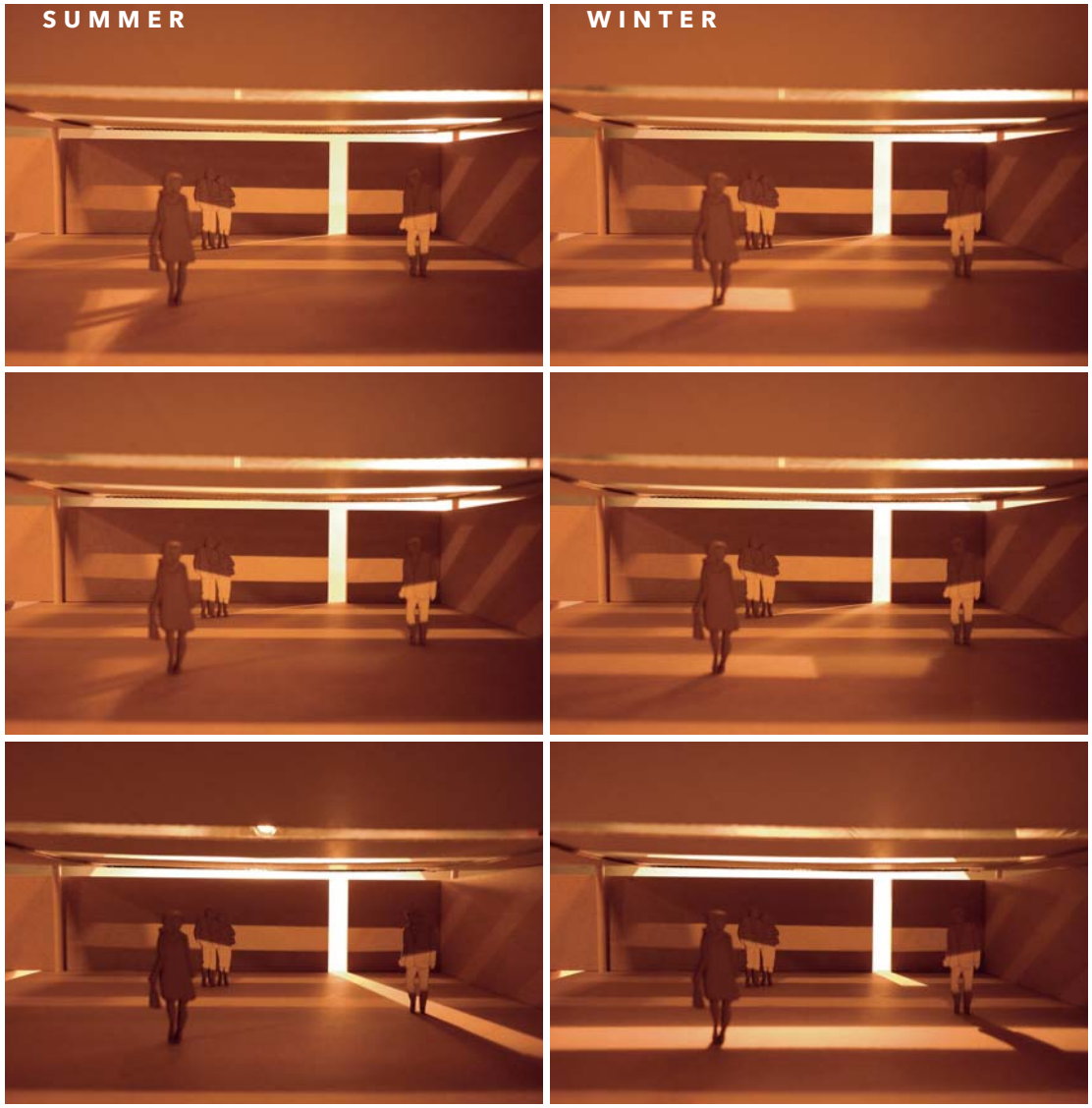
**PERPENDICULAR STROKE**
**MIDDLE STROKE**

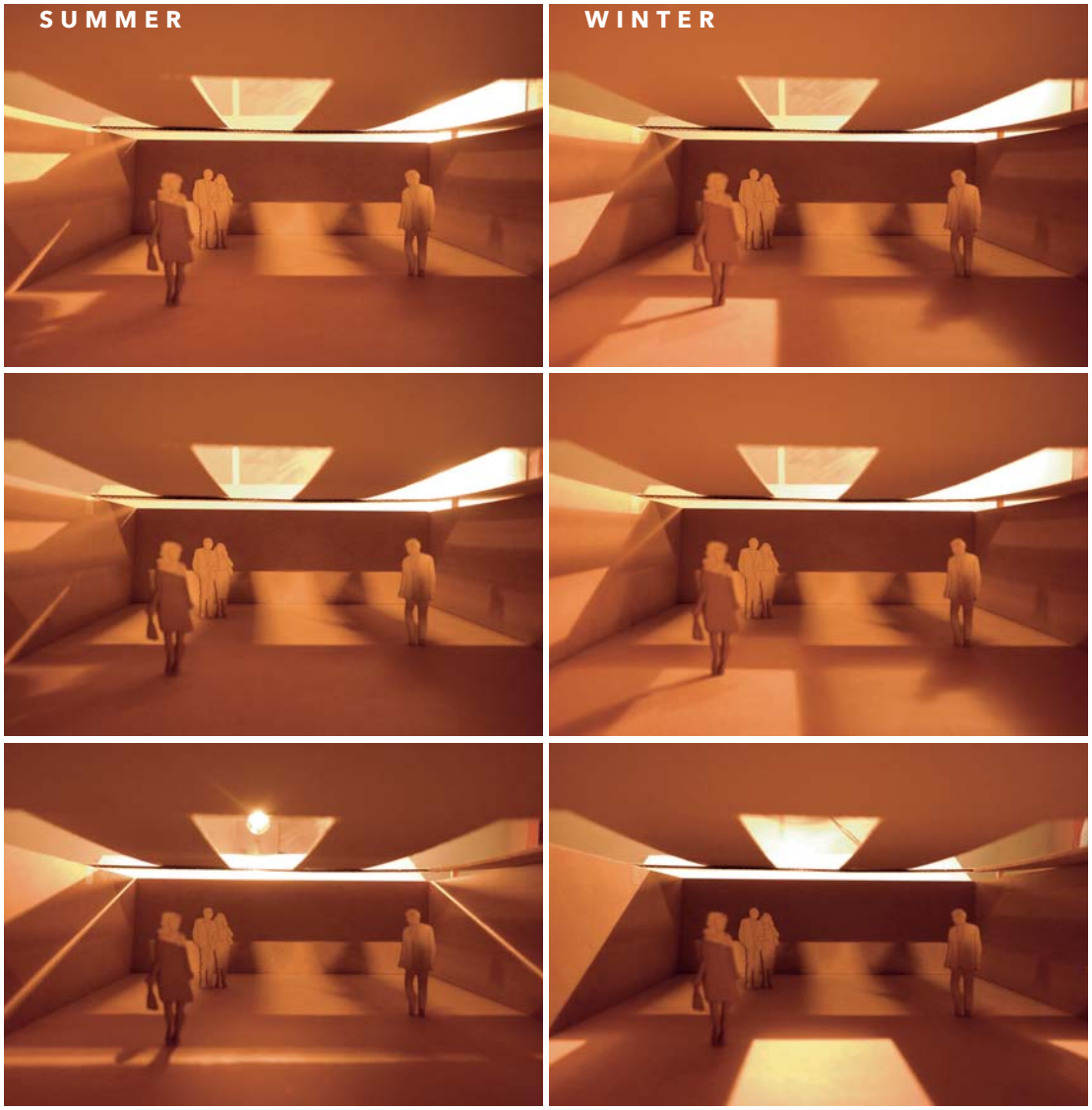
**PERPENDICULAR STROKE PERFORATION**




**PERPENDICULAR STROKE**
**WIDE STROKE**

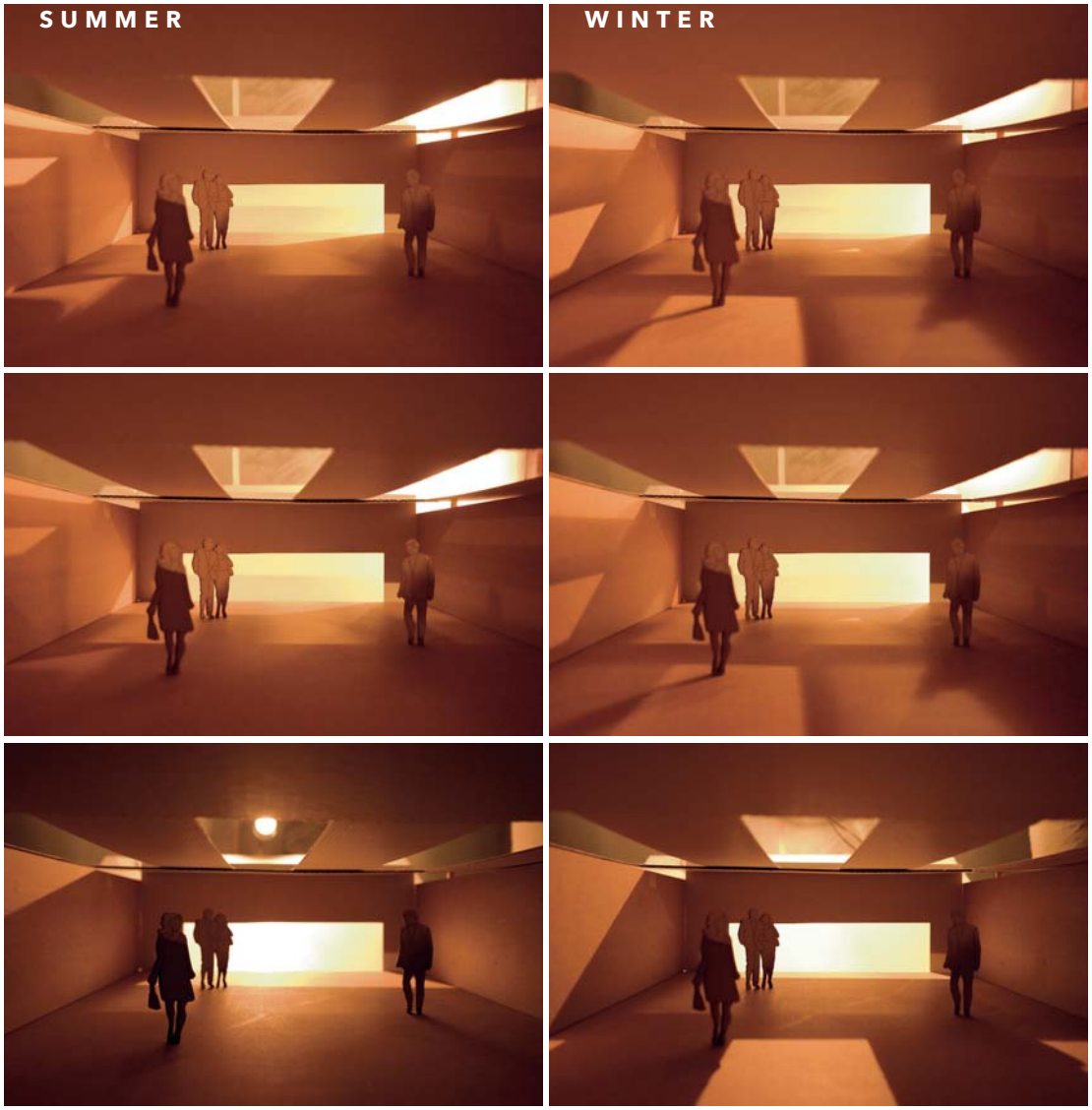
**PERPENDICULAR STROKE**
**SMALL STROKE**






**PARALEL STROKE**
**CLOSED FACADE**

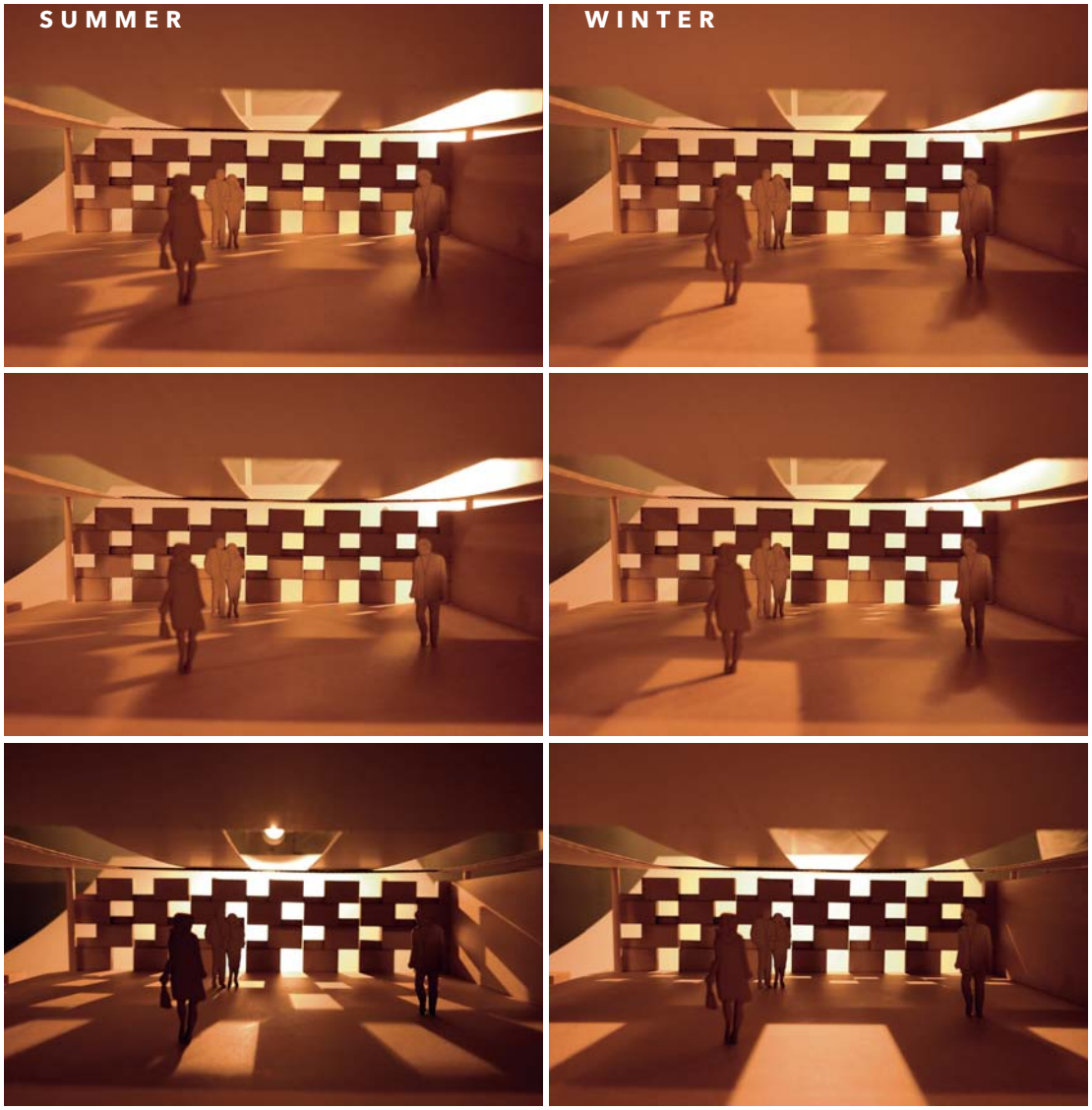
**PARALEL STROKE**
**HIGH STROKE**




**PARALEL STROKE**

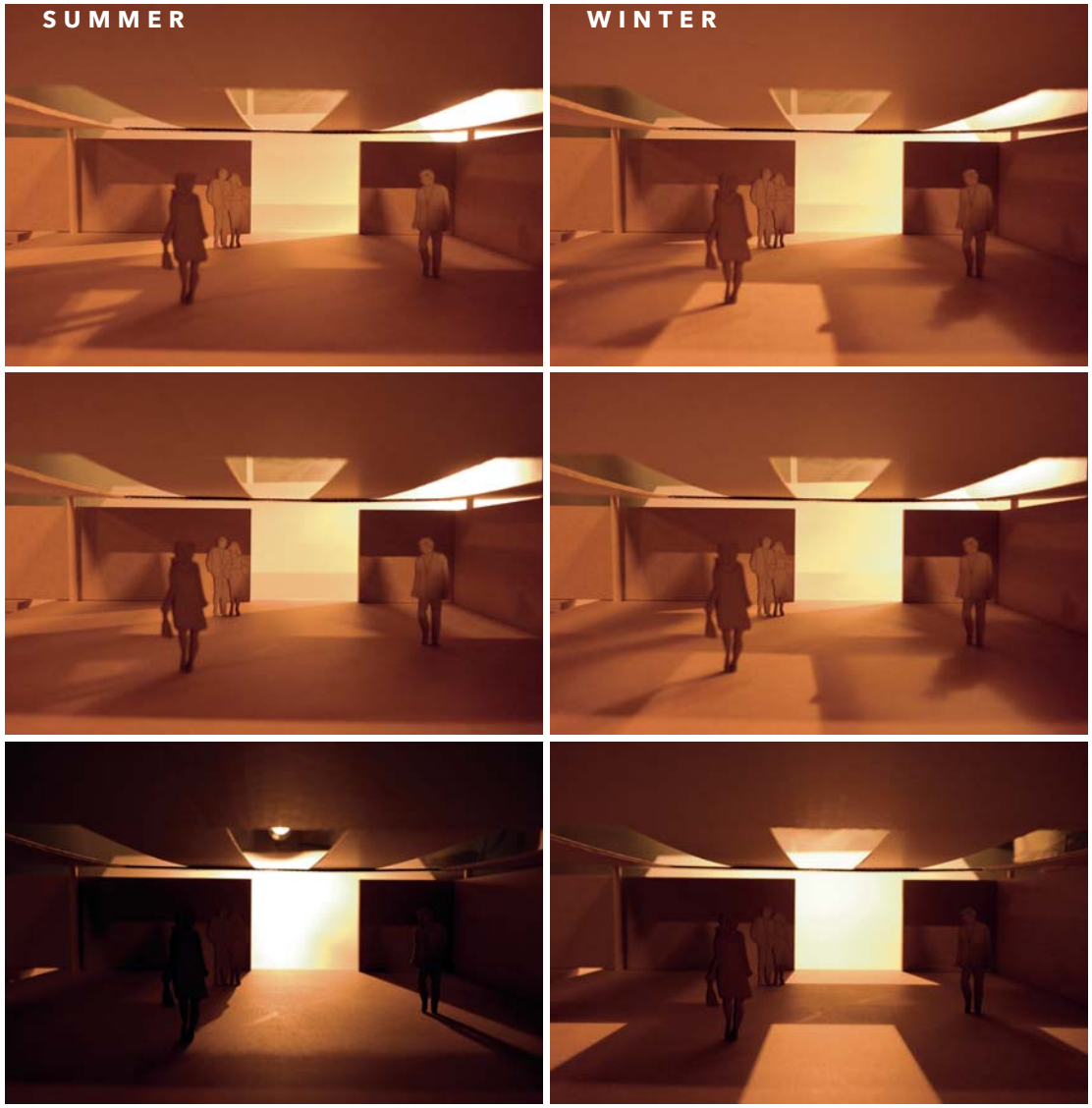
**LOW STROKE**

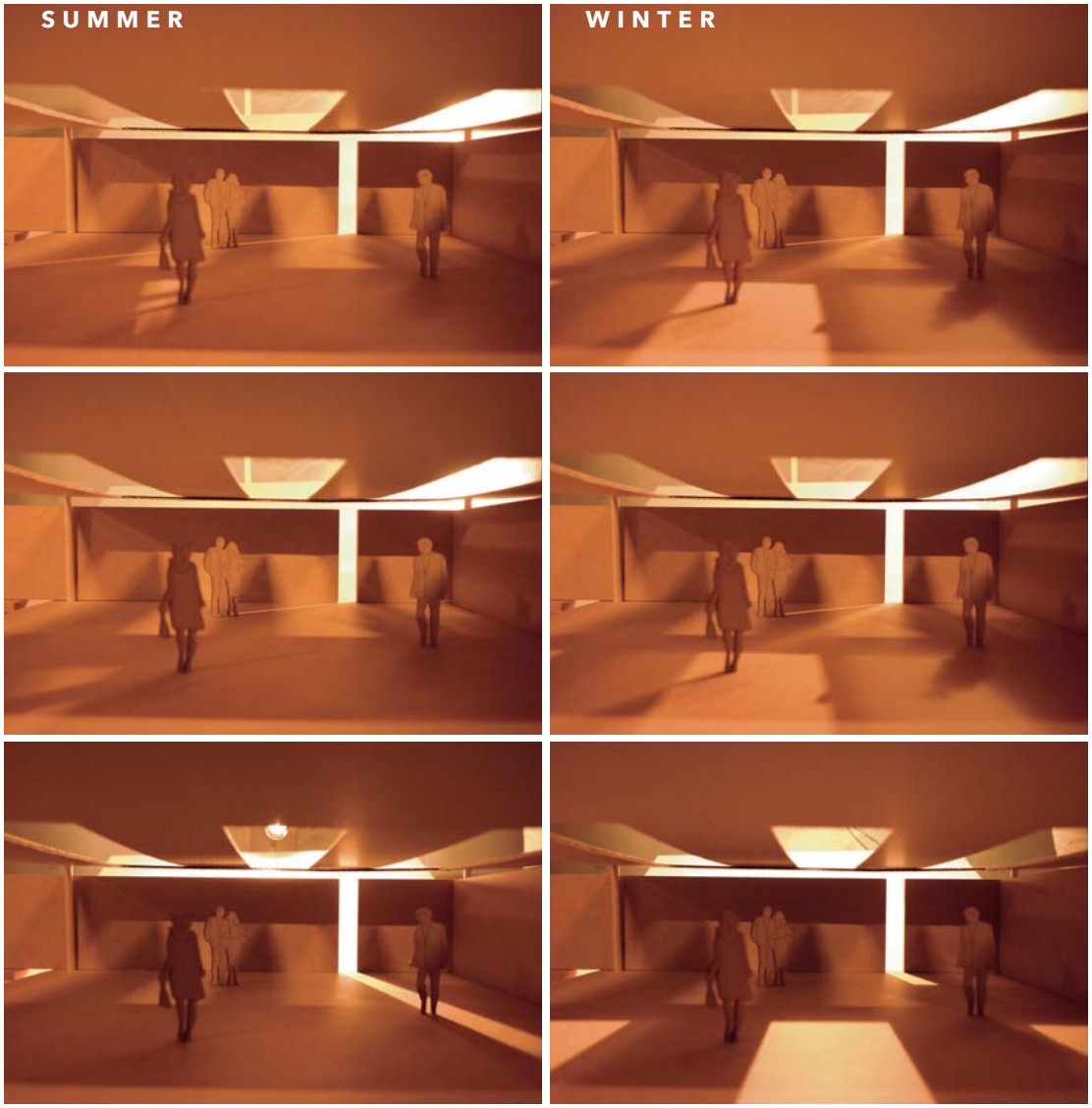
**PARALEL STROKE**
**MIDDLE STROKE**




**PARALEL STROKE PERFORATION**

**PARALEL STROKE**
**WIDE STROKE**






**PARALEL STROKE**
**SMALL STROKE**