SERLACHIUS MUSEUM

- a mediation of culture

Master Thesis
By Nina Clement and Astrid Leth Gregersen

Architecture and Design
Aalborg University

May 2014

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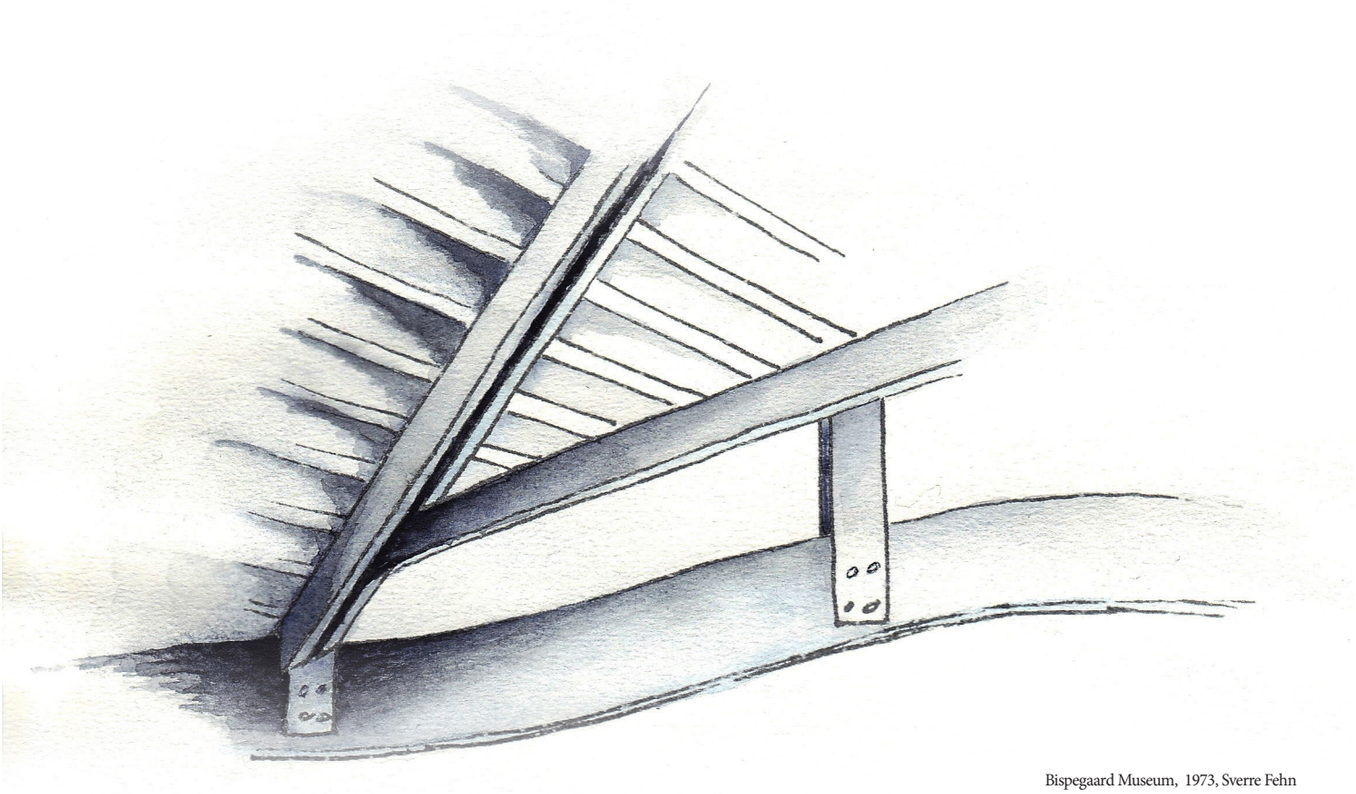

Bispegaard Museum, 1973, Sverre Fehn

How can architecture move people beyond practicality through the mediation of culture, represented by man, place and art?

MOTIVATION

As architectural students from Aalborg University, we find our roles and interests in a cross field between architecture and engineering. It is a fairly new education combining aesthetics and technique through problem-based learning. Combining angles represented by the two – technique and poetry – is a difficult task, but also the challenge we seek. Therefore we ask ourselves what differentiates architecture from building and how can we, with our knowledge of within architecture and engineering, pursue this in the creation of architecture.

Through several study trips of experiencing architecture first hand, we have seen examples of architectural quality. An example hereof is Bispegaard Museum in Hamar, Norway. Through a curved beam, architect Sverre Fehn, introduces an organic element, affecting a change in motion by contrasting an elsewhere strict structural rhythm. By this, a metaphysical change occurs by a gesture of staging. What is staged is the strictness of the primary structural system and its neutrality in relation to the existing, accentuated by the contrasting organic movement. The curved beam adds an imperfection and warmth to the system, creating a linkage between the imperfection of the existing and the strictness of the new. In line with the architectural work of Fehn our understanding of engineering benefits in the creation of an architectural concept, supporting it by a structural principle. Though cultural buildings, like Bispegaard Museum, must indulge uniqueness often reflected in the detail, general building practice suffers from consequences of globalization, sustainable and economical considerations. Focus has shifted and the result is inane architecture that is nothing more than a simple shell as it in our opinion shows no relation to the actual context. An example of this is common housing, where functionality, economics and duration of construction become the decisive parameters, often neglecting the metaphysical in architecture.

We experience architecture intuitively; through memories, senses, feelings, expectations, nostalgia and presence and therefore it must be narrated by the people who visits:

"As architects we do not primarily design buildings as physical objects, but the images and feelings of the people who live in them."
Juhani Pallasmaa (Pallasmaa; 1996; p. 448)

Departing in theories of Finnish architect Juhani Pallasmaa the emotional level derives from the physical conditions given by buildings. Architecture must present and mediate to people through emotions, separating architecture from being just physical object. This, for us, raises the question of embedding emotions in buildings and its relation to architectural quality. If people are not affected by our architecture, is it then architecture at all? We find an interest in the dependence between emotional and physical levels of architecture, and seek to investigate the display of feelings in architecture.

Anonymity incorporated in buildings is anchored in the absence of cultural acknowledgement as we see it. Culture refers to the "man-made", as everything that can be created and accumulated, whether it is process, art or architecture. This defines the place of which we live, which is crucial for our identity, as history and tradition is accumulated. By this, we seek for an architectural solution communicating culture, represented by man, place and art, to create architecture that moves people. Architectural quality is to us considered as a universal timeless envelope, as non-transitory, which, no matter time, has capability to emotionally impact on us as human beings. Thereby we present our point of departure for this project:

How can architecture move people beyond practicality through the mediation of culture, represented by man, place and art?

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- a mediation of culture

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ABSTRACT

English
This Master Thesis concerns the design of a extension to an existing museum of fine arts, located in Mänttä, Finland. The project is based on a competition brief by Gösta Serlachius Fine Arts Foundation, completed in 2011.

The report is a presentation of tectonic studies followed by a final building design and a design process. It becomes a media of discussion with departure in our tectonic extractions. The thesis explore the linkage between poetry and technique in our reach for architecture that moves people beyond practicality. A poetic key role of architecture is found as the mediator of culture, entailing a focus on mediation of architecture as representatives of culture; man, place and art. A tectonic approach of *staging* as a spatial gesture becomes the linkage that mediates man, place and art in technique through the potential of staging in a structural principle.

Danish
Dette afgangsprojekt tager udgangspunkt i en udvidelse til et eksisterende kunstmuseum beliggende i Mänttä, Finland. Projektet er baseret på et konkurrenceoplæg af Gösta Serlachius Fine Arts Foundation, som blev afviklet i 2011.

Rapporten er en præsentation af tektoniske studier efterfulgt af et færdigt bygningsdesign og en designproces. Med udgangspunkt i vores tektoniske forståelse bliver det et emne for diskussion. Afgangsprojektet har til formål at udforske linket mellem poesi i arkitekturen og konstruktion i vores søgen efter arkitektur der, udover funktionalitet, fremkalder emotionelle værdier. Arkitekturen som en formidler af kultur bliver et nøglebegreb i søgen efter det poetiske, med et fokus på arkitekturens formidling af kultur, repræsenteret gennem mennesket, stedet og kunsten. *Iscenesættelse*, som en tektonisk tilgang, bliver linket, der formidler mennesket, stedet og kunsten i konstruktionen gennem et strukturelt princip, hvori potentialet for iscenesættelse findes.

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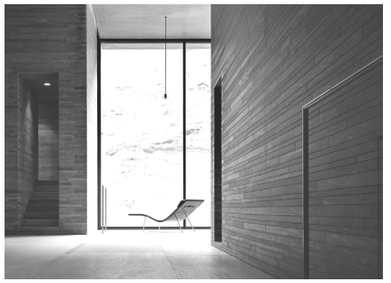
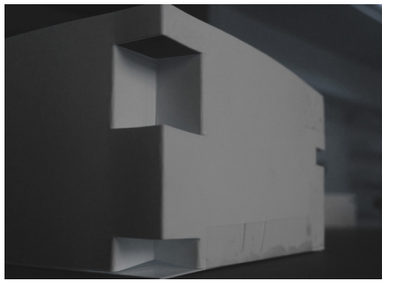
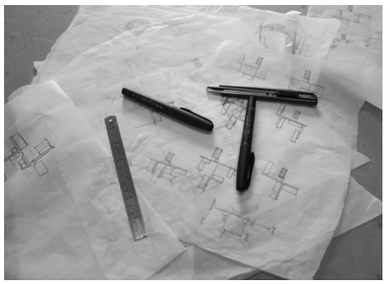
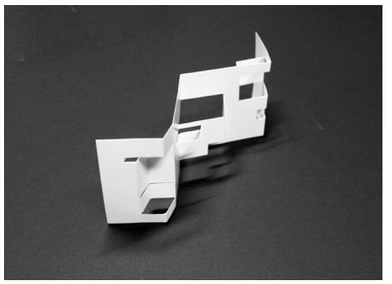
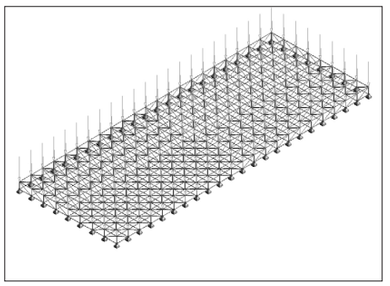










PREFACE

Inspired by Bispegaard Museum and Fehn, we seek to investigate the spatial gesture of staging as a tectonic starting point, discussing its potential as the linkage between poetry and technique. Staging is rooted in the ancient art of drama and relating to the notion of presenting a message. It is discussed, departing in theories of Gevork Hartoonian and Gottfried Semper. By this, staging should present culture and become a tool for designing. Furthermore, chosen methods are explained through the eyes of tectonics and its consequences.

A competition of Serlachius Museum is introduced as mediator in the creation of a stage for man, place and art. With a significant history, this museum becomes an example of strong cultural heritage. Through this, it is our aspiration to exemplify culture as evident in creating architecture.

01

STAGING CULTURE

Teatro Olympico, 1579, Andrea Palladio.

The notion of culture is represented and understood as a narrative of our history and the origin of our world. A narrative is, however, not stronger than the presentation hereof. Thereby we find interest in drama and the ancient art of constructing a stage. Inspiration is found in Teatro Olympico, designed in 1579 by architect Andrea Palladio, displaying how architecture affects perception of drama. Palladio introduces strong perspective lines, which gives an illusionary depth to not only the stage, but also the narrative. Our tectonic interest departs in the tension field between what your eyes see and how your mind perceives it, which also Palladio seeks to challenge. Through this, the discussion of how an illusionary stage, that obviously manipulates our mind, can be tectonic. The theatre interprets the relation between architecture, structure and function with the stage as a reference. Like Palladio use the stage as the framework of his theatre, it is our wish to translate this to a relevant element in tectonic architecture. Through this we see staging as the linkage between poetry and technique.

The term staging is historically linked to the art of drama, and is generally understood as the creation of a universe that holds actions and relations (www.denstoredanske.dk). However, it is contemporary transferred to a social and cultural aspect of interpretation and organising with the purpose of presenting. It is used as a means to promote chosen messages, whether they are personal or cultural. By this, staging becomes a framework that links poetry and technique as the construction of a narrative. The act of staging is found in exhibition design, that etymological refers to the act of displaying (www.etymonline.com). Its purpose is to mediate and enhance the narrative of a given object by staging in suitable ways.

The architectural choice of what and how to stage should reflect the message, like choice of clothes, home and gestures reflects our identity. Potential of exhibition design is seen in the Serlachius museum, as it holds potential for both communicating art and enhancing an interaction with people. By designing a specific museum it becomes possible to transform

“How can architecture mediate culture through the staging of man, place and art?”

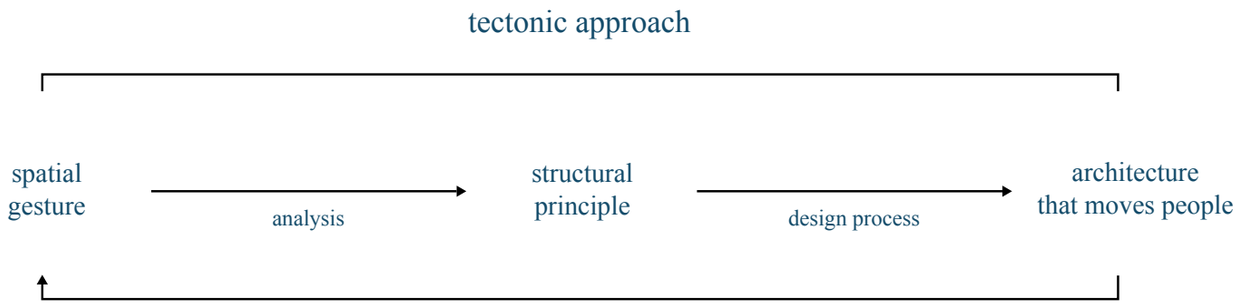
Gösta Serlachius Museum, 1935, Jarl Eklund

staging as spatial gesture into a usable principle of construct. Through designing a unique building, it is our hope to find a general understanding applicable in every-day architecture. As the notion of staging can be seen as a means to reinforce and accentuate, it is our thesis that by controlling what is staged and how, architecture is able to mediate the narrative of culture.

The project departs in the competition of Serlachius Museum and inquiry for an extension to house their growing collection of fine arts. Through our emphasis on cultural anchoring and the staging hereof, this has been an important factor in our choice of museum. Serlachius has a history based on a long significance within the art world, but likewise in its importance for the city of Mänttä and its inhabitants. Gösta Serlachius founded a still existing paper mill that secured the living of the city and through his rising fortune an art collection arose. Today the relation is symbiotic and the museum becomes a cultural cornerstone of their history. The affiliation to place, people and art is strongly rooted in history, and it becomes our departure in understanding culture through architecture. This museum creates the foundation of our tectonic search of architecture that moves people. Serlachius is cocooned in a strong Nordic tradition concerning man, place and art, allowing us to explore the tectonic theories in a relevant context.

METHODOLODY

In our reach to investigate staging as a spatial gesture that mediates culture, the process of designing architecture is approached tectonically. This embrace the complexity of translating an intangible value that evokes feelings into a tangible principle of construct. Hereof, tectonic becomes our primary tool to move from spatial gesture to structural principle, and further into a complete architectural form, that represents and reflects the respective spatial gesture.



"... our investigations implicitly explain both the poetic and technical significance of culture, providing us with tangible tools for creating architecture"

Analysing architecture

Analysing architectural works, relevant for this program, provides tools in the design phase. By using a theoretical method to analyse it is possible to draw conclusions from the perception of an actual architectural space. These conclusions can be seen as means to the raise the architectural quality and by linking these with empiric data is it feasible to use the results in creating a better project.

The systematic method *Analysing Through Scale*, develeoped by PhD Marie Frier Hvejsel, concentrates on a single object's ability to address humans by means of 'a gesture'. Its aim is to reflect upon the relationship between the given architectural form and the idea, and in the end charter the means of which this is accomplished (Hvejsel; 2010). The method is considered open in terms of adjusting and pointing out specific important aspects and with tangible outcome in the search of moving from theory to practice. Five aspects are analysed to fully investigate the relation between spatial gesture and the architectural whole; *Function, emotion, realm, construct and principle*. One furnishing gesture forms the basic of the analysis, as both drawings and writing supports the perception of the element. It states the impact on people in terms of physical and emotional experience. By explaining this by a single spatial gesture, it is visible that it also contains the specific structural principles of the experience, from which architecture can be constructed.

The spatial gesture is the notion of how people is moved within the given framework and thereby supports the definition of the tectonic and architectural quality and provides the tools – structural principles – to achieve and prove the thesis. Through the analysis, it is possible to define the linkage between poetry and technique as a structural principle, introducing an emotional level in architecture.

Analysing place

Phenomenological investigations are used to achieve an understanding of culture and place. In accordance to this, a studytrip is arranged to acquire knowledge of place in a multisensuos scale. Through this, Finnish culture is experienced first hand by contact with man, place and art. (Pallasmaa; 2014) This will endow us with a deeper understanding of culture, both national and local. Phenomenological investigations are further used as a tool to strategically analyze the site, inspired by the representation method *Serial Vision*, developed by urban designer Gordon Cullen. This method is used for inspiration to absorb and analyze the character of place, by photographing from significant viewpoints while moving around. These viewpoints are depicted to contrast and enhance visual impressions to identify character of place (Cullen; 1961). These are supported by empiric data, connecting considerations of functionality and technical aspects to the phenomenology of site. This leads to an inferring of design parameters leading to a tectonic principle, from which the design process will depart. This principle will be developed in accordance to the spatial gesture functioning in all scales of designing – from overall development to detailing of construct. Hereby it will function as tools to generate an emotional understanding of culture, through man, place and art.

Through our overall tectonic approach and specified analyses, our investigations implicitly explain both the poetic and technical significance of culture, providing us with tangible tools for creating architecture.

STAGING

02

This paragraph clarifies our understanding of architecture through tectonic theories by Kenneth Frampton, Karl Bötticher, Gevork Haartonian and Gottfried Semper. By them, we strive to understand the tectonic approach as a linkage between poetry and construct, and through this explain the spatial gesture of staging. Staging reflects our choice of project, as an element we wish to interpret in every-day architecture.

The relation between staging and exhibition architecture is justified by the exploration of tendencies in contemporary museum architecture and the experience it holds.

THEATRICALITY AND TECTONICS

Etymologically, tectonic derives from the Greek word tekton, being the carpenter or craftsman. The notion of tectonic evolutes in the 5th century BC from a solely physical sense to a more generic notion of making, involving poetry. (Frampton; 1995) From this derived a dualistic notion of the term tectonic, interpreted differently in its architectural use during time. The affinity and discussion lies in our understanding in the connection between poetry and technique. The first architectural use of the term in German dates back to 1830 in *Der Archäeologie der Kunst* by historian Karl Otfried Müller, using the term tectonic in relation to architecture as a representation of feelings (Frampton; 1995). Stressing that architecture, in its physical appearance, has the power to evoke feelings and to move through its conformity to sentiments, Müller hereby considers architecture as an activity, a product of culture that stages feelings in the link between poetry and its physical appearance (technique). Archaeologist and architect Karl Bötticher was more distinct in his use of the term tectonic in *Die Tektonik der Hellenen*, distinguishing between Kernform and kunstform. He interprets tectonic as a complete system of the carrying and the artistic part, clearly divided between the etymological presence and the later artistic presence. The core-from represents an internal functional and loadbearing wall, while art-from displays the external and iconographic.

Theorist Gevork Hartoonian also departs in the definition of architecture consisting of art- and core-form. In his interpretation of tectonic the synthesis of these is underlined by the etymological understanding of the word. However, he is critical to the general approach to contemporary architecture, this being dominated and controlled by a technical development:

"... but the very technique itself determines the process of design, and perhaps the form itself"
(Hartoonian; 2006; p.2)

Hartoonian stresses a significant and substantiated worry of what he calls "the crisis of the object" (Hartoonian; 2006). His concern is rooted in the complex relation between the disciplinary histories and the technical and programmatic needs of modernization. This leaves a conflict of interest between architects, engineers and manufactures that is reflected in contemporary architecture. The image of tectonics has simply not developed and adjusted to the modern world. As stated in our motivation, an emotional level depicted as art-form is detached from core-form, thereby losing its tectonic value.

Tectonic is dealing with the passing of architectural tradition to the process of modernization, which is supported by the theory *Stoffwechsel* by theorist and architect Gottfried Semper that underlines essentials of implementation of skills and technique in the art of building in the process of transforming cultural productivity into architecture (Frampton; 1995). Semper introduces the communicative dimension of architecture through theatricality, in the notion of architecture as an imitative art. Theatricality wraps the poetry of architecture in anonymity by expressing the message indirectly through the play of visible and invisible:

"It can be argued that theatricality is the flesh of construction whose thickness speaks for the invisible presence of the dialectics of seeing and making, that is the way a building relates to site, framing a constructed space and opening it to many horizons of today's culture."
(Hartoonian; 2012; p. 39)

Based on the and our thesis of theatricality not being interpreted as the playful dressing, but merely as a means to adjust the tectonic approach into a relevant context. Theatricality is the creation of a stage that presents the object in an essential manor. Exemplified by Palladio and Teatro Olympico, staging introduces the correlation between poetry and technique, as architecture becomes the stage of culture. Through a manipulation of mass and proportion, light and shade, rhythm and texture, it is the task to create architecture that evokes feelings.

Staging - a linkage between poetry and technique

In line with our interpretation of tectonics, discussed from theories of professor and architect Kenneth Frampton and Hartoonian, the role of architecture as a cultural stage is rooted in the linkage between poetry and technique. Staging culture reveals the poetic layers of construct as a means to how it relates to man, place and art in its way of staging. By staging, the constructed controls what to enhance in a specific relation to man, place and art, and hereby enhance and evoke feelings connected to cultural recognition. Though, as mentioned, we see a conflict between the tectonic needs of contemporary architecture and find it evident to concretise the poetic narrative of staging man, place and art to an actual principle of construct in coherence with contemporary technique. By linking poetry and technique in an early stage, the process of design can be determined by the technique itself without undermining the architectural form as a cultural stage. By this we seek an understanding of the linkage between poetry and construct in relation to tectonics of staging. As follows, we investigate a deeper understanding of the etymological understanding of layers in tectonics. By this, it is possible to clearly define a representation and a hierarchy of poetry and technique in our design process, allowing us to handle a complex situation taking advantage of poetry, construction, function, technique and aesthetics, all influential in architecture.

The wall

After Karl Böttichers distinction between *kernform* and *kunstform*, Gottfried Semper, German theoretician and architect, was influenced to depart in the Vitruvian Triad; utilitas, firmitas and venustas, interpreting tectonics of architecture as more cultural determined in The Four Elements of Architecture, (Frampton; 1995) in which he is nuanced in his distinction between poetry and technique. From the hearth, the fireplace, which was the first moral element of architecture, three other elements arouse as protectors of the hearth; the roof, the mound and the enclosure.

From the enclosure, man developed technical arts, first in terms of weaving. Hence the carpet represents the origin of the wall as a spatial divider, the visible boundary of a space, and his theories find the carpet wall essential for the history of art as ancient arts have clear references to embroidery and the carpet wall. An increasing need for security, permanence and load support became essential for developing the carpet wall into mason's art. However, the solid walls had for a long time no spatial relations, as the carpet remained the essence of the wall as an interior dressing and spatial enclosure (Semper; 1989). Relating this to Palladio and Teatro Olympico, the dressing becomes the setting or stage as essential link between poetry and technique. Through theatricality introduced by Hartoonian, staging lies in dressing, by exemplifying essence of culture.

Semper clearly defines tectonic hierarchy between art and construct, as a two-layered system of poetry and technique. We see a possibility in the architectural role to staging culture, strengthened by the wall; an introverted part representing the essence of the wall as spatial enclosure. The art form is essential to create the right conditions for staging art. This is the characteristics of the enclosed volumes. These are the dressing, enfolded by the extroverted part, the load bearing solid wall, referring back to the mason's art of the mound. Both are strongly dependant. Without the masonry wall (Die Mauer), the interior wall will not be able to withstand cultural developed conditions of today, and without the interior wall (Die Wand), the exterior wall will only be a physical shell losing its true essence of spatial enclosure.

Like Palladio uses the stage as his framework of presenting, Semper uses dressing as his tectonic stage, and through this we find an inspiration in the wall. This relation between the wall (the mound) and the volumes (the enclosure) can be detailed to accentuate the motive of the enclosure as a stage of art, and the mound as a cultural determined protector to withstand environmental conditions and loads.

To understand how staging can be a driving force within exhibition design, it seems evident to look at the development in museum buildings and display. This should position us tectonically in relation to exhibition design introducing a cultural acknowledgement.

Before the 20th century museum buildings were mediated by architectural currents at the given time and not by development in artwork. However, art and the idea hereof are changing constantly and provide ever-changing demands for their container. The introduction of abstraction caused rethinking of ways to present art to the public:

"Creating that synthesis of art and setting is the challenge that still faces architects and directors. It is the secret of a great museum" – Ada Louise Huxtable, Architecture critic
(Newhouse, 2006, p. 220)

As Huxtable states, it becomes an important design factor to consider the correlation between art and architecture. The traditional museum aimed to be a neutral background that would motivate visitors to form their own understanding and impression of art. The most common used museum space is a big white open space, divided by moveable partition wall, yet this suggests no relation to the displayed art. In our framework the new museum should enhance interplay between art and architecture to create an aesthetic whole. An example hereof, it Guggenheim, New York, by Frank Lloyd Wright, where a curved path interacts with the perception of art. This should encourage visitors to interpret and commit to art and architecture in order to gain from the visit and thereby the individual understanding and relation with place are enhanced.

Besides addressing art, museums have to adjust to even more demanding functional requirements. It is no longer just a place for art experts, but also a tourist attraction that house cafes, library, storage etc. Along with more involving types of art, this makes museums even more focussed on entertainment and education. The museum of today is not only a place for experts, but also a public institution (Rosenblatt, 2001). This is supported by the description from the competition of the Serlachius Museum, since they are hoping to extend their demographic reach.

By this analysis the significance of interaction between art and architecture is noted. The spatial gesture of staging hereby becomes this relation as a means to create a relevant display that enhances narrative of art. However, the structural principle used for staging must adapt to the flexibility of todays museum, not only concerning art but just as well place and man.

Solomon R. Guggenheim Museum. 1959. Frank Lloyd Wright

EXHIBITION ARCHITECTURE

Local museums

Departing in our motivation, culture plays a significant role in understanding architecture as a stage. Thereby, origins of local museums are investigated to understand how a museum can be used to enhance the narrative of culture, embedded in both art and place. Further, the means it applies to enhance this history.

The development of local museums began in the end of the 19th century, when the concept of cultural heritage arose. The task of local museums is the development of "strong links to the conservation and celebration of the distinctiveness of a place", as architect Elena Montanari points out in her introduction to local museums for the research field of European Museums in the 21st century (Peressut; 2013). There is a common understanding that these museums play a crucial role in education about local history and identity, promoting the sense of belonging and provide the roots for an identity (Peressut, 2013). This type of museum has had an increased interest during the 20th century due to especially World Wars, because of political interests and social issues. Furthermore, national and cultural feeling was strengthened as a response. In the later years local museums has had a revival as the on-going globalization and migration tend to blur both personal and common memory, and this has reinforced the need for understanding cultural heritage. By revising uses of the past it may be possible to reshape the cultural understanding and by moving from the museum being just a collection to a narrative that explaines the values embedded in a place, it is possible to create a re-imagination of identity. The opportunity of re-creating an individual cultural memory of the present enables people to represent a contemporary society. Thus, it is possible to develop not only as an individual but also as a community.

Supported by our tectonic approach of staging, the cultural understanding and past can be reinforced. By analysing the context it is possible to introduce important features that develop a common memory. The narrative and reminiscence of place should be read in architecture and together with the collection it creates the memory of the individual.

Louisiana; Museum of Modern Art. 1958. Jørgen Bo/Vilhelm Wohlert. Plan of Louisiana.

An exhibit path

The path that travels through entrance, exhibition and restaurant becomes a narrative in local museums. This is described by the experience it must create and feelings it must evoke.

The construction of an exhibition and its path is arranged to stage a crafted narrative. This has been central to all museums in recent times, and exhibition design is often characterized as narrative spaces; experience of narrative space oscillates between the real and imaginary (Dernie, 2008, p. 21). Through this experience we find a connection between poetry and technique. However, it is important this narrative is challenged and the visitor is provoked to make an assumption in order to create a relation between man, place and art. This experience we find in Louisiana Museum of Modern Art, where a circular path explores place. It is the challenge of visitors to create and explore the narrative, but we see architecture and art as the facilitator hereof. To evoke memories it is evident that these stories become emotional and personal and it is often between artwork that the opportunity to compose the individual story is noticed. To capture this memory, which also architect and professor Dernie finds important, it seems crucial to exploit the cultural heritage given by the place. In the notion of this, it is not only important how art is displayed, but the entire progress throughout the museum is significant in order to obtain a memory:

"movement animates our imaginations – through movement we understand our world" (Dernie; 2008; p. 28)

This suggests the significance of not only the exhibition space, but also how movement emphasizes the space between arts affected by the surrounding context. Besides movement as a physical act, it is related to place as well. The notion of light, nature etc. reflects a movement through year and time that is relevant of understanding place.

Through architecture it thereby becomes possible to influence the perception and cultural memory within the museum. Therefore the exhibit path must be seen as a journey of phenomenological investigations of focus and dwelling, rather than just functional, in which architecture and spatial gesture of staging can help transform the movement into a natural and spontaneous reaction to space as an exemplification of emotions in architecture.

Summary
Through the tectonic approach, theatricality is interpreted as the immediate connection between poetry and technique, by introducing an emotional affection through physical objects. The link between poetry and technique lies in the tectonic understanding of theatricality as the presentation of culture. Thereby we investigate the spatial gesture of staging as means to present the narrative of culture; man, place and art. Departing in theories by Semper, the interest of the wall moving from merely a structural to a spatial element is found.

Transferring the notion of staging to exhibition architecture, the relevance of presenting is obvious. Through this the relation between art and architecture becomes inseparable. Incorporating culture in museums holds a strong tradition as the reaction to migration, and is seen an important features of people interpretation of their surroundings. As a means to motivate and challenge visitors, the movement through the museum should be intuitive yet surprising to stage culture.

Keynotes

- The spatial gesture of staging

- The presentation of culture

- Cultural reminiscence

- The path as an architectural tool

03

CULTURE

In continuation of architecture considered as a cultural stage, we find it important to understand the scope of a given cultural environment in order to succeed in staging. Therefor, we ask ourselves what culture is and how it is sensed in man, place and art.

Culture is a dimension of which it is difficult to fully achieve an understanding through studies. Juhani Pallamaa even expresses that culture cannot be studied, culture has to be lived (Pallasmaa; 2014). Through both tangible and intangible investigations it is our aim to understand Finnish culture through man, place and art. The following paragraph combines theoretical studies in culture to specify our understanding. With a studytrip to Finland and the specific site of Serlachius Museum essentials of culture was experienced first hand. The trip has not only focused on architecture, but also the relation between the Finnish people and their nature. By this, we wish to state the essentials of man, place and art relating to both poetry and technique.

UNDERSTANDING CULTURE

Culture, originating from the latin *colere*, meaning to cultivate, also referring to *the man-made*. Man-made is the artifacts of a culture, meaning all visible or concrete phenomenons a culture produces and accumulates, whether it is processes, art or architecture. (www.etymonline.com). By this, it defines history, traditions and norms accumulated in the physical as well as emotional frames of the place we live, crucial for the human sense and identification of place.

The connection and sensitivity to such place is improved in line with the identification of the artifacts of place, experienced through the multisensory scale of the human being; through touch, smell, vision, hearing – all enhancing the human ability to recognize and memorize. Recognizing and memorizing are the extraction of what moves us as human beings. This expresses an importance of cultural anchoring in artifacts in terms of the built. In our understanding, architecture hereby becomes a cultural stage, reflecting our identity and intuitive connection to place.

"The timeless task of architecture is to create embodied and lived existential metaphors that concretize and structure our being in the world." (Pallasmaa; 2013; p. 71)

In line with Juhani Pallasmaa, expressed in the quotation before, architecture is the mediator of culture thus its structure is a concretization, a stage for the narrative of our culture. Hence, it is our conviction that consequences of migration, sustainable and economical considerations affect the cultural determined language of architecture into a more and more globalized language in terms of detailing and materiality, shaping a homogeneous expression across cultures. (Lund; 2008) This is devastating for the affiliation and narrative of cultural history in architecture. The diminished recognition and identification of place influence the existential footing of the human being, and as we interpret theorist Christian Norberg-Schulz, the Nordic spirit becomes victim of loosing sense of place (Norberg-Schulz; 1996).

To oppose this development in architecture, and having the earlier described notion of cultural necessity in architecture in mind, it is evident to grasp culture rooted in specifications of place. Through this, our understanding of culture is relative to the scale of perspective moving from the Nordic countries as a cultural borderline, defining similarities and relations, to the specific context of Finland.

Lake Melasjärvi, Joenniemi

“In our understanding, architecture hereby becomes a cultural stage, reflecting our identity and intuitive connection to place.”

NORDIC

The Nordic countries narrate a strong architectural history as a cultural province. The expression imbeds the northern context and natural materials, and is realized in the focus on light and construct. The search for architectural quality as the staging of culture must thereby begin in the clarification of Nordic and later Finnish culture. To understand culture in a regional context, Nordic has been investigated.

Light

North stems from the Greek 'enerthen', meaning from beneath, symbolic explained by dark and shaded enclosure (www.etymonline.com) Hence, North portrays the opposite of the sun or a reflection of night and so has the Nordic environment always been recalled as mysterious and indescribable. Through this limitation, architectural focus has evolved around the light provided as a gift rather than taking it for granted. Nordic light adds atmosphere and identity to the Nordic and in line with Norberg-Schulz' description, light thereby becomes the primary character. Nordic light reveals a colder and nuanced tone, dependent on the reflecting of water and sky, rather than the direct southern sun. Hereby, the Nordic atmosphere is dependent on weather, as it changes appearance and perception of space in a quickly. The Northern light has been a cultural mark accentuated through an architectural history focused on this. As light defines presence it becomes a crucial element in staging a Nordic context as a part of a cultural and architectural heritage.

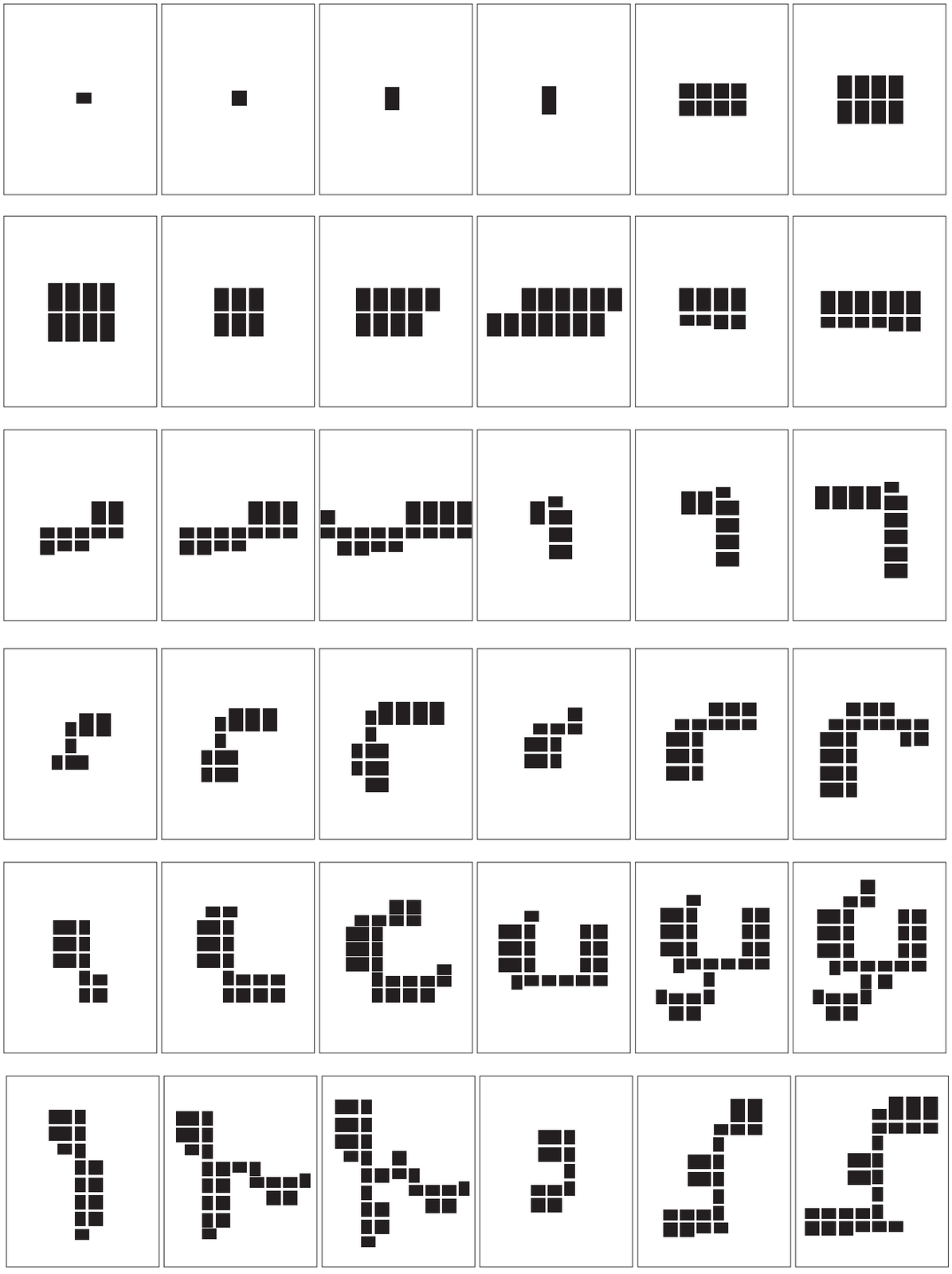
Construct

Equal for all Nordic countries is a recurrence to the cultural determined tradition of construct, as a backlash of the consequences of rational construction methods of the in the 1930ies and 1950ies. (Lund; 2008) This reflects a mutual Nordic understanding of the importance in incorporation of the geographical determined and cultural preconditions in construction. Though, the reaction to Modernism provoked some of the most appreciated architecture in the North in the linkage between foreign motives and cultural preconditions. This was based on the thoughts of CIAM, 1959 and the idea of strengthening the identity feeling through visualization of individuality and place (Lund; 2008). Jørn Utzon had, among others, success in combining the additive principle of the modernism with the mediation of culture and place. 'Espansiva' is an example of how Utzon worked with the additive system as a possibility rather than a limitation of economics. With a reminisence of past Utzon seeks not a relevant motif, but more importantly a valuable erudition. These successful outcomes represent a timeless connection to place and reflect in our understanding a need for emotional incorporation of cultural determined qualities in the construct. The contemporary way of accentuating man, place and art in construct combining physical as well as emotional resources of the local culture with new structural principles. Architecture as a stage of culture must adjust to a relevant and contemporary context, in line with the theories of Juhani Pallasmaa:

"Architectural and artistic works arise in the continuum of culture, and they seek their role and position in this continuum."
(Pallasmaa; 2012; p. 18

Accentuated by Pallasmaa, architectural quality must relate to past before it can affect the contemporary and future world. Through a historical reading of a Nordic construction tradition, the nearest nature and its resources play a significant role in the development of local building methods. This is an element that differentiates between regions and is what separates Finland from their neighbours. Though the limitation of materials has vanished, the intuitive methods remain in the construction of architecture.

Espansiva, 1969, Jørn Utzon

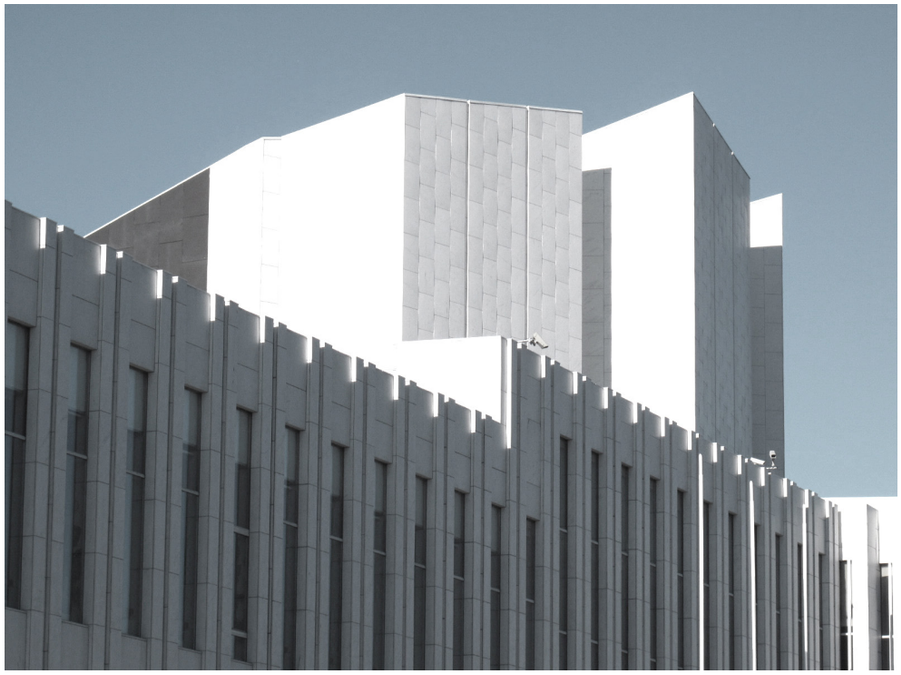


FINLAND

Finland is the most northern member of the EU with neighbouring Sweden (W), Norway (N), Russia (E) and Estonia (S). After 600 years of being a part of Sweden, Finland became a principality of Russia in 1809, before it finally became independent in 1917. Finland is influenced by other Scandinavian countries in terms of culture, welfare and system of justice. The nature of Finland plays a significant role for its inhabitants, and is known as *the land of thousand lakes*. Along with the lakes goes smaller islands of which the most is uninhabited. A third of the country was originally fen, but was dried out for agriculture during the 20th century. Today, 75% of Finland is covered with forest. (www.finland.dk).

Facts

Population:	5.3 millions
Density:	15.7 /km^2
Length N-S	1.160 km
Width E-W	540 km
Lakes	190.000
Islands	180.000



Finlandia, 1971, Alvar Aalto

A long history of being part of Sweden has naturally resulted in great inspiration. However, only about 10% of buildings in Finland are predated their independence in 1917. Thereby, a strong link to Sweden and the Nordic countries exist. A Finnish identity came through their Russian neighbours, turning the Nordic into a regional tradition.

After World War I, Classicism dominated using strong symmetry and style, followed by a big inspiration from the English Arts and Craft movement lead by Elien Saarinen and manifested in the artistic colony of Hvitträsk. A simplification continued towards the 1930ies, where an aesthetic revolution, lead by Alvar Aalto among others, transformed the architecture of Finland. Functionalism was represented by brightness, openness and a composition that reflects the functions within; *the white architecture*. Though Classicism and Functionalism stem from different paradigms, they share a wish for harmony, logic and reason. By this, transition from one to another became an easy movement (Lund; 2008). Despite few counter periods, Modernism arose in the 1940ies rooted in Functionalism. Alvar Aalto represented a direction within modernism that was more expressionistic. It was sculptural with freer lines and had an organic language inspired by the Finnish understanding of its nature. He introduced new material combinations like wood and brick (www.hel.fi).

Contemporary Finnish architecture is derived from Aalto's paradigms of regional and modern architecture. Like Nordic architecture in general, Finnish architecture is represented by a rational and authentic expression. Through this, the architecture of Finland represents a logical architecture that reflects a balanced and respectful understanding of Finnish culture.

The Finnish culture is observed and described through a study trip to Finland in early March 2014. It is based on our phenomenological investigations of place and a conversation with Serlachius Museum director Pauli Sivonen and architectural constructor Jaakko Karppinen.

Aalto Studio, 1955, Alvar Aalto

FINNISH CULTURE

Man

At first hand the Finnish people are experienced as calm, but later recognised with a modest and relaxed approach for living. The strong Nordic relation is also seen in behaviour, where Finns are similar to other Scandinavians. However, a long tradition of being in a nature have made them independent, which often, but misunderstood, result in a reserved manner. They treasure their nature through daily hikes, sleigh rides and hunts, followed by a cold shiver in a lake and the soothing warmth of a sauna. An average Finnish family owns a least one sauna, and often more. Even apartment blocks have a sauna. The sauna is a haunt for families and friends to discuss and relax, rooted in a long and momentous tradition.

Place

Finnish nature is known and characterized by its many lakes and islands. Between dense pine and birch forest and open lakes a contrast arise and create the dramatic place of Finland. The population density is low and it reflects an untamed and untouched nature that mystifies the obscure land. Snow covers the ground half the year and is a feature they have learned to circumvent or even love. Though it complicates many things, it brings a strong reflection of light creating a unique identity.

Art

Museums have not always been for the everyman, and often not prioritized due to accessibility and difficulty. However, they have a tradition for private collections, like the Serlachius, and have in the later years reached a great recognition by international connoisseurs. Besides fine arts, there is a strong architectural tradition spanning 800 years back, and especially through the last decades Finnish architects have put their stamp on international history. Most famous are they for their design icons exported to the entire world. Common to them, is the strong relation to nature, which becomes an inspiration to many.

The Finnish expression, whether talking man or art, is calm and rational and is interpreted as a counteraction to a dramatic and mysterious context. Though inspiration is found in nature, it is portrayed as a climax in the contrast between open and dense, order and chaos, natural and cultivated. Through this a deep respect for nature is sensed, reflective in their architecture as well.

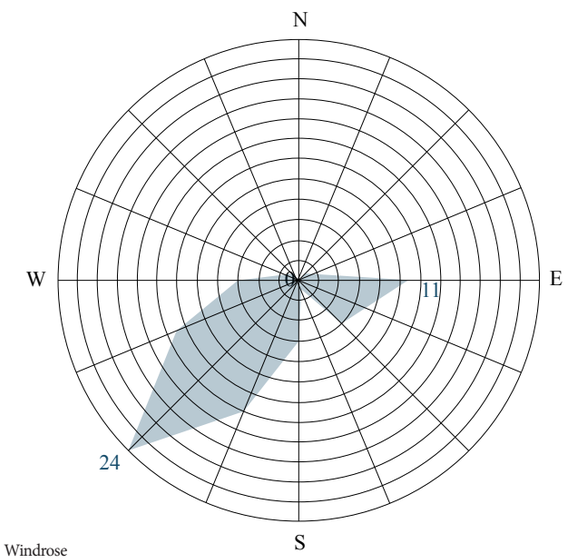
MÄNTTÄ

The nature and forests in Mänttä, where Serlchius Museum is placed, inspired Gustaf Serlachius to open a paper mill in 1868. The work attracted many people and became the groundwork of the city. Because of the vast success the industry provided, the city grew, but it was not until 1973 Mänttä received the title of city. The founder Serlachius had a great interest in art and architecture, and as a result of his success he had a lot of influence in the city. (www.manttavilppulamatkailu.fi). There are approximately 7000 inhabitants in Mänttä and it is located 250 kilometres North of Helsinki. (en.wikipedia.org).

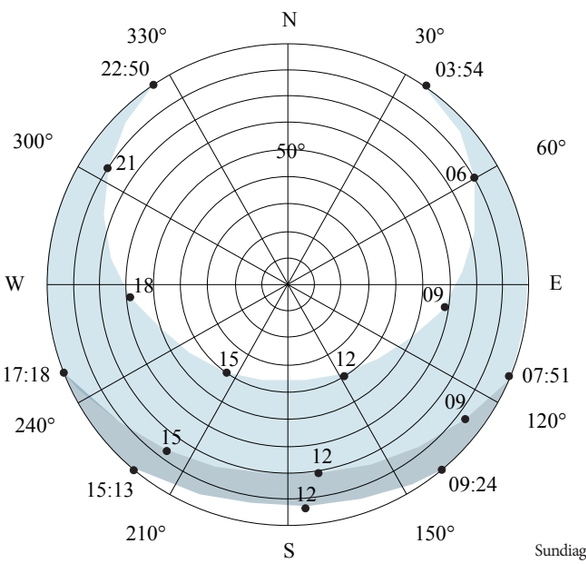
Today, the paper mill is still the main industry of the city, but it also thrives by the cultural environment and tourism of the area. The saying of Mäntta is 'feel free to come further', reflecting an exploratory nature of the inhabitants. Despite the secluded settlement, they show awareness of their surroundings and of what they offer to attract tourists.

JOENNIEMI

Five kilometres west of Mäntta, the site of Joenniemi hides in the dense forest. Approaching Serlachius museum, nature opens up revealing a secluded and peaceful spot. The site of Joenniemi is located on a peninsula between the mainland and Lake Melasjärvi. A small island called Taavetinsaari belongs to the site, and is situated 25 meters Southeast of the peninsula. Featuring both a dense forest and open water, Joenniemi is a representative of Finnish nature.



Windrose



Sundiagram

Levels and access at Joenniemi

The site of Joenniemi is easiest reached by car, but, reflecting the appreciation of nature, a scenic path leads from the city, through the forest and along the lake. Across the site, pavilions rise containing service functions for the manor or even small and secluded spaces for meditation. The last meters, approaching the museum, is by feet following the geometric lines of the landscape to the yard. The peninsula is raised approximately 105 meters above the sea and the contours differ with 8 meters around the site. Both steep and softer slopes occur. The existing main building, Serlachius Museum, is situated on the highest point.

In Finland weather vary during the day, reaching both sun and rain. Rapid changes in the weather are a characteristic feature from one day to the next. In the winter troughs of low pressure that have formed over the North Atlantic bring mild, cloudy and wet weather, while the hottest weather in summer generally comes from the southeast, bringing thunderstorms and heavy rain showers. The annual changes in temperature are of crucial importance for Finland's climate. It is natural to distinguish seasons using a thermal criteria, with seasons defined by the daily mean temperatures of 0°C and 10°C. With this criteria the lengths of seasons can vary from year to year.

Sun
Caused by a northern location, nights are light from the end of May to the beginning of August. In the middle of winter, in contrast, daytime is short. In Mäntta day lasts only 6 hours in December. In the middle of winter it is memorable to experience the dawning of a day on the southern sky around noon. However, when the sky is clear, it is not pitch black at night. Moonlight provides its own atmosphere on the fells, and a glowing Northern light in the grey-blue sky is not rare. The period of grey is really long throughout the country during winter and on clear days the beautiful, blue-tinted grey can be enjoyed for a long time, much longer than in central and southern Europe.

Wind
The windiest periods are autumn and, in particular, the winter months. In Finland's maritime areas storm-force readings (more than 21 m/s) are recorded on average on four days in November, December and January. The number of stormy days per year fluctuates. The dominant direction is from Southwest, in which our site is exposed. (http://en.ilmatieteenlaitos.fi/)

Precipitation
Permanent snow covers open grounds about two weeks after winter begins. The snow cover is deepest around mid-March, with an average of 30 cm in Southern Finland (http://en.ilmatieteenlaitos.fi). The lakes freeze over in late November and early December. A layer of clean white snow increases the brightness by as much as 80%, because artificial lights and moonlight are reflected off it. It is only completely dark when thick cloud covers the sky and there is drizzle or mist.

The topography reveals a site that falls towards the lake, creating a strong directional expression. Furthermore, it shows the area, where the slope is steep, which is useful for larger building volumes. The Finnish climate is raw with a strong differentiation from season to another. Due to varying light conditions, it is evident to utilize daylight in a way that exploits it.

LANDSCAPE

The section shows the main building of the manor located on top of a natural hill, slightly sloping down towards the lake in South. A brook Northwest of the main building creates a peninsula that accentuates a hierarchical order of the main building according to the specific location. A dense forest surrounds the site from North, East and West, while South opens up and extends the horizon accentuating a strong directionality.

SERLACHIUS MUSEUMS

Our thesis takes point of departure in a brief of an open international design competition for a museum of fine arts in Finland; The Serlachius Museum Gösta Extension. Gösta Serlachius Fine Arts Foundation and the Finnish Association of Architects carried out the competition. The primary aim of building is expanding the exhibition area, however also introducing modern museum features like restaurant, conference and teaching. It is their goal to become an international recognized cultural institution.

Gösta Serlachius (1872-1942) founded Gösta Serlachius Fine Arts Foundation in 1933 with the aim of a new museum building to hold his increasing private collection of art. Before realising it, Gösta died in 1942. After his death, his widow Ruth Serlachius placed the collection for public display in a part of their home, Joenniemi Manor. The Serlachius Museum opened in 1945.

During the 1980s, the collection had grown and facilities underwent a big renovation, making the entire manor suitable for housing fine arts. This provided an exhibition space of 500 square meters. In 2003, the foundation opened Gustaf Museum, named after Gösta's uncle, in the city centre of Mäntta. (www.serlachius.fi). Today, the foundation has one of the biggest private collections in Northern Europe. However, they only have space to exhibit about 7%. As a result of this and the wish of the foundation to exhibit contemporary art as well, they arranged an architectural competition. It was settled in 2011 and will opened in June 2014.

Serlachius Museum Gösta Extension
The brief for the extension to existing Gösta Museum, Joenniemi Manor clarifies visionary and functional needs. The existing main building of the manor is not a part of the design competition, except for a connection between the existing building and the new extension. The floor area of the existing is 1000 square meters, of which 500 are exhibition spaces. The brief focuses on aesthetic, functional, technical and economic targets, with a hope that the Gösta Museum together with its collections can enhance the appreciation of the Museum (Brief; 2010).

According to the brief a suggestion must respect the history, but at the same time reflect tendencies of contemporary architecture:

"…An implementation solution which is compatible with its unique cultural environment and architecturally of top quality …"
(Brief; 2010; p. 3)

The respect for the historical environment as well as nature of the site is evident to preserve the spirit of the museum. Principles of sustainability must be respected to create a contemporary museum.

The purpose is to expand and modernise the exhibition space, collection, storage, archive, offices and staff facilities. An important factor is to consider the public and professional facilities as separate functional entities, as it serves both a place of work and entertainment respectively.

The brief gives an impression of a modern museum, working even as cultural institution. It seems important that the museum exceeds this and that it enhances qualities besides what art offers in order to attract a broader audience. We sense the need of deference for their existing building, the preserved landscape and nature.

"...a suggestion must respect the history, but at the same time reflect tendencies of contemporary architecture"

The competition program has a strong focus on historical and cultural environment as fundamental for an extension. This means that the brief not only offers functional requirements but also visionary thoughts in line with our tectonic approach considering architecture as a mediate of staging culture, represented by man, place and art. As we seek for an understanding within the scope of a given cultural environment, a study trip to Joenniemi Manor is arranged to analyze the site and the existing main building of the manor to which an extension will be connected.

As follows, phenomenological investigations of place are found evident to analyze the site to extract essentials of place in terms of culture. By this place, we will be able to express what to stage and how, to enhance the cultural determined sense of place. The multisensory experience of place, in line with theories of Juhani Pallasmaa, achieved through phenomenological investigations, make us aware of what moves us on this specific place. (Pallasmaa, 2005). By designing architecture with the purpose of enhancing these extractions of what evoke feelings, both poetry and technique of place is important.

To achieve a deference of place, we strategically analyse place inspired by the representation method *Serial Vision*, developed by Gordon Cullen. Inspiration from this method is used to absorb and analyse the character of site, by photographing from significant viewpoints while moving around. These viewpoints are depicted to contrast and enhance visual impressions to identify character of place (Cullen; 1961).

SERIAL VISION


1
2
3
4

1 - Order of cultivation
The first significant view emphasises geometric lines from the landscape design seen from the existing manor and reveals a clear direction towards the lake south of the main house. This enhances a contrast to the otherwise natural surroundings. Further, the viewpoint emphasises how existing, cultivated landscape design stages art by using the scenic natural landscape as a setting, enhanced by geometric axes. This exemplifies synergy between cultivation and nature, which is a key point of ours.

2 - Order of nature

The next significant view shows a dense forest that characterises place west of the existing building. The view stages thin and elegant stems of birch trees, allowing visitors to experience a natural organisation, accentuating a contrast to the previous view, as both cultivated and natural sense of place is respected and have importance for the understanding of place. Further the outlined view of stems stages a characterising nearness to nature.

3 - Nearness to water
A third view is pointed towards the lake south of the main building, and stages the wide and open horizon of place. Furthermore a cut in the view does not allow visitors to experience the ground in front to enhance nearness to water, staging importance of the scenic lake to the character of place.

4 - Taaventinsaarin
The fourth significant view is the island Taaventinsaarin Southeast of the existing building. This is what Serlachius fell in love with when he saw the place for the first time, and became the reason why he built the manor on this specific place.

EXISTING MAIN BUILDING

Joenniemi Manor

The analysis takes departure in the architectural history and the cultural environment at Joenniemi. Point of departure is a brief prepared by architect Seija Hirvikallio, an interview with Pauli Sivonen and Jaakko Karpinen, and phenomenological investigations of place.

Joenniemi Manor was built in 1932-1935 and is situated at a visually prominent location, viewed from the mainland as well as from Lake Melasjärvi. The architectural style of the manor was inspired by English Country Houses with an axial and symmetric expression. Axes across rooms create long perspectives that make space seem bigger. Though it holds the authority of classicism with reference to Palladian style, there is a regional authenticity rejecting the picturesque expression and adjusting the Manor to the Finnish culture.

The main building of Joenniemi Manor was built for residential use with three storeys. The ground floor housed studies of the master and lady, library, drawing room, dining room, and kitchen facilities. A staircase for servants was located at the western end of the building and originally the building had a lift connecting all floors. On the second floor were bedrooms, a large foyer and a living room. The bedrooms of the master and lady had their own bathrooms. In the basement were a wine cellar, bathroom, laundry room and storage rooms. The eaves of the building were laid up stepped and the building was given a high gable. The height of the attic is 8.6 metres and total height of the building is 16.7 metres. Other buildings held facilities for guests and servants.

The main floor was converted to museum use in 1945 following the death of Gösta Serlachius and the end of World War II. The lady of the manor still used first floor as her home. After a renovation in 1983, the entire building turned into a museum. In connection to the basic renovations, the existing building components and surface materials were reused whenever possible. The original spatial division has, for the most, been preserved.

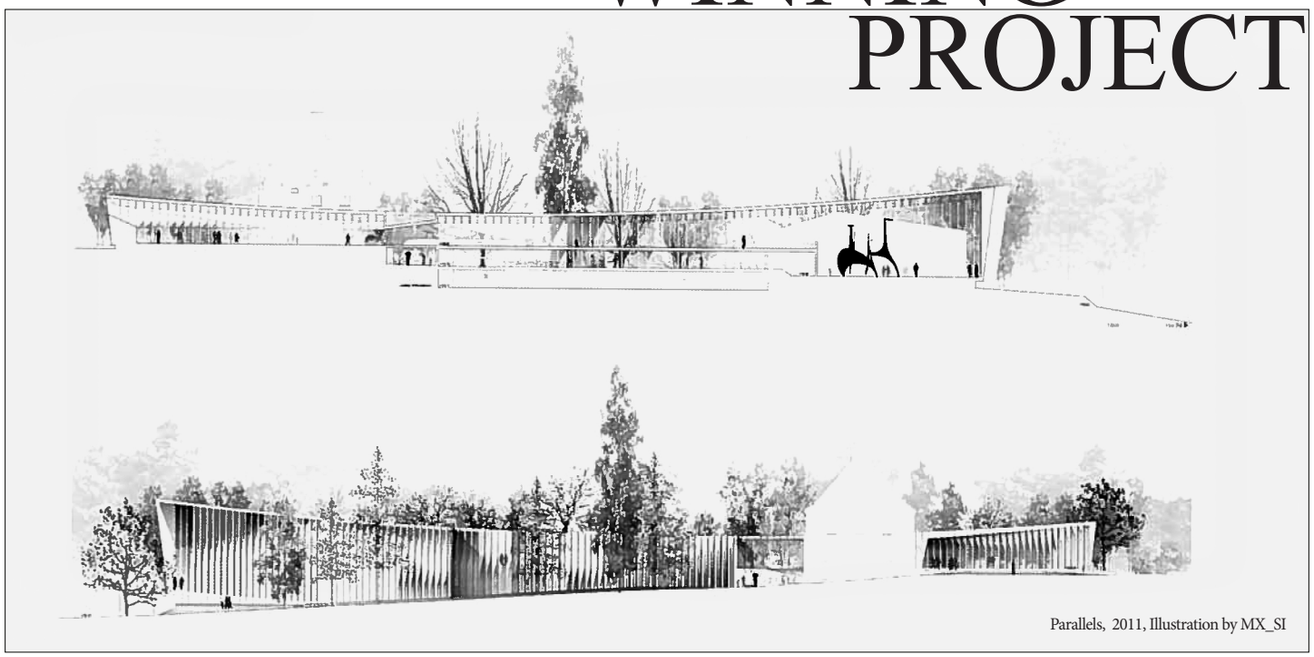
The geometric lines of the landscape extend the inner spatial structure and the relation between rooms. Through clear axes and large windows without bars, the view towards the lake is staged as essential of place. The exterior is simple without a significant ornamentation, while the brick facade and tiled roof break down scale, referring a Finnish architectural approach.

The winning project, named parallels by the jury, is a proposal by the Spanish architectural firm MX_SI. Even though they are familiar with a different context, they seem to have captured the Finnish spirit within their entity. The controlled building has a strong direction towards the lake that supports and respects the direction of the cultivated landscape. Furthermore, the extended building forms an entry yard, which provides a natural and readable beginning of the experience. The jury points out the necessity of the building itself being a "work of art" (Evaluation Minutes, 2011), and in our opinion one of the characteristics of art is the ability to see different layers and new layers, whenever you contemplate. When passing through the almost finished extension you are, however, not served with these layers, as the building and flow seem to continue in the same pace from beginning till end. The endless number of wooden frames reflects the repetition of planted trees in the park, but becomes an uninspiring element in the journey. Only few spots offer spectacular views staging place by cuts in the stringent shape.

Functionally, the circulation is easily understood moving chronological through the three exhibition halls ending up in an overwhelming exhibition hall, which is reached either on ground floor or overviewing the room. It seems a shame the restaurant is hidden in a basement-like part that does not justify it being an attraction itself. However, it utilises the existing terrace for outdoor serving.

Parallels is rational and understandable proposal that offers no surprises. It holds certain logic, and as a result little has been changed from first proposal to final design. When looking from afar it blends in between trees with the grey stained wooden cladding and exceeds at no point the hierarchy between existing and extension. By adapting to nature, becoming almost anonymous, place is staged. The strong focus on place has left an unequal attention to the three important factors of culture, leaving man and art unaddressed in the framework of Parallels.

WINNING PROJECT



Parallels, 2011, Illustration by MX_SI

Summary
Culture becomes an important aspect in architecture, as the essence of man, place and art. Through a strong accentuation of light and construct in the Nordic context, these become important features of staging. Investigations of culture tell of a rational country, defined by a distinct nature different from the Nordic neighbours. Untamed nature mystifies land and creates a tension field between dense forest and open lakes that motivate an explorative side of Finnish people. The sauna plays a significant role, as an element of tradition linking people and families together.

The history of the Serlachius Museum is rooted in a still existing paper mill, as the interrelation between the museums and Mänttä. Through this, we see an affiliation, as the root of existence. Joenniemi lies in secluded place with the manor placed on a hill overlooking Lake Melasjärvi. The site slopes towards the water with a steep slope facing West, which underlines Joenniemi Manor as an essential of culture, relating to both man, place and art. The manor holds a strong geometric expression with clear axes crossing through extending out into the landscape. Through this, a direction to the lake is accentuated, creating a clear border between natural and cultivated place. Four views of the site are experiences as important elements of cultural understanding of place, staging the mentioned features.

This paragraph introduces the importance and our understanding of culture, experience in a Finnish context. By this, we seek tools in the process of staging through man, place and art. Cases become specific examples hereof, explained in the following pages.

Keynotes:

- Paper as a collective memory
- Varying heights
- The curiosity indulged by dense and open
- Cultivated geometry versus chaotic nature
- The respect of Joenniemi Manor
- Strong direction towards the lake
- Inddirect light as a primary source of light
- Four important views as essence of nature
- The sauna tradition

CASES

04

The following paragraph introduces three essential cases that exploit the spatial gesture of staging; Laban Dance Center, Therme Vals and Canova Museum. They are analysed through the method *Analysing Through Scale* developed by PhD Marie Frier Hvejsel. Each case is an example of how staging is achieved through a structural principle:

- Laban Dance Center, London, experienced at a study trip in 2013, impressed by a strong visibility through the building. It creates a strong community ranging from the single dancing class to the surrounding city through the staging of man.

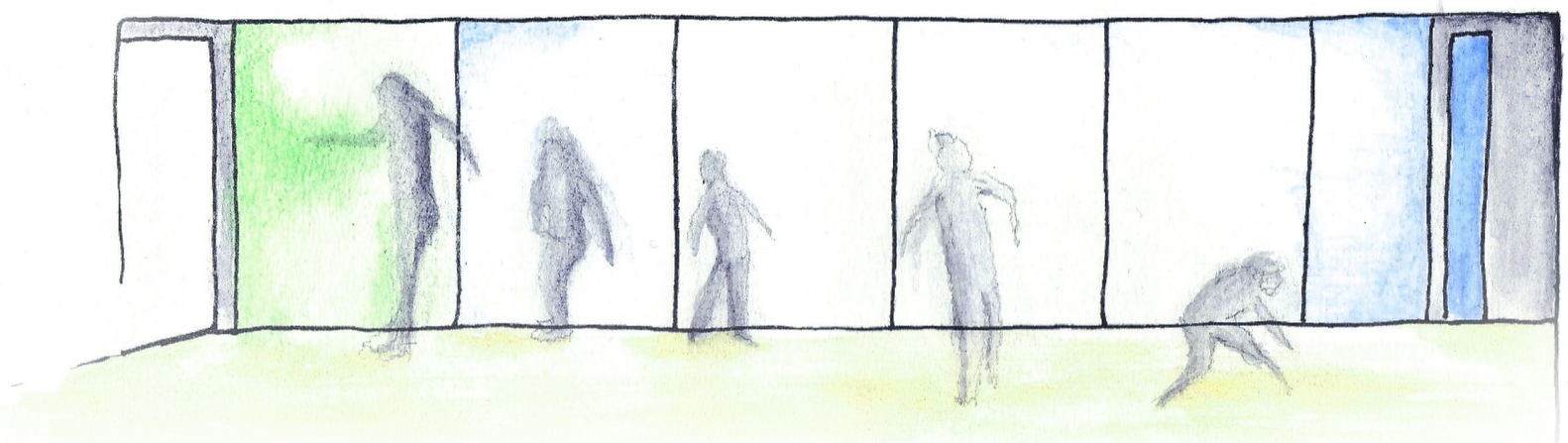
- Therme Vals, Switzerland, expresses a convincing relation to the nearby mountains. By the staging of place, the building utilized the contrast between the vast expanse and the enclosed intimate space.

- Canova Museum stages art by a consistent exploitation of daylight. The sculptures are presented in direct sunlight, casting a lively dimension to the static sculptures.

The cases are examples of our tectonic theory and its use in practice. By analysing, they will provide a tool and understanding of the spatial gesture of staging, helpful in our further process of creating architecture that moves people.

Therme Vals, 1996, Peter Zumthor

MAN
LABAN DANCE CENTRE



Laban Dance Centre is a public conservatory of music and dance in a London suburb. It is designed by Swiss architectural firm Herzog & de Meuron and inaugurated in 2002 (www.trinitylaban.ac.uk). Through the method of *Analysing Through Scale*, architecture is analysed to reveal the constructing principle that stages man.

Function
Interior windows separates the dance halls from the surrounding corridor, which make it possible for all to see dancers practice. The visual connection becomes part of a learning process across ages, disciplines and skills. The windows ensure daylight from various sides when practicing and though corridors are centred in the building they still receive diffused light by the interior windows along with light shafts.

Emotion
Visibility across functions creates coherence through the building, in which the community spirit is enhanced. An inspiration, admiration and respect is indulged through the windows that encourages both dancer and visitor. Furthermore, the awareness of an audience for every practice makes every show a premiere, inspiring to always do your best. When Herzog & de Meuron chose these window elements, they also carefully chose specific focus points in which the spirit of this community could be revealed. By this, the spatial gesture of staging tells the narrative of a vivacious and ambitious dance community.

Realm
Laban Dance Centre is built in a working-class district in London. Though the centre reflects an energetic community, the focus likewise lies in involving the underprivileged of the suburb becoming an asset of the environment. Not only staging dancers, the windows also relate to nearby place by illuminating history, like Deptford St. Paul's Church and Deptford Creek. Rather than hiding negative aspects of society, the focus lies in creating a community, which exceeds that of the dance centre.

Construct
The centre has a non-load bearing facade, which means that the structural system consists of slabs and loadbearing inner walls. The detail of the inner delicate windows become a contrast obstructing massive concrete walls. As an aspect of staging dancers and environment, the attention is drawn towards the change in materiality, indicating a point of interest and importance.

Principle
The spatial gesture of staging, introduced by Herzog & de Meuron in Laban Dance Centre, tells the narrative of a community ranging across dance, music and society. Stages are created to accentuate features to direct visitors towards a relevant narrative. The structural principle of framing connects Laban Dance Centre in its entirety staging the narrative of a working-class districts transforming to a graceful and ambitious dancing community.

PLACE
THE THERME VALS

A structural detail occurring in the translation of the carrying wall is analysed in the architectural work of Therme Vals, Switzerland, designed by Peter Zumthor. It is analysed to investigate the presence of staging in relation to experiencing the architectural whole, and to investigate the structural principle of constructing architectural quality by structural detailing.

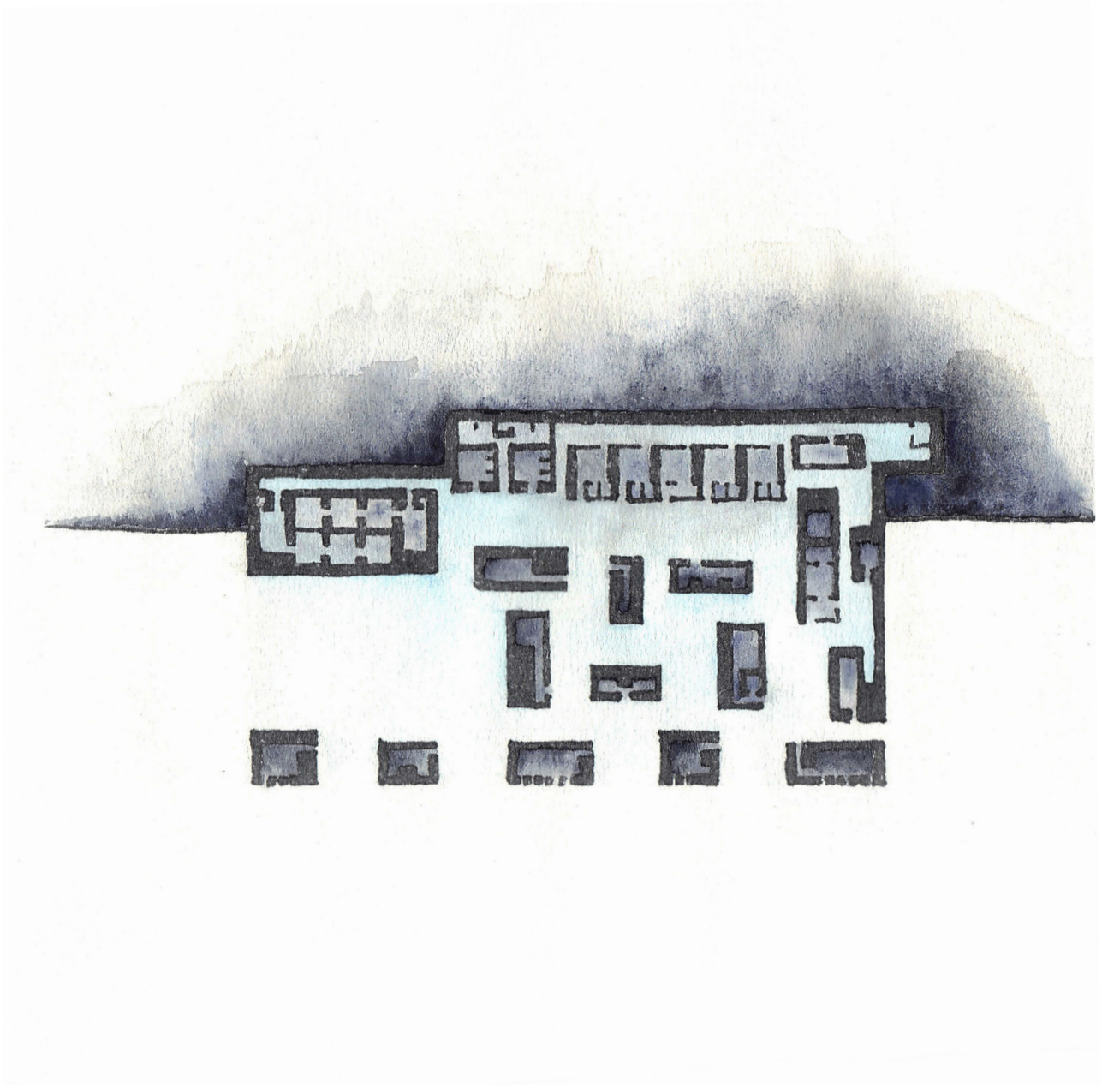
Function
The structural detail is the formation of carrying walls, which create smaller intimate spaces in an elsewise open plan; it becomes a unification embracing structural, emotional and functional aspects. Every wall in Therme Vals becomes a structural core, carrying the loads. It is the spatial divider, which creates contrasting spaces. The thickness of the walls controls the light, creating a dark and shady space between the large windows.

Emotion
In the investigation of what makes architecture emotionally impact us as human beings and move us, Therme Vals is a work representing such emotional impact of the structural detail. The contrast between light and shadow emphasizes diversity in materiality, as shadows enhance a third dimension and irregularity. This perception of space, created by the light intake enhancing the transition into a new zone, is experienced as an intuitive understanding of circulation, guiding the visitor by encouraging curiosity. It is all means of building up a stage, accentuating time and place. By attracting visitors from dark enclosure towards the light, a natural focus stages place.

Realm
The contrast of being embraced by solid walls, not in visual contact to the surroundings, enhances the affiliation to the outside, as the visual contact brings visitors the sense of being closely physical connected to the surroundings and the scenery. This experience is consistent with the relation between the context and the architectural whole that melts together with the hillside. The visitor is literally going through the experience of the meeting with daylight and nature while passing the way out of a cave. Zumthor stages the Swiss mountain through the concept of contrast between dark and light.

Construct
The building consists of a slab carried by cores that become room-shaping element in the open plan. These boxes, having different functions, evoke curiosity to experience the rooms behind, and guide the visitor through the room. By limiting the construction to the cores and thereby eliminating an actual exterior wall, the border between exterior and interior vanishes, creating a strong focus on the context. In this way the construction both strengthens the functional and emotional aspects of the concept, and becomes active in creating the spatial gesture of staging. Through a contrast between focus and dwelling, Zumthor stages place as an essential aspect of his architecture.

Principle
Zumthor's way to reveal the spatial gesture of staging through the structural principle of the architectural whole can be extracted from these observations. Even though the same structural detail is repeated all over, every corner and every partition is individual and shapes its own identity and meaning in the bigger envelope. This detailing evokes curiosity in its way of forming the circulation. Furthermore, the emotional and functional values of structural detailing does not only enhance and add identity to interior space, but it also connects the realm of the architectural whole to the specific place of context.



ART
CANOVA MUSEUM

The sculptures of Canova Museum in Possagno, North of Venice, were originally displayed in the local basilica, but in 1958 Carlo Scarpa executed an extension to produce additional space. The spatial gesture of a window detail is analysed through the method Analysing through scale to determine its relation to the architectural whole. This will reveal a structural principle, which might become a relevant tool in staging culture.

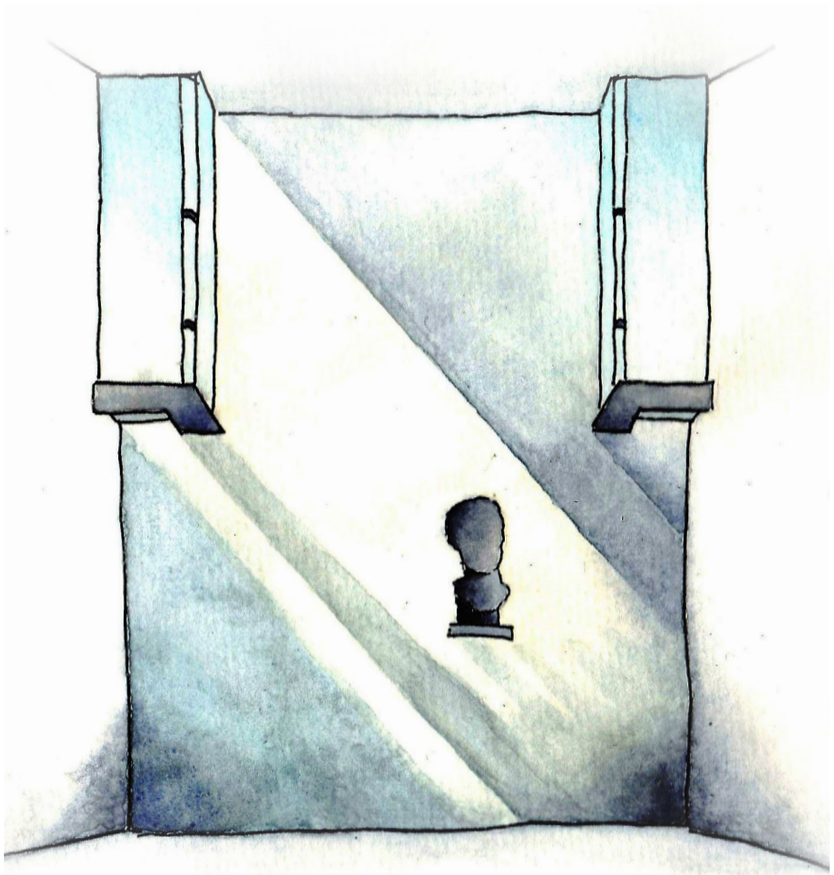
Function:
In a small cubic exhibition space Scarpa has positioned four glass rectangles in matching pairs in the upper corners and creates an introvert window relating to the room. Each one fill space with a wandering light from various directions to present the sculptures in the most essential way. It becomes an ever-changing experience with various shadows and silhouettes and thereby Scarpa presents a strong relation between window and art, as they become co-dependent. Light animates the vivacious form and refined surface of the sculptures and provides them with a lively dimension. The window creates a balance between dark and light, void and solid.

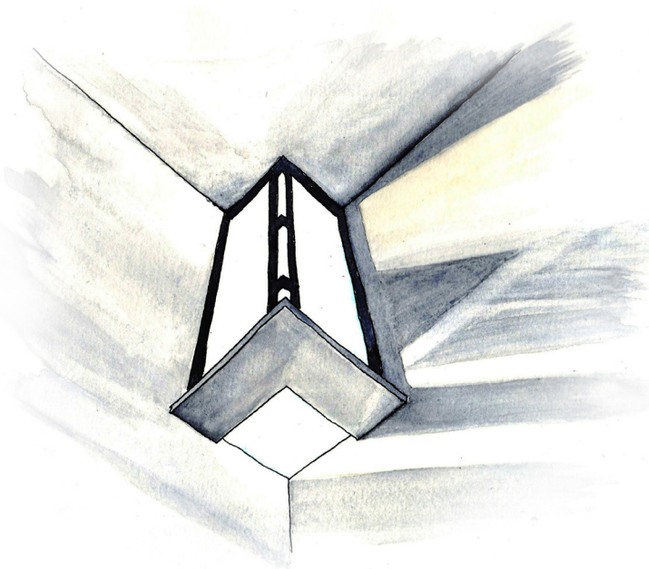
Emotion:
With the demonstration of movement and mutability of light, Scarpa presents an experience that is not only related to art, but likewise to the emotional state of the visitors. The apparent simplicity is infused with the softness of life without creating an immediate connection to the context, which gives an enclosed place for both focus and contemplation. It suggest the presence of a void that somewhat dissolves the edge between in and out, past and future, and in this lies the suspension between presence and absence. The spatial gesture of the window detail hereby becomes staging, as he accentuates the sculpture to become everchanging rather than a static art piece. Scarpa drags in the view and provides a protected introvert space to fragile sculptures and visitors.

Realm:
The Canova Museum is an extension to a neo-classical basilica completed in 1836 (www.axelmenges.dk). The new wing stands as a contrast to the monumental nave, in which sculptures are supressed by the sombre environment. Scarpa dissociates from this atmosphere, which suggest a criticism. Instead, it seems evident that elements of the visual culture and the built environment are conducted together to create a greater insight. It might be the attempt the see exhibition design as a consumption of art rather than a prejudice passed on it.

Construct:
The windows are introvert rectangles and almost invisible. They consist of glass and thin iron frames and have a slim plaster shelve. It is a light structure that compliments the simple form of the cube by using the same idiom. By placing the windows high, the visible contact to life outside becomes limited to follow the moving sky and day is followed by changing daylights. By creating a simple structure that has no specific view, a focus towards the sculptures is evoked by strong light beams somewhat framing them and creating a strong direction.

Principle:
Carlo Scarpa presents the spatial gesture of staging in order to amplify and rationalise the display. His use of light creates a fusion of space and object that also juxtapositions of what is fixed and what is fluid. The window becomes not only horizontal element, but also vertical, as something that relates a temporal and mental state. Furthermore the windows contribute to an introvert space. This influences the sculptures since they gain focus as elements captured somewhere in between these states. By that he is able to stage a secluded environment in which art becomes the centre of space.





Summary
The cases provide relevant architectural tools, explaining staging culture on a concrete level. The visibility across construction in Laban Dance Center stages a history of a working class district rising to a community, staging essential of dance and place. Zumthor on the other hand uses light as the center of stage, and through contrast between dark and light created by structure, visitors become aware of place. Opposite this, Scarpa excludes the context and lets light stage sculptures. By dissolving the perception of exterior and interior, focus lies completely in the animation of art. In these cases the exemplification of staging becomes the linkage between poetry and technique through a simple structural principle.

Keynotes:

- Staging occurs in various scales

- Contrast

- Visual connections

- Direct light indulges life through a play with shadows

- An introvert space creates focus

05

PRINCIPLE

Departing in the tectonic theory of staging and executed analysis, this paragraph forms a conclusion.

The room program explores the parameters given by the competition brief, listed as a set of functional demands. Spatial parameters are, however, defined through the subjective analyse that has been presented. By the room program, design parameters and a functional diagram, it is possible to execute a concept. This explains a principle of construct that accentuates the spatial gesture of staging. The paragraph allows us to move from an analysis to tangible parameters, easier translate into architecture.

ROOM PROGRAM

SUBJECT		FUNCTIONALITY			
Function		Accessability	Access to site	Daylight	Specific demands
Foyer services	Foyer	+++++	+	+	
244m^2	Tickets/shop	+++++		+	
	Storage				
	Wardrobe/Toilets	+++++			
Conference	Conference	++++++	+	+	
450m^2	Teaching	++++++	+	+	
	Storage				
	Service room	+++++			
Restaurant	Restaurant	+++++	+	+	
232m^2	Kitchen	+++++		+	
	Storage				
	Toilets	+++++			
	Garbage	+++++			
Exhibition	Temporary exhibition	+++++		+	Ceiling height 3.5m/9m
1000m^2	Collection	++++++		+	
Collections	Archive	++++++	+		Column-free areas
510m^2	Conservation	++++++	+	+	
Offices	Office	+++++	+	+	Seperated from public areas
400m^2	Meeting	+++++	+	+	
	Storage				
Other	Technical room	+++++			
164m^2	Cleaning				
	Storage				
	Maintenance			+	

STAGING

Man	Place	Art	Spatial Experience
+	+	+	Open, spacious and intuitive
		+	Unobstructed
+		+	Introvert focus
+		+	Intimate and focused
+		+	Exposed
+			Lofty and formal
		+	A sense of orientation
		+	Unobstructed, open and focused
		+	
		+	
+	+		Private and secluded
+			Informal and relaxed

The requirements connected to the different functions are presented in the schedule. These are given by the competition brief, vision and analysis, and explained in the previous paragraph. It is clarified by dividing it into functionality, spatial quality and gesture of staging, and will schematically express important factors that have been accounted for in the design process.

The subjects are given by the competition brief, in which also functional parameters are stated. Functionality is based on inner use of the museum, regarding circulation, daylight etc. Decisions of staging are focusing on the investigations of analysis, as an example of what we find important in specific parts of the Museum. To each of the subjects, a spatial experience is linked to the object of staging.

The architectural solution should mediate culture represented by man place and art. The act of staging becomes the tectonic imitation and interpretation of culture, as the architecture becomes the stage and foundation of presenting the essence of a context and this should evoke an emotional message at the visitor. Throughout the analysis, staging has been developed resulting in specific design parameters explaining how staging can be evident and reinforced in Serlachius Museums. The parameters are listed representing each chapter of the program.

DESIGN PARAMETERS

Staging
Construction has to combine physical as well as emotional resources of the local culture with new principles of construct, to ensure architecture as the mediate of culture, adjusted to a relevant and contemporary context.

The vision of staging the narrative behind every art piece must be reflected in the new building and a variation in the exhibit path should provoke emotional experiences of not only the art, but also place. It should create places for both focus and dwelling.

Culture
Light should be capable of staging and accentuate the identity of Nordic culture. The changing light conditions during the year makes it important to design a flexible lighting system that stages man, place and art. A bright summer and reflection from the snow at winter creates a focus on diffuse light as the optimal for presenting art.

The recognition of the difference between man-made and natural should be seen in the new museum. It should be a contrast to nature. The geometric is what enhances the natural, and the straight perspective lines create focus points within the nature. The saying of Mänttä “Feel free to come further” must be represented in the experience of the museum.

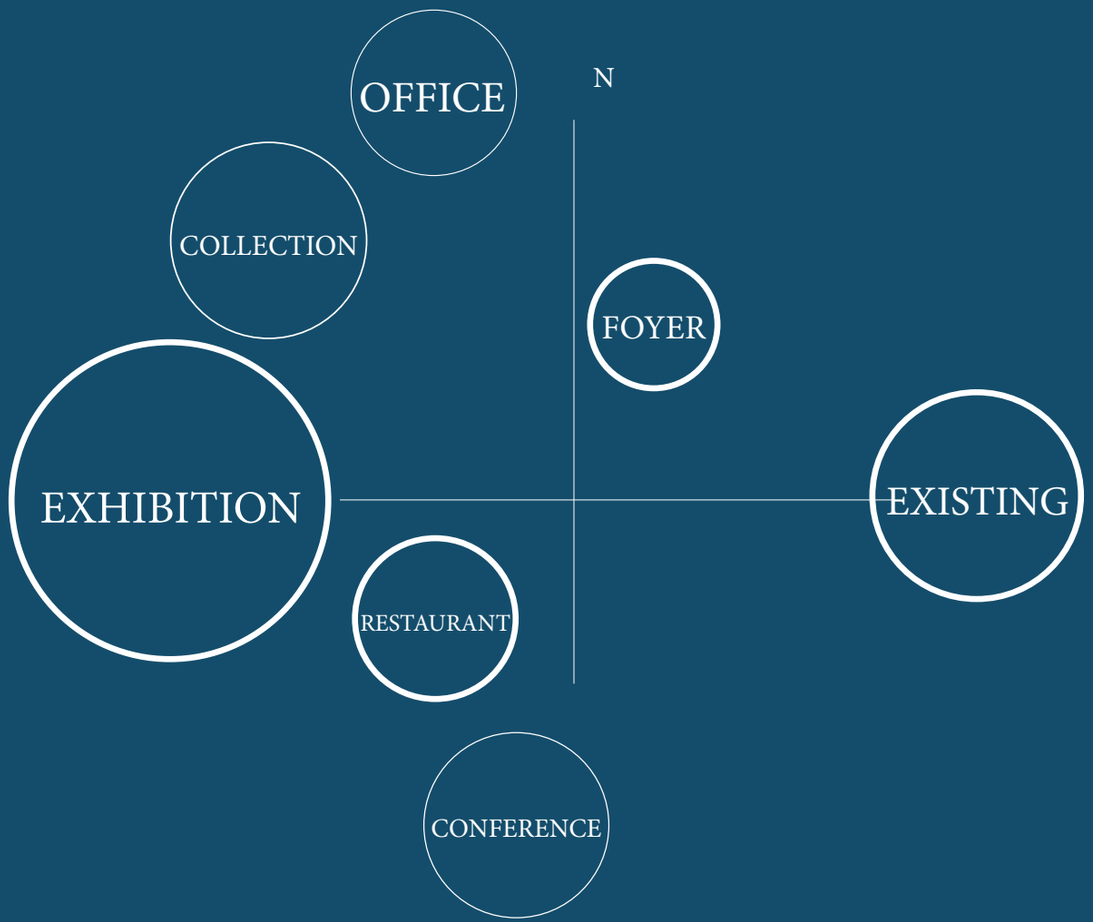
The building plot has varying levels, which must be used in the creation of big exhibition volumes.

There should be a connection from the extension to existing building to create one museum. There must be a separation of public and professional functions to respect that the museum is an institution and a workplace respectively.

Cases
The use of a visibility across functions and space allows the staging of man in a discrete yet narrative manor.

The use of contrast, like open and closed can facilitate the spatial gesture of staging a specific place.

The use of direct light accentuates a focus making it possible to control the staging of art.



FUNCTIONS

Through the design parameters and room program, it is possible to arrange functions in a diagram regarding inner relation.

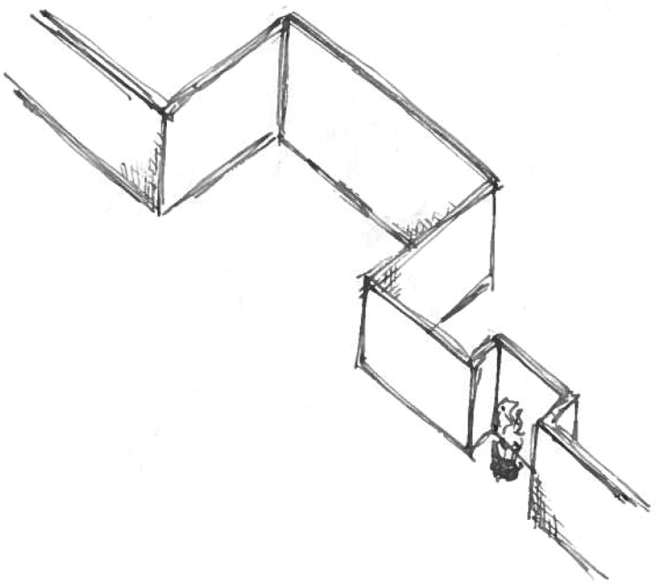
The existing Joenniemi Manor represents a long history as a part of the local culture, and must be respected through a distinct border. This will create hierarchy, as the existing will be introduced as a freestanding element in the museum. The foyer is exposed, inivi-ting visitors in, and the restaurant gets a central placement easy accessible, from both exhibitions and conference. The office gets a secluded placement with no immediate connection to the public areas. This will ensure a private department to respect the museum as a place of employment.

Departing in the notion of the exhibit path and the experience of moving between focus and dwelling, the remaining functions are placed in a fluent path with a varying experience in the staging of man, place and art. A notion of how art is delivered to the collection and food for the restaurant must be taken into account.

FOLDING

In compliance with our interpretation of tectonics, the spatial gesture of staging can be achieved by a principle linking poetry and technique. Initially, the history of paper, significant of place, became an inspiration for us to create a linkage between culture and architecture. Using the characteristics of the wall in terms of Semper, the partition of the wall distinguish between an introverted and an extroverted part and their mutual relation can be used to their adaption to the staging of man, place and art.
A straight wall has no spatial relation or any hierarchy in relation to what is introverted or what is extroverted, but only by the simplicity of a single fold of a wall, a spatial hierarchy starts to appear, and the power to take a position and relate to the spatial gesture of staging.

As follows, folding is a structural principle of staging as it has the ability to control and to create a spatial direction. It holds a congruency between outer form and inner life as the stage. The fold can create focus in different scales according to what to stage and how, and it can create contrasts between the enfolded or embraced, and the open and exposed. It can be a spatial matter of mystification and can rouse curiosity, as it does not reveal everything, and by this it becomes a matter of circulation, enhancing, concentrating and staging when concealed objects suddenly occur.



06

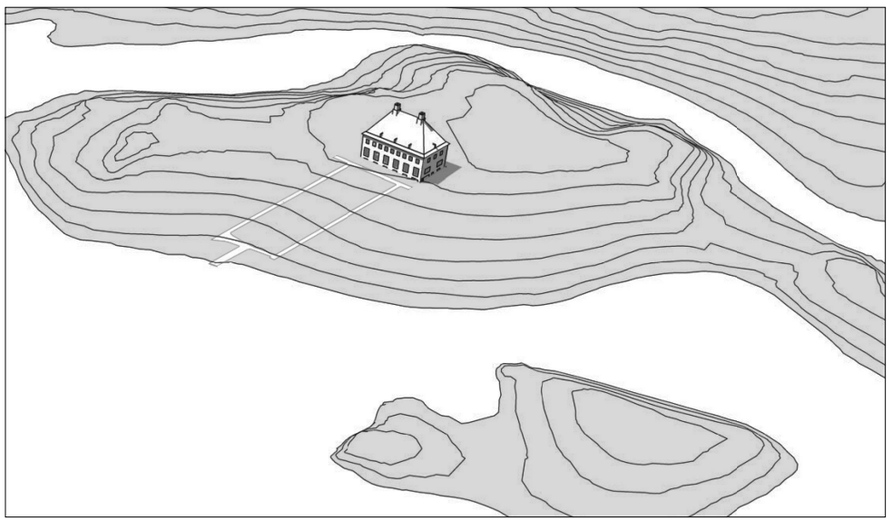
The following paragraph presents our suggestion to Serlachius Museum, described from exterior to interior. Through plan and corresponding visualisations the presentation explains functional, technical and aesthetic qualities of the design. Moving through the paragraph you experience the movement through the museum, as the chronologic understanding of the museum. Both the technical and poetic argumentation of the spatial gesture of staging is enfolding through folding, as the structural principle.

Joenniemi, from opposite Lake Melasjärvi

PRESENTATION

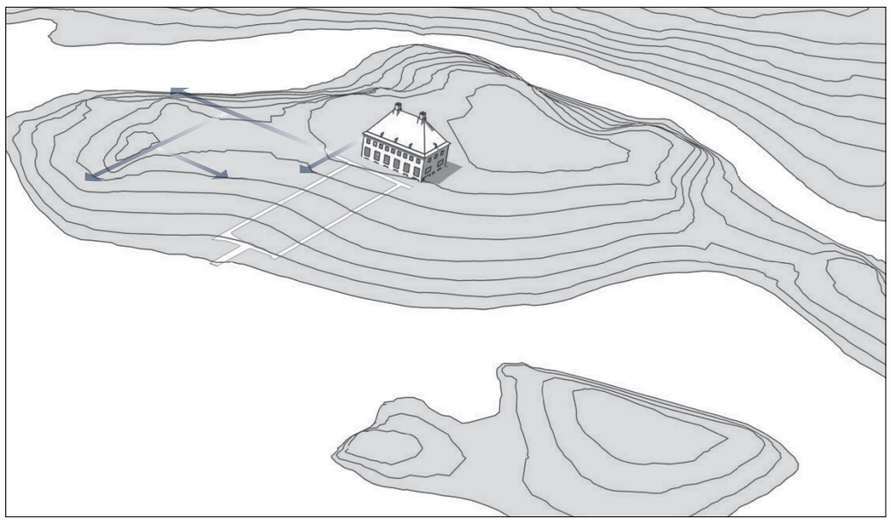
DEVELOPMENT

Combining the structural principle of folding with design parameters, we strive to create a relation between theories of a tectonic approach and functional and spatial entities of the room program. In a historical and cultural adaption to place, a masterplan for Serlachius Museum extension takes shape. An overall development of the masterplan is diagrammatically presented as a means to outline the overall process.

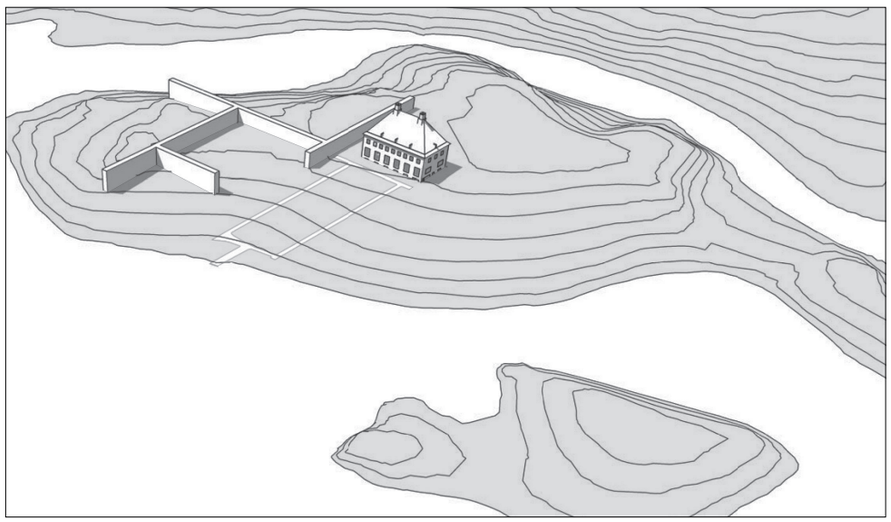


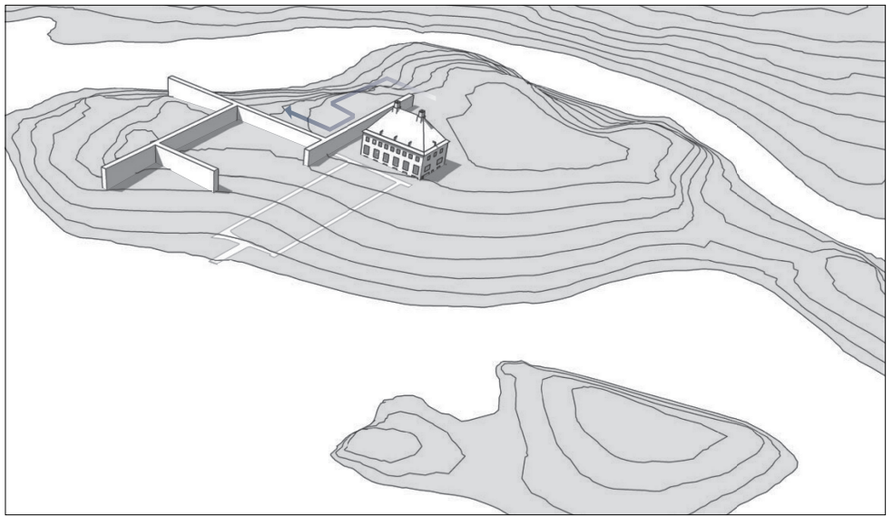
A clear geometric order of the existing main building and cultivated landscape is kept in respect to the balance between natural and cultivated, as it stages natural beauty of place.

This way of staging place is adapted to the extension; the earlier mentioned four selected viewpoints from Serial Vision becomes the foundation of a circulation on site that follows axiality. The circulation has the purpose to stage place by integrating these four viewpoints as part of experiencing art.

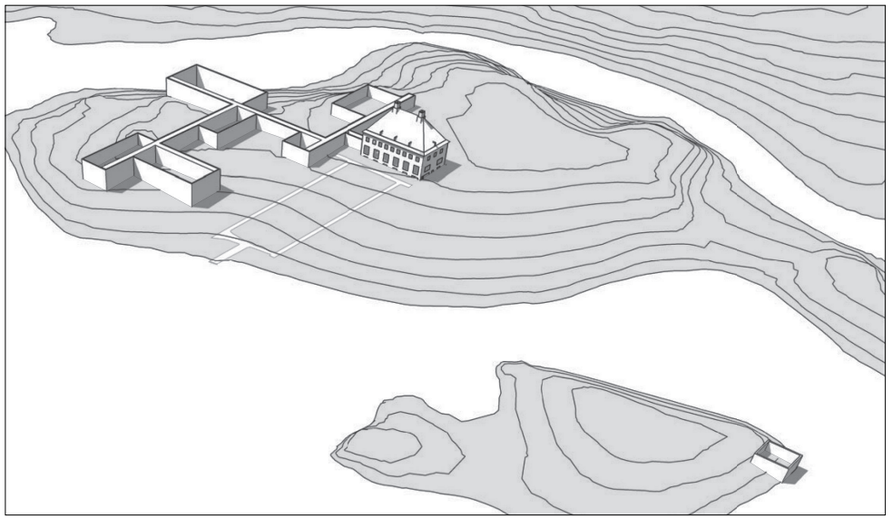


Referring to our program, viewpoints posseses qualities of the exhibit path. By this, a corridor system is introduced as a means to build up a spatial gesture of staging place. We find a coherence between the way of constructing a stage in ancient time represented by Palladio, the existing classicistic inspired axiality of the manor and our reach to stage place. This corridor system will accentuate perspective lines continuing to the outside, meeting the horizon.



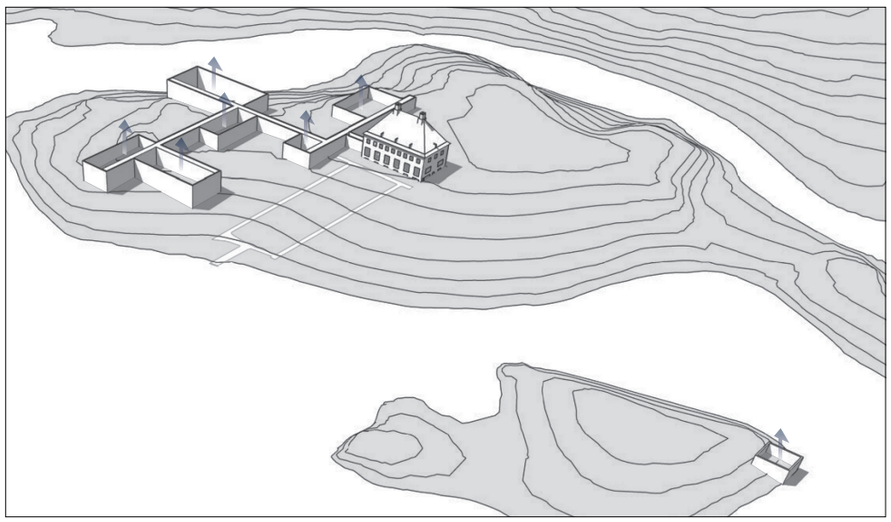


We see the exhibit path in a museum as having the ability to add a contrast to the experience of art – a contrast between focus and dwell. By staging nature we want to add a informal space to the museum, a space to dwell with a different pace in between exhibitions to accentuate focus on art. Thereof, we connect the experience of exhibit path and the respective viewpoint to exhibitions. Hence exhibition spaces are distributed out in the landscape according to viewpoints and the slope of the landscape, as tall volumes will benefit from steep slopes to keep a hierarchical respect to the existing. Thus we work with two contrasting spaces; extrovert corridors staging place that links to introvert spaces, staging art and man. Hereof the exterior wall of the corridor folds and creates space for exhibition in relation to viewpoints.

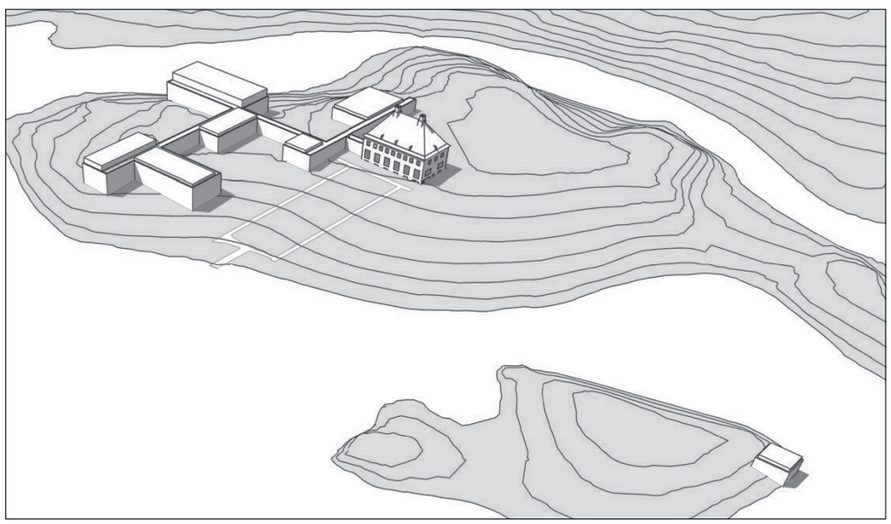


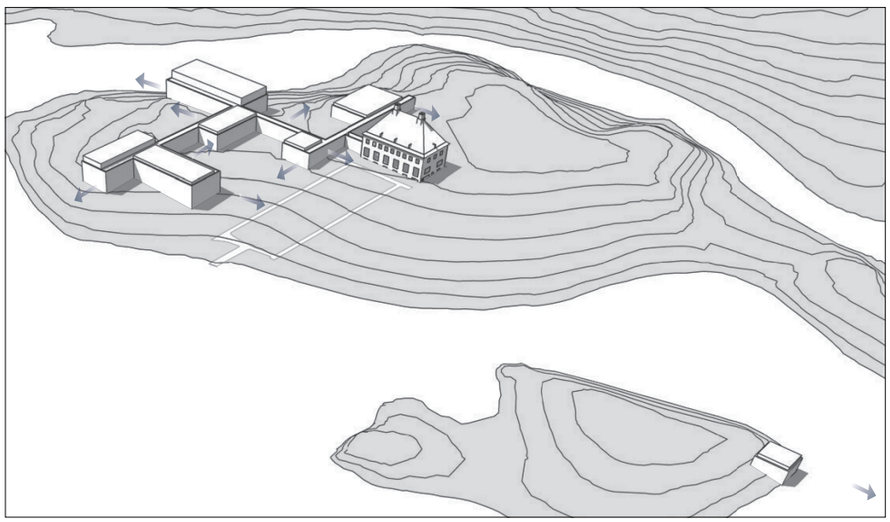
As exhibitions, restaurant, conference, foyer and other functions are enfolded by the wall on premises of place, a fragmented but strict plan takes shape. Referring to the cultural history of place, the fragmented shape has references to the paper mill industry of Serlachius and the foundation of Mänttä as an industrial city, while simultaneously following axiality of place.

In our immersion in Semper's theories of the wall, we see a potential in our interpretation of the wall as two-layered. A potential to accentuate the differentiation between the corridor and the volume physically, enhance the metaphysical power of the wall to create a spatial gesture. By this, a secondary material is introduced as extruded volumes, representing introvert spaces, enfolded by the exterior wall.

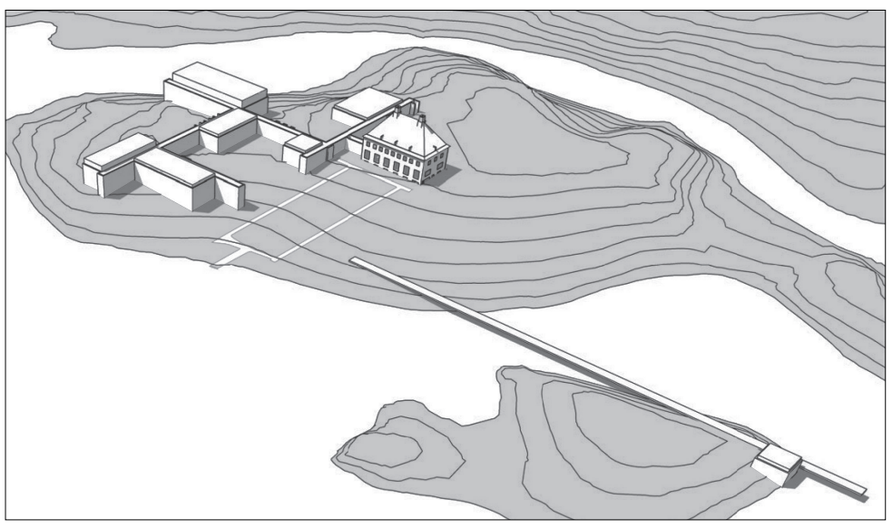


The volumes stand out in a semitransparent material to enhance its porosity, its non-carrying characteristics, a dressing having the ability to stage in accordance with our interpretation of theories of Semper.



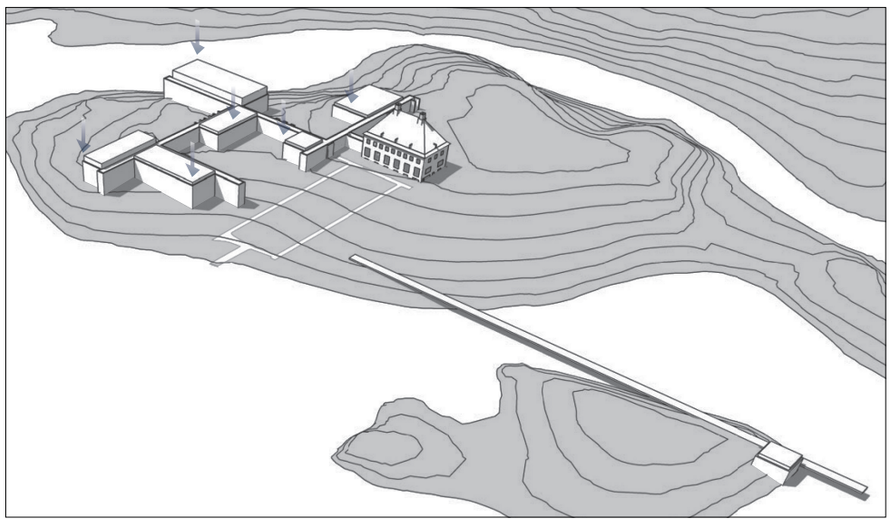


By introducing scale as an evident parameter of the wall, staging of man, place and art are developed by folding smaller niches, linked to the corridors.

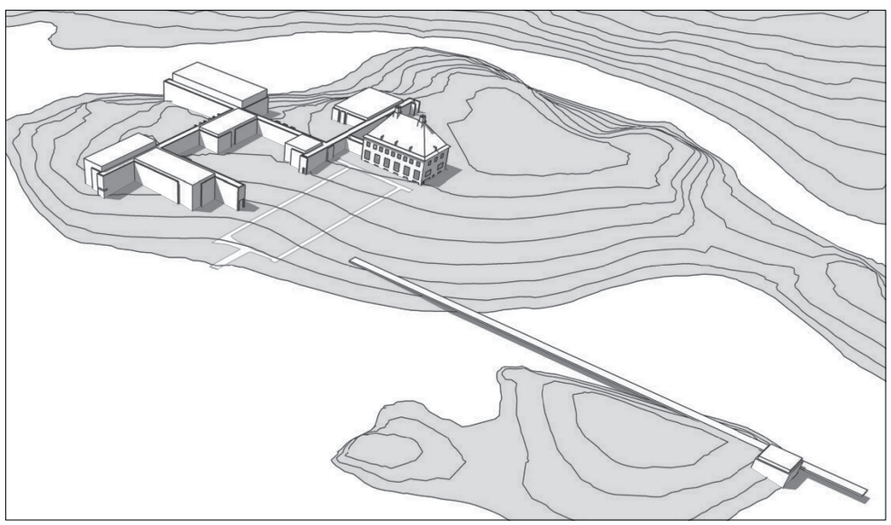


Thus niches for sitting places or sculptures are created. Light intake and the perception of defined space along the corridors rouse curiosity to experience what will come into sight when moving down the corridors. Staging man, place and art is incorporated and at the same time enhancing axiality inside, but also enhancing the axiality of the viewpoint exterior wise. The final viewpoint is further enhanced by the pavement continuing outside and becomes a bridge, staging a slightly revealed sauna behind the island, using the perspective of staging place.

To obtain more daylight in exhibition spaces and accentuate a contrast between interior and exterior – the two layers, the exterior wall is extruded down, and semitransparent surfaces are revealed behind solid walls.



Final design.

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MASTERPLAN

1. Entrance
2. Foyer / Office
3. Existing exhibition
4. Exhibition
5. Outdoor service area
6. Restaurant
7. Terrace
8. Exhibition
9. Exhibition
10. Conference
11. Sauna
12. Parking

1:1000
Gross area : 3705m^2

The tall pine forest surrounds the curved and hilly road, when suddenly a glade appears. A glimpse of the secluded Sauna first meets the eye. Lake Melasjärvi surrounds the peninsula and at the top Joenniemi Manor rises as a characteristic of the history of Serlachius Museum. The extension supports the strong axes, cutting through the natural landscape of slopes and forest. Four views stage essentials of place and Finnish culture, creating a directional expression towards the garden, the birch forest, Lake Melasjärvi and the island Taavetinsaarin.

The entrance is humble and only staged by a fold created by the heavy concrete wall. Behind, white extruded volumes stage a spatial differentiation. By an abruption a glass door appears inviting you into the dim corridors of the Serlachius Museum.

TAAVENTINSAARIN

The island Taaventinsaarin originally had a significant importance to the Serlachius family as characterizing place. It was connected to the peninsula by a bridge. A new physical as well as visual connection is created. Following the axial order of the exhibit path, it continues to the outside from the final interior viewpoint. It forms an exterior path, inducing visitors to continue outside. The exterior path becomes a bridge connecting Taaventinsaarin, housing the sauna. From Taaventinsaarin the bridge stages the contrast between cultivated and natural landscape through axiality, creating significant perspective lines. By this, the extension stages the island as important to place. Concurrently, the extension is experienced as secluded viewed from Taaventinsaarin, keeping respect and focus to the historical main building.


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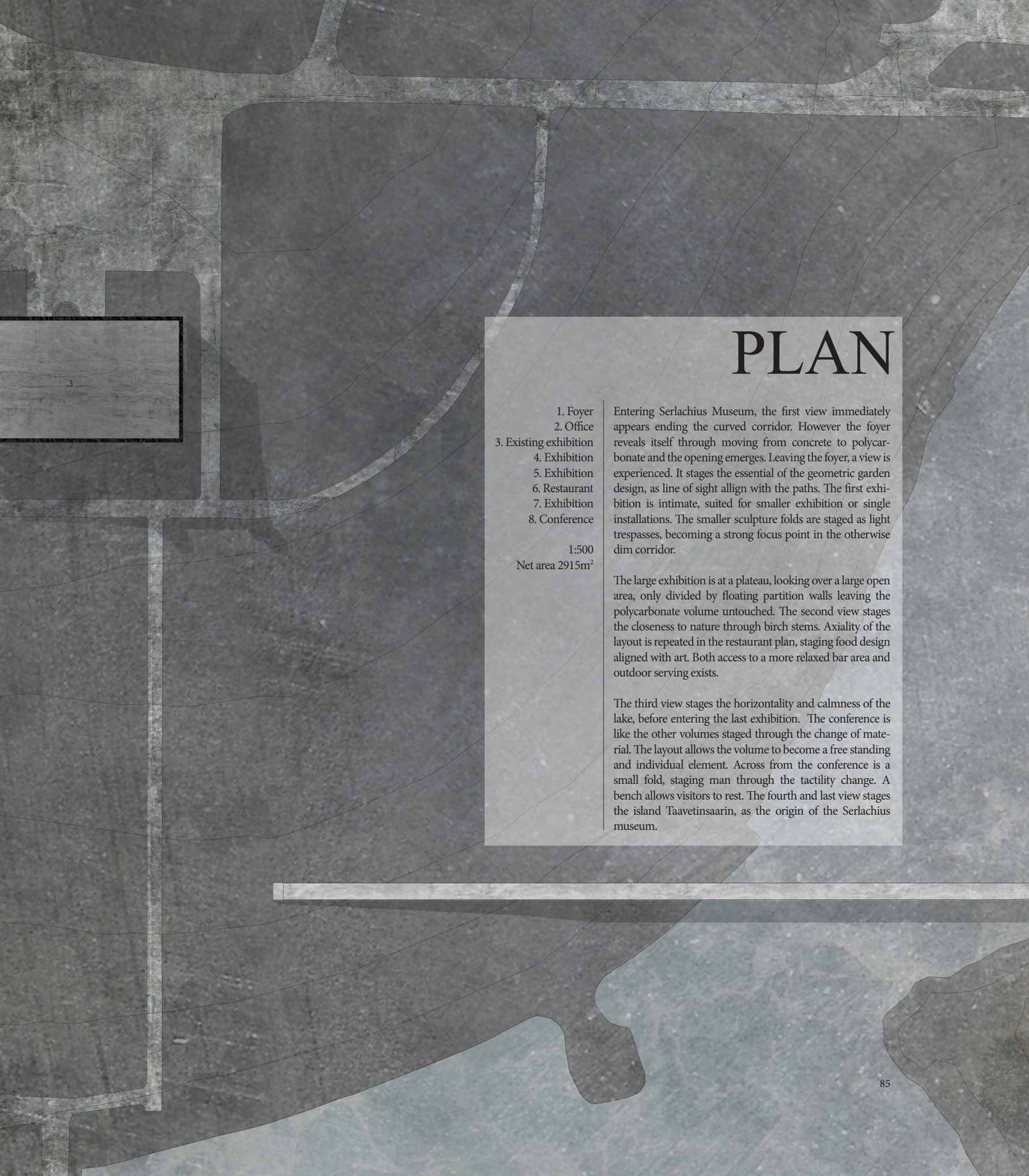


PLAN

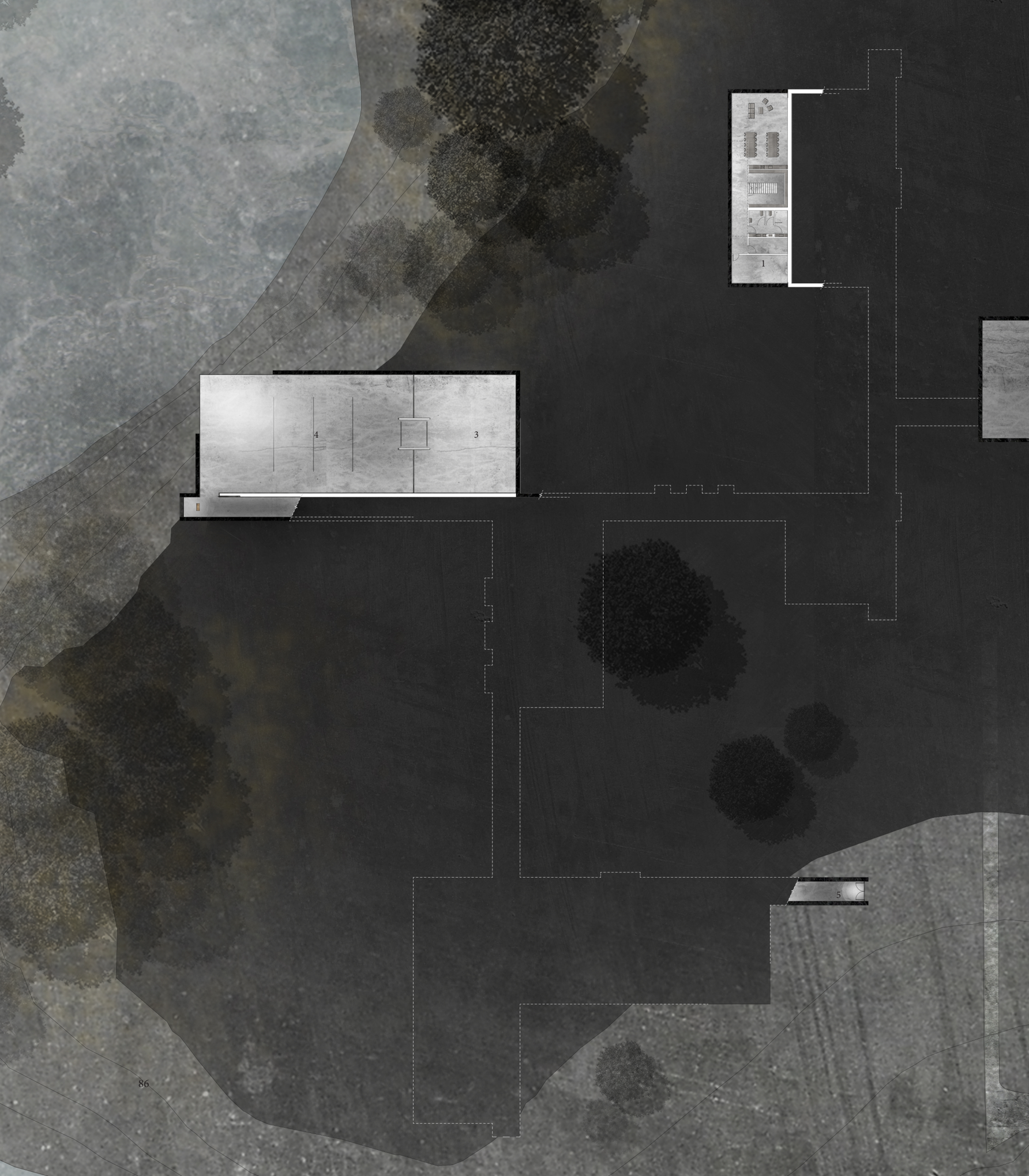
1. Foyer
2. Office
3. Existing exhibition
4. Exhibition
5. Exhibition
6. Restaurant
7. Exhibition
8. Conference

1:500
Net area 2915m^2

Entering Serlachius Museum, the first view immediately appears ending the curved corridor. However the foyer reveals itself through moving from concrete to polycarbonate and the opening emerges. Leaving the foyer, a view is experienced. It stages the essential of the geometric garden design, as line of sight allign with the paths. The first exhibition is intimate, suited for smaller exhibition or single installations. The smaller sculpture folds are staged as light trespasses, becoming a strong focus point in the otherwise dim corridor.

The large exhibition is at a plateau, looking over a large open area, only divided by floating partition walls leaving the polycarbonate volume untouched. The second view stages the closeness to nature through birch stems. Axiality of the layout is repeated in the restaurant plan, staging food design aligned with art. Both access to a more relaxed bar area and outdoor serving exists.

The third view stages the horizontality and calmness of the lake, before entering the last exhibition. The conference is like the other volumes staged through the change of material. The layout allows the volume to become a free standing and individual element. Across from the conference is a small fold, staging man through the tactility change. A bench allows visitors to rest. The fourth and last view stages the island Taavetinsaarin, as the origin of the Serlachius museum.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BASEMENT

1. Office
2. Existing exhibition, basement
3. Storage
4. Exhibition
5. Fourth view

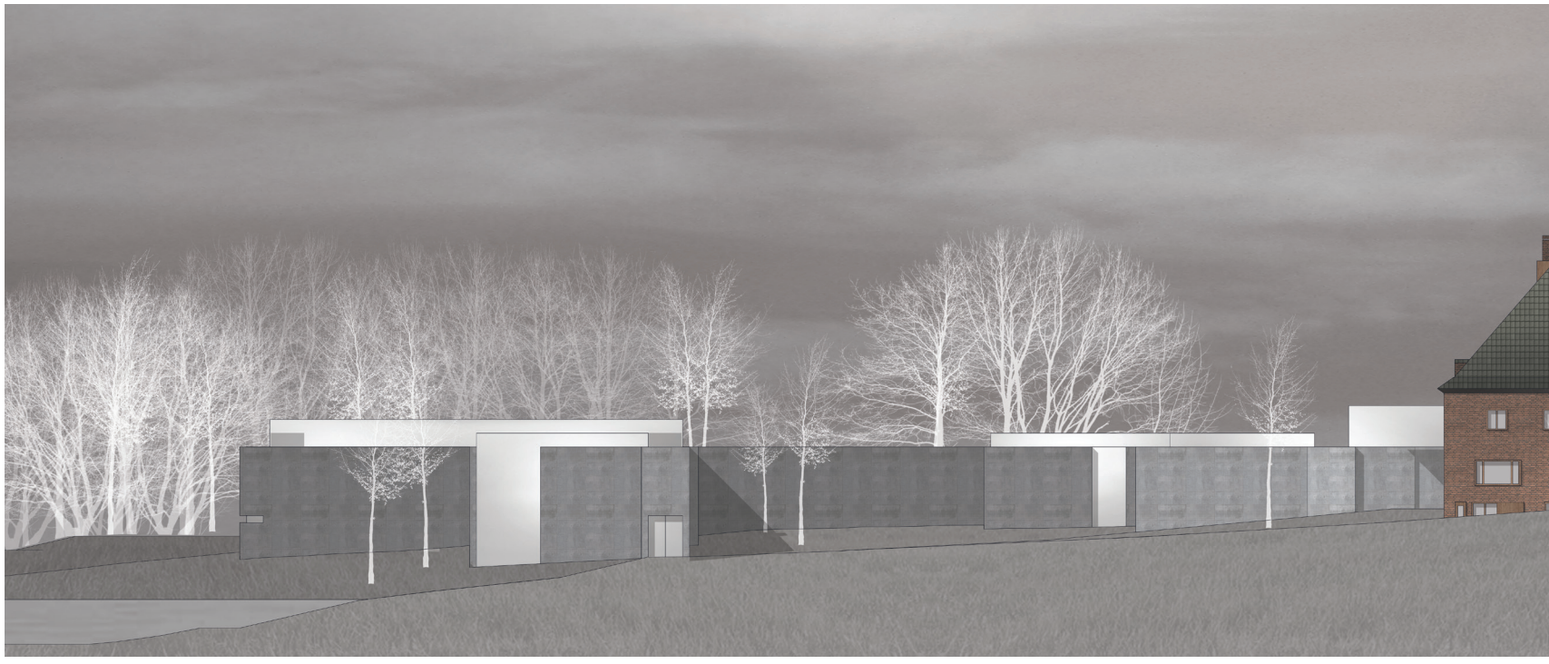
1:500
Net area 362m^2

To accommodate the levels of site, a basement is introduced. It holds informal functions of the office with lunchroom and library. Through a large double high room, light penetrates. Functions that do not require daylight, like escape room and toilets, are at the back.

Due to site levels, the large exhibition is at the same level, but is only partly underground. Storage facilities for the big collections are at the back, but accessible by elevator.

When daytime turns to night, hierarchy between existing and extension are shifted as it lightens up in the landscape. Further the hierarchy between the folding wall and the lighting volumes are shifted, as the exhibit path almost disappears in between the tree trunks, whereas the lighting volumes stands out and add a more dominant character to place. The fragmented building shape emerges and it comes into light how volumes are placed on premises of landscape and in play with landscape. The built itself is staged in the meeting with Lake Melasjärvi; using waters reflection, culture and nature to stage each another.

HIERARCHY

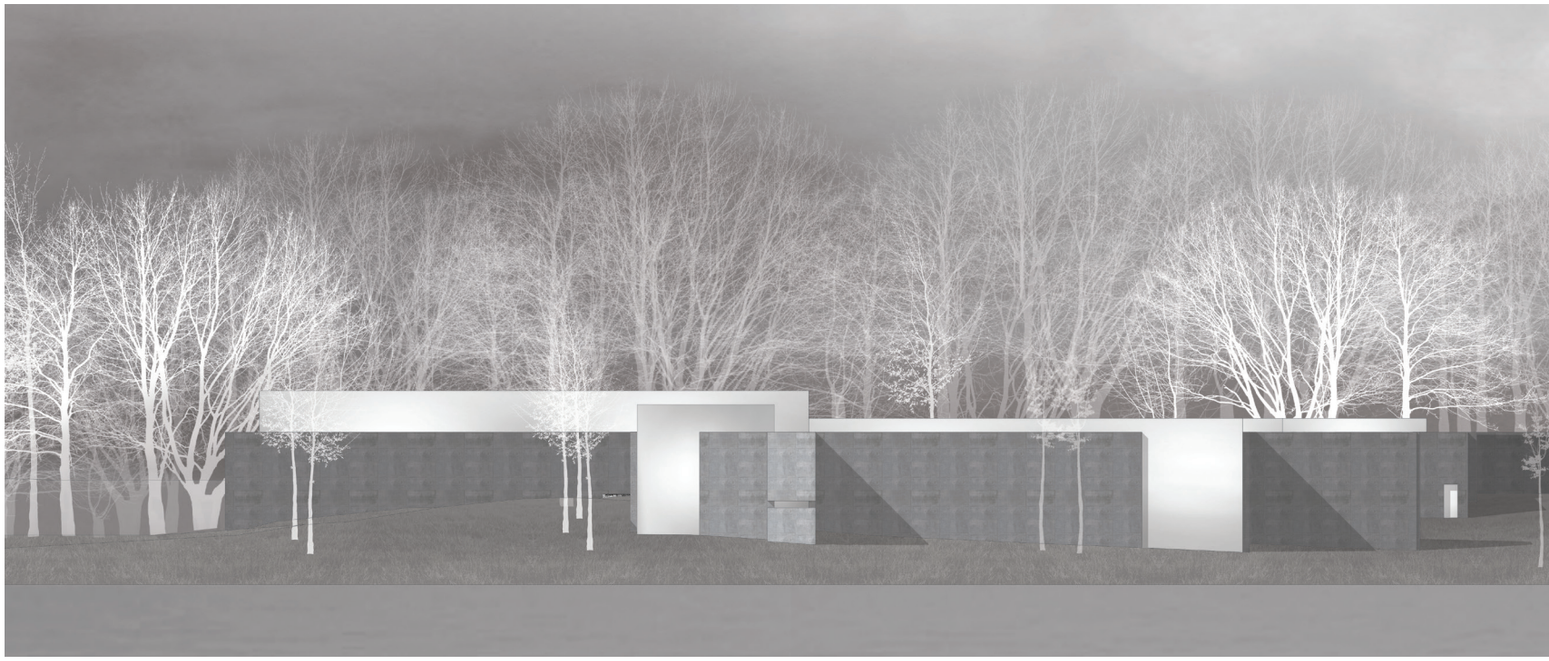


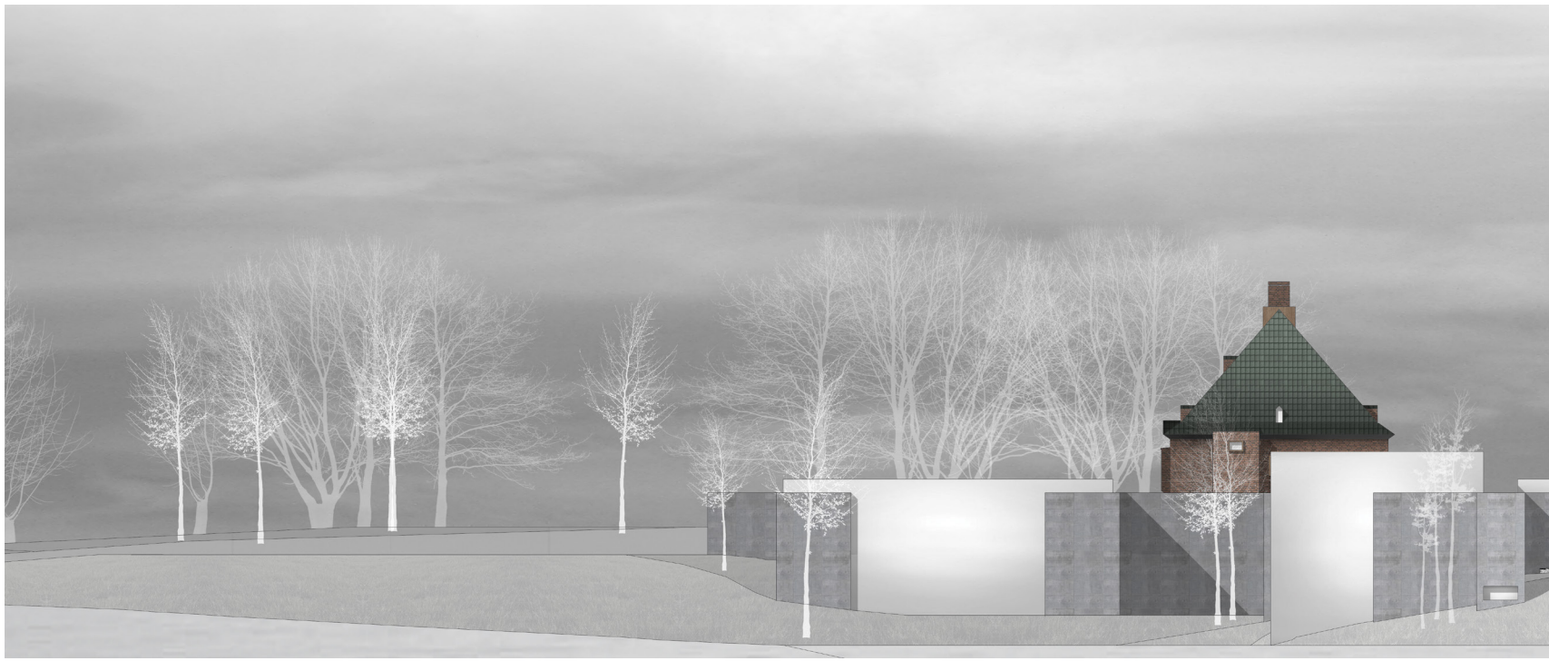
Above:
North Elevation
1:500

Below:
East Elevation
1:500

ELEVATIONS

The folding wall draws an uncompromising horizontal direction in the landscape, as it carves into it. Every fold does not only contribute to the staging of man, place and art in the interior experience of the museum, but contributes to a play of shadow and depth in the else neutral expression of the wall, becoming a sculpture itself. The perception of depth is enhanced by trees, enfolded by the negative of the wall, and creating stages for nature. By this, the extension invites nature to become part of it. Only volumes break the horizontality by extruding up as a vertical movement in varying height, revealing a hierarchy behind the wall. Entering site from East, the extension are experienced as a setting, an unobtrusive wall behind the main building that stages its original motive.





The South elevation shows a clear distinction between existing and extension, which respect the history embedded in place. The humble relation reflects the nature of Finnish culture, as respectful of its surroundings. From West the dominance of the extension enfolds, allowing it to create its own geometric expression.

Above
South Elevation
1:500

Below
West Elevation
1:500

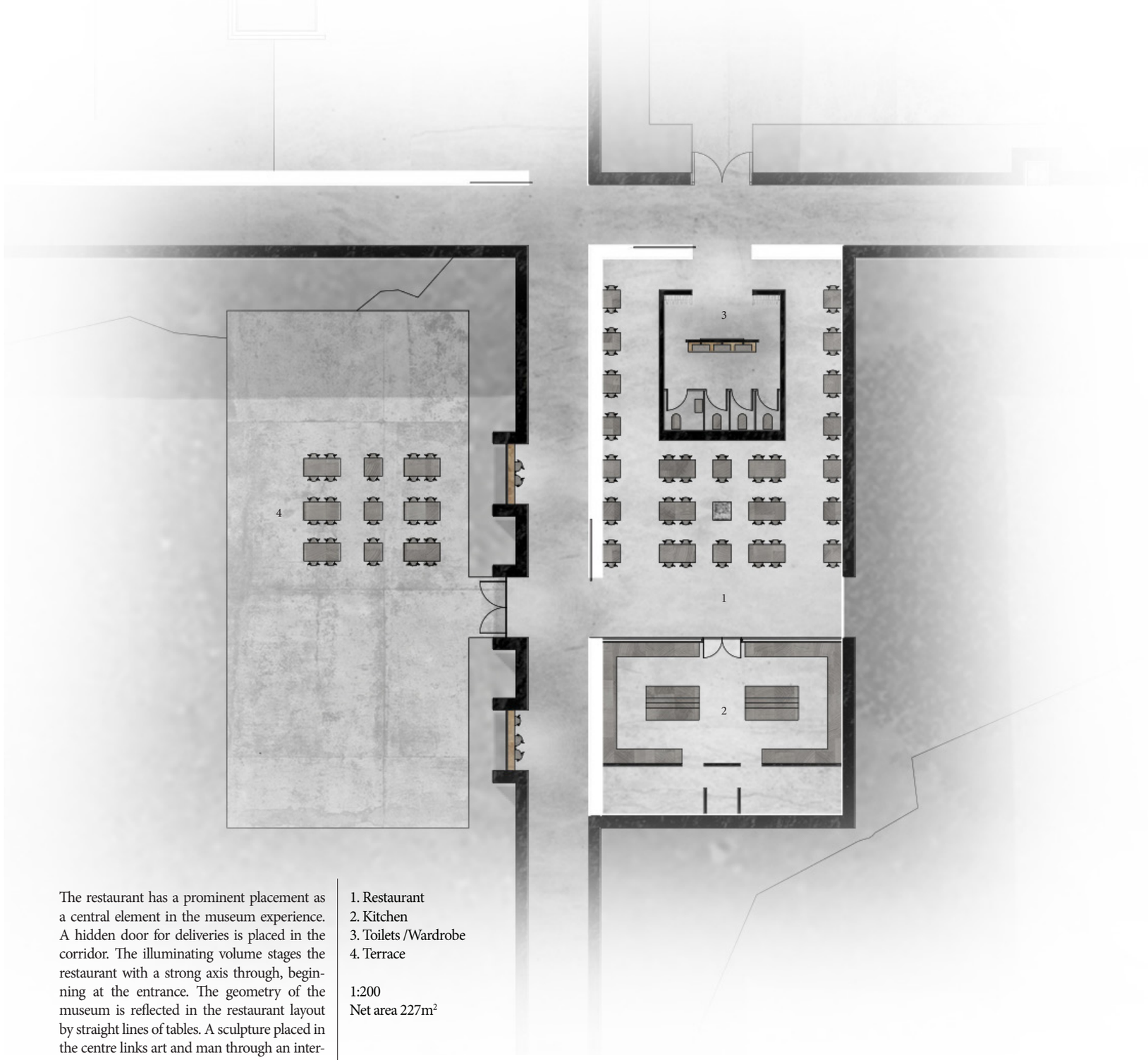
FOYER

Foyer
Entering Serlachius museum, visitors meet the foyer opening staged by a sculpture. Immediately, the essential of the museum is presented and staged, reminding the visitor of a cultural importance. Through the opening you sense an axis going through the reception and office. Toilets are staged as a volume freed from the illuminating volume in an otherwise open foyer, securing a fluent circulation.

Office
Offices are placed in a private part, only accessible to employees. Considering both a formal and informal working environment, there are both closed and open offices. A double high room serves daylight to the basement, containing an informal lunch area. A dim space under the stairs holds the library. Every office has visual contact to the picturesque Finnish nature. The polycarbonate roof provides even diffuse daylight suitable for working.

1. Foyer
2. Office
3. Toilets/Wardrobe
4. Bench

1:200
Net area 583m^2



The restaurant has a prominent placement as a central element in the museum experience. A hidden door for deliveries is placed in the corridor. The illuminating volume stages the restaurant with a strong axis through, beginning at the entrance. The geometry of the museum is reflected in the restaurant layout by straight lines of tables. A sculpture placed in the centre links art and man through an interaction.

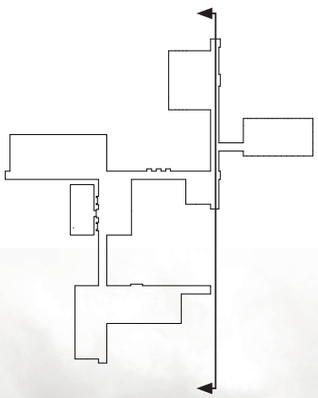
A concrete slab cuts through the landscape as a terrace for outdoor serving. The corridor holds bar tables in a more relaxed environment, overviewing the terrace and nature.

1. Restaurant
2. Kitchen
3. Toilets /Wardrobe
4. Terrace

1:200
Net area 227m^2

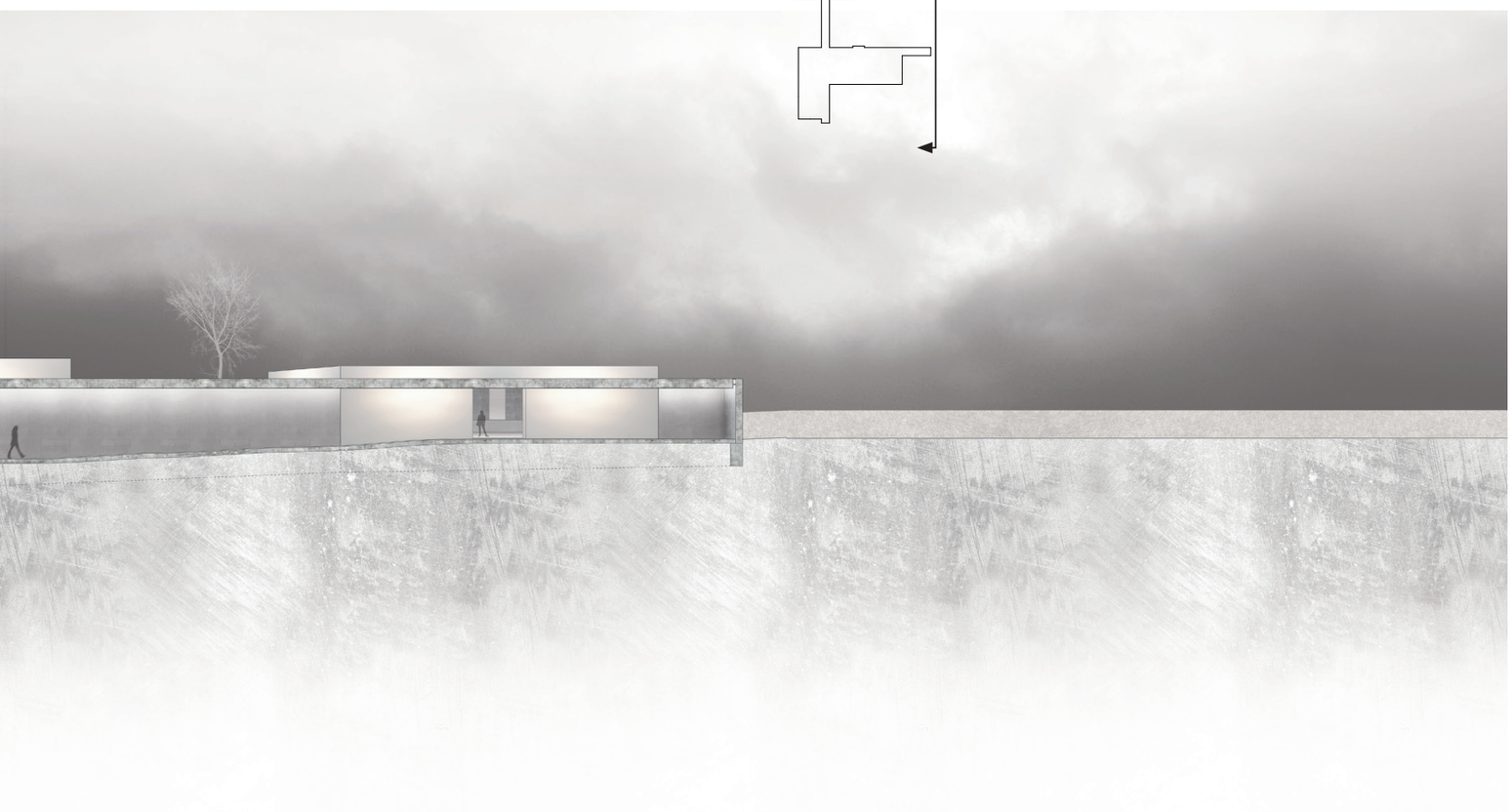
RESTAURANT

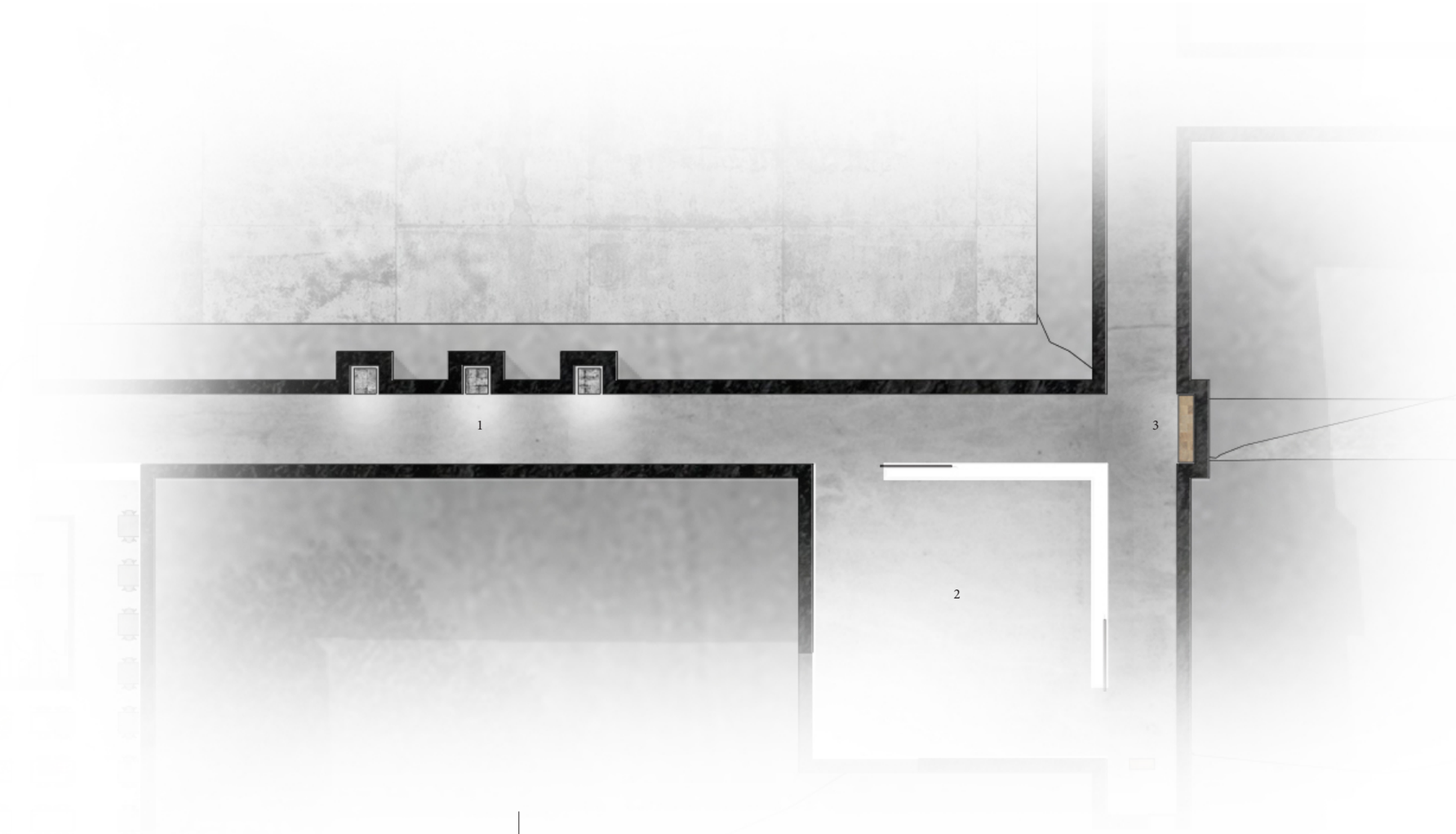
SECTION



1:200

A soft curvature of the corridors follows landscape reflecting the fluent slope of nature and emphasizes the concrete wall as carved through the landscape. A sensuous awareness of place is perceived; not directly visual as openings to the outside are few, but an awareness activated by other senses. By this we seek to make it clear how movement of folding creates spaces.





The staging of art is incorporated in different scales by the structural principle of folding. The wall folds a series of smaller niches merging with the exhibit path. Direct light intake from above reveals these niches and contrasts the elsewhere obscure exhibit path. The light intake accentuates tactility in the limited areas as a means to create conditions for staging sculptures.

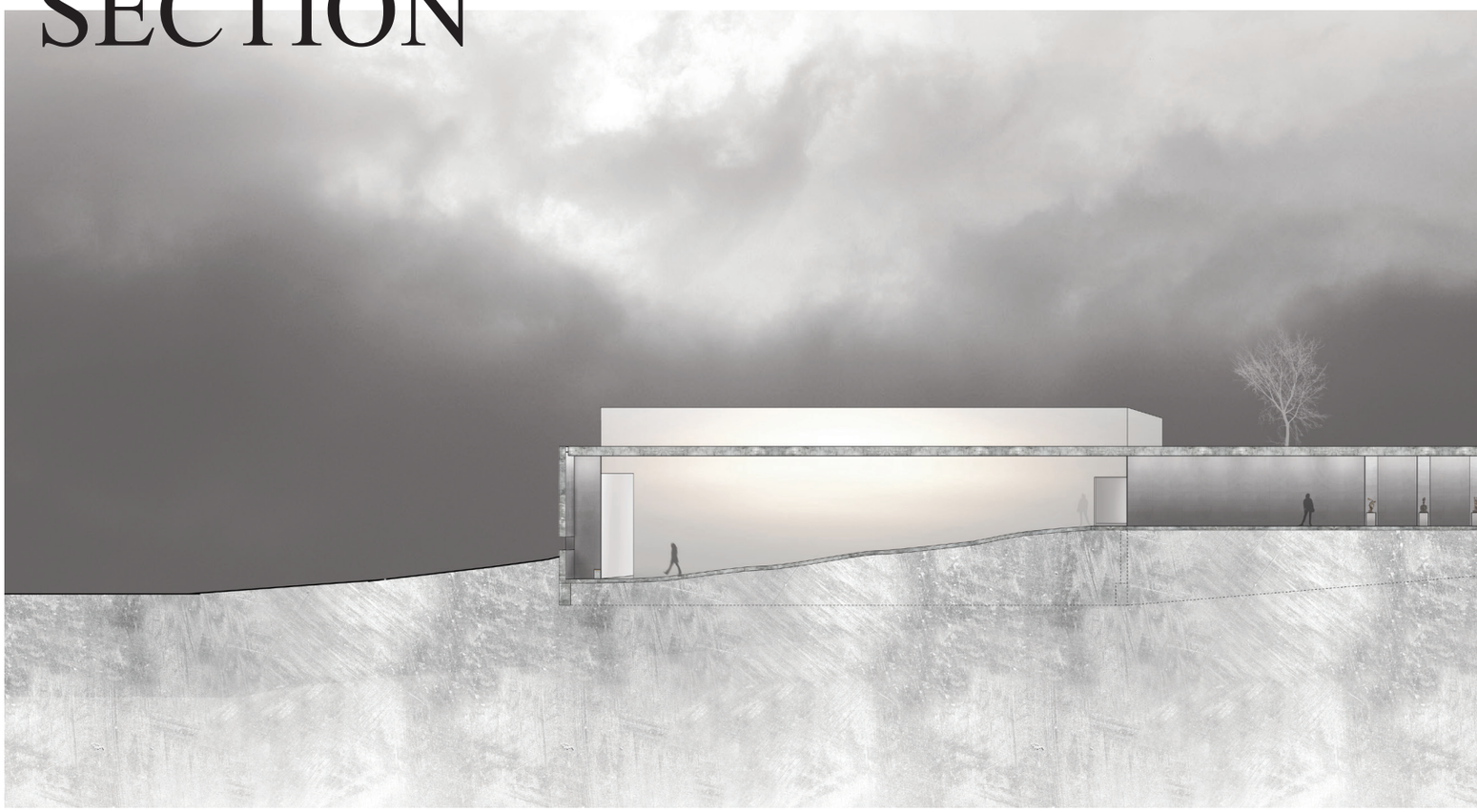
1. Sculptures
2. Exhibition
3. Bench

1:200

EXHIBIT PATH

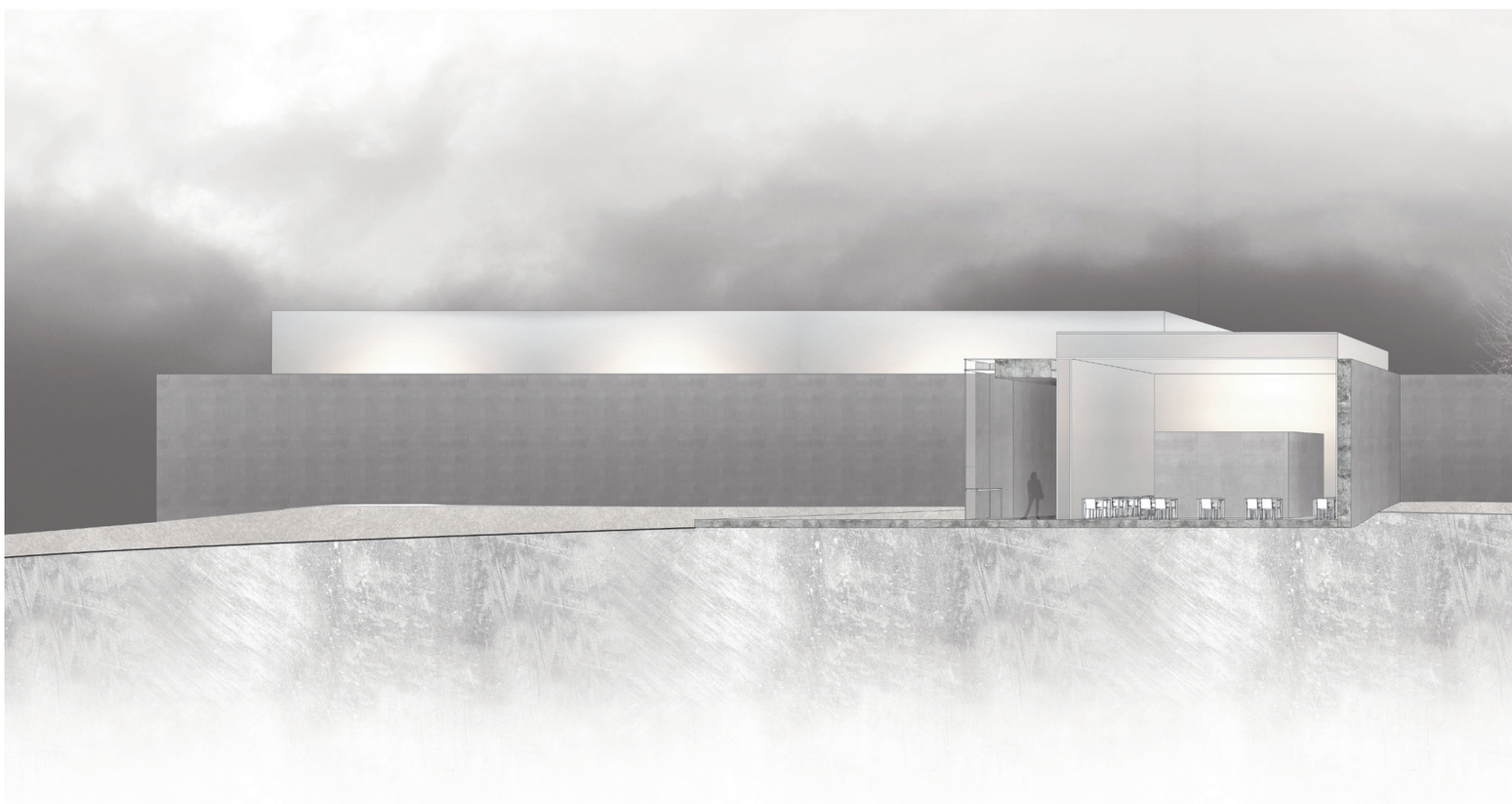
When walking down the exhibit path towards the restaurant and the second exhibition area, the folded niches breaks down the longitudinal path in play with direct light. By lowering the roof in the exhibit paths, released by the exterior walls, an oppressive experience accentuates the obscure path as a contrast to the light and open exhibition spaces. By this, focus are not removed from staged art, but rather merging experience of place and art by interacting with the sensuous scale of man, in linkage with our interpretation of theories of Pallasmaa.

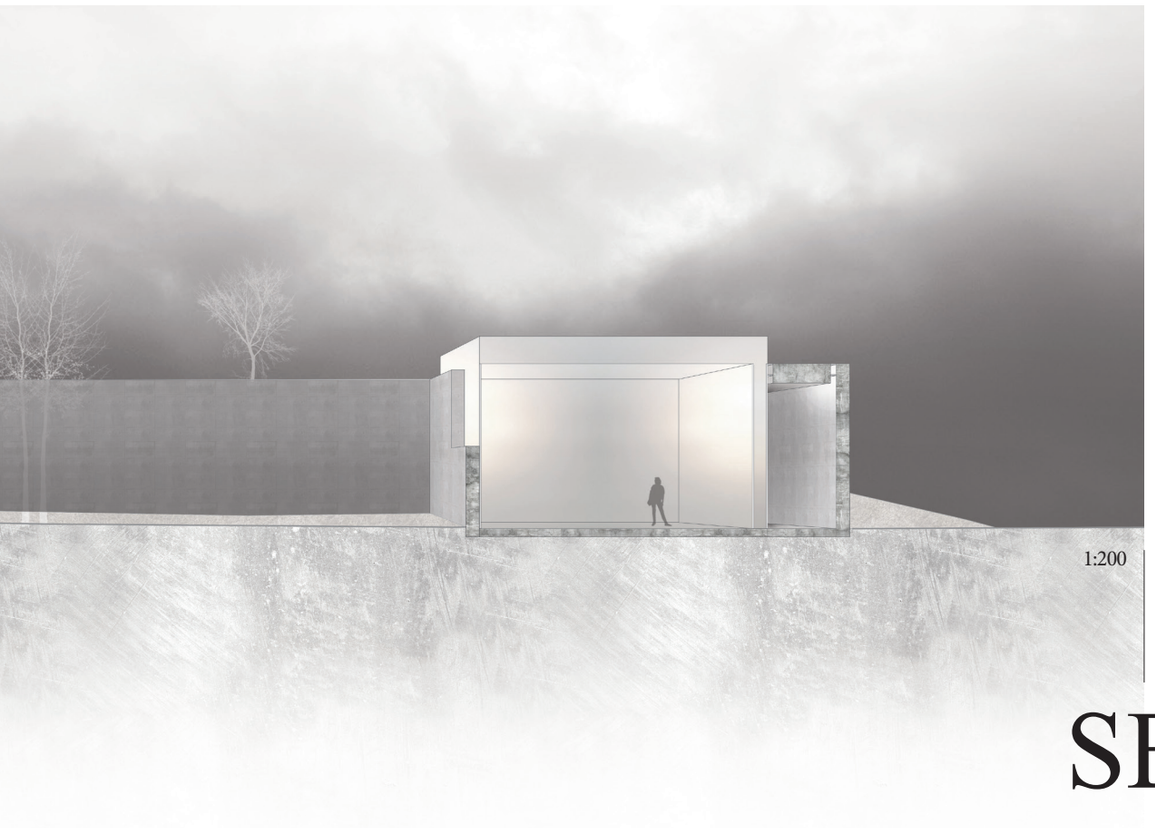
SECTION



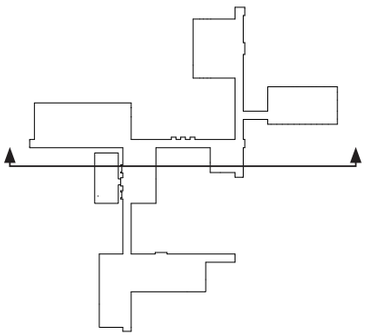
1:200

Moving towards the viewpoint at the end of the corridor, ceiling height increases and creates a more dramatic atmosphere with a strong directional expression. Place is staged through the chosen view.





1:200



Volumes stand out with a rational and immediate experience, where focus is directed on art alone. The polycarbonate lights up, accentuating a spatial difference, which seem compelling to the visitor.

SECTION

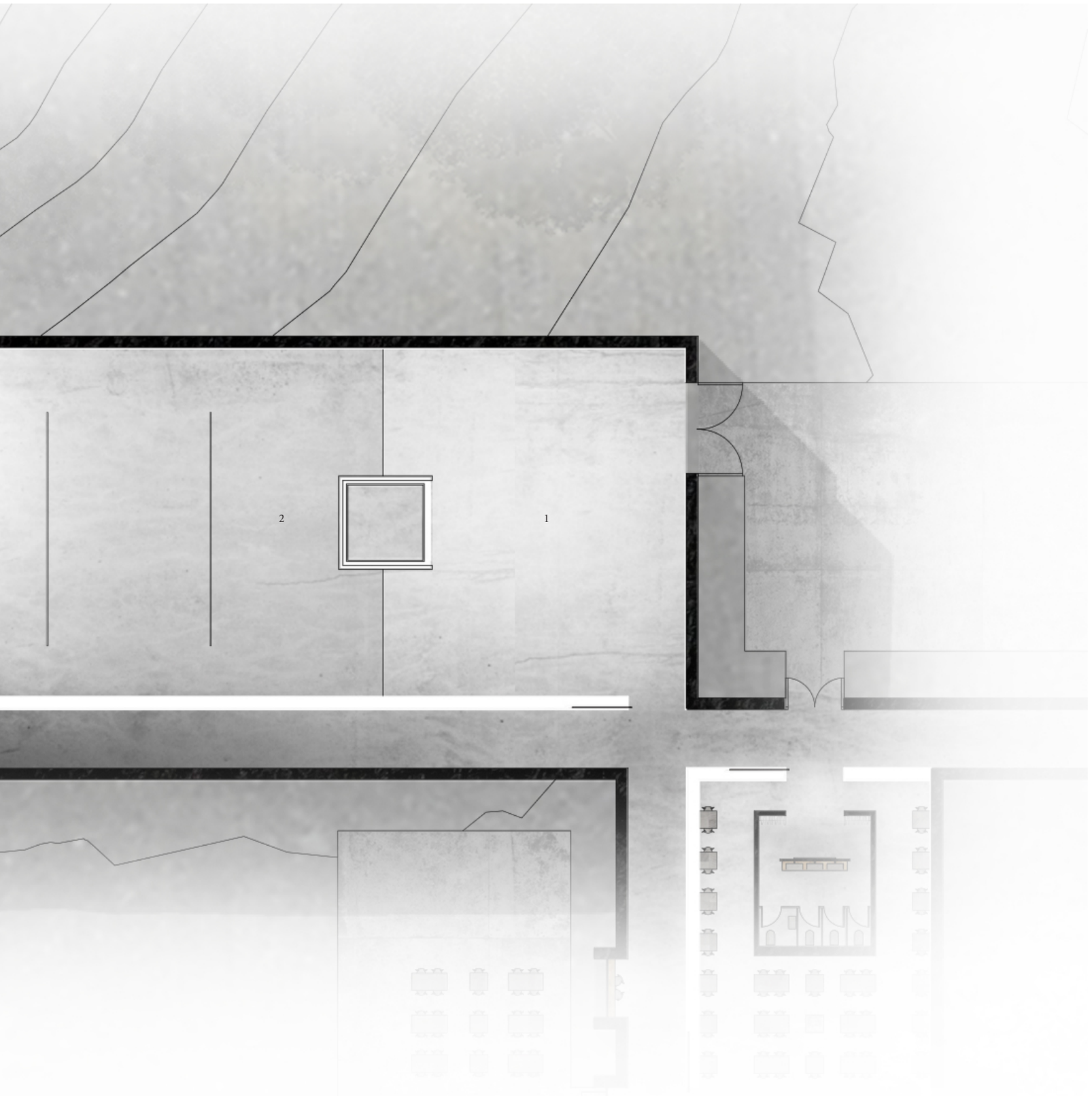
AN EXHIBITION

Approaching the large exhibition, the view is dominating. Moving through the dim corridor a large luminous surface appears. Entering, a small area creates an intimate exhibition overlooking the large area, and thereby staging man and art. The elevator leaves the ceiling untouched and the volume is accentuated.

Walking down the curved ramp, the view reveals a birch forest, significant in Finnish culture, staged by a fold in the heavy concrete wall. The narrow but high corridor has a formal yet relaxing atmosphere and a single bench allows the visitor to dwell, getting lost in the layers of nature. Further, the voluminous space of the exhibition stand as a stage for art, only interrupted by floating partition walls.

1. Exhibition
2. Exhibition, basement
3. Viewpoint

1:200
Net area 600m^2


2
1

Overlooking the exhibition, volumes becomes the stage of art. Standing as a luminous element, the folding wall is only sensed behind. This shows the duality of the wall, differentiating between mound and enclosure, referring to our interpretation of Semper's theories. The truss filters light between the layers of polycarbonate polycarbonate, reflecting walking through a Finnish forest. Furthermore, leaves and snow allows a play of light as does the grid. Partition walls can be mounted according to needs following the ceiling grid. This divides the fairly big volumes into smaller intimate space without interfering with the freestanding volume.

AN EXHIBITION

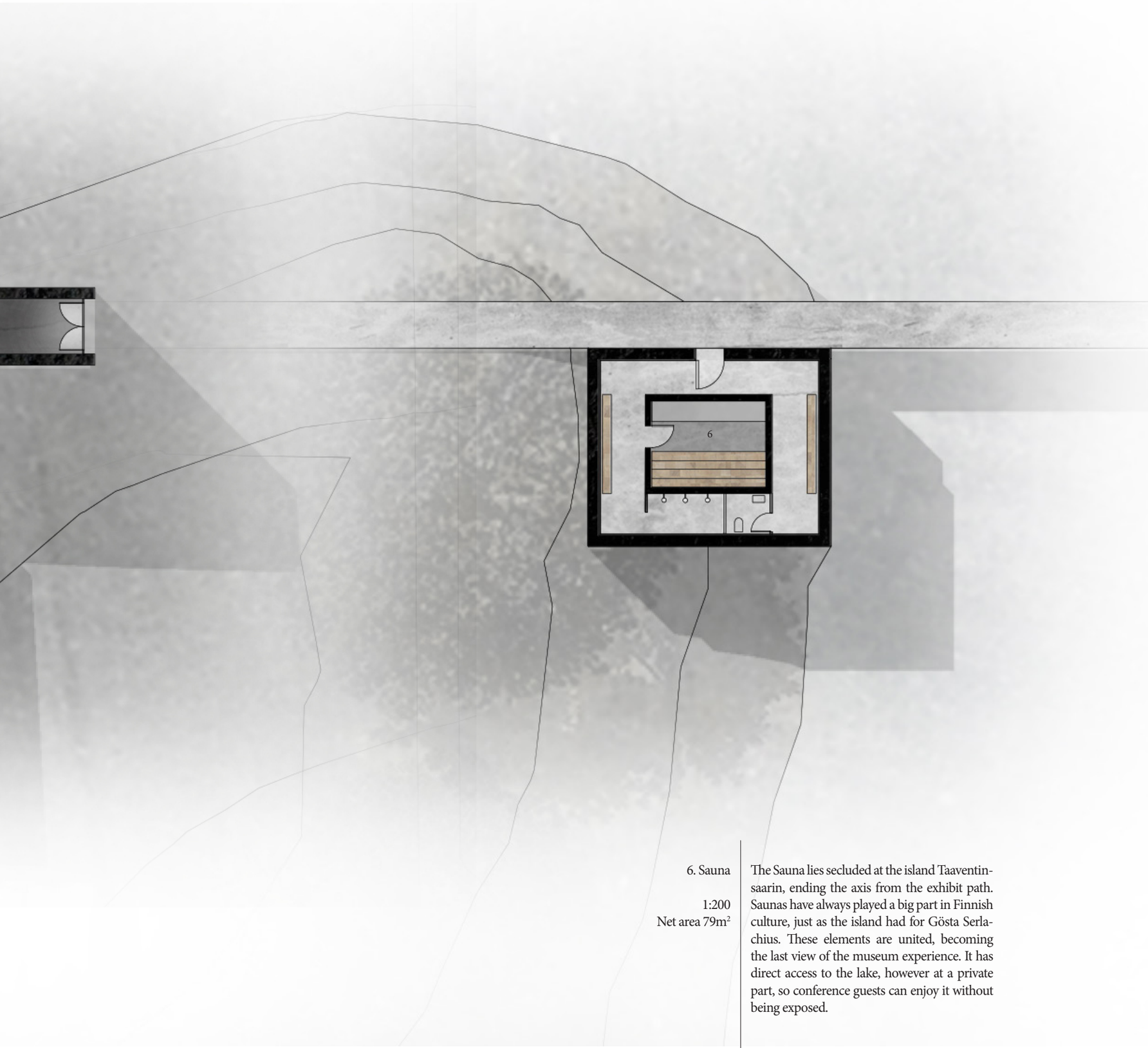
CONFERENCE

The conference center is located in the final part of the museum. The location is fundamentally based upon an experience associated with the conference. To define a user group who are willing to choose Serlachius Museum in the outskirts of a smaller city as the stage for a conference, art and local history must be a field of interest and the user group will often reach for an exclusive experience. A second user group is students in relation to school excursions, whose profile also relates to learning of art and local history. This reasons why we find it evident to combine experience of art and place with experiencing a conference. The conference visitors are hereby motivated to experience exhibition areas, as exhibit paths will guide them through Serlachius Museum down towards the conference center.

A hall area in the conference center opens up in continuation of the final exhibit path, functioning as space for reception and art exhibition combined. Thus, it is open for all visitors of the museum. The conference hall distributes out to a conference room and a teaching room. The conference is closely related to the restaurant and bar area, opening up for the possibilities of a culinary experience. Further a sauna, primarily functioning as an acquisition to conference attendees, is visually connected to the conference.

1. Conference
2. Teaching
3. Toilets/Wardrobe
4. Bench
5. Storage
6. Conference hall

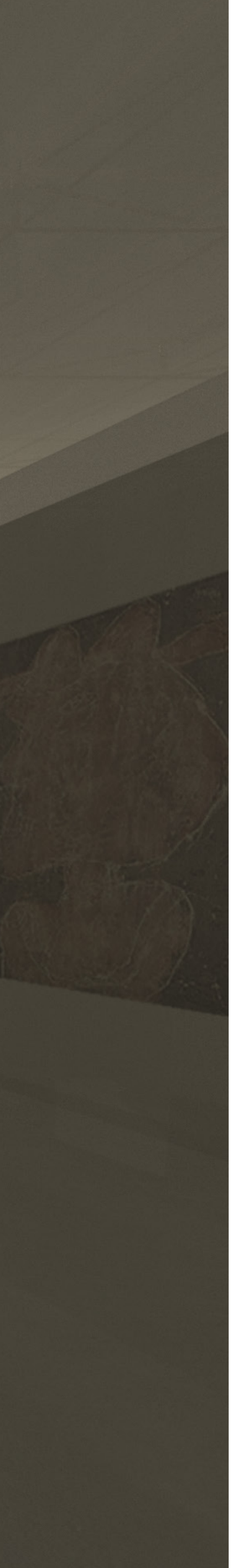
1:200
Net area 371m^2



6. Sauna

1:200
Net area 79m²

The Sauna lies secluded at the island Taaventinsaarin, ending the axis from the exhibit path. Saunas have always played a big part in Finnish culture, just as the island had for Gösta Serlachius. These elements are united, becoming the last view of the museum experience. It has direct access to the lake, however at a private part, so conference guests can enjoy it without being exposed.



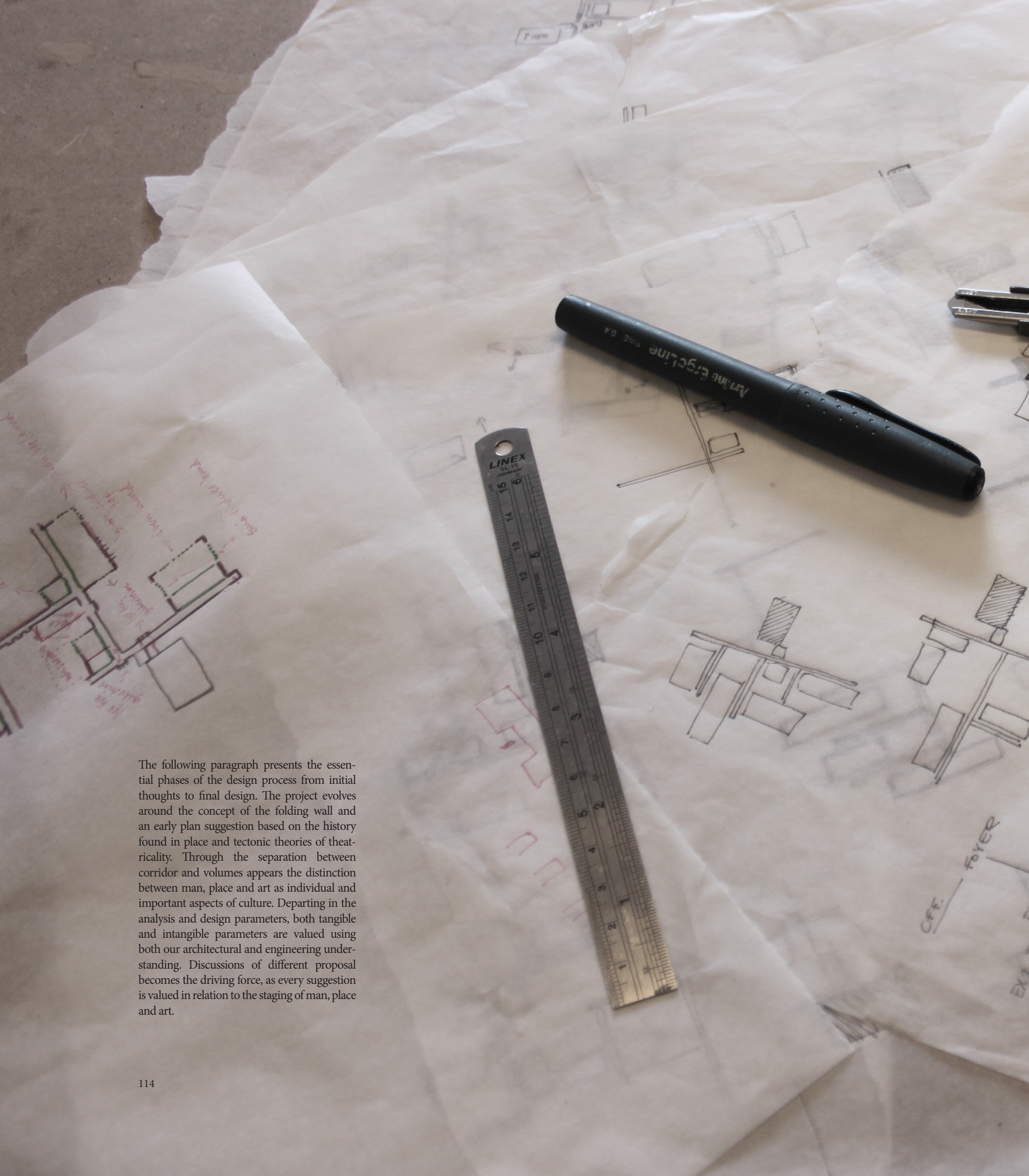
CONFERENCE

The entry into a symmetrical conference hall are staged by a folding wall, creating direct light from above and space for a sitting niche, from where art can be observed. The composition refers, like the foyer and restaurant, to classicistic nuances of staging in relation to the existing main building.

The conference hall is separated from the conference and teaching by semitransparent walls of polycarbonate, staging life inside when conferences are ongoing.

Continuing down towards the final viewpoint of the exhibit path, a door opens up the possibility to continue the path outside, from where a bridge leads to the island Taaventinsaarin, connecting conference center to the sauna, slightly hidden at the back of the island.

Summary
Serlachius Museum stages culture, focused on man, place and art. A concrete wall folds and introduces a spatial dimension; the stage, which becomes the linkage between poetry and technique. Extruded polycarbonate volumes become the enclosure, accentuating art as an element of culture. The geometrical layout and expression stands as a contrast to reflect the distinction between cultivated and natural, hereby staging architecture in it self.



The following paragraph presents the essential phases of the design process from initial thoughts to final design. The project evolves around the concept of the folding wall and an early plan suggestion based on the history found in place and tectonic theories of theatricality. Through the separation between corridor and volumes appears the distinction between man, place and art as individual and important aspects of culture. Departing in the analysis and design parameters, both tangible and intangible parameters are valued using both our architectural and engineering understanding. Discussions of different proposal becomes the driving force, as every suggestion is valued in relation to the staging of man, place and art.

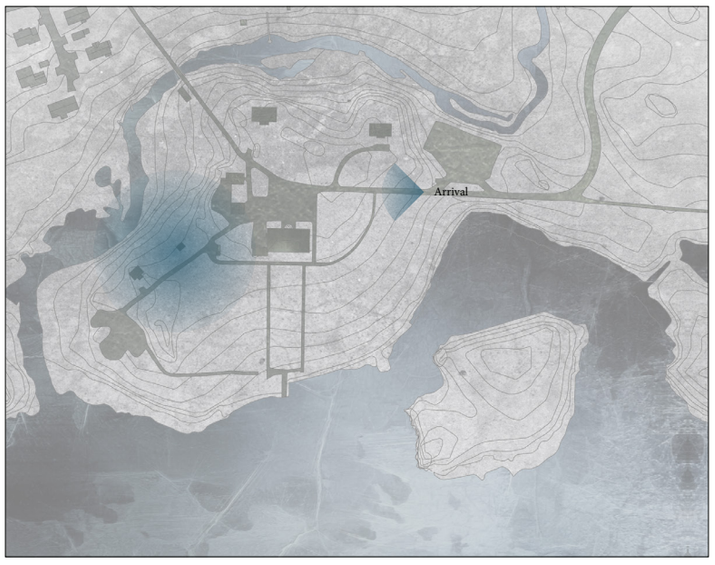
07

DESIGN PROCESS

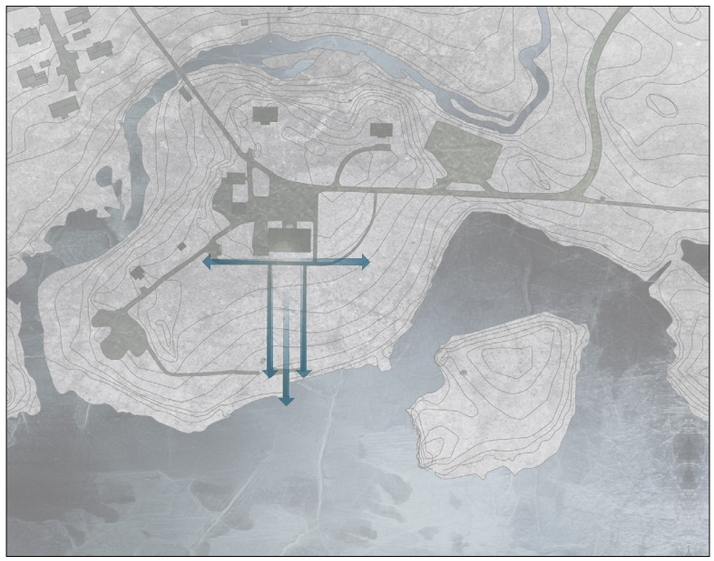
PLAN WORKSHOP

Through the analyses, three aspects are relevant of place. They become important features when the design phase begins as the organization of space evolves around this.

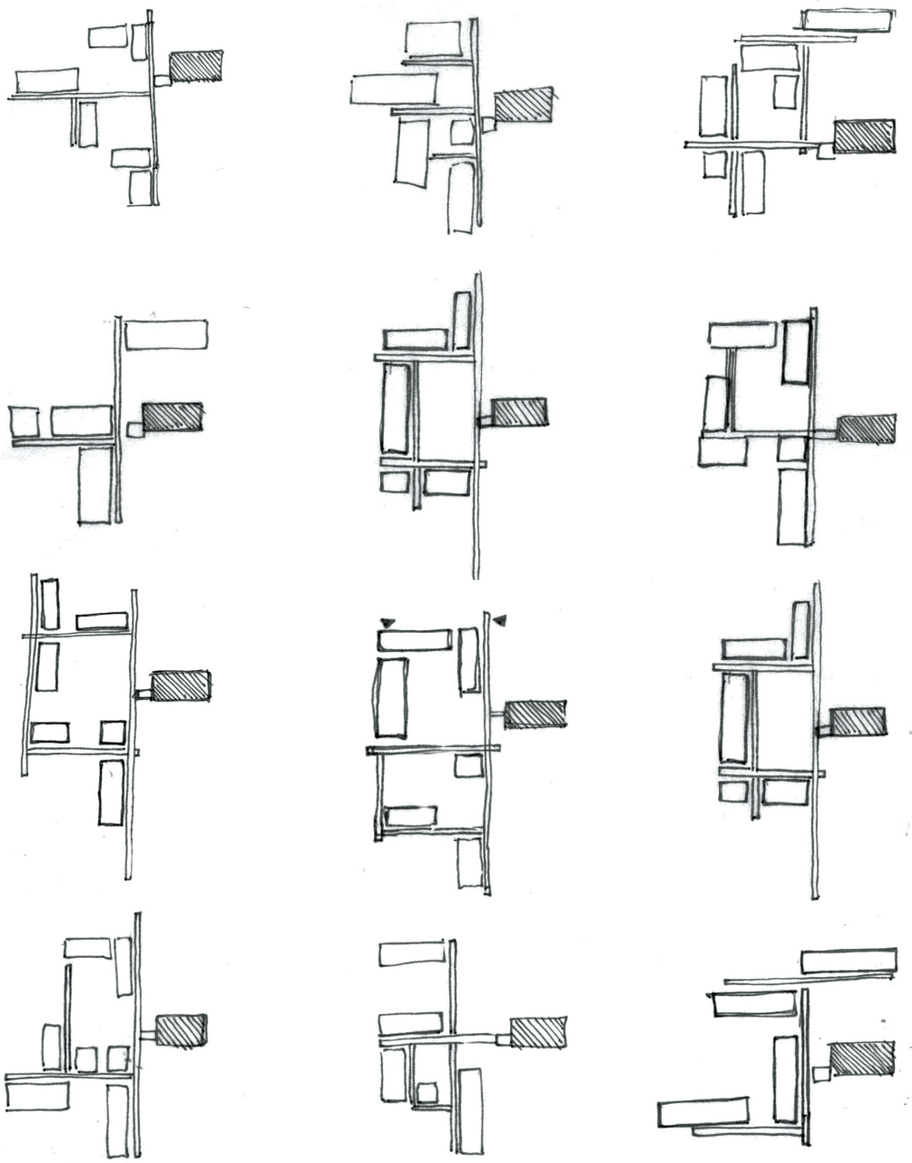
Hierarchy
When arriving at the site from the parking area at east, the main building is met with an open yard area in front. To preserve the historical values of the manor, hierarchy is seen as an important factor. A new extension needs to serve a foyer area, meaning that the extension needs to respect the hierarchical order of history, but still be visible to guide visitors towards a new entrance.

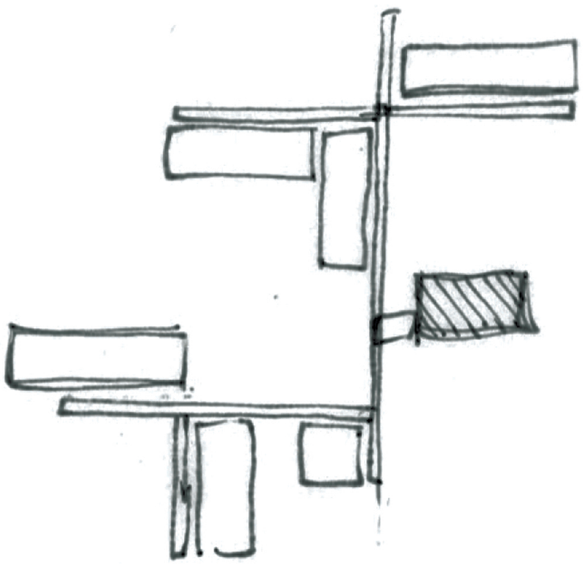


Axes
The existing landscape design defines axes from the main building. These adds geometric order, enhancing scenic views of nature. We find it important to be aware of the existing axes in respect to cultural environment and historical values.



Topography
The topography introduces steep slopes South and West of the peninsula. These can be strategically used for tall building volumes when designing. This indulges a respect of the existing manor subordinating to its height.

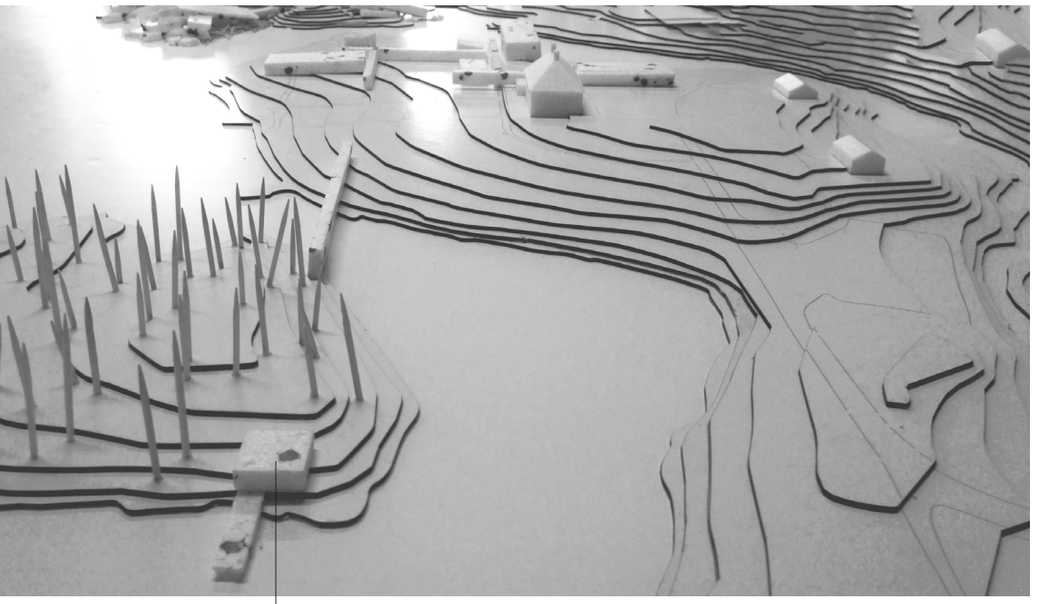


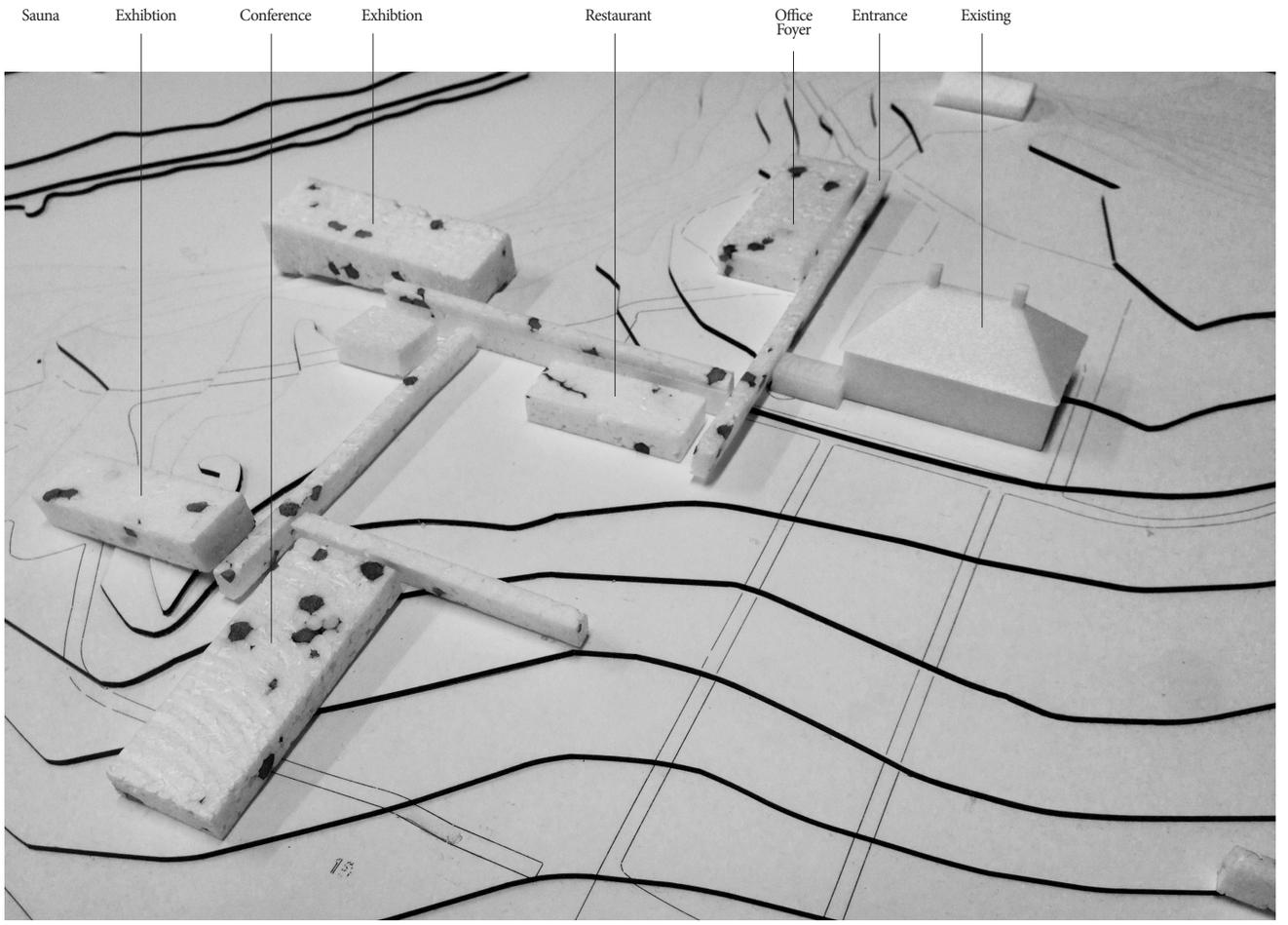


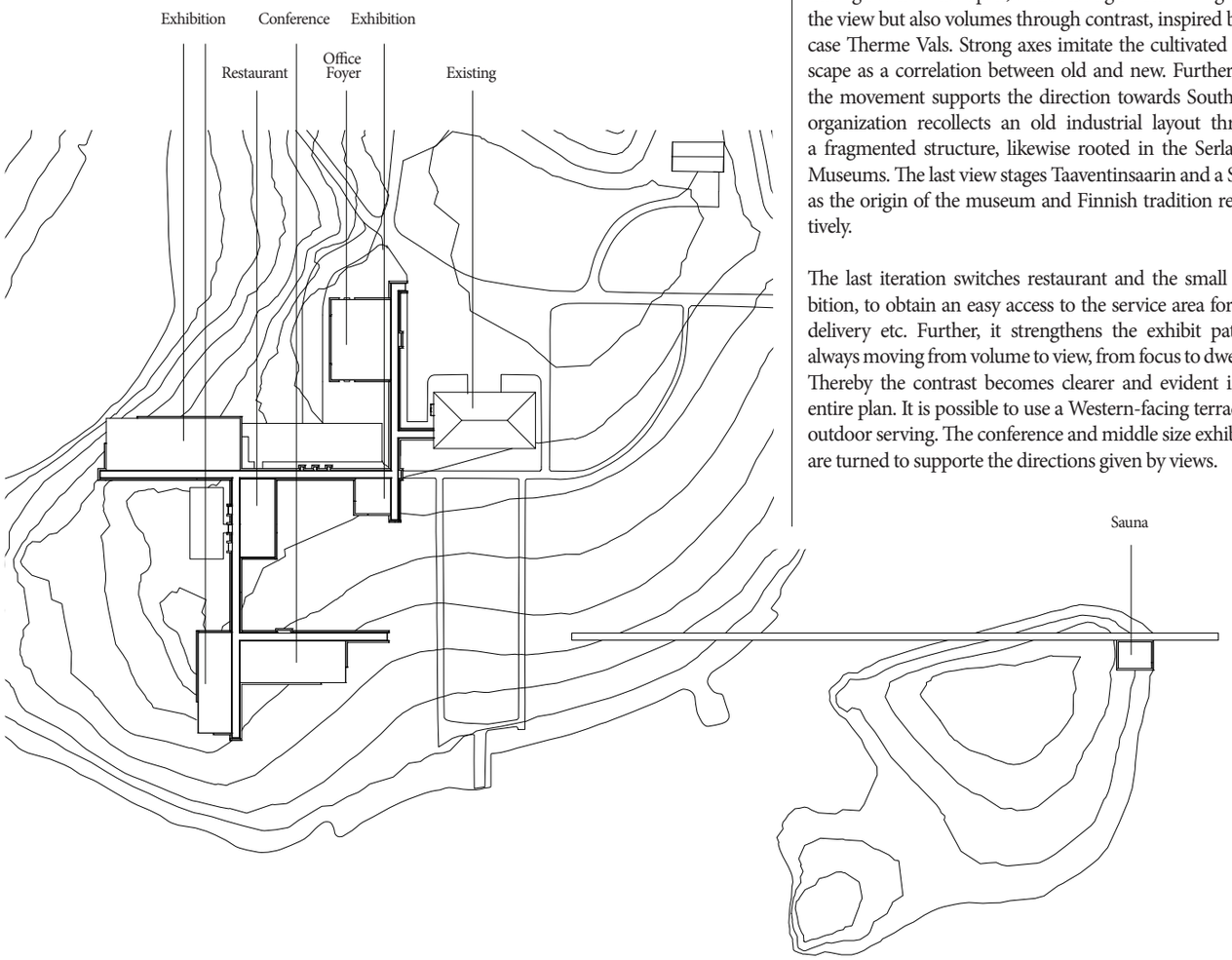
These three aspects of place becomes the point of departure. The extension should lie behind the manor when approaching, where it is possible to utilize the slopes. The room program has five divisions with different spatial characters; foyer, exhibition, restaurant, conference and office. By the function diagram the overall organization is given. Departing in this, seven volumes and their interrelation becomes their focus point of a plan workshop.

The four views, presented in the paragraph *Culture,* are embodied as the contrast to the volumes. When each volume focuses on staging their function, the views stage place. The exhibit path introduces both focus and dwelling, differentiated by volume and corridor respectively. Moving through the museum you experience a contrast between dense and open inspired by the Finnish landscape.

The views are connected by a narrow path, to which the volumes align. Initially, the volumes had a distance to the path accentuating the distinction between these. Different ways of organizing are shown in the drawings. The example to the left shows the first plan towards the final, with a shape that follows the peninsula. A courtyard is formed capturing the visitor, but likewise create equality between existing and extension, which is not desired. Dead-ends stage the chosen views through a motivated circulation, creating an intimate space freed from passage turning focus to the view.



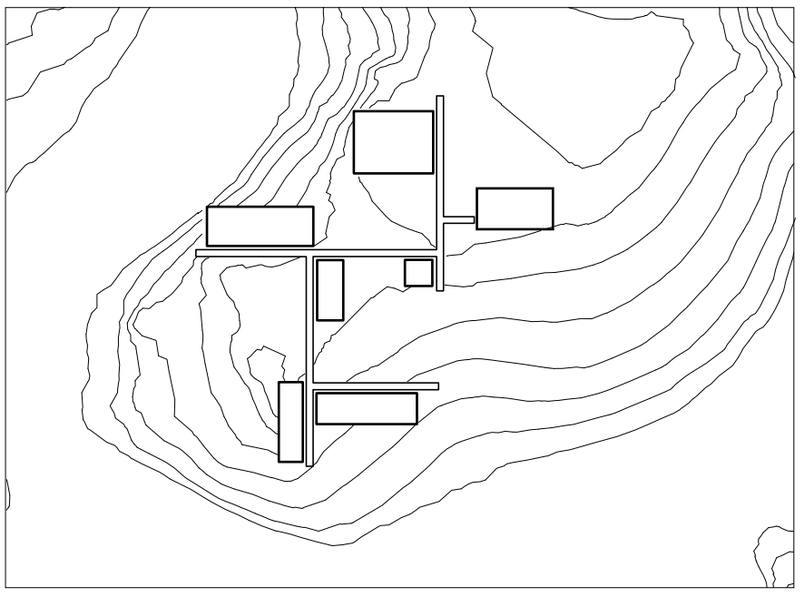

Sauna
Exhibtion
Conference
Exhibtion
Restaurant
Office
Foyer
Entrance
Existing



Departing in the previous suggestion the plan is further developed. Entering the museum at the courtyard, a long axe towards the first view is apparent. This works as a clear border separating existing from extension, supporting the hierarchy between them. Throughout the museum logic yet unexpected movement is accentuated. Turning corners views appear and volumes enfolds, creating distinctive space through dense and open, dark and light. These stage both the view but also volumes through contrast, inspired by the case Therme Vals. Strong axes imitate the cultivated landscape as a correlation between old and new. Furthermore the movement supports the direction towards South. The organization recollects an old industrial layout through a fragmented structure, likewise rooted in the Serlachius Museums. The last view stages Taaventinsaarin and a Sauna as the origin of the museum and Finnish tradition respectively.

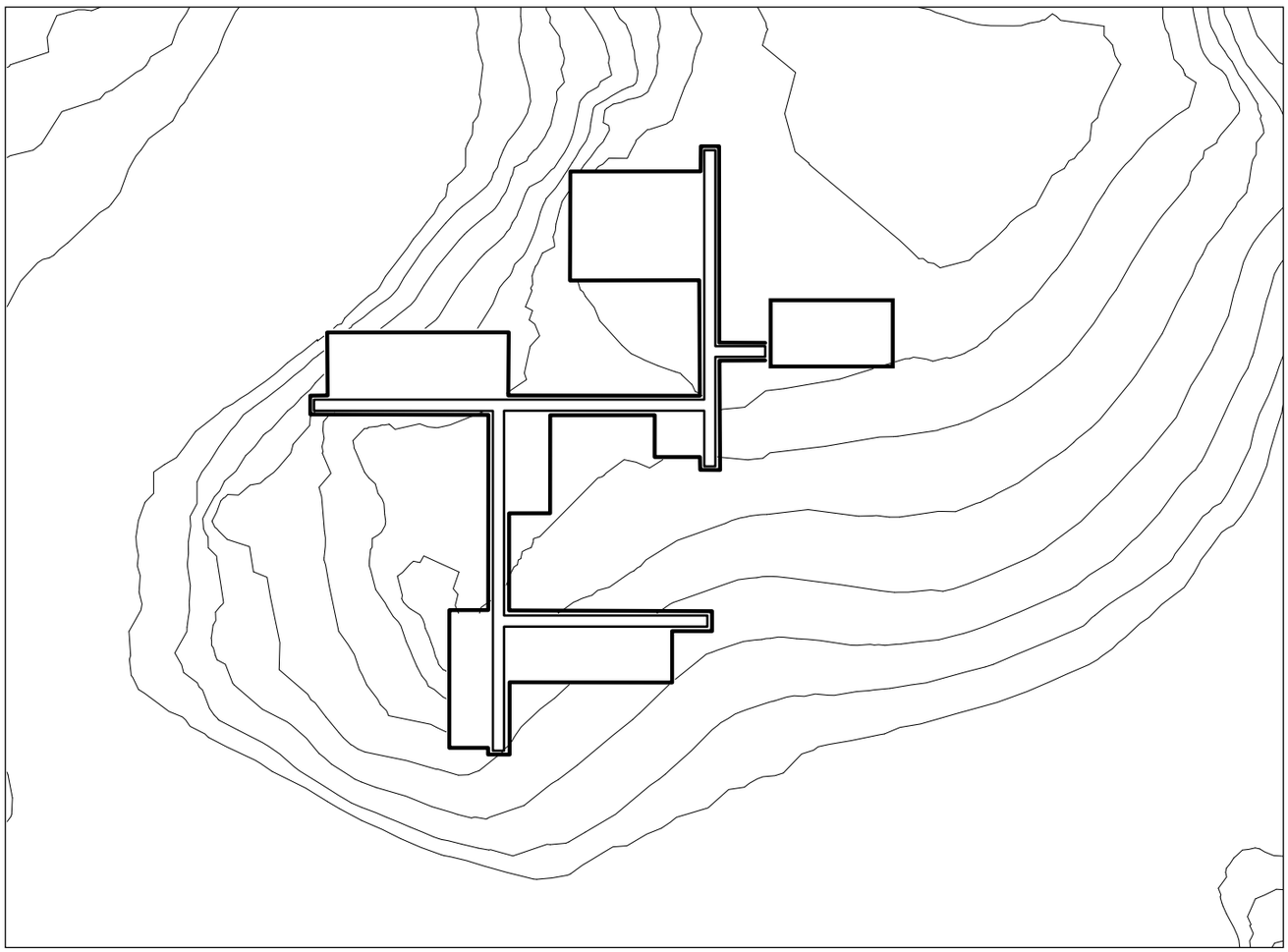
The last iteration switches restaurant and the small exhibition, to obtain an easy access to the service area for food delivery etc. Further, it strengthens the exhibit path by always moving from volume to view, from focus to dwelling. Thereby the contrast becomes clearer and evident in the entire plan. It is possible to use a Western-facing terrace for outdoor serving. The conference and middle size exhibition are turned to supporte the directions given by views.

FOLDING WALL



Left:
Initiatively, volumes and corridors were seen as separate entities to complete the contrast to stage man, art and place. By this the volumes becomes the staged as visitors physically cross a border. Awareness of the change creates a focus point, through which art is staged. However, this border likewise distances corridor and volumes and thereby breaks the intuitive exhibit path to a less fluent circulation.

Right:
Instead, the folding wall is introduced departing in the theories of Gottfried Semper. It becomes the element leading visitors through the museum and creates the focus points through a fold. The volumes then become the enclosure through the introduction of a secondary material. It is the direct and pragmatic reflection of the interaction of place and circulation; when a fold occur an interest point is accentuated as a stage of man, place or art. The wall is now the border between natural and cultivated carving through landscape, and likewise the link between poetry and technique.



Departing in Bötticher's theory of core- and art-form and a strong distinction between technique and poetry, a duality of the concept is introduced. The folding wall possesses neither substance nor sense of depth which seems evident in its interpretation. However, when applying material, the notion of both internal and external boundaries are generated. To reflect core-form, concrete are introduced, interpreted as a strong construction. Concrete has a solid and heavy expression that underlines the folding as a distinct enclosing boundary, which separates cultivated space from nature.

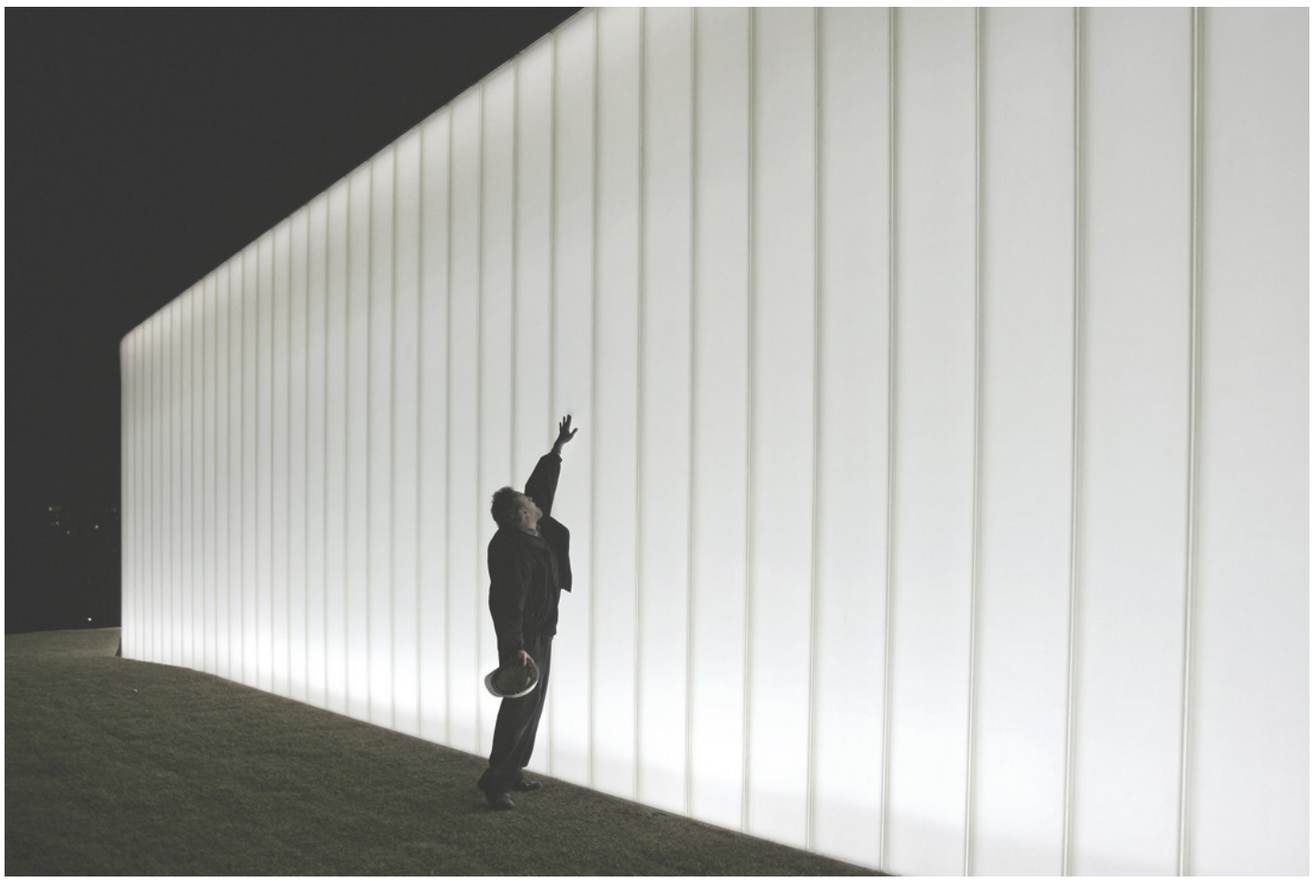
The nature of concrete states a contrast to the surroundings. It is heavy, cold and rough, while nature represent a detailed, light and refined structure, as seen Lee Utan Museum by Tadao Ando By this, it is possible to support the distinction between cultivated and natural, making the folding wall an artificial demarcation. It becomes a non-transitory manifestation of culture.

The concrete is in-situ, poured in a smooth form. The surface becomes clean, only obstructed by small bumps that create a grid narrating the production. Further the bumps create clear perspective lives, accentuating the horizontality of the wall. Through the uniformity, the surface seems continuous, supporting the concept of a wall that moves and cuts through an undulating terrain. The simple expression subordinates the strong ornamentation of the existing manor, supporting the strong hierarchy between history and contemporary.

Lee Ufan Museum, 2010, Tadao Ando

CONCRETE

POLYCARBONATE



The transformation of the folding wall, generating a strong focus point, represents the art-form. Moving from the heavy concrete to a refined and delicate surface, explaining the change of focus, staging art. A hierarchy between the folding wall and polycarbonate-volumes are understood through a significant difference in density.

PCSS is a polycarbonate structural sheet with a hollow-core structure, either honeycomb or triangular. This allows a strong structure with u-values comparable to ordinary insulating glass. Because of strength and lightweight it is suitable for facade and roofing – external and internal. A façade consists of interlocking panels with a system of 'click and fix' that gives a seamless expression. The panels are fixed in top and bottom with either visible or invisible aluminium clips. (http://continuingeducation.construction.com)

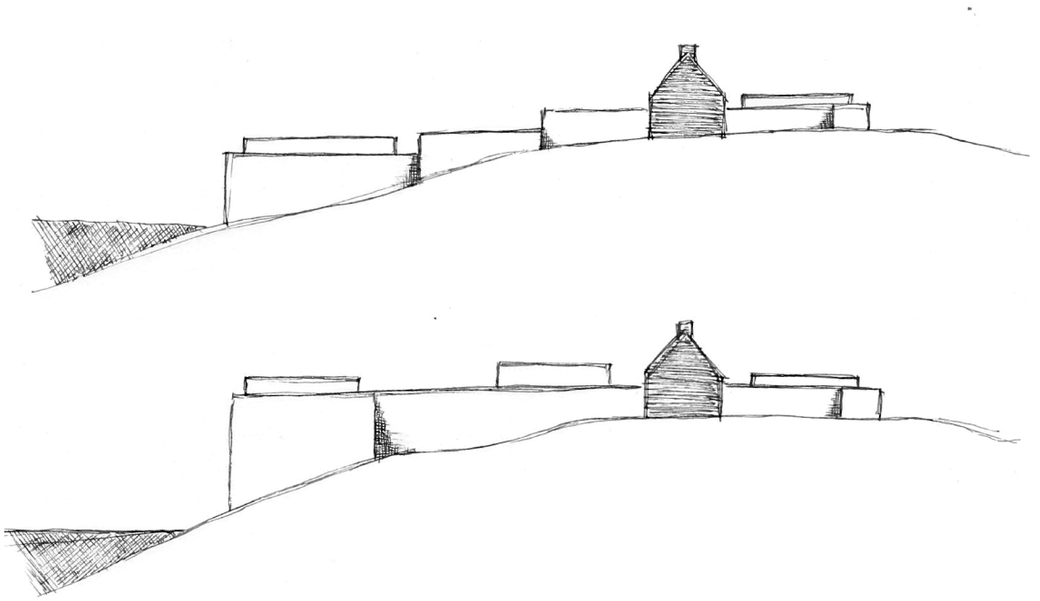
Polycarbonate has been used in building many years, but has been limited to skylights, roofing for sheds etc. In recent years it has become possible to manufacture sheets that meet both fire and energy restrictions. Today the sheets are used in larger constructions as well, mainly where functions require a large daylight factor to indulge power savings without compromising heat transmission. Furthermore it is losing its reputation of being a cheap and artificial material, as it is becoming more refined with a long life span if treated right.

PCSS – Properties

Thickness	50mm
Density	4.3 kg/m3
U-value	0.33W/m2C
Light transmission	50% (UV-resistant)

Caused by an untraditional building envelope, an energy frame calculation has been carried out to verify the materials. Be10 has been used as the tool for calculations (see appendix p. 179). The building fulfils the BR2015 by 36,2kWh/m2 per year (limit 41,3kWh/2 per year), including electricity for artificial lighting. Though an actual roof construction is reduced, the PC minimizes heat loss to a sustainable level

Looking at properties of polycarbonate, it has a light expression with a continuous movement supported by the vague repetitions in the structural core. PCSS creates a soft and even daylight ideal for viewing art. The seamless joint creates clean appearance contrasting the roughness of the folding wall. It works as an opponent to the heavy concrete as an indicator of staging art.



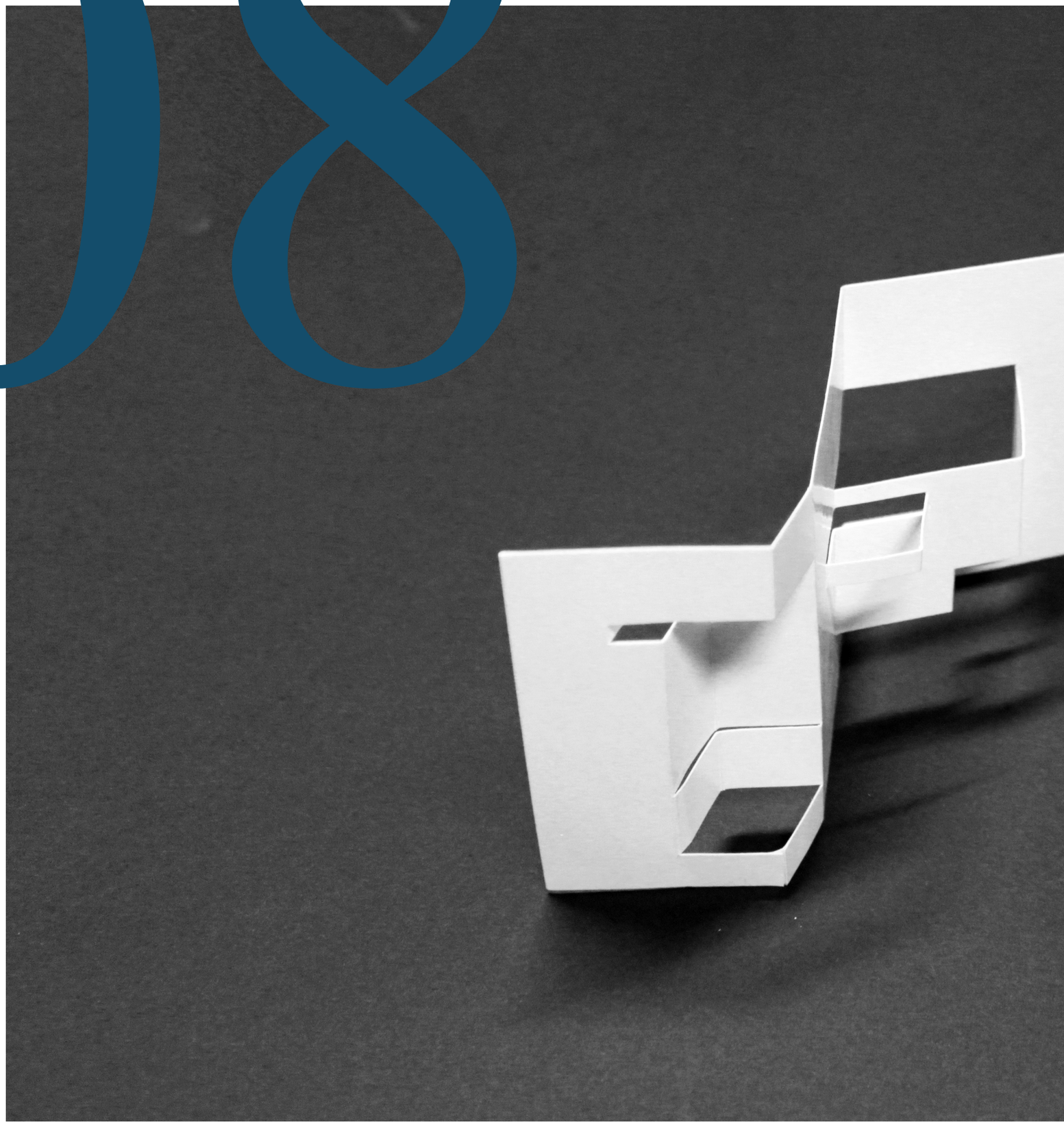
LANDSCAPE

The slopes, caused by the landscape, are reflected in the corridor. This supports the wall as an element cutting through landscape creating a clear division between natural and cultivated. The soft movement reflects levels given by place. The level cause significant height differences across the site, allowing us to a have large ceiling height that seems smaller, but likewise varying height in the corridors. A discussion of how the wall should meet the height differences was carried out.

Stepping
Reflecting the functions within and following the direction of the landscape and garden design, it steps down towards the water. This allows us to choose the ceiling height in relation to volumes. However, understanding the wall as a single continuous element folding around volumes gets blurred as it seems broken by the jumps.

Straight
The wall extends, and has the same top level throughout the building. This strengthens the perception of the folding wall, allowing it to stand as a freed element. The calm expression with a single horizontal line has the same axial expression as the plan, supporting geometry opposed to nature. It is not in our interest that the building blends in, rather standing as a contrast to chaos given by nature. Furthermore, the volumes emerge and are staged not only in plan but also in elevation. This suggestion leaves spaces with large ceiling heights. This slopes of the corridors emphasize each view, this controls a peak within the exhibit path, staging each view. The narrow but high corridors eliminate the intimate space and create an almost formal atmosphere with attention turned to the view, staging place.

08

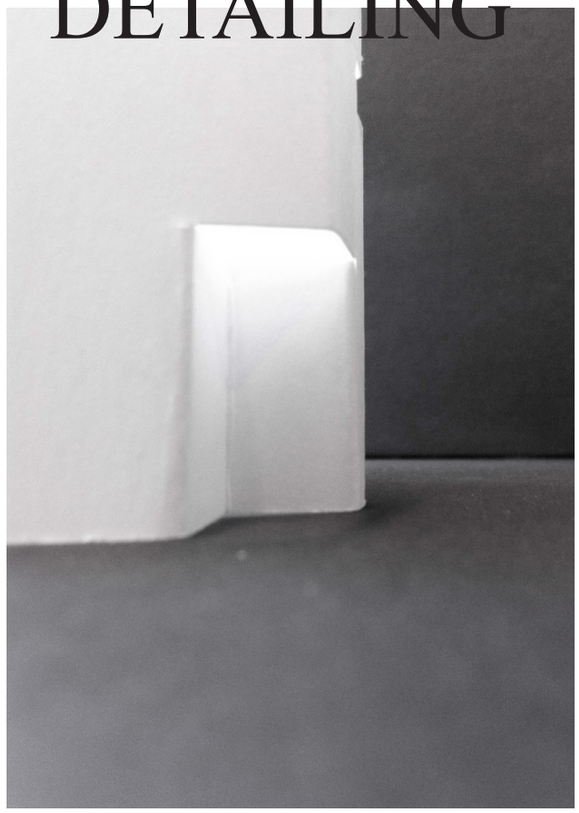


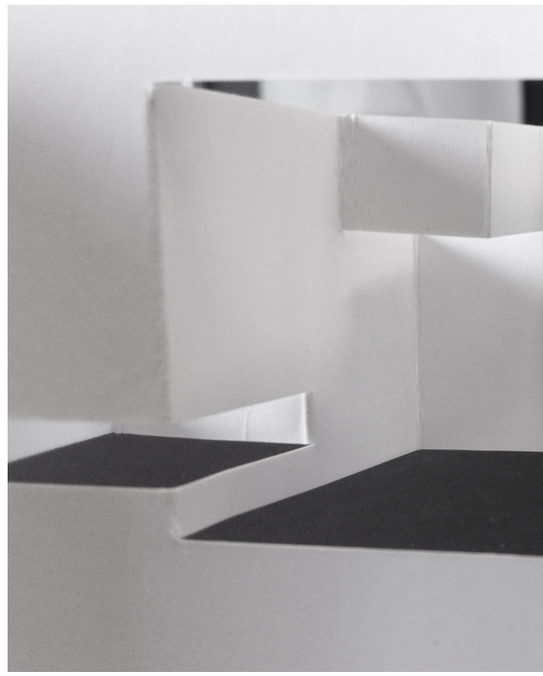
This paragraph goes further in the spatial gesture of staging, scaling to detail level. In the tectonic approach lies a notion of the detail as an important element. Addressing the detail, is often what separate tectonic quality from objectivity as the concept becomes evident in all scales.

Developing folding, introduced by the previous paragraph, further allows staging to emerge through detailing. By this, the ability of the architecture to emotionally impact visitors becomes on going through the entire museum, allowing them to explore the staging of culture in all scales. Three details develop and present the staging of man, place and art, respectively.

DETAILING

STAGING MAN
DETAILING



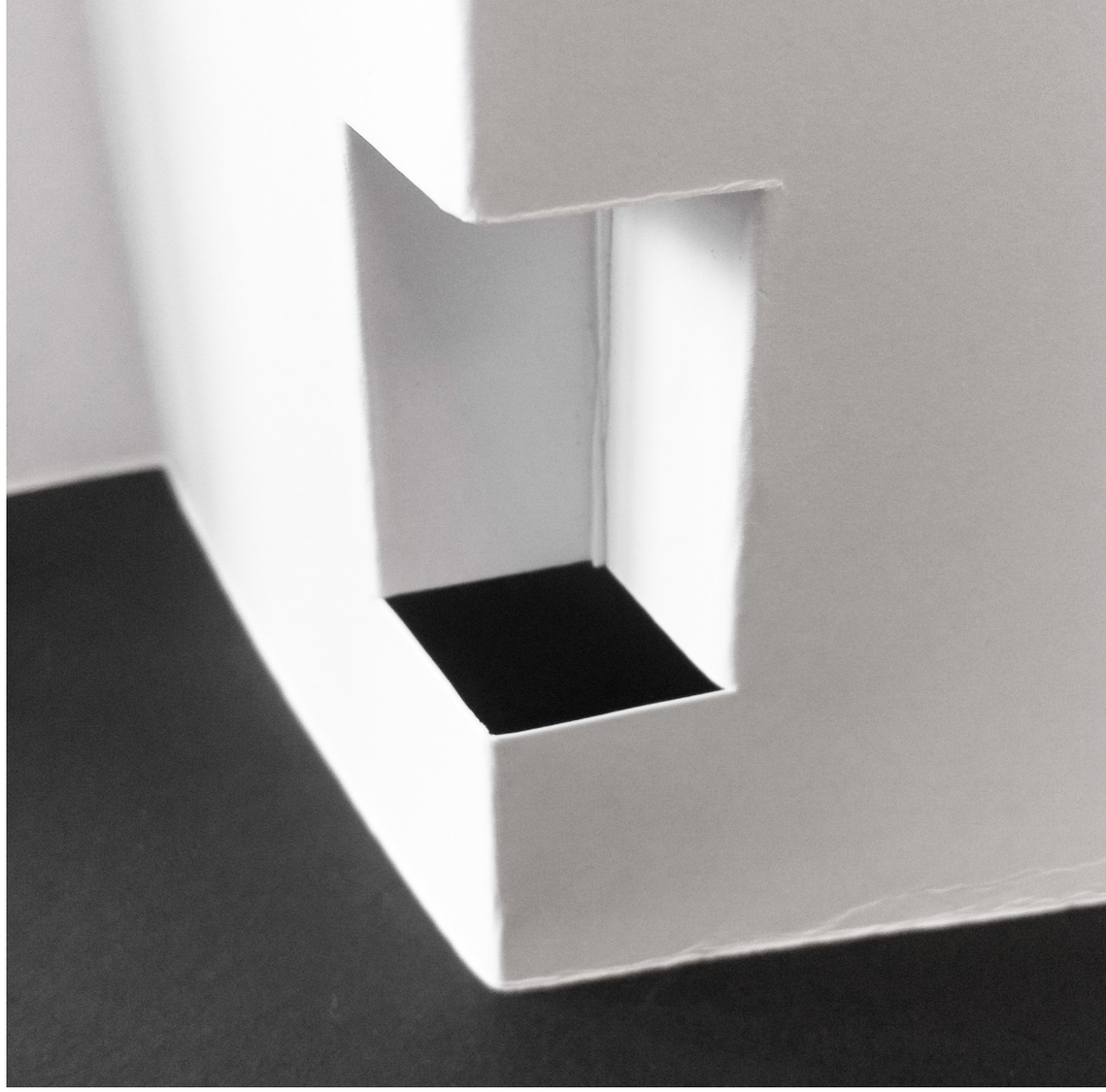


The obscurity of corridors must be utilized in a search for the spatial gesture of staging culture. This can be used to create at dramatic stage adding tension to space and the presentation of man, place and art, through the notion of folding. This detail investigates the structural principle of folding in a smaller scale relating to a single art piece and human body. The intimate space created is evident to provide a varied experience moving through exhibition and corridor.

The corridors furthermore call for exploitation of direct sunlight and the advantages it gives. Through light and shadow art becomes vibrant and ever changing, in which visitors might find interest and curiosity.

Folding a stage

With a point of departure in the structural principle of folding our approach turns to niches in order to create stages relating to the human scale. The first ideas departed in the history of Serlachius and their paper mill. Introducing paper as an experimental material gave inspiration to how folds are what create space – without them there exist no spatiality. Counter folds then create an inner spatiality to give the experience a more intimate character. Sense of intimacy emphasizes the wanted atmosphere of focus towards art, supporting



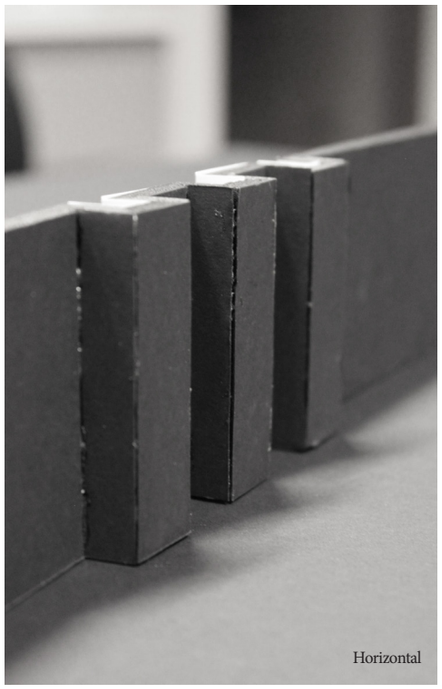
the spatial gesture of staging.
The initial workshops were rooted in the case study of Carlo Scarpa and his Canova Museum, as a means to utilize suspense to create focus and thereby staging. The folds create a highlighted stage through filtering of light exploiting the contrast between light and shadow. Looking at model pictures, folding introduces several ways of staging; either literally or by a perceived space.

Literally, the fold becomes a stage on which you are able to present an art piece. This, however, relates merely to the functional aspect of staging, neglecting the experience and interaction of art and architecture.

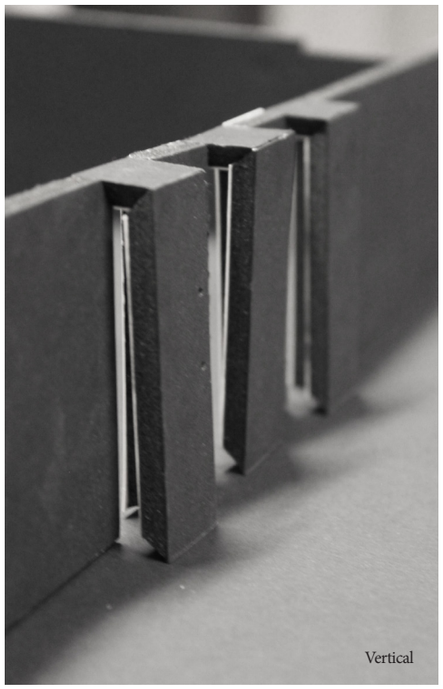
The perceived space is introduced by light and the contrasts it creates. Here it becomes an imaginary stage that influences the presentation, live-giving the art dependent on place, season and time of day, and the changes the perception thereby. It attracts visitors through the introduction of light in otherwise dim corridors.

Light studies

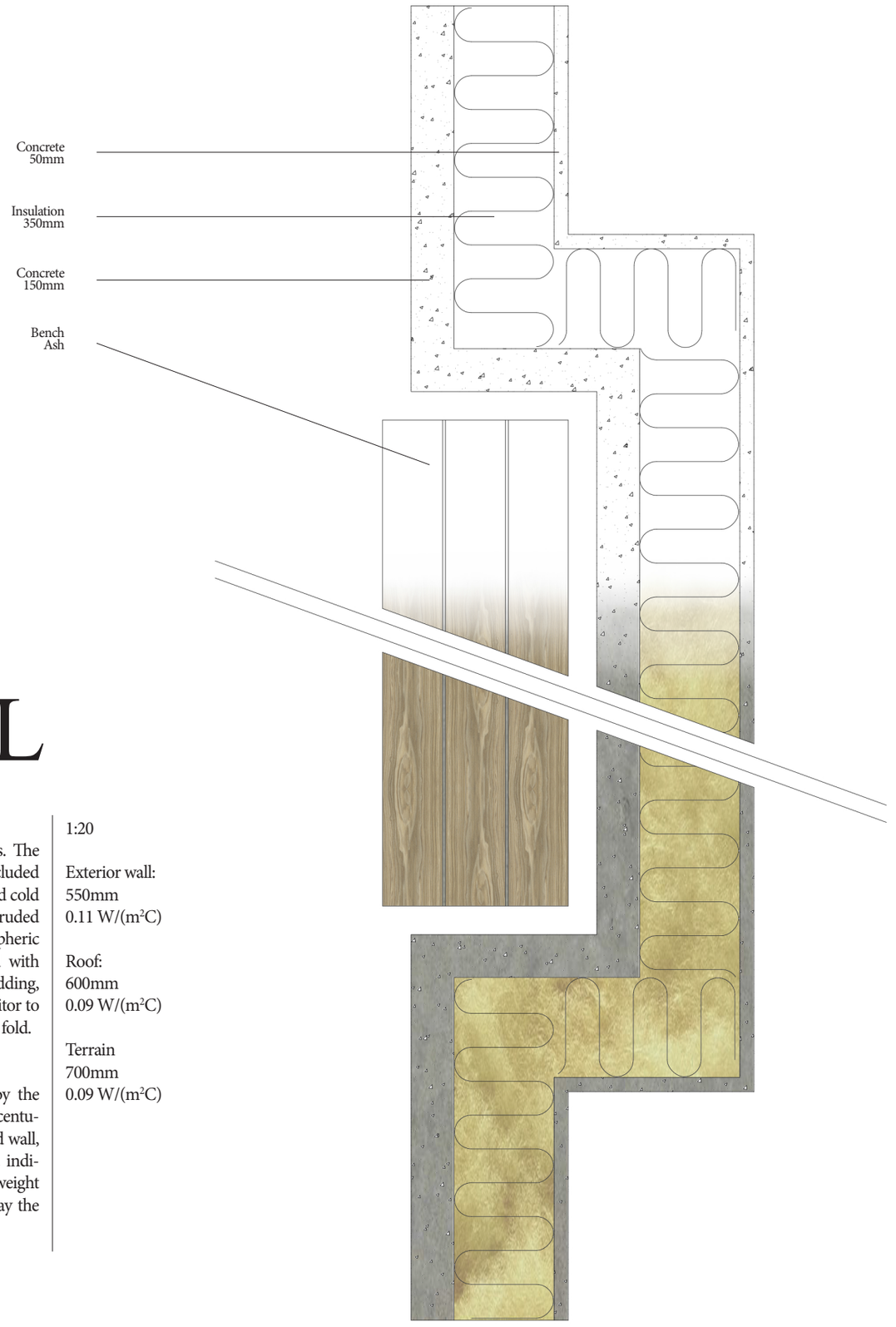
Physical models has been used to explore two different folding techniques; either vertical or horizontal. A vertical fold makes it possible to exploit direct sunlight, when the sun is low. It creates light slits that introduce a strong differentiation between light and shadow, but show no actual relation to the staging of man. Furthermore, a vertical fold has an opposite direction and seem to blur the folding element as a continuous element. The horizontal fold however supports the movement of the wall, and creates an interest point, without disturbing our concept. Through this, the fold that creates the volumes is repeated in a scale relating to art and human body. This fold allows light from above to enter, staging a displayed object; an object on a pedestal or a person on a bench. Light becomes the immediate thing that enables what you see and experience, but also what delineates space.



Horizontal



Vertical



DETAIL

Plan
The fold is introduced in several scales. The detail relates to the human scale, as a secluded niche for stay. Surrounded by a heavy and cold concrete wall, a small volumes is extruded into a bench. To emphasize the atmospheric change, the materiality shifts. Covered with a warm and soft surface of wooden cladding, the bench invites for sitting, allowing visitor to dwell. Man is thereby staged through the fold.

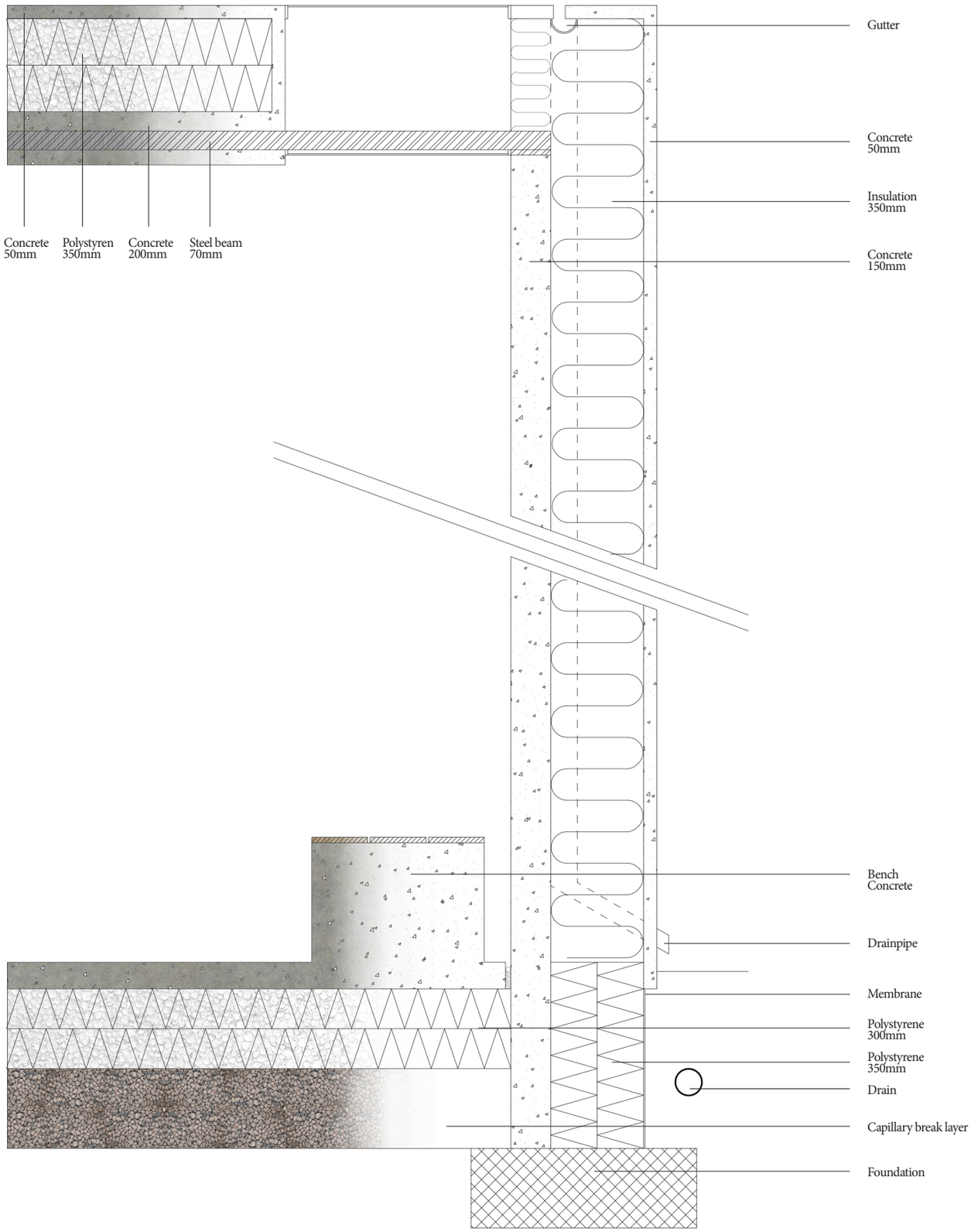
Section
In the detail section, light trespasses by the creation of a fold. Staging man, light accentuates a focus. The gab between ceiling and wall, allows visitors to perceive the wall as a individual structural element, carrying the weight of not only the roof, but in symbolic way the entire museum.

1:20

Exterior wall:
550mm
0.11 W/(m²C)

Roof:
600mm
0.09 W/(m²C)

Terrain
700mm
0.09 W/(m²C)

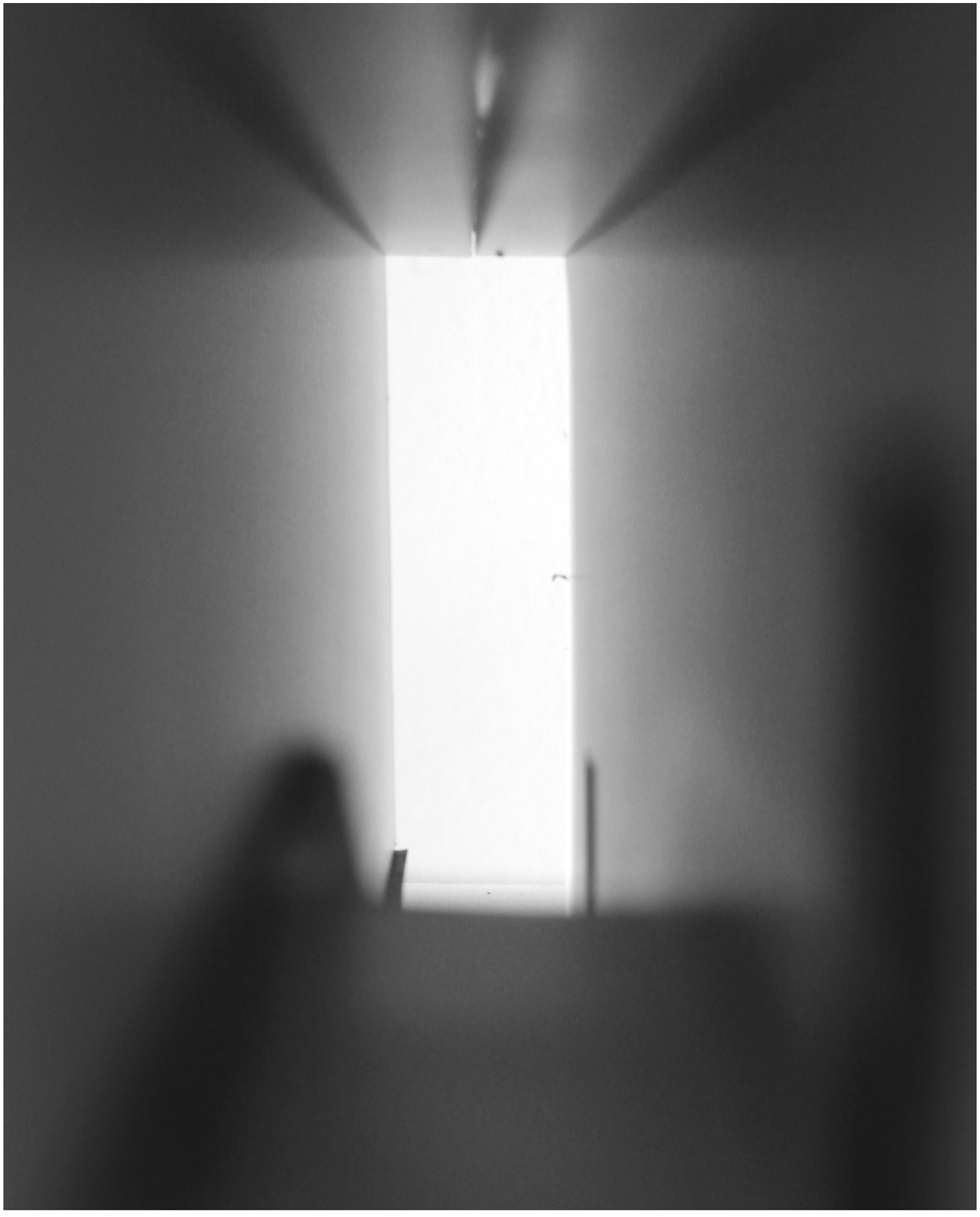

Concrete
50mm
Polystyren
350mm
Concrete
200mm
Steel beam
70mm
Gutter
Concrete
50mm
Insulation
350mm
Concrete
150mm
Bench
Concrete
Drainpipe
Membrane
Polystyrene
300mm
Polystyrene
350mm
Drain
Capillary break layer
Foundation

STAGING PLACE DETAILING

The spatial gesture of staging place is essential as it is the crucial factor of the concept development in relation to the adaption of building to this specific place. The structural principle of folding is for that reason further developed into detail in these four essential endpoints of the path. These four details are addressed to accentuate and stage the essential of each of these views which are specifically selected to clarify and tell the narrative of the cultural importance of place. This means that each view represents a narrative of place, and this will stand out clear as architecture isolates and stages the purity of the selected place.

Being connected to the path, the views have the power to rouse curiosity and attract people as the long walk accentuates importance of the views. However, the visitor have the liberty to choose its own path, which becomes an evident factor to strengthen attention and leave the visitor to their own pace. Hence the path becomes a break, a place to dwell and to clear the mind, in between the enclosed exhibition spaces of art that claims for focus. Hence it follows that the viewpoints not only have to tell the narrative of place, but also need to absorb the visitor as a meditative space. The contrast between the darkness of the path and the light at the end of the path is likewise a poetic feature that accentuates the role of the viewpoints.

A slope of the path that follows the natural landscape further accentuates a contrast between the enclosed volumes of exhibition space of art and the path, as the it represents a more direct connection to place, whereas the volumes does not allow any direct view to place. So the four viewpoints become even more essential as they reveal place entirely.

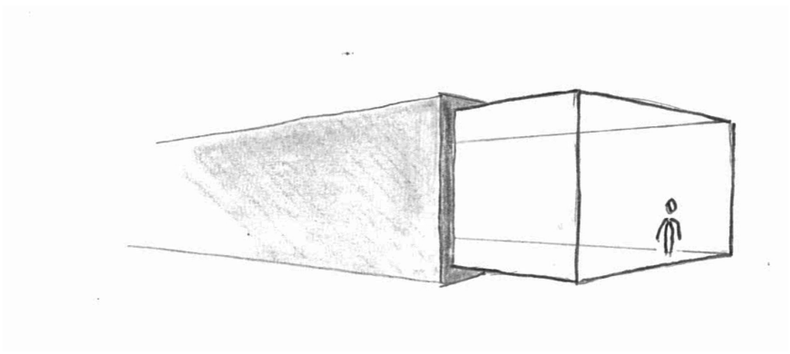


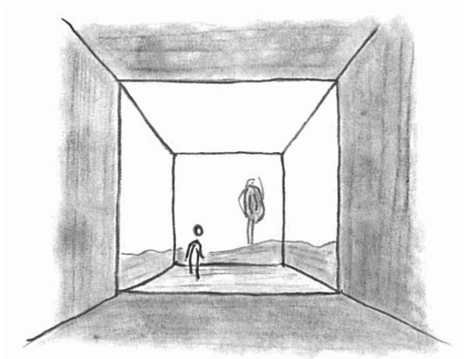
Through the site analysis and the structural principle of folding, four views are presented as essential in the process of staging place. Each view tells of an important element in Finnish culture and the history of the museum; the built, birch forests, the thousand lakes and the sauna. A workshop was carried out to explore how each view stages place to narrate culture and how window shapes and sizes affect the spatial experience of place. The following explain the development from initial idea to a working principle.

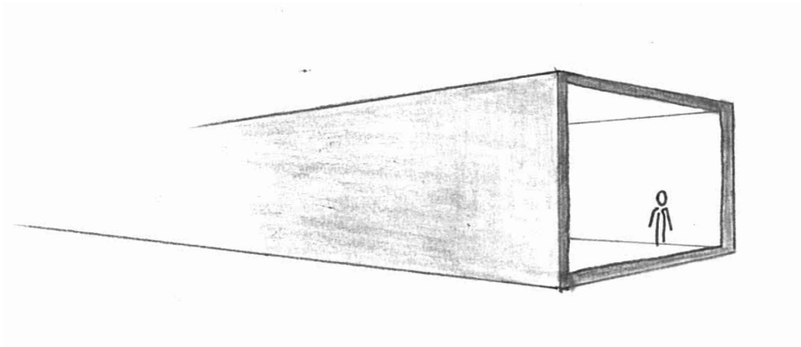
1. The lighting box
Each view ends in a glass box; staging context and creating a framing box that stages man from outside. A contrast between darkness and light is created. This accentuates a hierarchy and suggests an important element in the museum experience. However, the box blurs the actual narrative of the view, as it gives no direction.

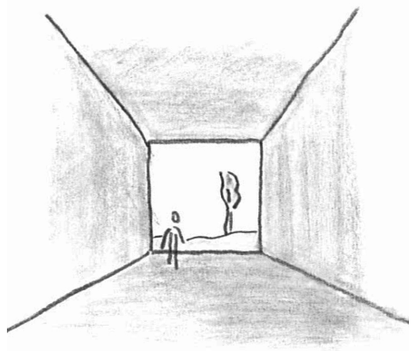
2. The glass façade
The glass area is reduced to being only at the end of the corridor. This gives the feeling of moving towards nature and has a strong direction making your eyes wander past the corridor and further. The folding concrete wall stages place, however the big glass façade is vertical due to the height and this makes visitors glance move upwards and yet again is the view not controlled.

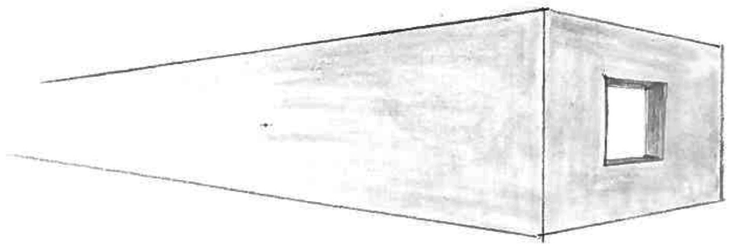
3. The carved out window
Moving from the glass façade, the area is even more reduced to fully control the view. In this way, the element of contrast is even more valid as it is able to stage the essence of place. Each view becomes an aspect of dwelling, as you are lost in the infinity of each scene.

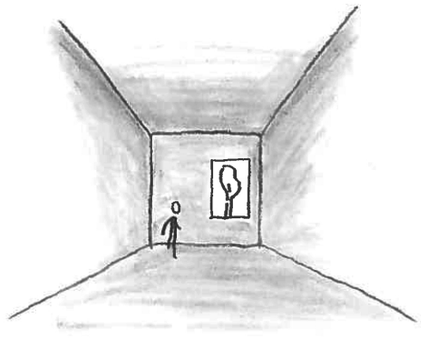








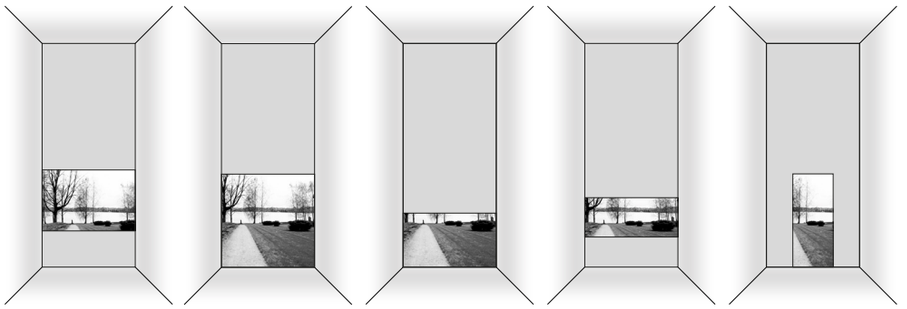




The structural principle of folding is developed in detail according to the display of viewpoints that reveal place. Theoretical investigations of dimensions and different ways of framing views are leading to a practical workshop that investigates a spatial experience of four selected viewpoints and how they are staged.

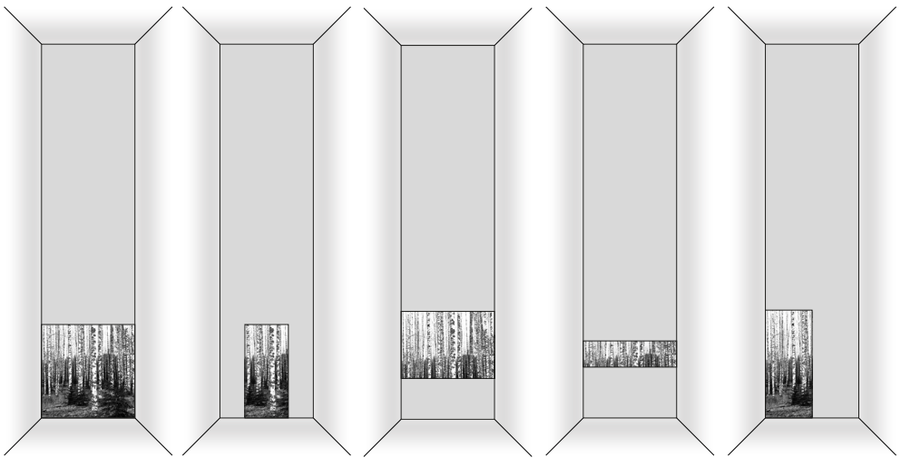
In aspiring to cover the aspects of architecture as a stage of place, we find photographic art as comparable to architecture. Photography is involved with perception of place and its framework can obscure or accentuate reality of place. Hence there is a distinction between what is real and what is perceived, and this is the art of staging. It is a selective process of what to reveal or isolate, to accentuate and stage what is essential of place. The theories of Newberg and d'Arquili means that controlling the perception of environment is the primary starting point for affecting a "spiritual" experience in architecture. (Helm , 2006).

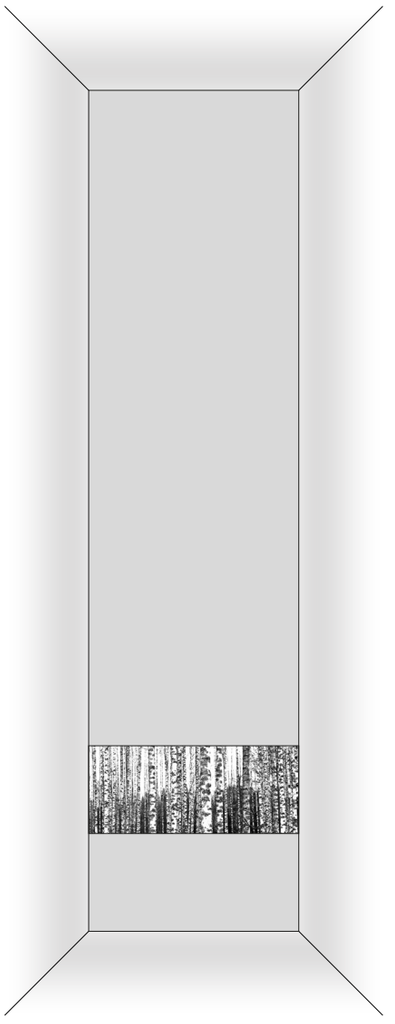
To capture the scenic and essential of a given place, the photographic art form deals with the relationship between the shape of the frame and landscape form, and the selection of elements within the frame as equally important (Nassauer, 1982). Translating this to architecture, the adaption of dimensions of a window to the landscape form is essential to accentuate and hereby stage a scenic viewpoint. This means, that a landscape with a horizontally dominant compositional orientation needs a panoramic formatted window to accentuate the scenic values of horizontality and boundlessness, whereas vertically dominant orientated elements in the landscape will be obscured by a panoramic format (Nassauer, 1982).



1. Order of cultivation
The first view on the path emphasizes geometric lines of the existing manor and landscape design, and reveals a clear direction towards the lake south of the main house.

To emphasize this, the framing of geometric lines are essential and the direction towards the water and horizon. The window needs to be low orientated to sense and strengthen the existing axis as a continuation of the interior path towards the lake.

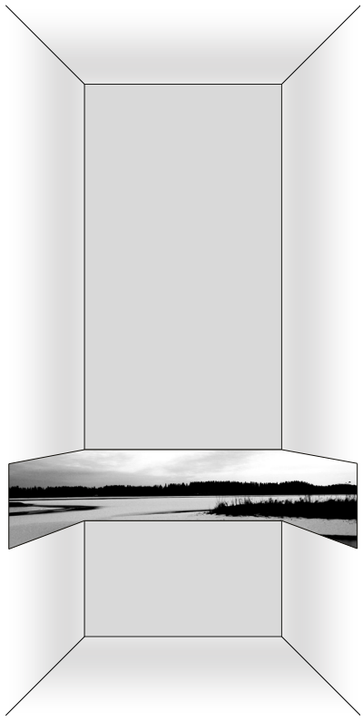


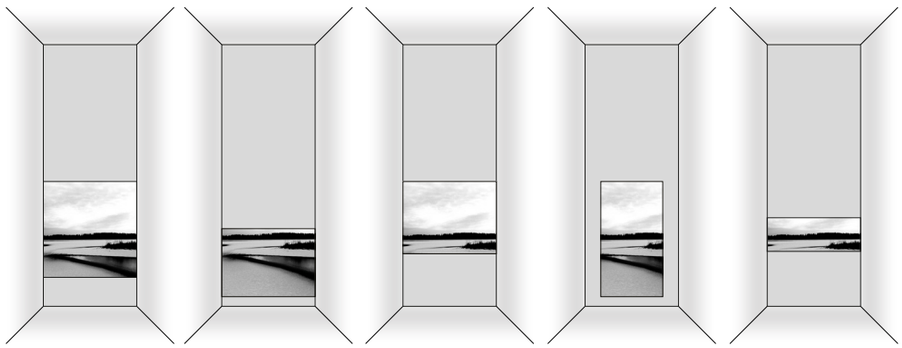


2. Order of nature

A dense forest characterizes place West of the building area. The view stages thin and elegant stems of birch trees, allowing visitors to experience a natural organization. It accentuates a contrast to the previous view, as both cultivated and natural sense of place is respected and have importance for the understanding of place. Further the cut view of stems stages a characterizing nearness to nature.

A high-orientated window cut the stems before they meet the ground. This expresses nearness to nature the best way, as they seem to be even more close to the window. A longitudinal format gives the sense of being encircled by the birch forest.



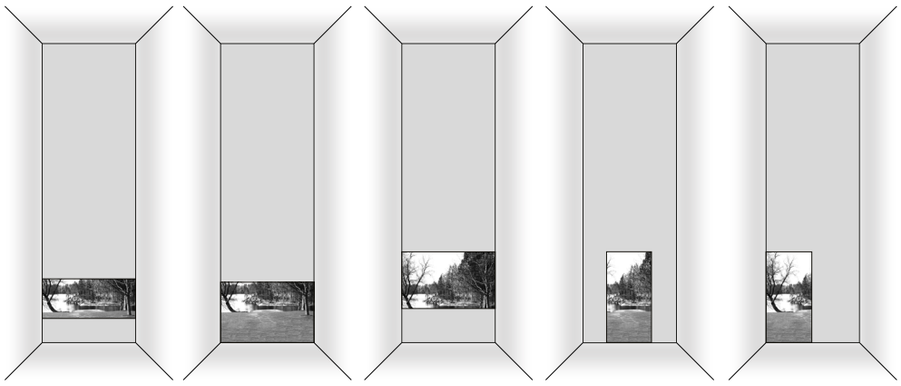


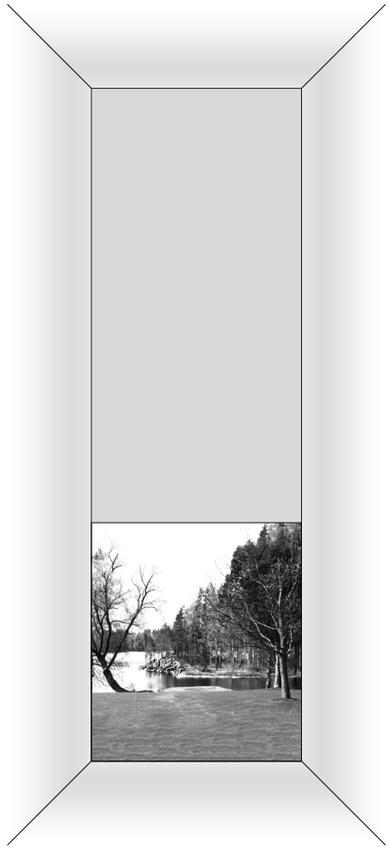
3. Nearness to water

A view of the lake South of the main building stages the wide and open horizon of place. Further the cutting of the view does not allow visitors to experience ground in front, and enhances a nearness to the water, staging importance of water to the character of place. The panoramic view accentuates the wide and open horizon. This will emphasize the distance and wide field. By exposing the sky it accentuates the feeling of space and openness.

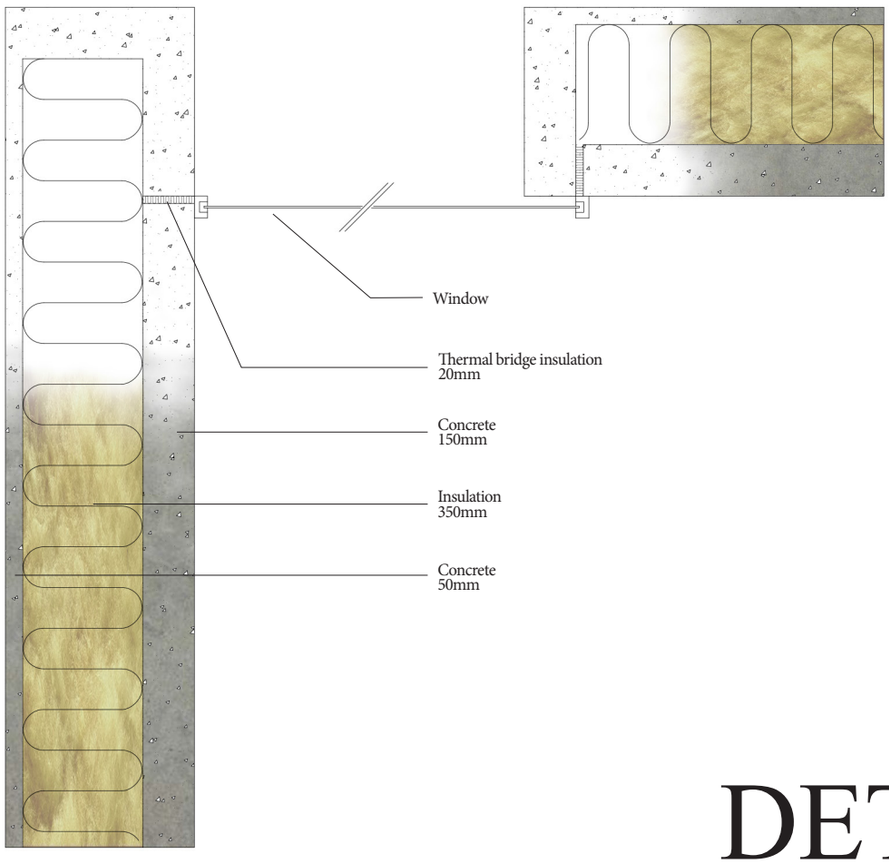
4. Taaventinsaarin
The island is what Serlachius fell in love with when he saw the place first time, and became the reason why he built the manor on this specific place. This is the final view on the path, and a long walk towards the final endpoint on the interior path emphasizes the importance of Taaventinsaarin. Pavement extends and directs the view towards Tarventinsaarin by melting together with a bridge. This merges interior and exterior, and entices visitor to continue the path outside.

The foreground is essential when framing the island. Too much foreground will make the island seem far away, but a little is needed to accentuate the connection to mainland, as visitors must feel invited to continue the path outside. The pavement will enhance the axis and direction towards the island, of which reason the dimension of the window should be vertical orientated.



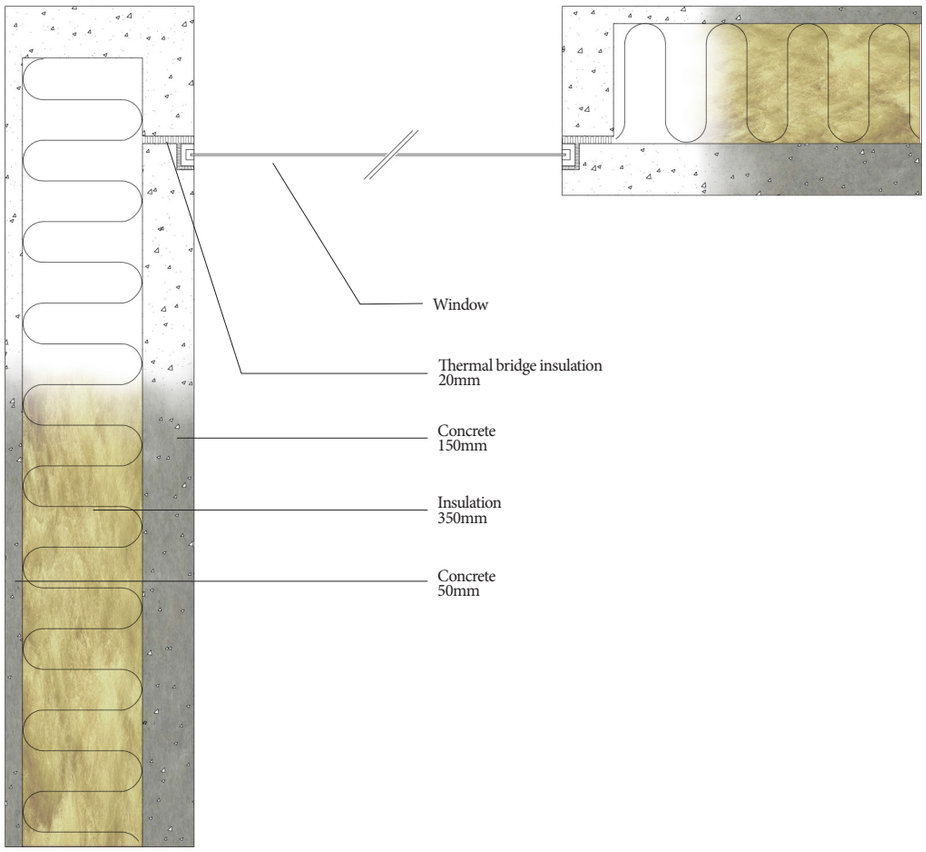


The four views have their own distinct character each specific of place. By specifically choosing how to stage each one, the essential of place are revealed. Through this, the presentation of place becomes controlled and accentuates both the importance of nature and cultural tradition, seen in a Finnish perspective but likewise in near context. The geometric landscape design and Taavetinsaarin are entities important of this specific place, while the birch forest and lake also become of a Finnish perspective. By this, affiliation of place becomes an important features in a emotional aspect of architecture, linking poetry and technique through staging.



DETAIL

Inner mounting of the frame
The windows are mounted on the loadbearing part of the concrete wall, as an attached element. This reflects the same duality as in the polycarbonate volume, as the glass will seem like an insolated layer. The frame will become visible to visitors, stealing focus from the view and becoming a disturbing element influencing the simplicity and essence of the view. Further, thermal bridges are inevitable which is undesirable for the energy consumption.

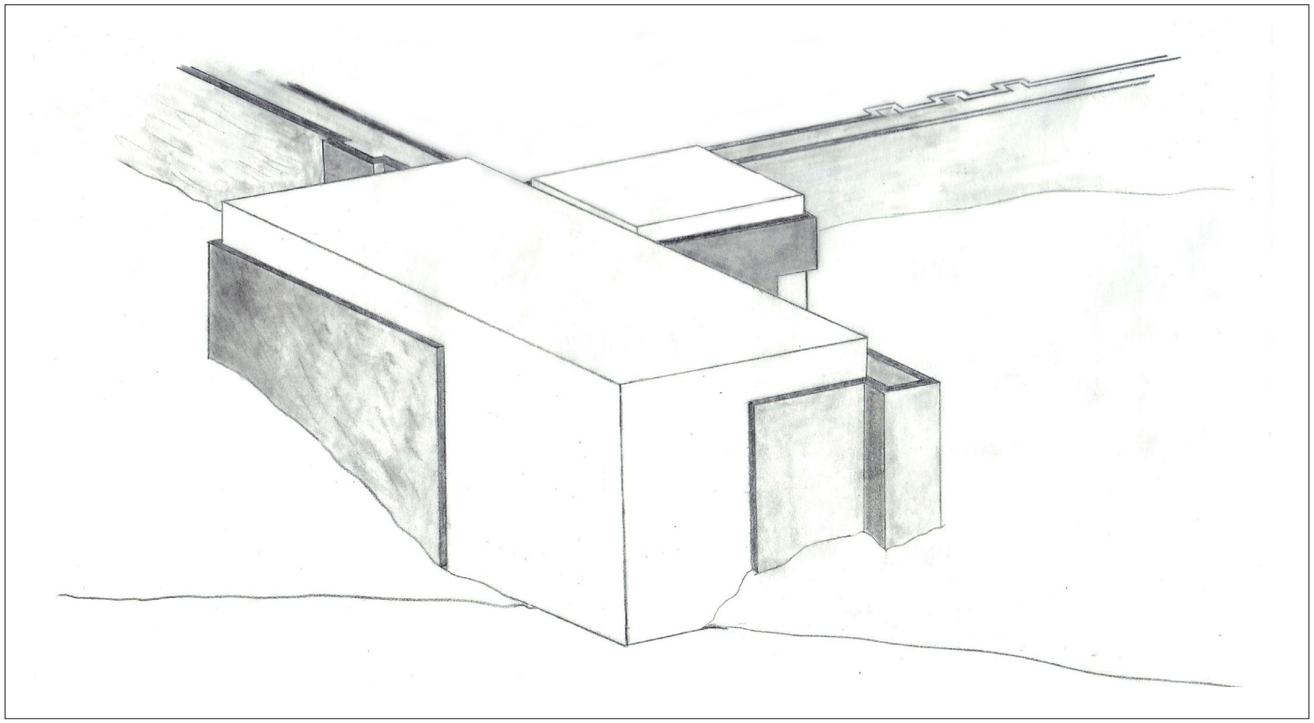


1:20

Window:
0.85 W/(m2C

Exterior wall:
550mm
0.11W/(m^2C)

Invisible frame
The second drawing shows an example, of how a window can become almost invisible. The frame is hidden in the periphery of the concrete wall behind a thin layer cladding. Only the actual glass is visible, however not sensed because of its transparency. Thereby the view is completely undisturbed and focus lies on place. By this, the invisible frame holds concept of staging, allowing the visitor to absorb the essence of place. Due to these argument, we find that this suggestions supports the staging of a view.

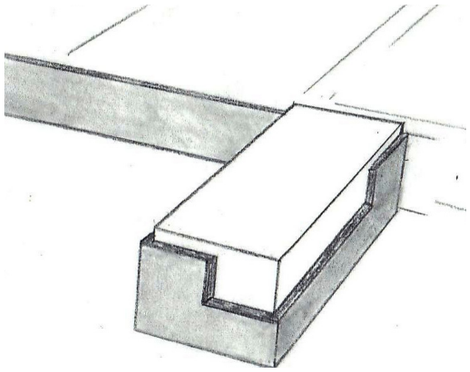


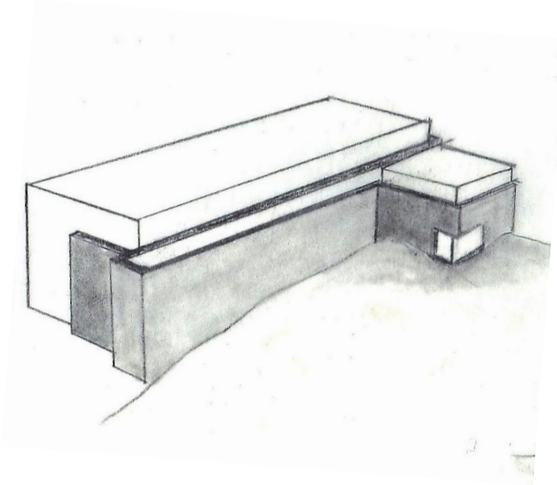
STAGING ART
DETAILING

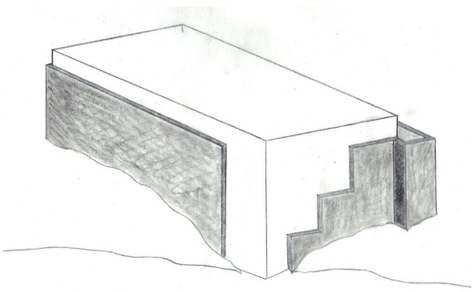
With a point of departure in the structural principle of folding, the detail is addressed. This will support our spatial gesture of staging in the mediation of culture.

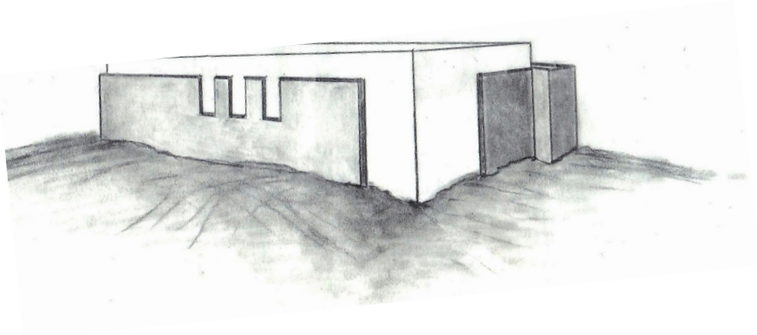
The exhibition spaces require daylight, however direct sun is damaging to art pieces. Furthermore, Finland is limited to only few hours of daylight during winter, and thereby the size and shaping of windows becomes an evident element of a working museum. Together with the functional aspect, the lighting detail must strengthen our staging principle of art to present the culture of the Serlachius Museum and reflect the hierarchy that follows functions.

The chosen detail has a significant relevance, as it is repeated throughout the exhibition spaces as the structural principle for staging art. Thereby it becomes an element that represents a point of interest within the museum. The process is represented by initial ideas and sketches and thereafter further developed through discussions based on aesthetic and technical explorations related to the design parameters and the spatial gesture of staging.





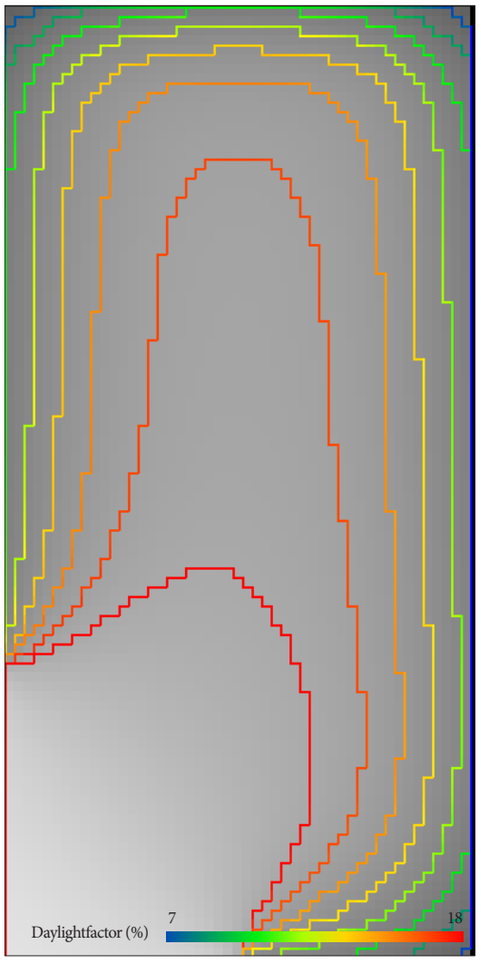




Semper clearly defined tectonic hierarchy between poetry and technique, defined in the chapter *Staging*. What we find interesting in the origin of the wall, is the clearly defined tectonic hierarchy between aesthetics and function, the core form and art form, from which we find inspiration to further develop and strengthen the conceptual idea of the folding wall.

The wall is considered as two-layered; an introvert part representing the essence of the wall as spatial enclosure and the extrovert as a load bearing solid wall, referring back to the mason's art of the mound (Semper; 1989). The art form is essential to create the right conditions for staging art. This is the characteristics of the enclosed volumes. These are the dressing, enfolded by the extroverted part. Both are strongly dependant. Without the masonry wall (Die mauer), the interior wall will not be able to withstand cultural developed conditions of today, and without the interior wall (Die wand), the exterior wall will only be a physical shell losing its true essence of spatial enclosure.

This relation between the folding wall (the mound) and the volumes (the enclosure) is detailed to accentuate the motive of the enclosure as a stage of art, and the mound as a cultural determined protector to withstand environmental conditions and loads. When exposing the volumes, the concept is interrupted staging the volumes through a noted hierarchy. It is also in this area of tension we challenge the theory of Semper. By removing the load bearing, fragility is revealed, and it is here the visitors becomes aware of a correlation between mound and enclosure, between construct and dressing. Through this, a staging of both architecture and art appears.

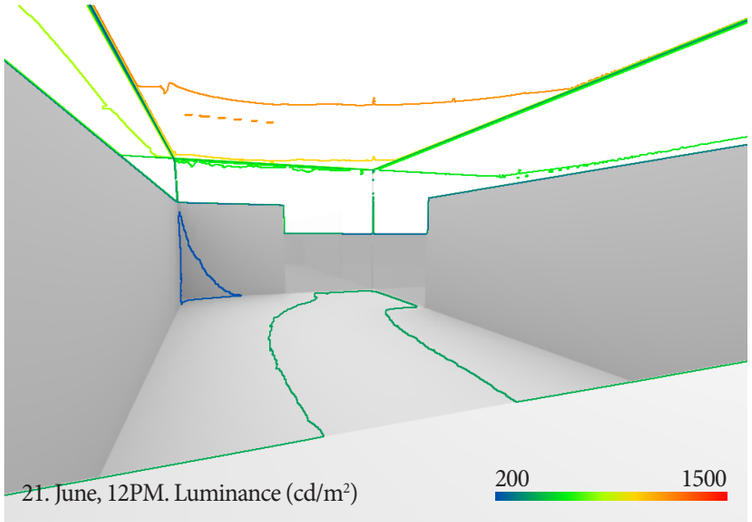


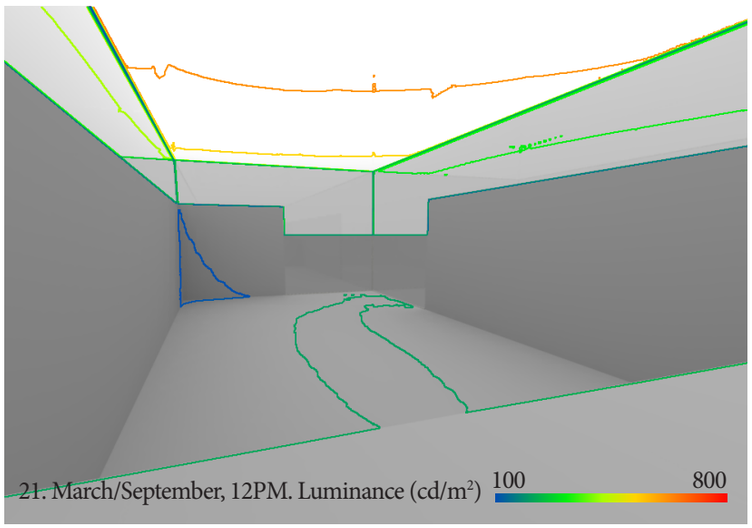
Studying daylight

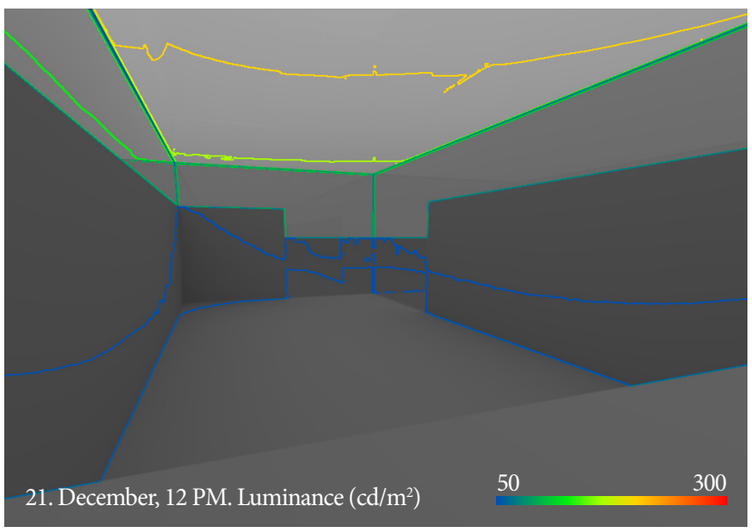
Our understanding of light as a significant atmospheric element in a Nordic context have a considerable importance for the way of introducing light in interplay with functional entities in relation to exhibition architecture. This becomes evident for detailing in terms of light, and needs a certain flexibility to encompass the staging of art of different kinds, primarily fine art paintings but also sculptures and the variation in contemporary art.

From this deduction, the facilitation of indirect light holds an introvert atmosphere for staging art. The wall moves from closed to the open in which it becomes controlling in the creation of space. By exposing the enclosure, a tension field is created. With this, differentiation in space between lighter and darker areas appears and a staging of art is revealed (right)

Furthermore, the roof has possibilities as well and by introducing the roof as a light giving element. It is possible to achieve a fairly even daylight factor that considers every art piece. (left). The amount of daylight varies in Finland, and light must be utilized, however electrical light should compliment when necessary. Through a raised roof, the folding wall is accentuated and gives hierarchy between the volumes and walls, and a larger surface can bring light to the interior space. By consistently using the same material, PC, for each surface, duality of the concept is strengthened through this distinction.

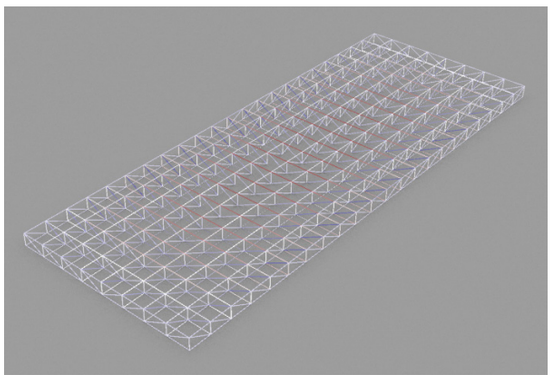

21. June, 12PM. Luminance (cd/m²)
200
1500


21. March/September, 12PM. Luminance (cd/m²)
100
800

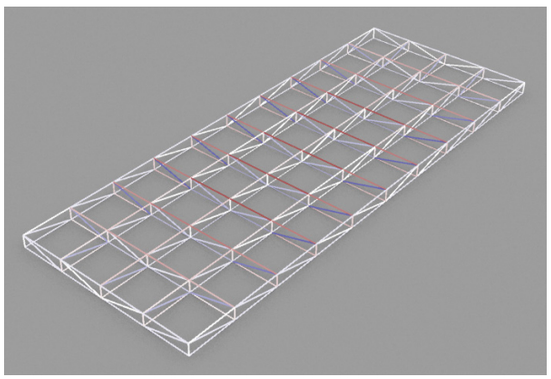

21. December, 12 PM. Luminance (cd/m²)
50
300

Dense grid,
Displacement 0.028M

Compression
Tension



Loose grid,
Displacement 0.034M



Designing structure
Freestanding volumes, created by the structural principle of folding, stage the exhibitions as mediator of art. Too ensure the perception of a volume being an independent element the roof is constructed of polycarbonate sheets, supported by a three dimensional steel truss system. As a result of PC the truss is sensed and thereby it becomes both an aesthetic and structural element of space.

To understand how the truss affects the atmosphere, a parametric model is assembled in Grasshopper3D. This allows the model to change in truss density, size and element thickness; by this it is possible to understand aesthetic and structural consequences to reach an expression supporting the staging of culture.

The Pratt truss is built in Grasshopper as a parametric model that controls three chosen aspects; number of trusses across, number of trusses along and element thickness. These are considered as dependent parameters that influence the aesthetic qualities of the grid. As given by the finite element plugin of Karamba it is possible to estimate the structural behaviour of the truss, in relation to displacement and utilization of the material.

Material:	Construction steel	Yield strength 345MPa Youngs modulus 0,21*10^6MPa
Area:	Roof, no parapet	600m^2
Deadload:	3D Truss - Polycarbonate 4,3kg/m^2	G_p - Parametric calculated G_c = 0,11 kN/m^2
Snowload	s=μ*C_e*C_t*s_k μ = shapefactor, C_e = factor of exposure, C_t = factor of thermology, s_k = factor of terrain DS/EN 2010, p. 50	s = 0.8*1*1*2,5kN/m^2 = 2,00kN/m^2
Windload :	Fw = cscd*cf(F)*qp(ze)*A Appendix, p. 180 Eurocode 1, p. 63-99	0,30kN/m^2
Liveload	Teknisk ståbi, table 4.7p. 167	Q_k =0,003kN/m^2
Load combination Snow dominant	1*1*Gp + 1*1*Gc + 1,5*0*1*Qk + 1,5*1*S + 1,5*0,3*Fw (Teknisk ståbi, table 4.4, p. 165)	G_p + 3,24kN/m^2

Aesthetically an equality between the horizontal top- and bottom chord and the verticals as well as diagonals of the truss are wished to be achieved, to visually be able to sense the structure of the trusses behind a layer of semi-transparent polycarbonate. This means that the thickness of all elements of the truss will be equally dimensioned to enhance the visibility of the structural system in terms of shadow effects. Structurally this means that the horizontal top- and bottom chord will function as hinged. Furthermore, a uniform grid is desired for an aesthetical expression of regularity.

Loose grid		
Elements (tubes):	Diameter	10CM
	Thickness	1CM
	Total weight	25789KG
Displacement:		0.034M
Utilization	Compression	51.0%
	Tension	39.5%
Grid		~ 3.75x3.75M

Dense grid		
Elements (tubes):	Diameter	5CM
	Thickness	1CM
	Total weight	23861KG
Displacement:		0.028M
Utilization	Compression	59.5%
	Tension	29.8%
Grid		~1.875x1.875M

As shown in the table, both models meet the required strength of the construction. However, the dense grid uses less material and thereby exploits it better. Aesthetically though, the difference seems distinct. The loose grid is hardly sensed, leaving a larger area exposed for daylight. The ceiling seems freed from a structure.

However, the dense grid introduces a stronger expression, filtering light and mirroring the behaviour of nearby trees by imitating nature geometrical. It breaks down the scale of the large exhibition areas, which thereby seem more intimate.

Dense

Loose

Caused by the height of grid, the ceiling becomes more than just a surface; it retains the character of a roof. Through this, visitors understands the structural significance of the grid.

The exhibitions have no partition walls connected to the floors. However, the grid must carry hanging walls with wires for displaying art, leaving the polycarbonate volume untouched. Exploring this need, the dense grid provides a higher degree of freedom and flexibility for exhibitions. It becomes an easy and rational way of changing the interior without disregarding staging through folding. Furthermore, the dense grid is easily adjusted to the different exhibitions varying in size.

ROBOT

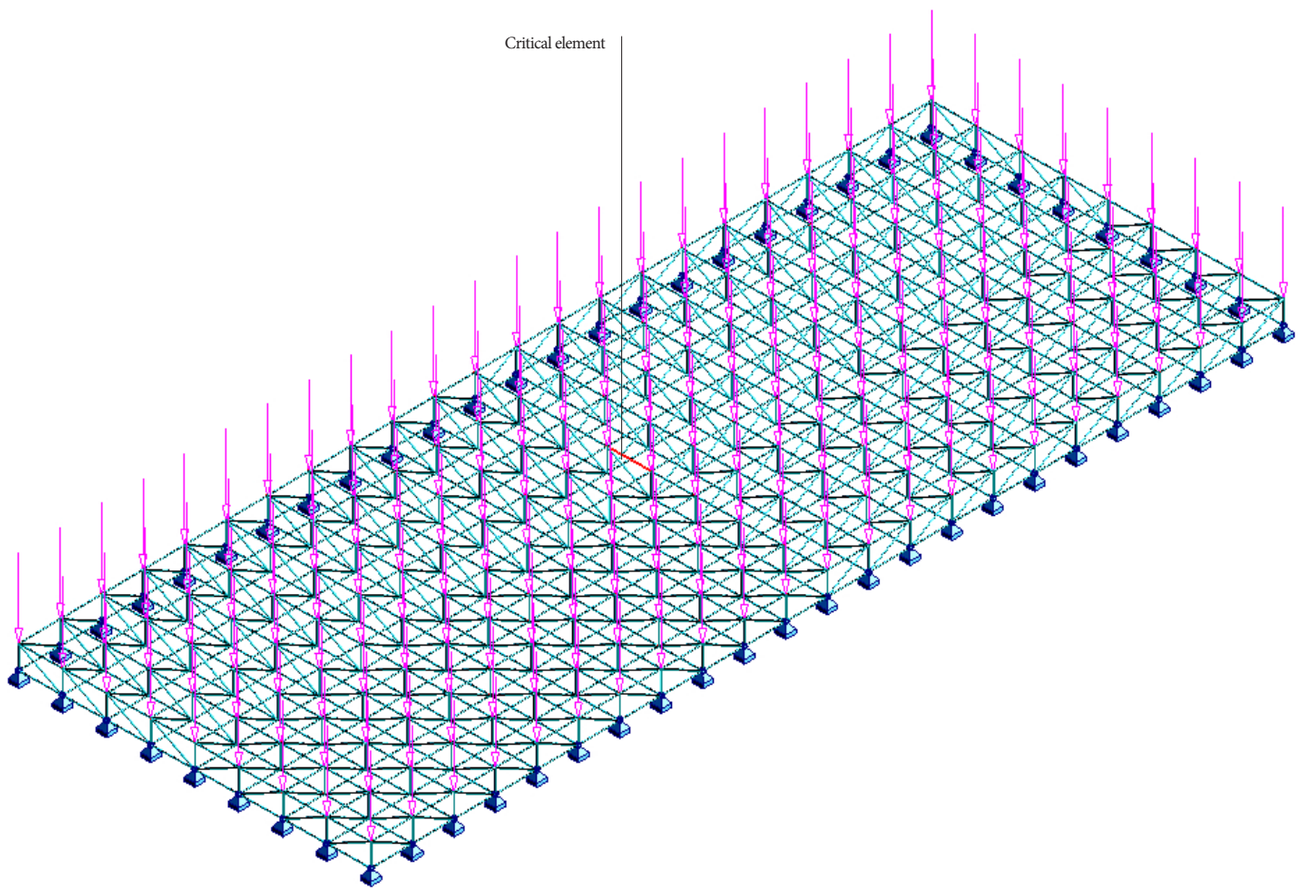
An acceptable (l/400) displacement is obtained through Karamba, however the construction must be checked for buckling in Autodesk Robot. Buckling, as a sudden failure, that occurs when the compressive stress extends the ultimate stress the material is capable of withstanding.

The finite element model imported from Grasshopper, verified by Karamba, has excessive buckling. The ratio is above 1, meaning that it is utilized past its limit. Easier explained, the most critical element is utilized 166%. Therefore different element sections are investigated to optimize the structure, two of which are displayed in the table. Buckling is dependent on the material properties, the section and the slenderness of the element. Load combinations are applied before calculating, as a precaution. Our snow load is dominant and thereby multiplied by a factor 1.5. Each node is treated as a hinge that allows rotation in only one direction, allowing forces to transfer.

Material:	Construction steel	Yield strength 345MPa Youngs modulus 0,21*10^6MPa
Bar lenght		1880mm

Section Diameter x Thickness (mm)	Utilization - Calculations %	Utilization - Robot %
50 x 10 (Karamba)	179	166
100 x 15	28	33
60 x 15	88	87

The chosen bar section has a diameter of 60mm and a thickness of 15mm. The most critical element uses about 87 percent of the strength embedded in the steel. Results from Robot are verified by a comparison with hand calculations. Robot is a complex calculation program, and therefore hand calculations work as a security. The results vary slightly, due to a simplification. However, moving away from the center for grid, the ratio decreases. If wanted, we could use different sections to utilize all elements better, however a uniform expression is desired and it is thereby not investigated in this project.


Critical element

SOUND

We consider sound of a space as influencing on the perception of a spatial gesture in architecture. Linking to our interpretation of Pallasmaa's theory of multisensuos scale in architecture, we find a potential in the composition of materiality, scale and dimensions to use sound of a given space to accentuate the spatial gesture of staging in Serlachius museum, responding to our tectonic approach.

To accentuate staging in exhibition spaces, acoustics are incorporated in the use of materiality with a relatively low absorption such as polished concrete floors and polycarbonate surfaces on walls and roofing, combined with large rectangular volumes. Reverberation time will hereby result in a sublimity that motivates visitors to lower the voice, and hereby experience a perception of being staged while increasing their own focus on staged art. However, facilities linked to the conference of Serlachius Museum are more sensitive to the acoustic results of materiality, scale and dimension. The composition of sound in the conference room is found critical in terms of its use, of which reason we calculate on the room acoustics.

The conference room will primarily be used for conferences and teaching, meaning that we will take advantage of the optimal reverberation time for the frequency of speech, 500 Hz in average, in an auditorium for teaching or conference, meaning that the optimal reverberation time is 0,6-1,3 seconds. (Kirkegaard; 2012)

The reverberation time is the time it takes for a sound to decrease with 60 dB. Hence the reverberation time depends on the absorption coefficient of the applied materials, number of persons, furniture and air, and the room dimensions influencing on the reflection. A formula of Sabine is used for calculation as dimensions of the conference room is rectangular, nearly squared.

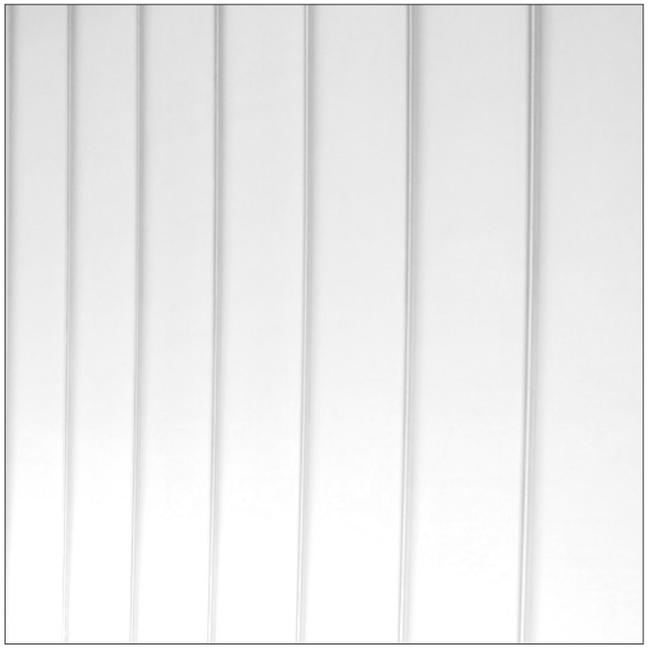
The formula used is:
$T=(0,16*V)/((\Sigma\alpha*s)+(\Sigma n*A)+(4*m*V))$

A calculation sheet is compiled, in which equivalent absorption areas are calculated. See appendix, p. 178.

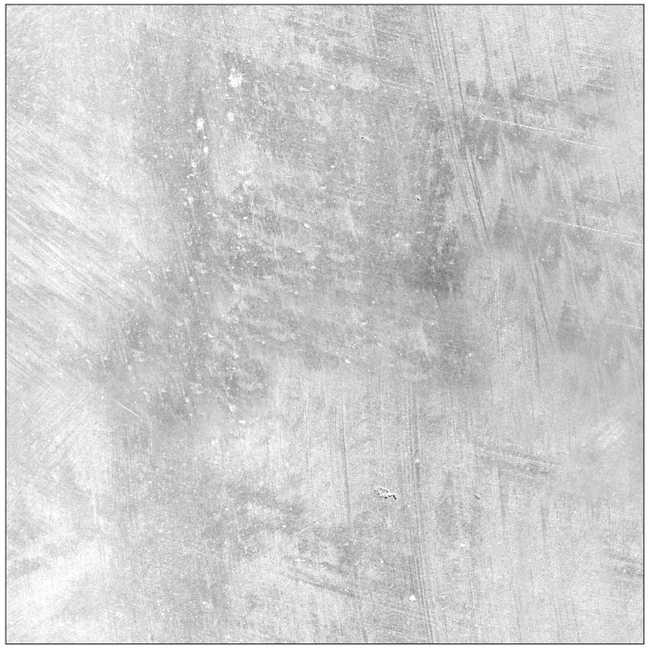
The estimation shows a result in accordance with the optimal interval of 0,6-1,3 seconds for speech in auditoriums, spanning from 0,7 to 1,1 seconds. The average frequency of speech, 500 Hz, have a reverberation time of 1,0 seconds in the conference hall.

Frequency	125	250	500	1000	2000	4000	[Hz]
Tsab	0,7	0,7	1,0	1,1	1,0	1,1	[s]

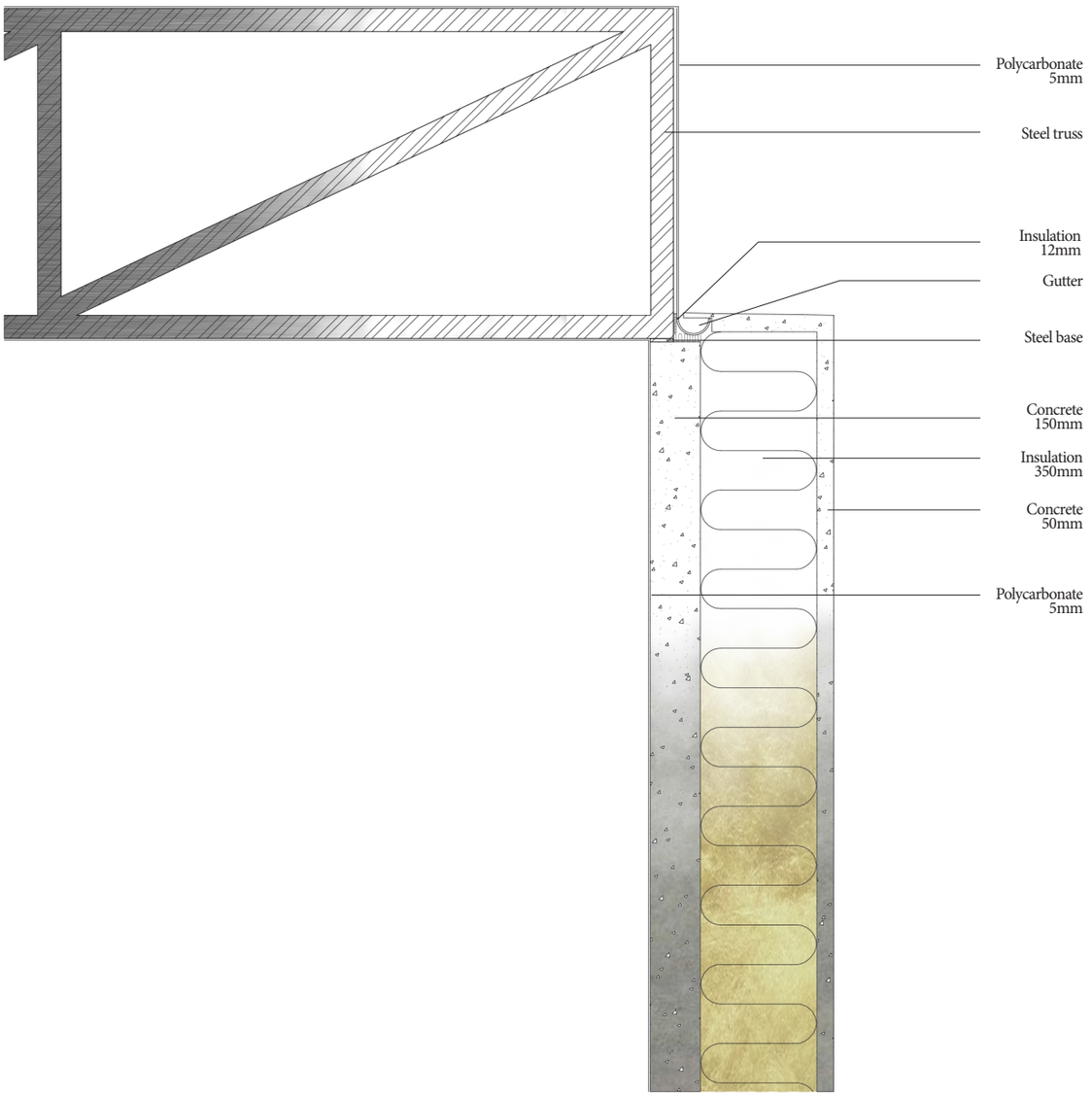
Furniture, upholstered Seven chair, leather and steel.



Ceiling and wall cladding, polycarbonate.



Flooring, semipolished in situ casted concrete.


Polycarbonate
5mm
Steel truss
Insulation
12mm
Gutter
Steel base
Concrete
150mm
Insulation
350mm
Concrete
50mm
Polycarbonate
5mm

1:20

Exterior wall:
550mm
0.11 W/(m²C)

Roof:
1000mm
0.33 W/(m²C)

The concrete has an inner layer that carries the load transferred from the roof. Otherwise, it holds insulation and an outer protective screen. Covered by polycarbonate, the concrete is hardly visible from within and only sensed, when a break appears. Likewise covered by PC, the roof is translucent, through which a truss is visible. It filters light and further relates to the dimension of in situ concrete of the heavy wall.

The construction holds different expressions depending on viewed from inside or outside. Outside, the concrete stages the volumes as a surrounded and individual object. Inside, polycarbonate becomes the dominant material creating an introverted enclosure focused on art.

DETAIL

EPILOGUE

09

The epilogue is the overall summary of the project, as a reflection of how the project reaches the aim of creating architecture with an emotional impact, moving beyond practicality. Departing in the concept, a general discussion of project and its influence on our professional life is presented. Explaining how the uniqueness of this project can be transferred to a usable tool, the discussion relates to every-day architecture. A description of how gesture of staging influences Serlachius Museum, carried out by the structural principle of folding.

Finally, our sources of inspiration are listed and acknowledged in an index of names. Sources and an illustration list document their origin.

DISCUSSION

Choosing the Gösta Serlachius Museum extension, we form the physical frame of our theoretical investigations of how architecture moves people beyond practicality. Through mediation of culture, we are conscious that our departing point is founded in an exclusive project. Fewer rules and less restriction have made it possible to explore spatial qualities in the tectonic detail. This has given us a freedom to involve with the spatial gesture of staging in a context where cultural mediation is the primary object of our attention.Thus, we have felt an aspiration to be able to extract and put words on staging as a tectonic approach, in order to mediate culture in a broader architectural perspective, whether we, in the future, are engaged in projects concerning rationalized building methods, sustainable living or exclusive cultural institutions.

Firsthand, the thesis has provided us with an awareness of the intangible value of architecture, represented by culture understood as a narrative of our history. Further an awareness of that everything possesses a history and the importance to incorporate and not forgetting it in contemporary as well as in a future perspective. In this connection we found the narrative of history not stronger than the mediation hereof, as something that becomes an interest in our future work. Staging hereby became the framework in our reach to mediate culture in architecture. Through a theoretical discussion staging is objective without a relation to context, building type etc., thereby applicable in every architectural frame. So, staging of man, place and art becomes representatives for culture as an approach for us to mediate and anchor a narrative of history. The structural principle of staging is found through analyses and provides us with a tangible tool. This becomes specific, relevant to man, place and art and thereby this becomes what differentiates projects. Folding became the solution at Serlachius, but does not necessarily work in other cases. However, our education, within both architecture and engineering allows us to explore the potentials of the structural principle. By our structural understanding, we become able to challenge and explore construction within its premises in order to adjust staging to a specific culture. In our case, folding is relevant at Serlachius Museums referring to paper as a part of a collective memory and by the relation between the fold and the characteristics of culture.

Like challenging the construction in relation to stability, it can be developed to adjust into a sustainable context. Focus in contemporary architecture often lies in physical measures, because this we can relate to as a definite answer and is easier to argue. This is probably also why the emotional aspect is neglected. However, this has been our clear focus, but leaves the project to be developed in a more pragmatic and rational level. Allowing environmental sustainability become an equal parameter to softer values of architecture, this project can be explored in an even deeper layer of architectural quality.

Architecture is the home of ours, which reasons why a workspace or a dwelling in the same degree as a museum needs the ability to move us beyond practicality. Man, place and art will function as representatives of culture in a dwelling as well; A dwelling is a stage of a personal history, a narrowed understanding of culture, similar to the way cloth stages personality. Through this, we see architecture in a larger perspective; staging is to us the designation that encircles our every-day, including our emotional experience of architecture.

The term of staging and its utilization in relation to tectonics as an approach entails contradictions in the sense of the word. Staging directs one's thoughts to a setting, to something transitory and dishonest. However, as Palladio likewise exemplifies, architectural quality is not necessarily a reflection of structural honesty, but more a question of how the link between construction and poetry is accentuated. Thus, staging can be considered as a contradiction to the ancient sense of tectonics, represented by theorist Vitruvius, as an honest reflection of construction (Frampton, K.; 1995). Staging becomes an additional dimension to the tectonic understanding adding an emotional level in architectural quality that we, through our education, are able to present through a structural principle. Our interpretation of staging does not relate or connotes to this understanding of tectonics as staging does not position itself according to architectures honest reflection of structure, it merely position itself according to architectures ability to mediate through a structural principle.

CONCLUSION

We ask ourselves how architecture goes beyond practicality to sustain and emotionally impact on us. Accumulation of culture in architecture is experienced as a focal point. The fundamental role in architecture is hereby considered as being the mediator of culture, represented by man, place and art, from where the project departs in the notion of culture. It is understood as a narrative of our history, and so the art of mediating is a narrative of culture.

Thereby we found our interest in drama and the art of staging, to translate this into a relevant element in tectonic architecture with the purpose of presenting man, place and art. Used as a means to mediate culture, the cultural institution became a physical frame of our thesis, departing in Gösta Serlachius Museum of Fine Arts. Methodologically, we have approached our thesis tectonically, addressing the art of staging as a spatial gesture, from which we move towards the development of a principle. Embracing the complexity of translating the intangibility of an emotional impact, the spatial gesture, into a tangible structural principle of construct in play with aesthetical, structural, technical and functional aspects of architecture, becomes our motivation. By moving from spatial gesture to structural principle, the analysis part was compiled to prepare us to a discussion of relevance in the process of designing. Likewise, it was to reflect upon and conclude on the outcome, addressing a structural principle into a complete architectural form in our reach to address humans by the presence of a spatial gesture.

The result of our proposal to an extension of Gösta Serlachius Museum of Fine Arts identifies the wall as an architectural detail functioning as a linkage between poetry and technique with the purpose of addressing humans by the presence of staging.

The detail of the wall is both poetically, structurally and functionally contributing to how the extension of Serlachius Museum takes shape. The detail of the wall forms part of a two-layered entity consisting of a solid concrete wall that structurally becomes the carrying part, and a thin and semitransparent interior wall of polycarbonate, primarily a non-carrying part. In the relation within the two lies the linkage of poetry and technique. The exterior wall is horizontally orientated. It forms and enfolds all functions on nature's premises with connecting corridors. This is done by a movement of continuity, carving the wall into the landscape with impression of the wall as one single element, controlling the progress and the next turn.

The interior part of the two-layered system is, on the other hand, non-continuous and introvert. It only appears when interior functions are separated from the corridor to contrast interior experiences according to the art of staging. The elements of the interior part of the wall are vertically orientated, enhanced as they melt together with a transparent roof, from where shadows of tree crowns contribute with a play of diffuse light. This both enhance the interior part as an embracing volume, but also the exterior part of the wall as folding. The wall carves into the landscape to enhance the contrast between what is cultivated and natural, emphasized by the strong geometry. This is at the same time with respect to the existing geometric lines of the cultivated landscape of the existing manor, but also in respect to nature, as the contrast enhances beauty of the natural landscape. The following explains examples of how man, place and art is staged:

Man
Smaller niches creating space for sitting places in an enlightened space staging man, accentuating axes in the museum. Thus man is staged becoming a sculpture on a pedestal for the visitors, still being secured by enfolding of the wall.

Place
The meeting between structure and nature is evident in accordance to folding of the wall. Selected views stage place marking turning points as the only views to nature. The contrast amplifies and there by stage each view.

Art
A larger fold creates the focus point that is the exhibitions. The extruded volumes, illuminating the path, attract visitors through the change in the atmosphere. Gentle light optimizes the interior space for exhibitions, and further creates an introverted space not allowing view to the outside, which stages art.

The meeting between structure and ground is essential according to the realm of the architectural whole. The flooring emphasizes the contrast between qualities of the volumes and corridor. A soft curvature of the flooring follows the slope of nature. This emphasizes a nearness to place, as the natural slope is invited into the corridor, to enhance that the wall carves through the landscape, and not the building itself. The corridors accentuate a horizontal connection to place through a clear direction and views at the endpoints, extending the corridor to the horizon.

Structurally, the wall has, as mentioned, a carrying and a non-carrying part. By folding, the carrying part becomes more stabilized, meaning that folding not only contributes to staging of man, place and art, but also to a stabilization of the construction. The interior wall functions as a carried part, and the exterior wall further carries the roof. A truss projects vertical forces onto the concrete wall and is supported by it. The truss uses the characteristics of steel in the best possible way, and allows a span of 15 times 40 meters without any inner supports, contributing to flexible areas of exhibition. At the same time, the structural system appears slim and elegant, and also contributes to an acceptable u-value, as the thickness of the thermal air layer in between the two layers of polycarbonate is relatively large. By this insulation becomes redundant, further contributing to a high daylight factor and the wished aesthetical expression. With a play of shadows together with leaves or snow, diffuse daylight trespasses and makes the visitor aware of the slightly visible structural system behind the layers of polycarbonate.

Uniting the spatial gesture of staging in a constructive principle, an awareness of letting construction meet poetry already in the initial phase is achieved, letting the two merge together in the sketching phase, guided by theoretical acknowledgement. The museum takes shape of few structural elements and materials. Here it becomes clear that folding of the wall is essential to the appearance of the spatial gesture of staging. When the wall is folding, light will act by penetrating or diffuse in a way, that physical as well as poetical accentuates awareness and marks a metaphysical space of staging. Whether it is a niche creating a sitting place for man, an opening allowing direct daylight and extends the view to place, or an introvert informal presentation of art, the stage is accentuating essentials of culture; man, place and art. Through the structural principle of folding, staging links the poetry of culture to the technique of building, embedding an emotional dimension in Serlachius Museum, as we move beyond practicality. Moving past the framework of our thesis, we feel that the project has provided us with tools to design architecture. Though the nature of this project is unique and exclusive, we find several similarities to the notion of every-day architecture, as we are able to see the importance of staging in the built.

INDEX OF NAMES

Müller, Karl Otfried (1797-1840) was a scholar who studied Greek history, art and literature, presenting the Greek life as a whole.
P. 16

Palladio, Andrea (1508-1580) was an Italien architect, active in and around Venice. Inspired by Roman and Greek architecture and theories of Vitrivius, Palladio is considered one of the most influential architects in Western architectural history. Today, he has lent name to Palladian Architecture, with features like symmetry, perspectives and the values of classic temple architecture.
P. 10, 16, 17, 73

Pallasmaa, Juhani is a Finnish architect and theorist and former professor at Helsinki University of Technology. Acknowledged for his book 'The Eyes of skin' (1996), Pallasmaa is speaking of the multi-sensuous scale in architecture.
P. 3, 25, 26, 28, 41, 93, 156

Peressut, Luca Basso, professor of interior Archiecture at the Department of Architectural Design in Milan. He is currently a part of the Mela Project working with 'Museums in an age of migration'.
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Rosenblatt, Arthur (1932-2005) was an architect, who participated in many great buildings in United States of America. Here of, many were museum, among others the Metropolitan Museum of Art in New York.
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Saarinen, Eilel (1873-1950) famous for art nouveau buildings in the early twentieth century. His is one of the founders of the artistic colony Hvitträsk in Finland, who worked as studio for his architecture.
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Scarpa, Carlo (1906-1978) was a Italian architect influences by landscape, materials and Venetian architecture.
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Semper, Gottfried (1803-1879) was a German architect and theorist, influential in an early discussion of tectonics. Interested in the origin, Semper discussed the traditions of construction in an architectural and sensuous frame.
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Utzon, Jørn (1918-2008) was a Danish architecture, most famous for his Sydney Opera House. Utzon worked and developed additive principles of construct, rooted in the need for temporary housing after World War II.
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Vitrivius, Marcus (c. 70BC – c. 15BC) was a roman author, architect and engineer, most known for his book De Architectura. He introduced the triangular relation within architecture, consisting of an equal notion of aesthetic, function and technique.
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Zumthor, Peter is a Swiss architecture, who has received great recognition for The Jewish Museum in Berlin, among other works, emphasizing the sensory aspects of architecture.
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ILLUSTRATIONS

Illustrations
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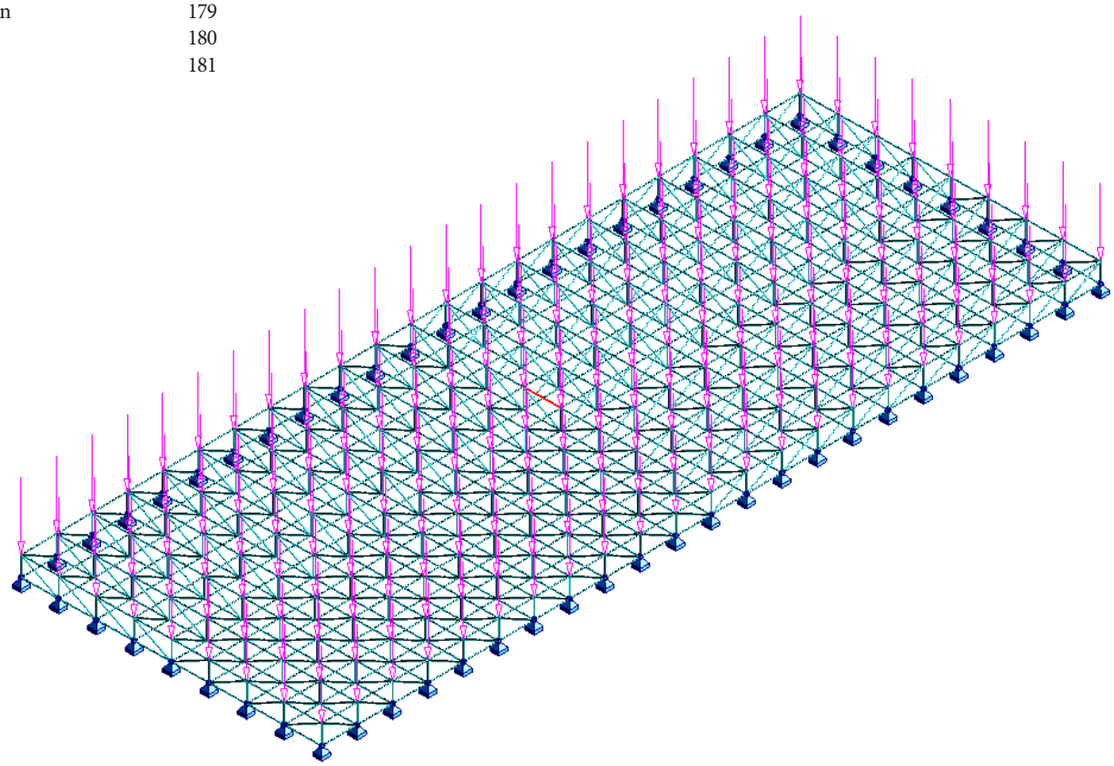
APPENDIX

The appendix contains calculations, used in the design process as a verfication of the results.



10

REVERBERATION TIME

Frequency	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
Equivalent absorption area (S*α)						
Absorption coefficient (α)	0.36	0.44	0.31	0.29	0.39	0.25
Floor, Concrete: S =146,4m^2	52.70	64.41	45.38	42.45	57.09	36.60
Absorption coefficient (α)	0.28	0.20	0.10	0.07	0.07	0.01
Ceiling, PC: S = 146,4m^2	40.99	29.28	14.64	10.25	10.25	14.64
Wall, PC: S = 338,8m^2	94.86	67.76	33.88	23.71	23.71	33.88
Absorbtion from people (Σ(n*A))						
Absorbiton /per (q)	0.6	0.74	0.88	0.96	0.93	0.85
People + chairs 80 pieces	48.0	59.2	70.4	76.8	74.4	68.0
Absorption in air (4*m*V)						
Air absorption coefficient (m)	-	-	0.0004	0.001	0.0024	0.0061
v/ 50% RF V=1025m^3	-	-	0.41	1.025	2.46	6.25
Total absorbtion						
Absorption coefficients (α +q+m)	1.52	1.6	1.4	1.4	1.5	1.3
Reverberation time T (0,16*V)/((Σ(α*s))+(Σ(n*A))+(4*m*V))	0,7	0,7	1,0	1,1	1,0	1,1

Σα

Gross area		3594m^2
Usage	10AM-10PM	84 h/week
District Heating		
BR2015	Energyframe	41.3kWh/m^2
	Energyconsumption	36.2kWh/m^2
Contributions to the consumption		
	Heating	5,1kWh/m^2
	Electricity	12.9kWh/m^2
Total consumption of electricity		47.9kWh/m^2
Electricity needs	Lighting	7.6kWh/m^2
	Ventilation	5.3kWh/m^2

ENERGY CONSUMPTION

Due to an untraditional construction, with a large part of the roof without insulation, a calculation of the energy consumption is carried out. Be10 is used as the tool for calculating. However, the results show that the Danish energy frame BR2015 is kept. Even though insulation is limited, the polycarbonate roof has a low u-value, diminishing the heat loss. Limited window areas likewise decrease the heatloss and lineloss. Ventilation and lighting are controlled automatically, which limits the use of electricity that counts as a factor 2.5.

LOADS

Loads are calculated and applied to the parametric model. Permanent load: Dependent on the material section. It is applied as gravity load in both Karamba and Autodesk Robot. The area A of the roof is 600m^2.

Permanent load – construction: Polycarboante		
Density		107.5kg/m^3
Thickness		0,01m
Load	(weight * g)/1000)*A = ((1.08kg/m^2*-9.82)/1000) * 600m2	-6.33kN

Snow load	(Eurocode 1, shortened version, p. 45-53)	
C_e	Formfactor of exposure	1.00
U_i	Formfactor of the roof angle	0.80
C_t	Thermal factor	1.00
s_k	Characteristic terrainvalue	2,50kN/m^2
Snowload	$s = U_i*C_e*C_t*s_k*A = (0.80*1.00*1.00*-2.5kN/m^2)*600m^2$	-1200kN

Windload	(Eurocode 1, shortened version, p. 63-99)	
C_{scd}	Construction factor	1.00
$C_f(F)$	Force form factor zone F	-1.80
$C_f(G)$	Force form factor zone G	-1.20
$C_f(H)$	Force form factor zone H	-0.70
$C_f(I)$	Force form factor zone I	-0.20
$q_p(z_e)$	Peak speed pressure	0.80kN/m^2
z	Height over terrain	10.00m
z_0	Lenght of roughness	0.30
F_f	$F_f = c_{scd}*c_f*q_p(z_e)*A_f = 1*-1.80*0.80*10m^2$	-14.4kN
F_g	$F_g = c_{scd}*c_f*q_p(z_e)*A_g = 1*-1.20*0.80*10m^2$	-9.60kN
F_h	$F_h = c_{scd}*c_f*q_p(z_e)*A_h = 1*-0.70*0.80*120m^2$	-67.20kN
F_i	$F_i = c_{scd}*c_f*q_p(z_e)*A_i = 1*-0.20*0.80*450m^2$	-72.00kN
Windload Total		-177.60kN

BUCKLING

Assumptions for a Pratt truss:
- The center axis of each member connects in the centers of the adjacent members and the members only carry axial force.
- All members are connected only at their ends by frictionless hinges in plane trusses.
- All loads and support reactions are applied only at the joints.

Example:
Diameter: 50mm
Thickness: 10mm
Length: 1880mm

To examine our grid for buckling, the calculated and permissible loads are compared, and their relation must fulfil:

NEd < Nb,Rd =(XAfy)/yM1
(Teknisk ståbi, p. 274)

Material:	Construction steel	Yield strength 345MPa Youngs modulus 0,21*10^6MPa
Area A	$(\pi/4)*(D^2-d^2) = (\pi/4)*(50^2-30^2)$ (Teknisk ståbi, figure 1.19)	$1256mm^2$
Moment of inertia I	$(\pi/64)*(D^4-d^4) = (\pi/64)*(50^4-30^4)$ (Teknisk ståbi, figure 1.19)	$267035mm^4$
Inertia radius i	sqr(I/A) = sqr(267035mm4/1256mm2)	$14,58\ mm^2$
Lampda	$(l/i)/(93,9e) =(1880mm/14,58mm^2)/(93,9e)$	1,675
X	Reductionfactor (Teknisk ståbi, table 6.30)	0.270
F_y	Compression strength	345MPa
Y_{M1}	(Teknisk ståbi, table 6.1)	1.2
Nb,Rd	$(0.270*1256mm^2*0.345GPa)/1.2$	97.50kN
N_{Ed}		174.18kN
$N_{Ed} < N_{b,Rd}$		175.18kN < 97.50kN
Ratio		1.79
Section 100 x 15mm		
$N_{Ed} < N_{b,Rd}$		219.14kN < 762.35kN
Ratio		0.28
Section 60 x 15mm		
$N_{Ed} < N_{b,Rd}$		189.00kN < 212.77kN
Ratio		0.88