

# FORGET ME NOT

*Architectural atmospheres as a form of communication*

PIA LÄHTEENMÄKI

2024

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ARCHITECTURAL EXPERIMENTATION

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CHALMERS SCHOOL OF ARCHITECTURE  
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ARCHITECTURAL EXPERIMENTATION

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WHAT

Warp the atmospheric qualities of architecture and use them as a form of communication.

WHY

To understand the phenomenology of architecture on deep time scales, once language and symbols are obsolete.

HOW

Use storytelling to aid the speculative design of architectural atmospheres of a memorial, that stands as a reminder of buried radioactive waste.

## ABSTRACT

This thesis explores the atmospheric qualities of architecture, focusing on the sensory and emotional cues, and aims to interpret the experience of space as a language of its own. What follows is a story of a memorial standing as a reminder of *Onkalo*, the final repository of Finland's nuclear waste. This thesis poses the question, can architecture be used as form of communication with future humans?

Architecture is not only a visual experience but a multi sensory encounter. Building on the ideas of Juhani Pallasmaa and Peter Zumthor, this thesis examined how atmospheres influence the experience of architecture and how they can be warped to tell of a possible threat. The project is seen through a conceptual lens of nuclear semiotics, a field of research on long-term communication of radioactive waste storage. With the *Onkalo* repository set to endure 100,000 years, traditional warning methods become obsolete with the vastness of deep time. By extending architectural atmospheres to the scale of deep time, this thesis seeks to investigate the elements of architectural communication that carry beyond language, cultural bias, and time.

The project unfolds as a story, narrating a speculative future told from the perspective of the memorial itself. Each chapter of the story was interpreted to visual representations by translating the atmospheric qualities to architectural design. The goal of this method was to change the order in which architecture is designed, to aim focus the on atmospheric spaces. Surrendering the design to the story came to be the theme of the thesis. The focus did not lay on the solving the question of nuclear semiotics, but to tell a story that reflects on the inherent impossibility of the task.

Experience of a space is not only a result of its elements but more than the sum of its parts – atmospheres are to be felt, not explained. The method of storytelling allowed the experience of architecture before it was fully visualized. Ultimately this thesis emphasizes the nuances of architectural atmospheres and the experience of space as a subtle form of communication.

*Keywords : Atmospheres, phenomenology, storytelling, nuclear semiotics.*

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Cooling towers of a nuclear power plant.

Fig. 1

White Power Plant  
Kolar (2019)

## PROLOGUE

This thesis dawned from a long curiosity regarding the sensory and emotional cues within architecture. From the notion of how a space can be felt, before it is understood or even seen in its entirety.

This curiosity to understand the subtleties of architectural atmospheres and the emotions they bring forth, led me to experiment with the sensory cues within architecture; not by creating spaces that embrace the body but by forming environments that lure, overpower or even scare its observer. Through warping the atmospheric qualities of a site, I wanted to learn more of how architecture can embody emotions and aspects of time and memory, as a subtle form of communication. Can these architectural atmospheres be warped in a way that they tell of a possible threat in that space? Moreover, what is the fundamental human experience of our surroundings not only now, but across the history and future of our species?

This aspect brought in the topic of nuclear semiotics. A field of research regarding long-term problematics around the disposal of hazardous, radioactive waste. This allowed the thesis to grow from our current time onwards to the scale of deep time, and into speculative future scenarios, dancing on the line between reality and science fiction.

The topic of this thesis is also born out of deep sorrow of what humanity will leave in its wake. The phrase *Humanity grew powerful before it grew wise* is something I think of often. The consequences of our actions for planet Earth are irreversible and the problems we create now are left to be dealt with by future generations. An implicit aim of the thesis is to illustrate the long-term issues created by nuclear energy. By shedding light onto these potential risks posed by nuclear waste management, I hope to encourage more renewable energy sources that do not carry potentially life-threatening toxins to our nature and future.

The project and the story, to which this thesis boils down to, is not only a warning or experiment with architectural atmospheres, but can also be seen as a memorial for the greed of humanity. A place of contemplation for what our actions have cost our planet. A constant and longstanding reminder of the destructive nature of humans during the age of Anthropocene.

## THESIS QUESTIONS

|               |  |
|---------------|--|
| MAIN QUESTION | <i>How can architectural atmospheres be used as a form of communication at the site of the final repository of Onkalo?</i> |
| SUBQUESTIONS  | <i>How does the method of storytelling guide the speculative design of architectural atmospheres?</i>                      |
|               | <i>How do architectural atmospheres change over deep time scales?</i>  |

## AIM

The aim of this project is, through the lens of nuclear semiotics, to investigate the role of spatial and material qualities of architectural atmospheres and the emotions that they evoke. With this project I hope to motivate a more intentional design of atmospheric spaces and to use architectural atmospheres to support and elevate the role and character of a space. I hope to highlight the importance of what we communicate with architecture and how the experience of a space can support that. With the deep time scales of the project, I aim to highlight the time scales of architecture and how they carry a story of our time into the future.

## DELIMITATIONS

This thesis project will not focus on finding the perfect solution for the issue of nuclear semiotics, but rather uses nuclear semiotics as a vessel to investigate the potential of architectural atmospheres. The focus should therefore not lie in whether or not the project manages to translate the danger of buried nuclear waste across millennia, but rather how the message might change or alter over time and what atmospheric qualities of architecture stand the test of time.

Technical aspects of material longevity or structural integrity are not the main focus of this project. The aim of the project is to explore the atmospheric qualities of a space through architectural fiction.

As the project has a location in time, the thesis frames a speculative future scenario. For the sake of clarity, these speculative futures will concern the *future human civilizations*. The thesis will not reflect over the sensory intake of other species that might form future civilizations. As of now, humans pose the greatest threat of intrusion to the long-term repositories, so the thesis will focus on how future humans experience and understand and interact with the project.

## GLOSSARY

### ARCHITECTURAL ATMOSPHERE

The intangible qualities of built environments that evoke emotional and sensory responses in humans. Sensing an atmosphere is bodily perception, and experience of a space, beyond its functionality and visual givens.

### DEEP TIME

An altered perspective on the passing of time. Not seeing time from a point of view of a human life, but in geological terms. Deep time is a timescale for the life of stones, tectonic plates, and nuclear waste.

### FINAL REPOSITORY

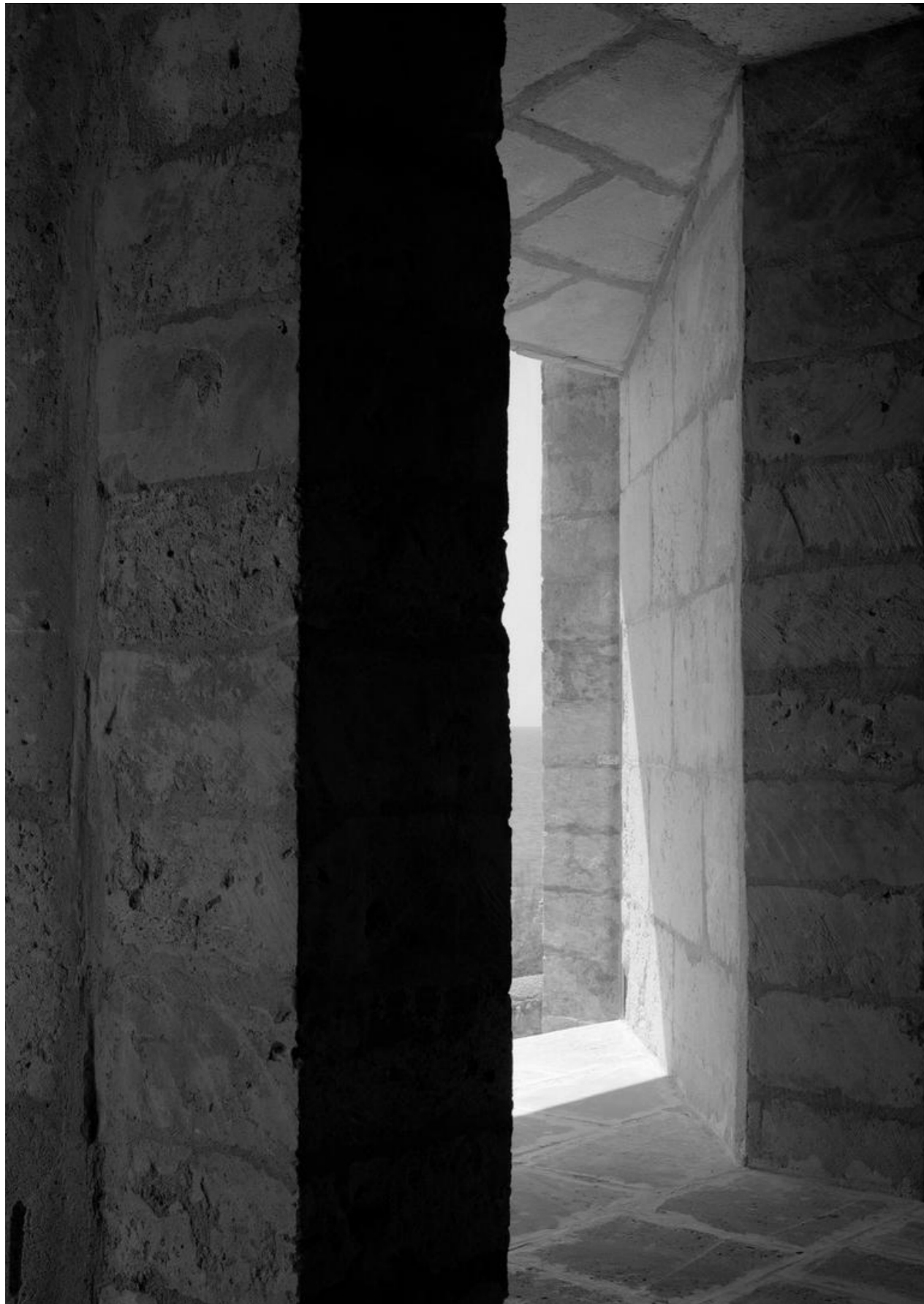
A final storage for nuclear waste, where the radioactive toxins are stowed away in large capsules into the bedrock of earth.

### NUCLEAR SEMIOTICS

Design problematics concerning communication of location and possible danger of final repositories for nuclear waste, on deep time scales.

### PHENOMENOLOGY

The philosophy of experience. In architecture, this means a focus on the aesthetic experience of a space and how a human body perceives and makes sense of its surroundings through visual, sensory, and emotional cues.



Jørn Utzon's family house, *Can Lis*, on Mallorca. This house is a moving example of atmospheric architecture with its thick stone walls that sculpt light through carefully chosen openings.

## DISCOURSE

*Our capacity to grasp qualitative atmospheric entities of complex environmental situations, without a detailed recording and evaluation of their parts and ingredients, could well be named our sixth sense, and it is likely to be our most important sense in terms of our existence, survival and emotional lives. (Pallasmaa, 2014)*

Architectural phenomenology emphasizes the human experience of our surroundings. How people understand and make sense of their environments is not purely focused on visual perception – the experience of a space is multi-sensory and connected to aspects of emotion and memory. One way of describing this qualitative interpretation, a type of first impression, is through architectural atmospheres. The themes of sensory perception and phenomenology of aesthetics have become widely known thanks to theories by philosophers and architects, such as John Dewey and Juhani Pallasmaa, and exemplary works of architectural atmospheres have been designed by architects like Peter Zumthor, Louis I. Kahn and Tadao Ando, to name a few.

In "Art as experience" John Dewey (1980) describes art, or more specifically the experience of art, as an interactive encounter – the artwork becomes a medium of connection and a discussion between the artist and the audience. The artist uses art to form a vague idea into something definite. They externalise their feelings, thoughts, and imagination into a physical object, starting the discussion with their audience. The artist might say one thing and the audience hear another,

but that does not take away from the meaning or experience of the object. The art does not exist without a viewer perceiving and interpreting it.

Architecture, as a form of art, is very dependent on its audience. Or more to the point – buildings are not simply meant to be objects to be looked at from a distance but spaces of shelter, function, and use. Architecture is, therefore, even more dependent on its audience and occupant than other more direct forms of art. So, could this dialogue and experience of architecture be seen as a language of its own? We form impressions of our surroundings and experience architectural atmospheres whether they are intended or not. How can we be more intentional in what emotions and experiences our built surroundings cause in humans? Can architectural atmospheres be seen as a form of communication, letting the space itself tell of its character and nature, through the emotions it brings forth in its observer?

Fig. 2

*'The house never forgets the sounds of its original occupants.'*

Binet (2019)





Pyramids of Giza. The curses of the Pharaohs are a common comparison, when speaking of ancient messages of danger.

**Fig. 3**  
*Pyramids of Giza*  
Tavalbi (2020)

## BACKGROUND

### NUCLEAR SEMIOTICS

Nuclear energy, despite its potential as an efficient power source, presents an unprecedented challenge to humanity: the management of radioactive waste. Disposal of nuclear waste comes with several environmental, societal, and ethical queries, the consequences of which reach several millennia into the future. Currently, the safest way to stow away this radioactive waste is to encapsulate it into repositories hidden deep in the bedrock of earth. One such repository, called Onkalo is now being built in Olkiluoto, Finland. The underground repository is estimated to become the longest surviving man-made structure on planet Earth to date – that is 100 000 years. (Positiva, 2020)

Traditional methods of warning for danger around these sites grow weary with the addition of deep timescales. Today's warning signs of nuclear waste rely on established symbols used in connection to radiation. These are often combined with written messages and warnings of possible danger of radiation. According to a study by Choi & Choi (2021) the most commonly used symbol for radiation, a black trefoil and a circle on a yellow background, was confidently recognized by only 6% of people alive today.

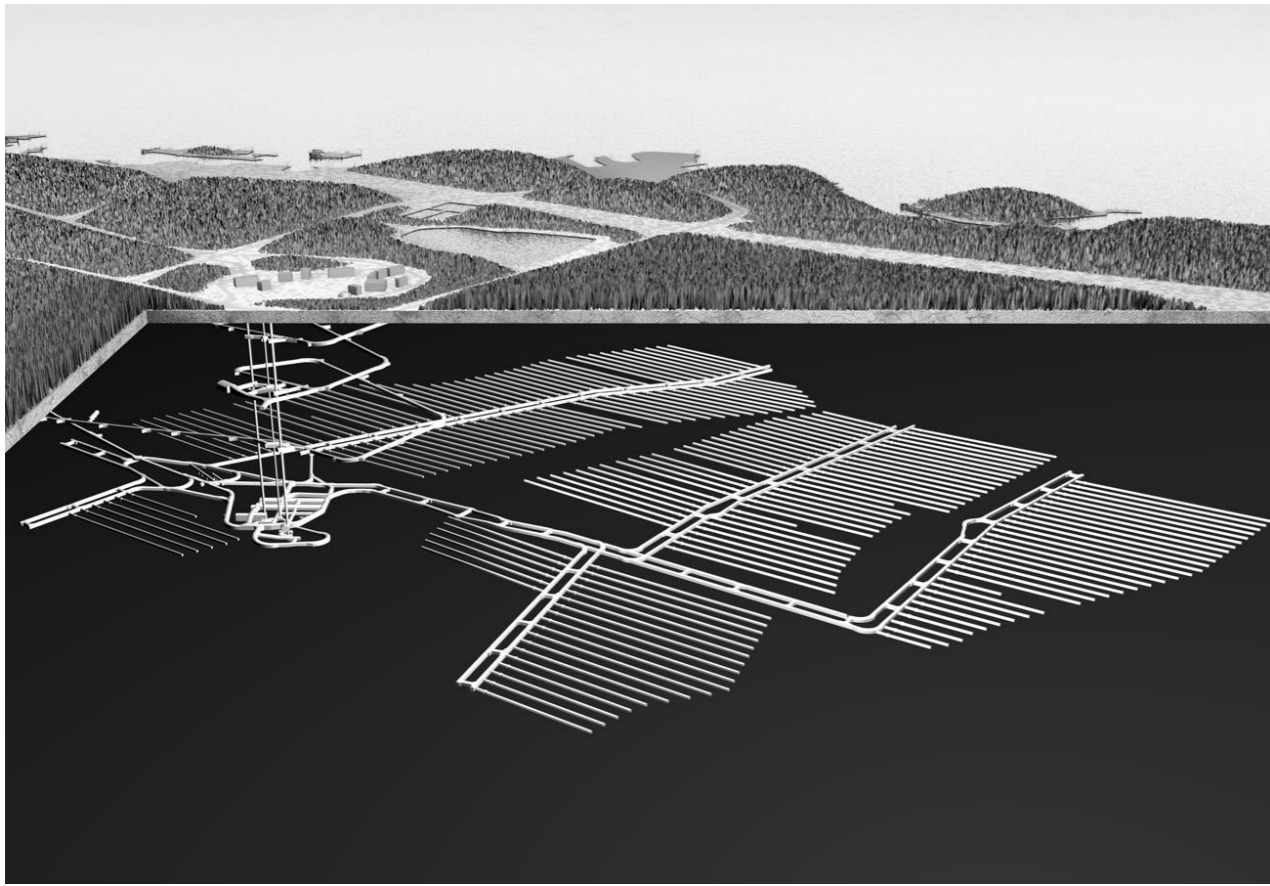
Nuclear radiation is not something that is easily understood or explained, and neither are we able to detect it with our senses. It is invisible, does not have a smell, taste, or sound. So how can we warn the future of our buried dangers?

This design task is seemingly straightforward, but every idea seems to be throttled with the scale of deep time. A

mere sign won't do. Symbols are easily misinterpreted or overused to the point where their meaning is diluted. Languages change and evolve to beyond our current understanding. Even if we were to create a universally understood symbol to communicate radiation that stands the test of time, how would we portray it? Materials whether and decay or are stolen and repurposed if they carry any value. The pyramids used to be covered in a gleaming white finish of limestone (Davis, 2023), and the bronze in Pantheon was repurposed elsewhere (Capitolo di Santa Maria ad Martyres, n.d.).

Historically, we also have the tendency to overlook messages of warning left behind by past humans. Again, to use the example of the Egyptian pyramids: the curses of the pharaohs left in hieroglyphs, did little to scare away exploring archaeologists and scavengers. (Davis, 2023).

The thought arises, is it better to leave the place unmarked? To hope, that no human civilisation will detect the repository or unknowingly dig in the bedrock, stumbling upon our toxic waste. Well, that is debatable – it can be argued that it is our ethical responsibility to mark this place and give future humans a chance to recognise and understand the danger of the site. If the site is left unmarked, some curious exploring of the site might be avoided but that is not where the greatest danger of the site lays. We have an obligation to warn future humans of the toxins we leave behind us, and it is up to the future humans to decide, if they will listen to our warnings or not.



A 3d modeled image of Onkalo, showing the projected outcome of the final repository with all its underground tunnels.

**Fig. 4**

*Underground repository*  
Positiva (2019)

This challenge has given rise to the interdisciplinary field of nuclear semiotics – a field of study first explored by American *Human interference task force* in 1981 on behalf of U.S. Department of Energy and Betchel corp. Nuclear semiotics is a branch of study that explores the creation and communication of long-term warnings for nuclear waste repositories. The field is based in anthropology, cognitive science, and linguistics, exploring the fundamental elements of communication that carry beyond language, cultural bias, and time. (Office of Nuclear Waste Isolation & U.S. Department of Energy, 1984).

Many possible routes and solutions have been proposed in the past, such as fields of threatening spikes that would scare away visitors of the site. Some suggestions create whole religions surrounding nuclear

priesthood, who guard the secrets of radioactive waste-sites as holy land (Sebeok, 1984). Even urban myths concerning genetically mutated cats known as “ray cats” that change colour when exposed to radiation, have been proposed as a solution (Fabbri, 2017).

This thesis deploys nuclear semiotics as a conceptual lens to investigate how architectural atmospheres and the phenomenology of built environments changes, or is perceived through the scale of deep time. Nuclear semiotics is ultimately a question of how humans understand their surroundings once language, symbols and culture are taken away from the equation, and this leaves us with the most basic human instincts of perception and phenomenology.

*This place is a message... and part of a system of messages... pay attention to it!*

*Sending this message was important to us. We considered ourselves to be a powerful culture.*

*This place is not a place of honor... no highly esteemed deed is commemorated here... nothing valued is here.*

*What is here was dangerous and repulsive to us. This message is a warning about danger.*

*The danger is in a particular location... it increases towards a center... the center of danger is here... of a particular size and shape, and below us.*

*The danger is still present, in your time, as it was in ours.*

*The danger is to the body, and it can kill.*

*The form of the danger is an emanation of energy.*

*The danger is unleashed only if you substantially disturb this place physically.*

*This place is best shunned and left uninhabited.*

*“Expert Judgment on Markers to Deter Inadvertent Human Intrusion into the Waste Isolation Pilot Plant”*  
(Sandia, 1993)





Therme Vals By Peter Zumthor. This spa embodies many of the qualities associated with atmospheric architecture. The tension between the interior and exterior, and the sense of seduction through the spaces are particularly interesting in this building.

**Fig. 5**  
Therme Vals, Graubünden,  
Switzerland.  
Binet (2006)

## THEORY

### PHENOMENOLOGY OF ARCHITECTURE / ATMOSPHERIC SPACES

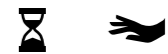
I enter a building, see a room, and – in the fraction of a second – have this feeling about it. (Zumthor, 2006, p. 13)

Architectural atmospheres as a concept, is not something that can be easily broken down into its components. How we perceive our surroundings is instant and unconscious. It is a way of sensing the space and creating an impression of a place. In “Atmospheres, Architectural Environments, Surrounding Objects” Peter Zumthor describes the experience of an atmosphere as a first impression or an emotional response to one’s surroundings (2006). This transforms the conventional understanding of architecture as merely a functional space, emphasizing the emotional and sensory dimensions that shape human experience within built environments. Sensory perception of atmospheres also stretches beyond the five Aristotelean senses of sight, hearing, touch, smell, and taste. We measure and observe our surroundings through senses of orientation, gravity, balance, stability, motion, duration, scale, and illumination (Pallasmaa, 2014).



Atmospheres within architecture are not external qualities imposed on a space; rather, they emerge organically from the harmonious integration of elements. Zumthor theorises his personal methods and lifts examples on how his architectural works become atmospheric spaces. First example is the body of architecture. This material formation of architecture is the anatomy of a building, a way accepting how all parts of the building play into its aesthetics. (Zumthor, 2006). As John Dewey expresses it; “Even bricks and mortar become a part of the house they are employed

to build; they are not mere means to its erection. Colours are the painting; tones are the music.” (Dewey, 1980, p. 197). The aesthetics of an object are physically formed through its materials and how they are assembled and arranged. This links directly to material compatibility, focusing on the perceived softness or density of materials and how their visual weight or tactility interact with each other. So, the perceived weight of a material is not only connected to its materiality and tactility, but it is affected by the composition and order to surrounding materials and void spaces. (Zumthor, 2006).



Zumthor lifts the aspect of time and connection to other people through surrounding objects as part of the atmospheric experience. These could be described as sense of lived in space – in other words, exhibiting traces of human presence, or marks of how the space is used and loved. (Zumthor, 2006)

It is pleasurable to press a door handle shining from the thousands of hands that have entered the door before us; the clean shimmer of ageless wear has turned into an image of welcome and hospitality. The door handle is the handshake of the building. The tactile sense connects us with time and tradition: through impressions of touch we shake the hands of countless generations. A pebble polished by waves is pleasurable to the hand, not only because of its soothing shape, but because it expresses the slow process of its formation; a perfect pebble on the palm of the hand materialises duration, it is time turned into shape. (Pallasmaa 2012, p. 62)



This quote by Pallasmaa extends this sense of human presence from mere objects to the continuum of time, and how the marks left by the touch of others inadvertently connects us to our past and future. In *Between silence and Light* by John Lobell and Louis I. Kahn, (Lobell & Kahn, 1979/2008, p. 12), Kahn writes of the visible layers of time: "In everything nature makes, nature records how it was made."

Architecture and its materials that tell of time passed, give us a sense of belonging and a context. This becomes almost like a connection to what once was. Ruins of human settlements, such as ancient Mayan cities, spark imaginations of how long-gone generations might have lived and interacted with the same space we now observe. Pallasmaa (2012) further states: "Architecture domesticates limitless space and enables us to inhabit it, but it should likewise domesticate endless time and enable us to inhabit the continuum of time." (p. 35)



Many famous architects and artists have their signature ways of working with the contrasts between light and shadow. Louis I. Kahn sculpted light through thick walls before bringing it into a room (Lobell & Kahn, 1979/2008). Tadao Ando's buildings open with narrow windows through which light cuts through the darkness as a knife. Alvar Aalto used light to enhance the haptic sense and the tactility of materials, whereas James Turrell is interested in the "thingness" of light itself, rather than the materials the light falls upon (Pallasmaa, 2021). These different methods of working with light, do not contradict each other but rather show the complexity and influence light has in architecture. Light can form and divide space, it can paint and illuminate materials or be a material of its own. But for light to have these qualities, there needs to be darkness. Pallasmaa writes of the significance of shadow. Dim lights and deep shadows awaken the imagination and the contrasts in between light and shadow are what makes a space interesting whereas homogeneous light has a dulling effect on a space. (Pallasmaa, 2012)

The shadow gives shape and life to the object in light. It also provides the realm from which fantasies

and dreams arise. The art of chiaroscuro is a skill of the master architect too. In great architectural spaces, there is a constant deep breathing of shadow and light; shadow inhales and illumination exhales light. (Pallasmaa, 2012, p. 51)



Intimacy in scales of architecture affects the atmosphere of a space. This conceptual measure of scale focuses on the relation between the mass of the building and one's own body. Human scale in architecture does not therefore mean that a space or its building elements should be the same size, or directly proportionate to one's body. It has more to do with the dimensions of space – how voids and masses relate to human body in their proportions, mass, and size. (Zumthor, 2006)



Intimacy of space is not only dictated by scale and size – the acoustic intimacy of a space plays a role in its atmospheric aesthetics. Dewey (1980) describes the interplay of the eye and the ear as a still scene, viewed by the eye and the effects of its occurrences are carried to us by the ear. Sense of hearing tells of our surrounding spatiality. The sound of footsteps or echo of our own voice indicates to us the space and the materiality of our environment. As Pallasmaa describes it; "Buildings do not react to our gaze, but they do return our sounds back to our ears." (Pallasmaa, 2012, p. 53). Buildings can also be characterised as large-scale instruments, that accumulate and intensify sounds. (Zumthor, 2006)



Architectural atmospheres could also be defined as a way that a building is inviting you in. Zumthor (2006) describes the sense of orientation with the heading between composure and seduction. He portrays architecture as spatial and temporal art – something that transform the simple act of wayfinding or directing to a form of architectural seduction or a space you can freely drift along with. As he says "—it's kind of

a voyage of discovery. -- Guidance, preparation, stimulation, the pleasant surprise, relaxation". (p. 43)



This sense of seduction is formed through spaces in transition, thresholds, openings, and in-between spaces where the contrast can be subtle or dramatic. Zumthor (2006) calls this as the tension between interior and exterior. It can also be seen as static view, as glimpses to the world around the building or vice versa – how a window can frame a small view of the life inside the building. Dewey (1980) uses the example of stepping into a cathedral when talking of the rhythm and transition in architecture. The extreme change in one's surroundings creates a bodily experience of the space, that is brought on by all human senses. He also goes on to state that prolonging this type of experience is not possible or even preferable since the novelty and exceptional nature of these encounters are what make them special.

Building on these insights, it could be said that the beauty of this experience lays in the radicality of contrasts this space has to its surroundings. This is not to say that we need dull architecture to have admirable architecture, but that the difference in the atmospheres is what makes us notice the spaces and appreciate their uniqueness. The piazza in front of the church is no less beautiful than the building – the contrast in the spaces is what makes each stand out. How, when stepping into the cathedral the light abruptly dims and temperature changes from that of sun and breeze to coolness and stillness. The warmth of air is replaced by the smell of cold stone. How the thick walls of the building shut out the noise and turns speech into silence and whispers. Footsteps echo on the stone floor and reverberate in high ceilings eventually disappearing in the intricate detailing. The person does not only marvel at the space with their sight but experiences the allure of the space with their entire body.



Continuing the example of the cathedral, its sheer scale and placement are also relevant to its nature and consequent experience. The interiors of the cathedral

can paradoxically feel bigger than the space outside of the building. The cathedral is inside space and yet vast and limitless with its high ceilings compared to the piazza framing the building. It is open space, yet it can somehow more defined and familiar. These changes in the scale and atmosphere of architecture, brought to us by our senses are needed in our environments for there to be experience of architecture. Dewey (1980) states an example of this in 'Art as Experience' of how a correctly placed lower building can tie together the urban space and not be swallowed or overpowered by higher buildings that surround it. He further illustrates that the space isn't complete with just the organization of objects but by distributing them in manner that makes them optimal in relation to one another. The rhythm, and more importantly, changes in rhythm and its intervals are essential in both the creation and analysis of all art forms. These variations in the rhythm of architecture and its atmospheres, scale, materiality, and spatiality are what shape the experience of our surroundings. The interplay of elements – of materials, of solids and voids and how their attributes are read by the human senses – are what shape the base for the experience of architecture.

In architectural education we are usually advised to develop our designs from elementary aspects towards larger entities, but, as I have suggested, our perceptions and experiential judgements seem to advance in the reverse manner, from the entity down to details. When experiencing a work of art, the whole gives meaning to the parts, not the other way round. We need to grasp and conceive complete images instead of singular elements, and, in fact, there are no 'elements' in the world of artistic expression; there are only complete poetic images intertwined with distinct emotive orientations. (Pallasmaa, 2014, p. 242)

As quoted above, the experience of a space and its consequent atmosphere starts from experiencing and accepting the space as a whole. Despite different theories that dissect and analyse how we experience architecture, it will always more than the sum of its parts.

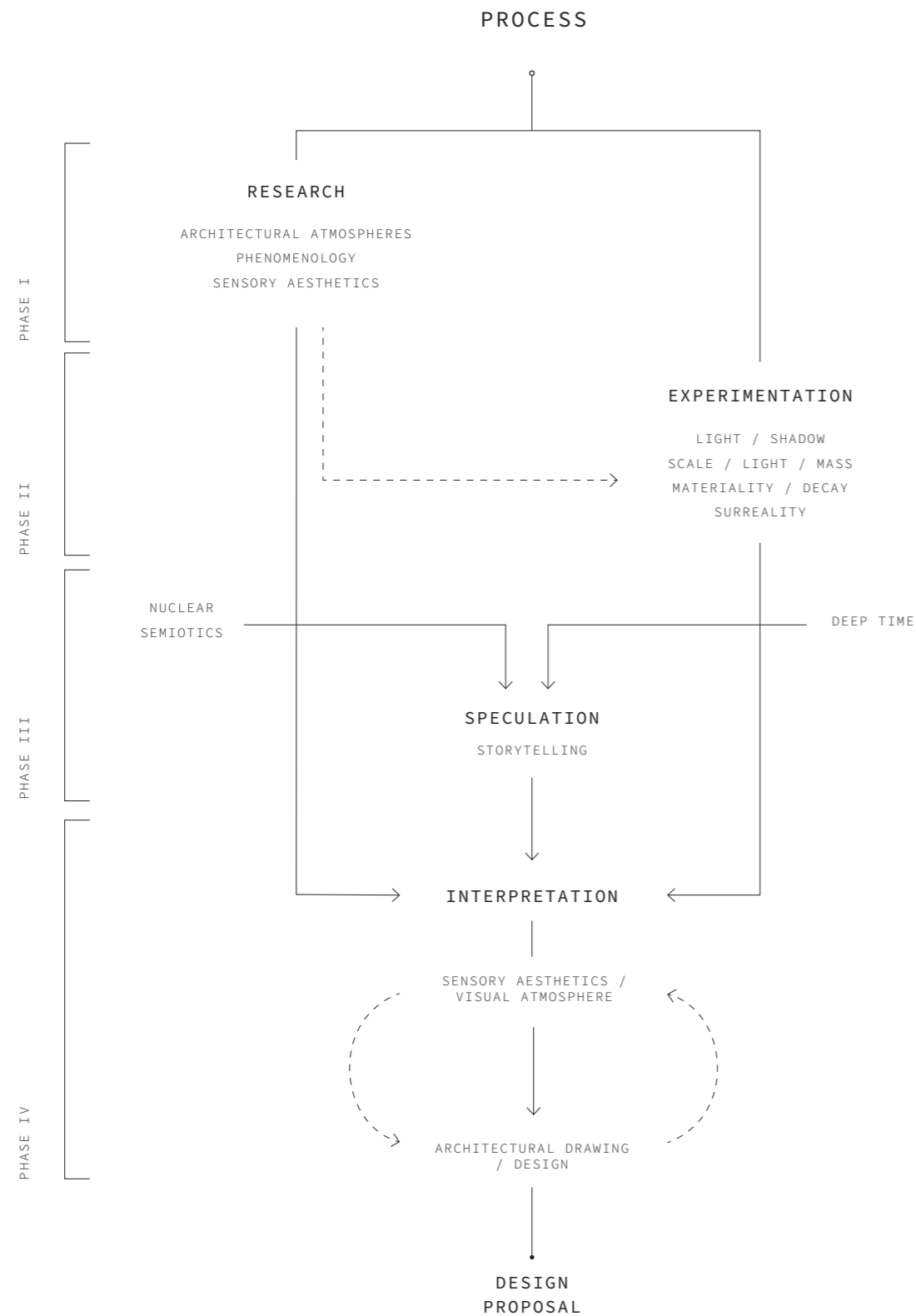


Diagram presenting the different phases of the process, connections and iterations.

**Fig. 6**  
Process diagram  
Author

## METHOD

### PROCESS

The design method of the project focuses on different ways of creating and interpreting architectural atmospheres. The design process laid its foundations in research of architectural phenomenology, atmospheres and the sensory aesthetics of space. These theories were then further explored through architectural experimentation, with focus on visual atmospheres and conceptual models. These two phases of research and experimentation were overlapping in time where research inspired new experimentation and the analysis of experimentation led to new theories.

To tackle the extreme scales of both time and space, that characterize this project, the method of storytelling was implemented. Narration and fiction allowed the thesis to grow from our current time frame into new

speculative futures. The motive of why this method was chosen, the inspirations behind it, and the process of design are further explored in the next chapter.

These instances of speculative storytelling are written in phase three, with the focus on painting a atmospheric space through text. The stories are then interpreted in phase four, by exploring the emotions and atmospheres they evoke. Here, the theories of architectural atmospheres and the knowledge gained from explorations are applied. This is an iterative process. The aim is, however, to begin the design from the point of atmospheric experience of a space, rather than the form and function of a space. The goal of this method is to change the order in which architecture is designed to better fit the design of atmospheric spaces.

### STORYTELLING / ARCHITECTURE FICTION

Architecture fiction and speculative design have been used for decades, and were particularly popular during the 1960s and 70s, with some notable names such as the avant-garde groups of Archigram and Superstudio. Archigram's speculative designs grew during the age financial crisis and rising environmental worry. The utopian superstructures proposed a new urban fabric that escaped or even embraced looming climate catastrophes with underwater cities and inflatable homes. (Rouillard et al., 2013). The topic of this thesis project grows from similar starting point of speculating a future that seems uncertain and unpredictable.

Speculative design and its various methods are explored by Dunne, A., & Raby, F. in *Speculative Everything: Design, Fiction, and Social Dreaming*

(2013). They state that to find inspiration for speculating through design, one needs to explore the varying tools beyond design, and aim to craft not only things, but concepts such as what-if scenarios and cautionary tales.

For this thesis project, the "what-if" idea, grew to be; what if the memorial could tell its own story? How would the future on deep time scales look through the architectural work itself? What if the realities of structural integrity could be expanded, to allow the design of extreme architectural atmospheres? These themes are explored through design, with the initial starting point of storytelling.

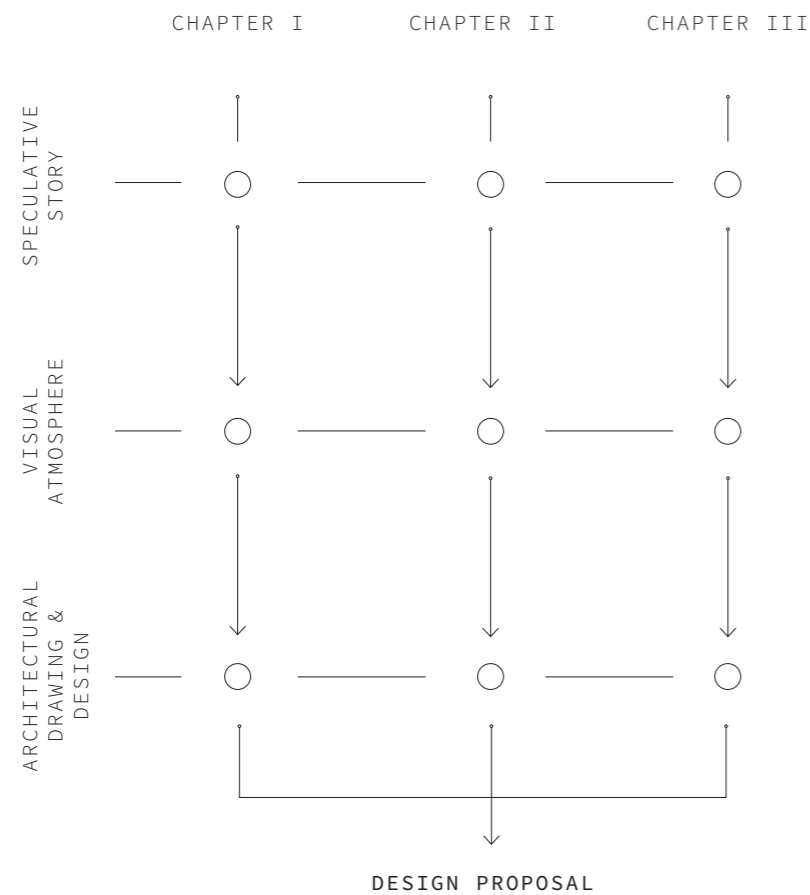


Diagram presenting the different phases of the design process and according to the method of interpretation

Fig. 7  
Method diagram

The life of the memorial is divided into three sequences or moments in time – one for each chapter of the project, each one zooming into a different area of the memorial. These chapters are called, *Message*, *Interpretation* and *Echo*.

The stories were then interpreted, one by one, to illustrate and translate the story into visual atmospheres through series of collages. These images were then

interpreted into architectural drawings. The combined design outcomes of each chapter were stitched together to form for the finished design of the memorial.

This iteration of different speculative futures forms a base on how architectural atmospheres can change on deep time scales with material deterioration, landscape and context.

## REFERENCES

### ONKALO / VICTOR VON HELLENS

A prose poem book telling a story of a security guard, guarding one of the entrances to nuclear waste repository of Onkalo. The book has a vague melancholy to it, and the story is disconnected from time and society. The guard only knows that his job is to guard his entrance – they are unaware of what is happening in the world around them. Time seems to move in strange jumps or not at all.

This book of poems is a literary reference for how the memorial tells its story. The memorial can only tell of what is happening in its direct vicinity and how people interact with it. This helps to narrow down the scale of the speculative future of the project. Onkalo also works

as a reference on how a story can paint a vivid picture with words, and how written language is charged with emotions. The following translation of a poem is an example of such atmospheric description:

*Time without interruption  
My contours in the twilight  
A slumbering existence  
At the entrance to the forest*

Citation of a poem from Onkalo, trans. by author  
Von Hellens (2022)

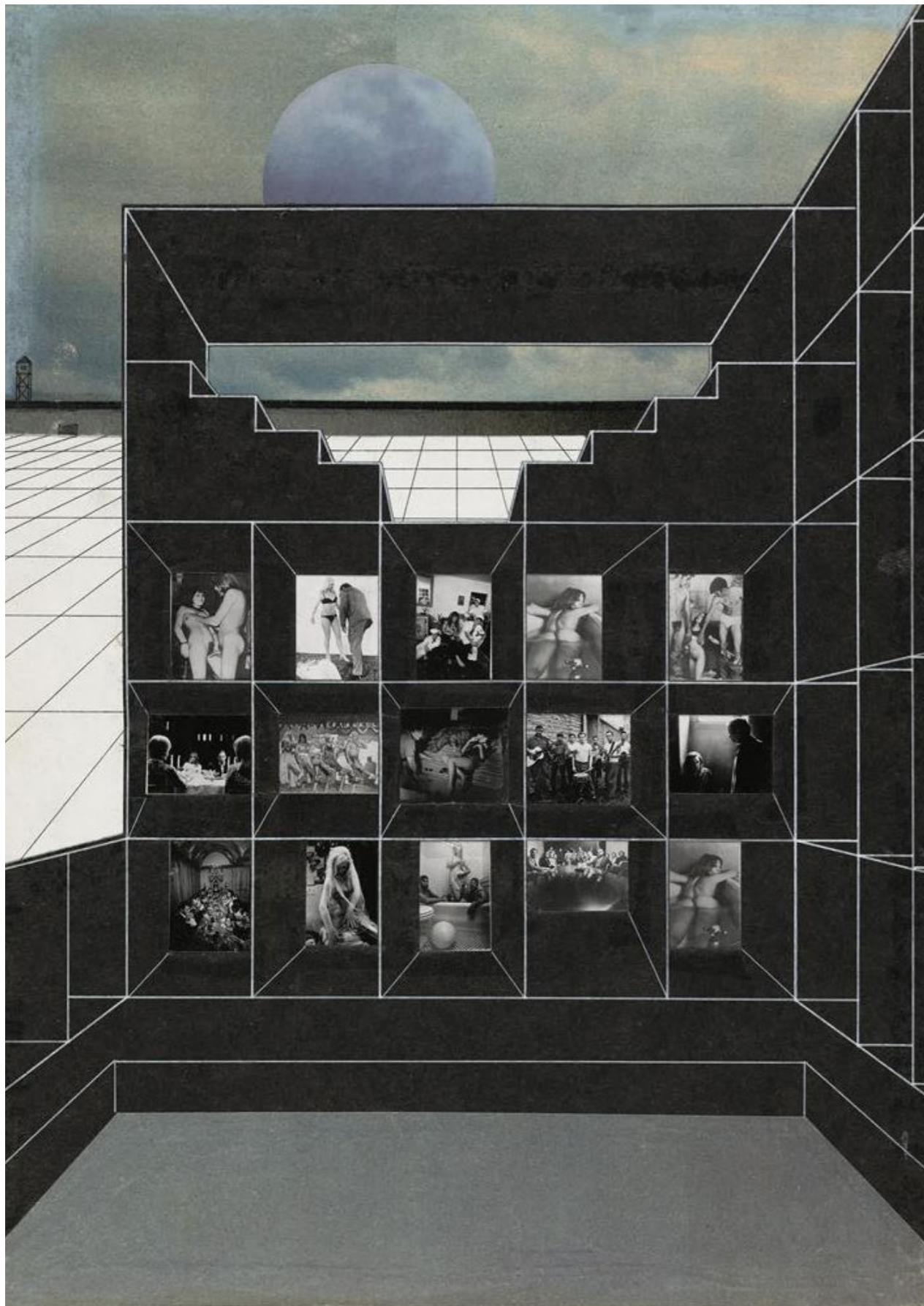
### IMAGINARY PRISONS / GIOVANNI BATTISTA PIRANESI

Imaginary prisons are artworks by Giovanni Battista Piranesi. They fall under the category of architectural fiction, depicting complex imaginary structures of grand rooms with labyrinthine staircases. Piranesi became known for the artistic style of *capriccio*. This style places existing structures and changes the characteristics of the building or its surroundings to create contrasts or new interpretations. This could mean changing the scale or size of the structure or

re-imagining it in new scenarios, such as in stages of ruination. (Jacobs-Thomson, R. 2016)

This way of altering the character or context of a familiar element became a reference for the design explorations and interpretations.





Collage of The Baths in Exodus, or the voluntary prisoners of architecture. The surreal nature of the project is elevated the visualizations that bring together strange elements that warp the reading of the scale and other elements of the project

**Fig. 8**  
Exodus, or the Voluntary Prisoners of Architecture:  
The Baths  
(Koolhaas et al., 1972)

## EXODUS, OR THE VOLUNTARY PRISONERS OF ARCHITECTURE / REM KOOLHAAS

Thesis work by Rem Koolhaas, Madelon Vriesendorp, Elia Zenghelis and Zoe Zenghelis. The project follows a narrative that dances on the line between dystopia and utopia. The thesis paints a thought-provoking story of the formation and life of a new utopian city forming in the middle of London. The story is combined with striking collages that visualize the odd contrasts and life within the society. (Koolhaas et al., 1972)

Exodus works as a reference both in regards to the aspect of storytelling and how that story is

emphasized with images. The surreal nature of the project is also a point of interest – the thesis places itself into a future scenario where the line between reality and the impossible is faded out. Exodus is also an intriguing example of superstructures in architecture and how the scale of the project effects its image and impact. Are large scale superstructures that overpower their surroundings by nature dystopian and intimidating?

## STRAIT: A GEOFICTION / NEMESTUDIO

“STRAIT” is a silent film by Nemestudio, presented through architectural drawings, depicting the fictional scenario of the world’s largest oil tanker, Oilella, becoming permanently lodged in the Bosphorus Strait in 2025. This incident begins the transformation of the Bosphorus into urban area, sparking new developments and turning existing structures into tourist sites that reflect the area’s history as an oil-shipping lane. New building codes are inspired by Oilella, now considered a historic structure, and monuments are erected to mark the locations of past oil spills. The film was part of the

“STRAIT” installation at SALT Beyoğlu Gallery in Istanbul from May to August 2015, and includes a monument commemorating the original shorelines lost to urban development. (Nemestudio, 2015)

This project is an interesting reference, on how the story guides the speculative future - in this case, how one event changes the character and the landscape of a site and how it is adapted into the architecture of the site. The project is also interesting reference, regarding how the role of a structure can change over time.



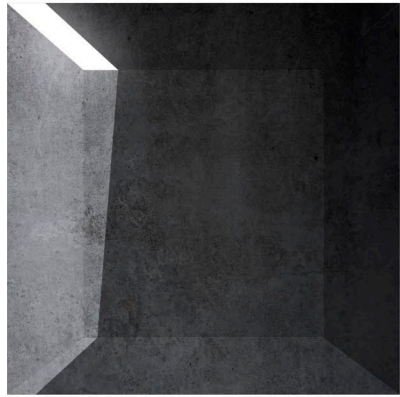


Fig. 9



Fig. 10



Fig. 11

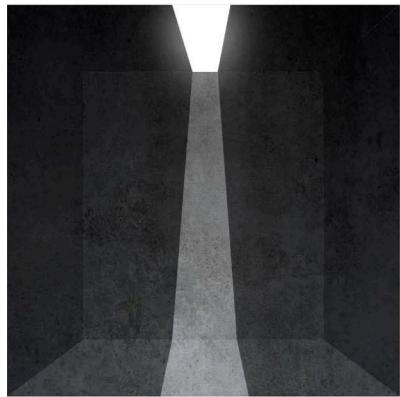


Fig. 12



Fig. 13

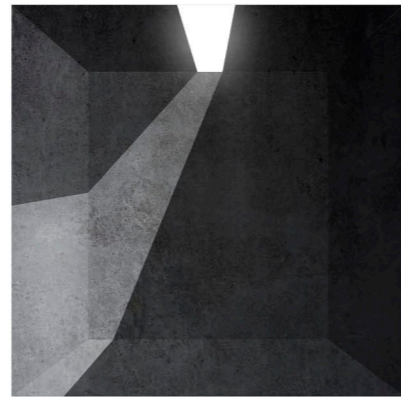


Fig. 14

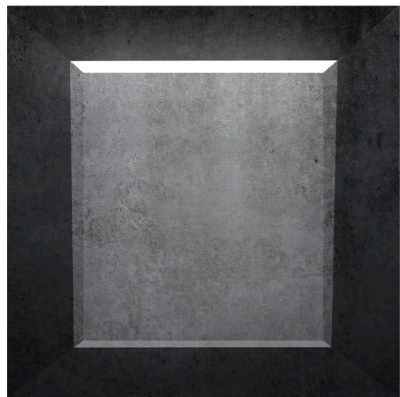


Fig. 15

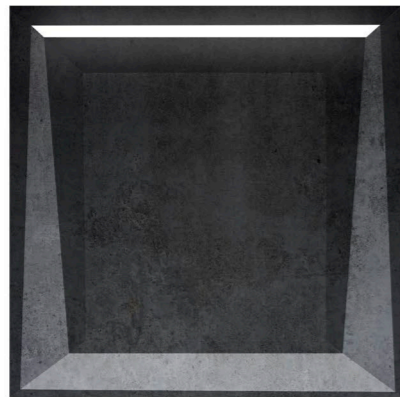


Fig. 16

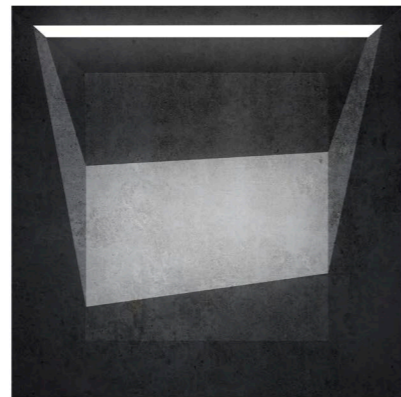


Fig. 17



Fig. 18

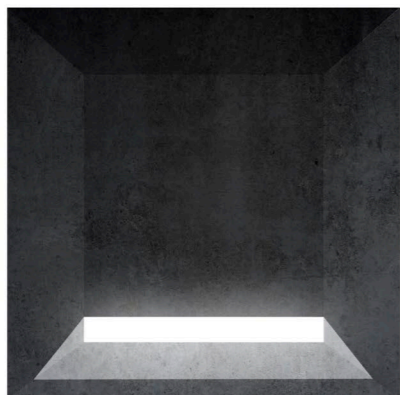


Fig. 19

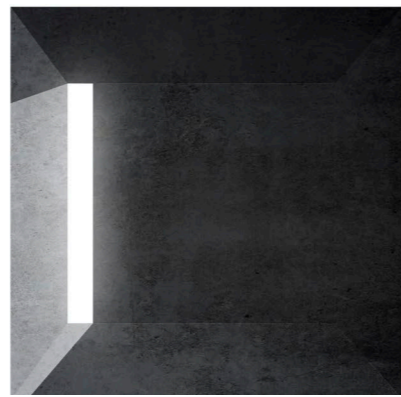


Fig. 20

## EXPERIMENTATION

### LIGHT / SHADOW

Collages to explore the atmospheric qualities of a space with different compositions of light and shadow.

#### Fig. 9 - 11

Light along a wall with different sun exposures. Position of the light is guiding and invites one to follow along it.

#### Fig. 12 - 14

Light dividing a space in the middle. This creates a strong contrast and gives an illusion of a continuing space. Direct light in zenith creates an altar-like atmosphere.

#### Fig. 15

Light at the far end of a space. Falling light creates a dramatic, altar-like room. The space feels very still and the light does not have a guiding quality to it, rather it suggests the room ending.

#### Fig. 16 - 17

Perpendicular skylight dividing the room in the middle. With light in zenith it leaves the wall behind in darkness. This shadow feels ominous and uninviting.

#### Fig. 18 - 19

Light along the floor. This makes the space feel more heavy than overhead light.

#### Fig. 20

Vertical light in corner. The contrast of light and shadow is strong. The space seems to continue to right, towards the darkness.



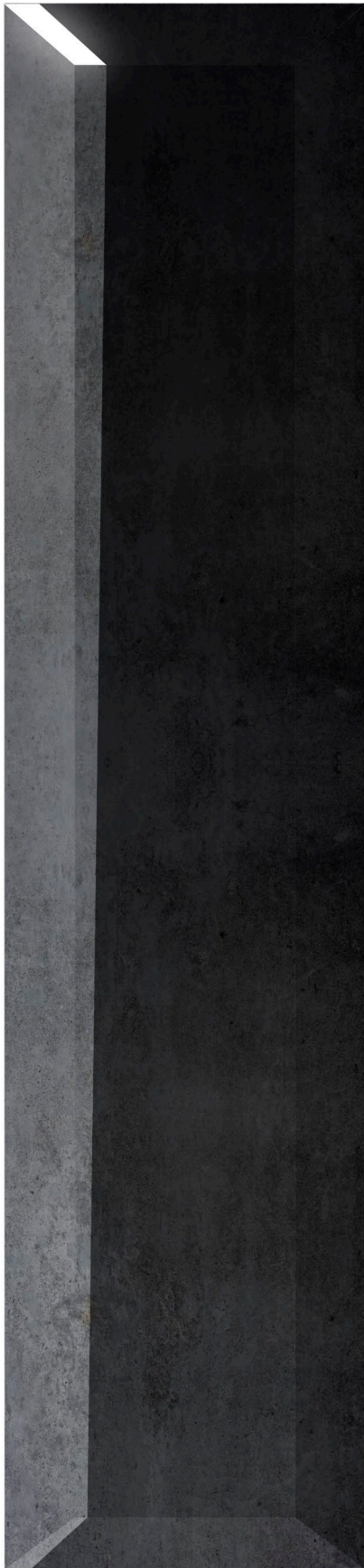


Fig. 21



Fig. 22



Fig. 23

## LIGHT / SHADOW / SCALE

Collages to explore the atmospheric qualities of a space with different compositions of light and shadow, while warping the proportions of the space.

### Fig. 21

Light along a wall with the sun in zenith. This creates a very dramatic space and the direct light seems to further increase the height of the space.

### Fig. 22

Light along a wall with angled light. The effect of the light bouncing from wall to wall creates a more ethereal atmosphere compared to direct light.

### Fig. 23

Light at the far end of a space. Warping the height of the space strengthens the dramatic effect of the light. The stillness of this space feels more ominous than calming.





Fig. 24



Fig. 25



Fig. 26



Fig. 27

## MODEL EXPERIMENTATION / MATERIALITY

Conceptual models or sculptures that to explore three stages of ruination and various ways of highlighting its effects. Models are cast from plaster and broken or destroyed to portray the same object throughout its life span. The aluminum details were added in a later phase to experiment with contrast between the broken element and whole parts.

Throughout the exploration process, each model grew to be a conceptual sculpture or symbol of one chapter in the life of the memorial.

### Fig. 24

In this first model, the small holes and cracks on the surface of the model were repaired with aluminum foil. The contrast between the smooth and matte surface of the plaster, in comparison to the shiny and polished material of the aluminum seemed to increase the tactility of both materials. The appearance of the aluminum was something close to quicksilver that was poured on the imperfections of the model.

### Fig. 25

The second model was also repaired with aluminum, but due to the nature of the cracks on the skin of this model, the aluminum seemed to be oozing out of the model, rather than covering the broken parts. This seemed to liquefy the metallic texture.

### Fig 26 - 27

The last model was the most fragmented of the three, with only a few patches of undisturbed surface left. These parts were covered with aluminum. This changed the nature of the model, and it could be interpreted as to have once been completely covered with this metallic material, but that it had worn away with time. The contrast between the smooth and shiny surfaces and the rough broken parts increase the tactility of each other.





Fig. 28

EXPLORATIONS IN SCALE AND CONTRAST

The design explorations experiment with atmospheric qualities of a space in nature when warping traditional architectural elements in mass and scale.

**Fig. 28**  
Forest that view that is covered with a massive ceiling, and a bearing wall. The unnaturalness of the scene creates an unease, and a sense of foreboding. The cantilevering edge of the ceiling increases the perceived weight of it.

OBSERVATIONS

A massive structure that overpowers the scale of nature could warp the perception of time. If a built structure competes in size with a hill or a mountain, who is to say what came first? Has nature taken over this space or has this space taken over nature?

Seeing nature that is covered by a large scale structure seems surreal and it has an otherworldly atmosphere.

Purely contrasting lush nature with rigidness and heavy mass of a concrete structure did not have large atmospheric consequences.



Fig. 29



Fig. 30

**Fig. 29**  
Concrete wall rising from water. This image is interesting in its tactile qualities and the way the smooth water surface reflects the heavy concrete wall, but the scene has no strong atmospheric quality to it.

**Fig 30**  
This image shows a long concrete wall, supporting a roof that covers the shoreline. The roof is leveled at a proportionate height, and the only element that sticks out is the long wall, stretching out to sea. Warping the structure in length does not significantly change the atmosphere of the scene.

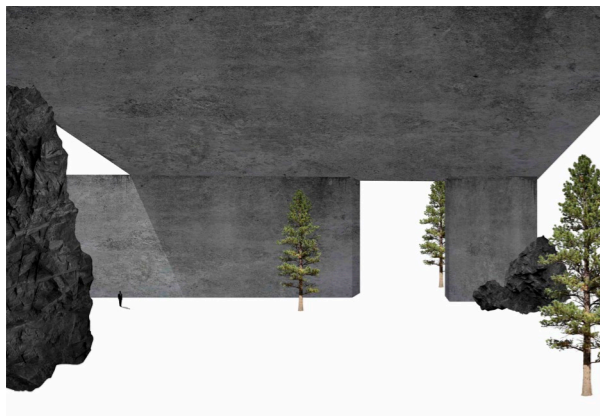


Fig. 31

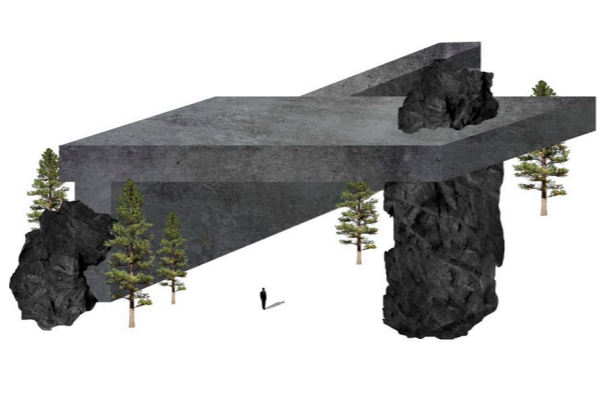


Fig. 32

**Fig. 31 - 32**  
These collages were built without context scenery and the sense of scale was warped with the addition of trees and scale figures.





Fig. 33



Fig. 34



Fig. 35



Fig. 36



Fig. 37

## EXPLORATIONS IN SURREALITY

What consequence does a sense of surreality regarding gravity and mass have on atmospheres? These explorations lean into the themes of science fiction and towards the futuristic nature of the project.

### Fig. 33 - 35

Concrete objects that are heavy in their perceived mass are depicted to be hovering in air. In Figure 34 the object stands, unevenly balanced on one corner. These scenes seem to have a silent looming quality to them.

### Fig. 36 - 37

Object or structure that hover just few decimeters off the ground. This position and the qualities of the shadows seem to increase the perceived weight of the object.

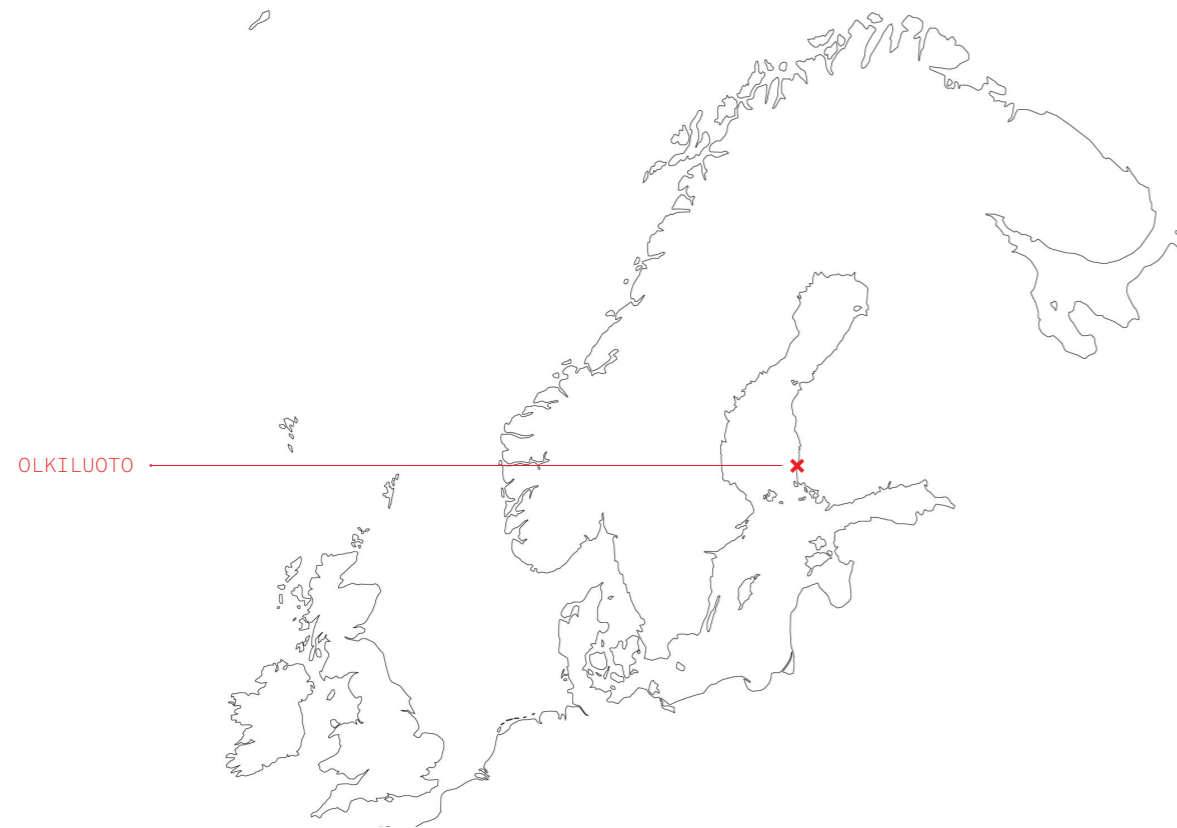
## OBSERVATIONS

The mass and perceived weight of element is effected by its placement. Objects floating high in the air had an ethereal aura to them, while also bringing forth a looming sense of danger. Objects floating low, just above ground have a more urgent sense of instability and they evoke a feel of claustrophobia or pressure.

This can also be affected by the aspect of light. Strong shadows casted by a mass increases its perceived weight, and the darkness itself awakes ones imagination. Not fully seeing what lies concealed under the mass can create a sense of unease.



SITE



SITE LOCATION IN LARGER CONTEXT

Fig. 38

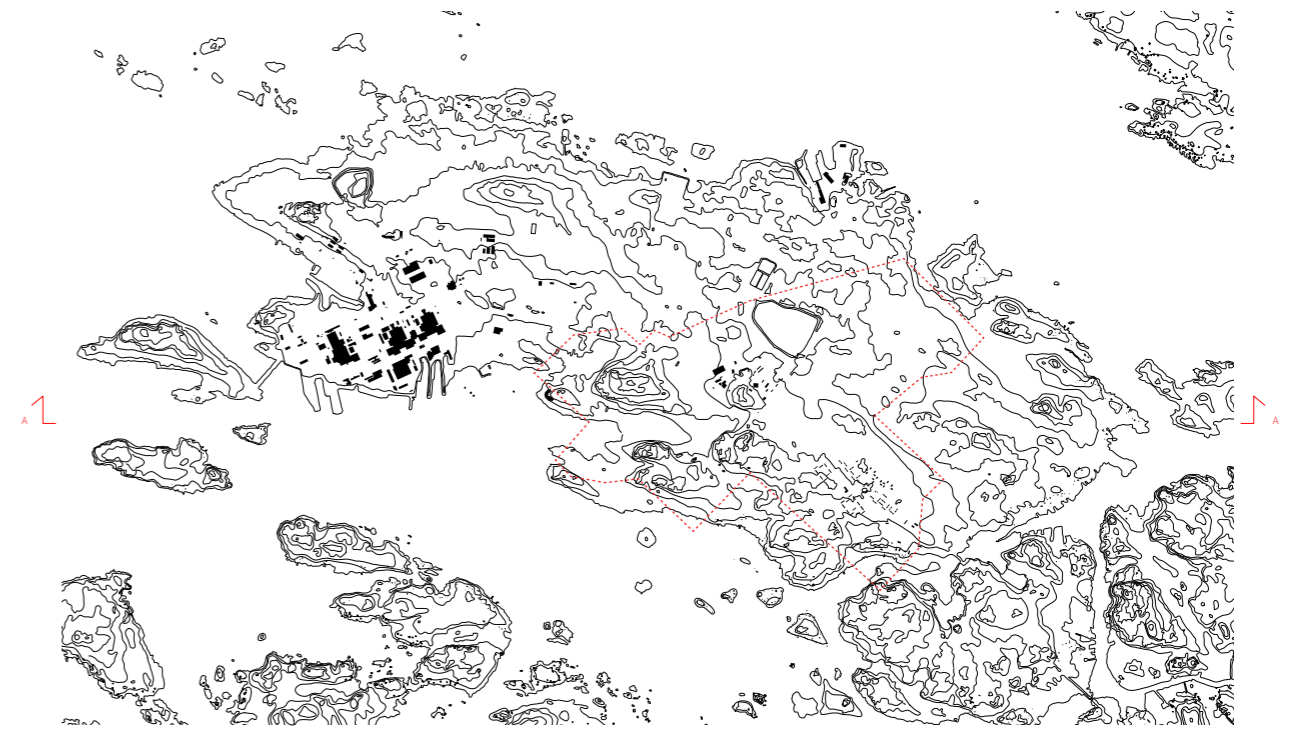


Fig. 39

ISLAND OF OLKILUOTO

CONTEXT

The project site is located on the west coast of Finland, in the town of Eurajoki. In the bedrock of the island of Olkiluoto, lays the long-term nuclear waste repository of Onkalo. This final repository is the first of its kind, and it is seen as a prototype for nuclear waste management. The repository of Onkalo is estimated to become the longest surviving man-made structure on planet Earth to date – that is 100 000 years (Positiva, 2020). Similar repositories are being planned in places like Forsmark, Sweden.

Currently the island hosts the nuclear power plant of Olkiluoto with its three reactors. Majority of the island is closed off from visitors and only accessible for the employees of the Olkiluoto power plant. The site also has a visitor center and a small number of dwellings.

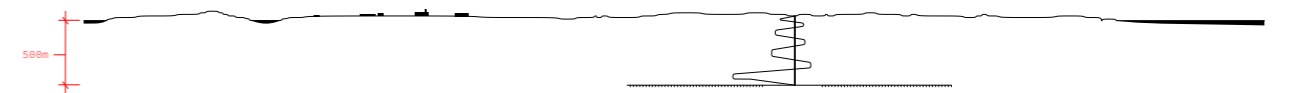


Fig. 40

SECTION A-A / REPOSITORY

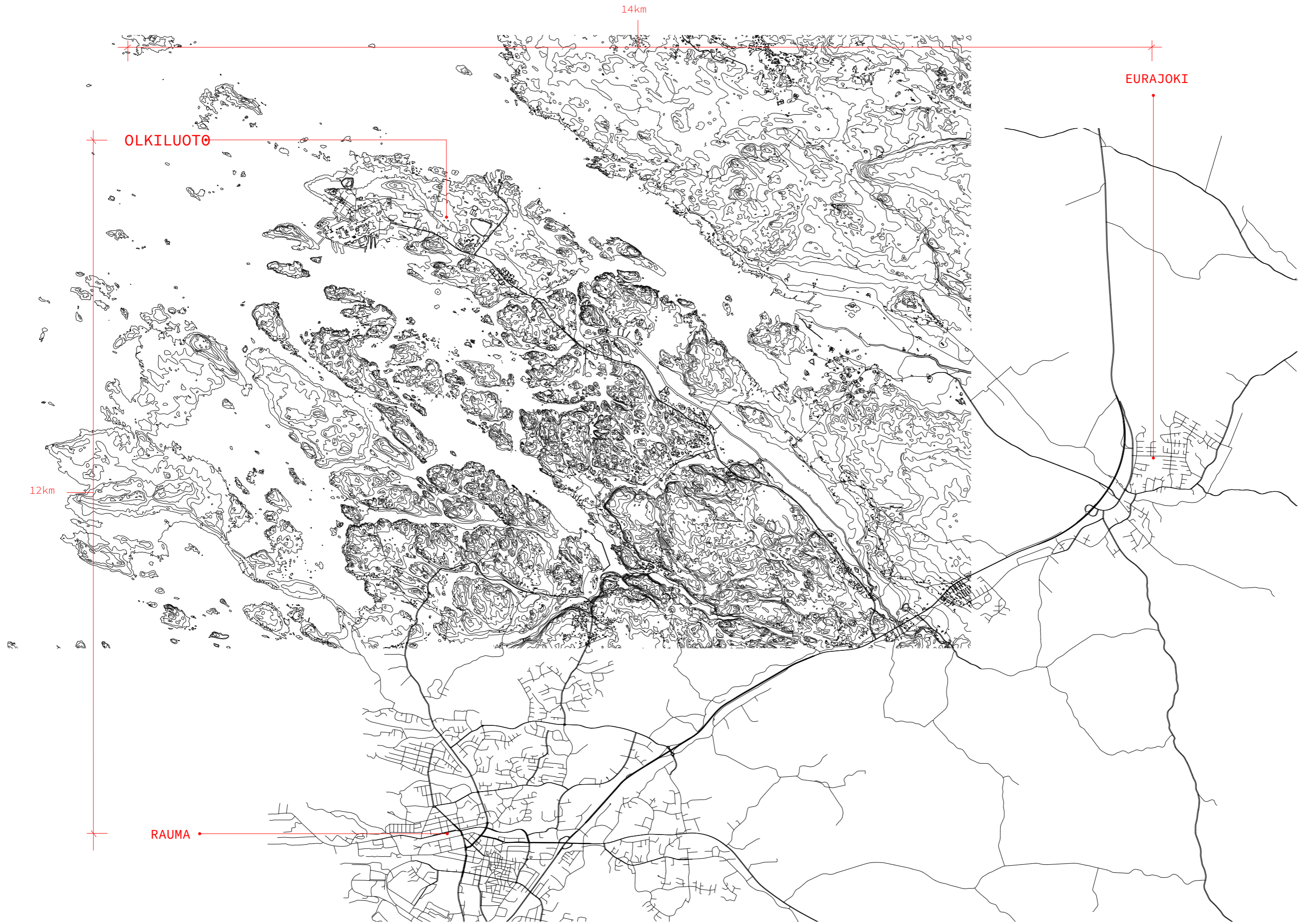
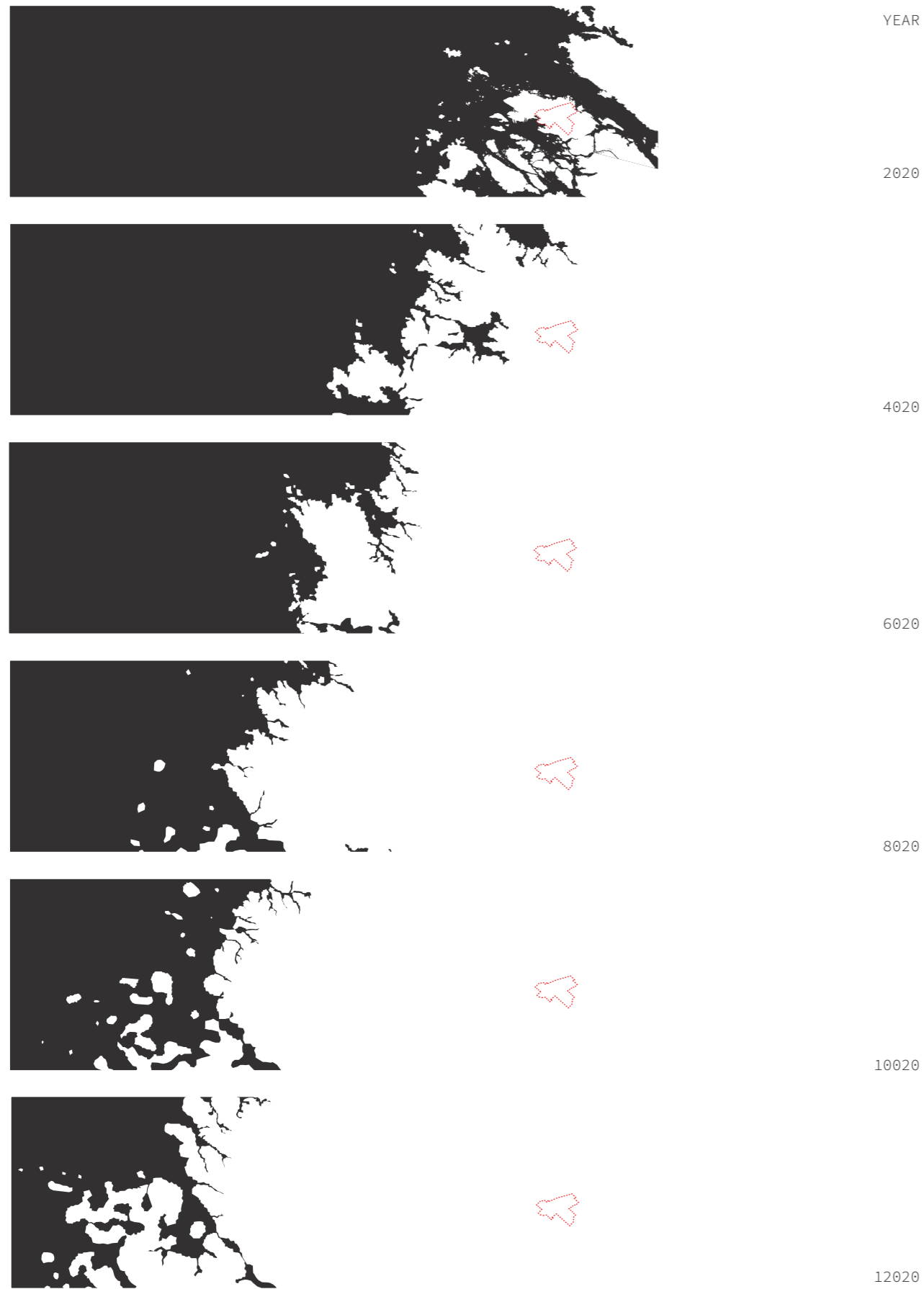


Fig. 41

ISLAND OF OLKILUOTO AND ITS NEIGHBORING CITIES



Maps showing the projected progression of the coastline due to land rising.

**Fig. 42**  
(Positiva, 2020)  
Graphics: Author

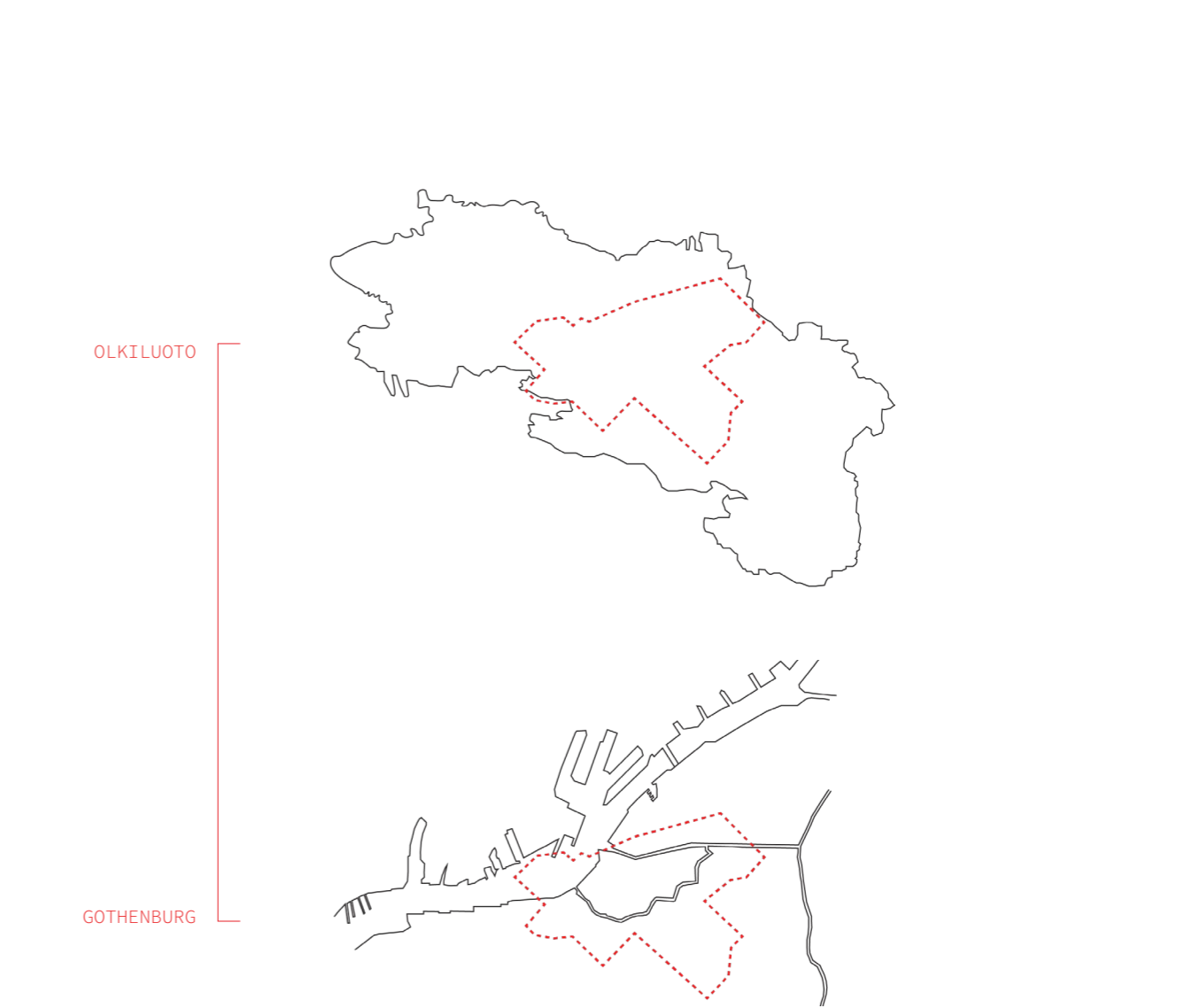


Fig. 43

SITE SCALE COMPARISON

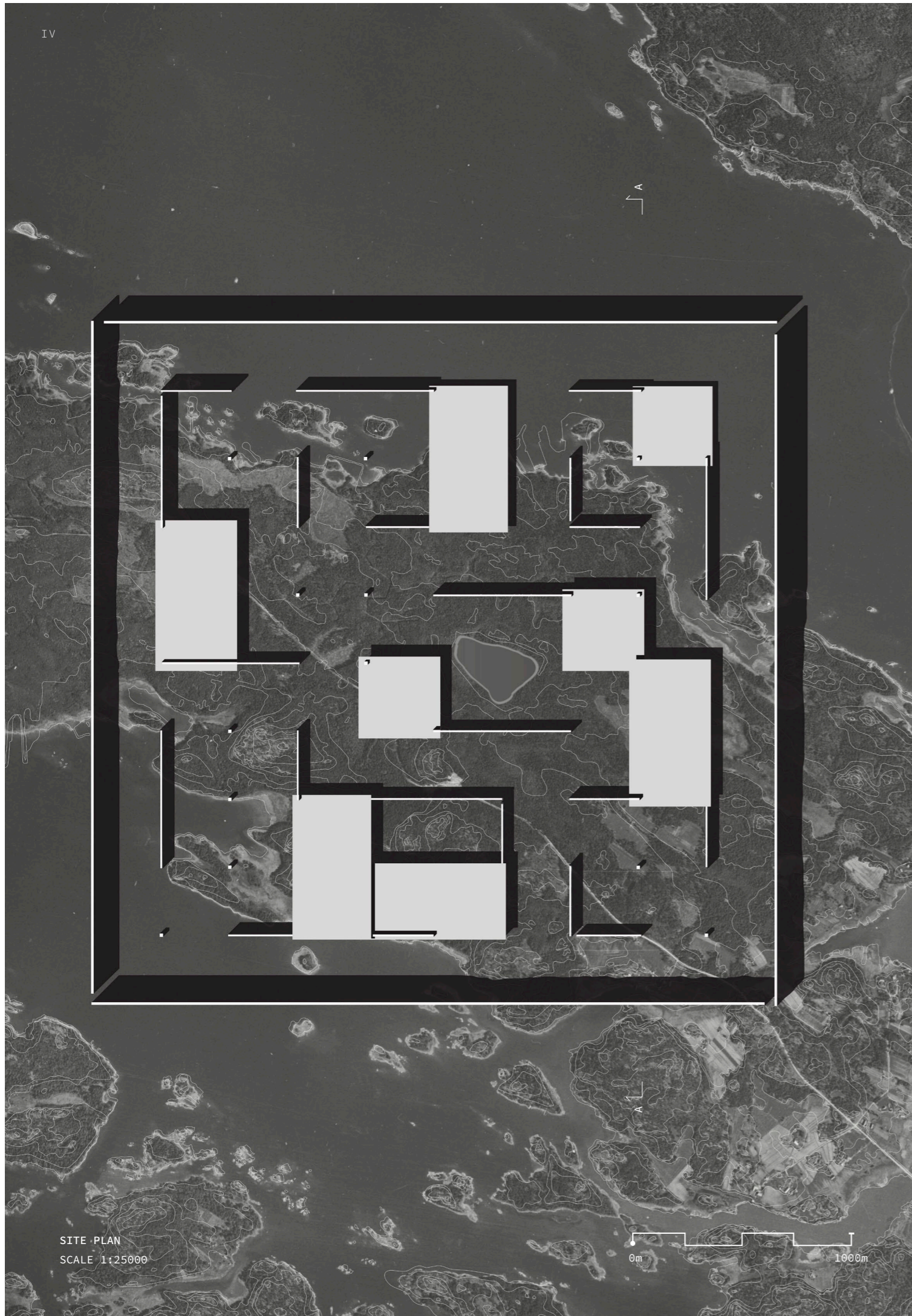
**DEEP TIME**

Due to the futuristic nature of the project, the context is not only linked to the physical site but also to the scale of time. Due to land rising caused by the previous ice-age, the Finnish coast line will change drastically during the coming millennia and the island of Olkiluoto will eventually be part of the main land of Finland. (Positiva, 2020)

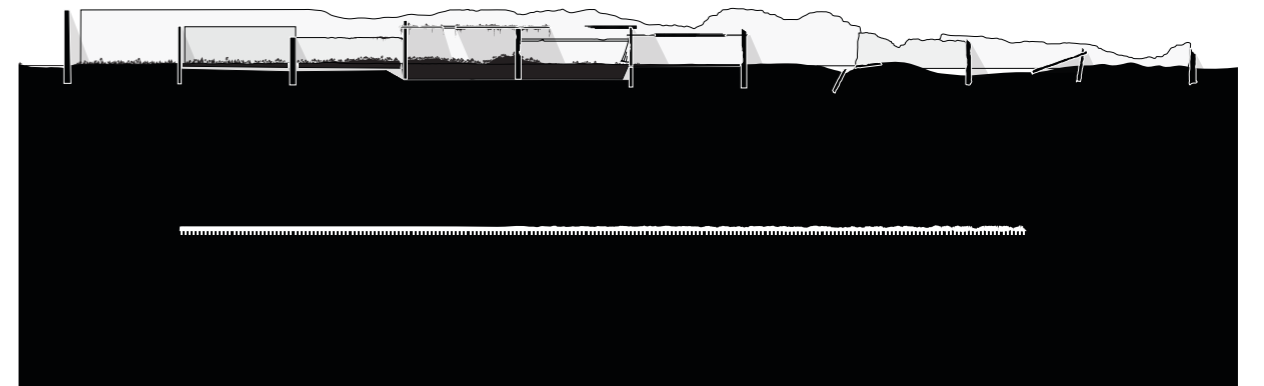
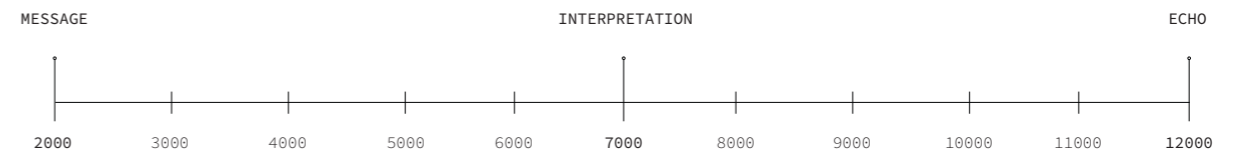
**SCALE**

The scale and size of the underground repository is vast. The final repository is located approximately 500 meter underground and it covers an area of roughly 6 square kilometers. (Positiva, 2020)



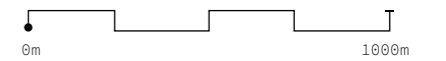


### DESIGN PROPOSAL

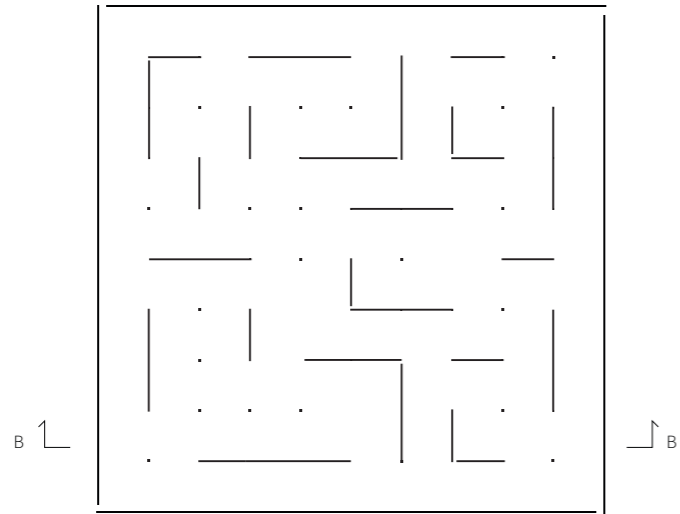


SECTION A - A / TIMELINE OVER LIFE OF THE MEMORIAL  
SCALE 1:20000

Fig. 45

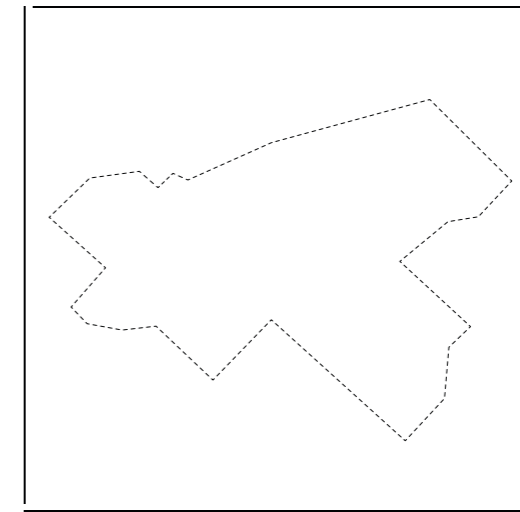






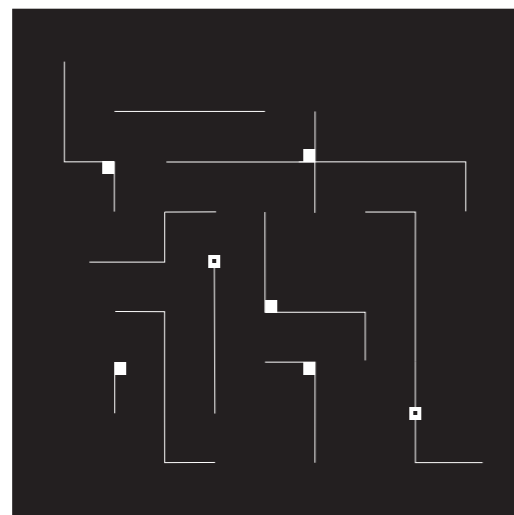
PLAN

Fig. 46



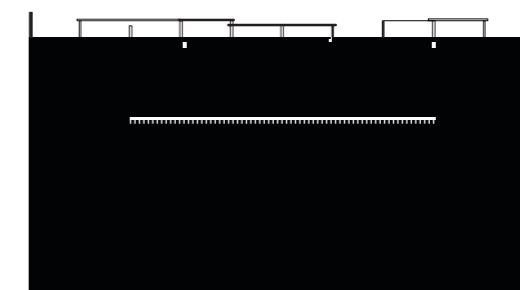
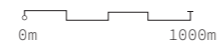
FINAL REPOSITORY / OUTLINE

Fig. 48



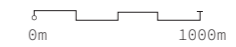
PLAN / UNDERGROUND TUNNELS & HALLS

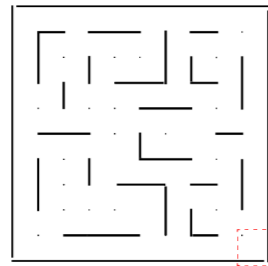
Fig. 47



SECTION B - B

Fig. 49





YEAR 2200

## I

### MESSAGE

I guard an island.  
 My island is a place of exile.  
 My island is a grave for an undying thing,  
 and I am the gravestone.

My task is to tell a story.  
 I am a reminder, a placeholder.  
 I am a form of contact, a bringer of message.  
 I am to both weather and endure.  
 Die at the same, sleepy pace as the poison  
 my island conceals.  
 That is my task.

I eclipse the evening sun and silence  
 the sound of waves.  
 I cover forests under my belly and carve  
 halls beneath their roots.  
 I tower with columns of granite and skin of  
 concrete.

I am not a place of honour.  
 I am the sorrowful symbol for the  
 age of Anthropocene.  
 A permanent band-aid on the man-made wound.





Collage / An entrance to the memorial

Fig. 50



Fig. 51

Collage / Entrance seen from the inside the walls of the memorial.





Collage / Underground hall at the base of a monolith.

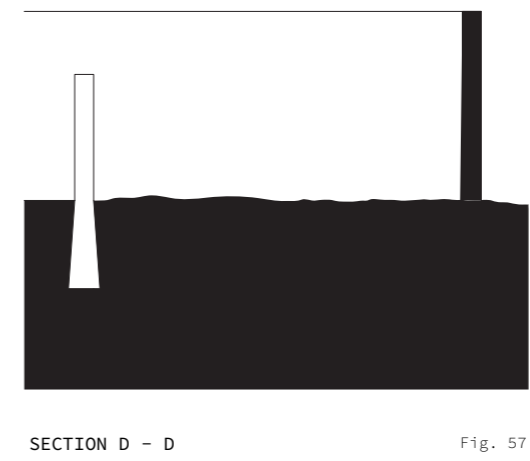
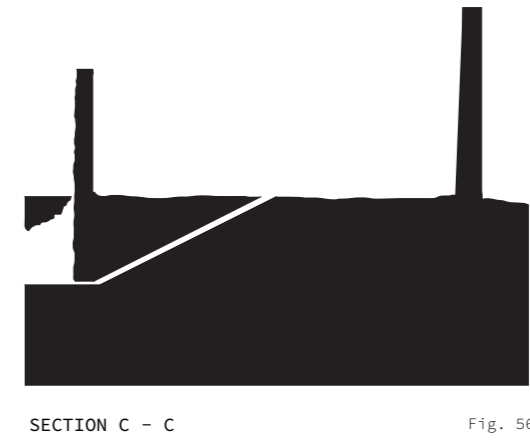
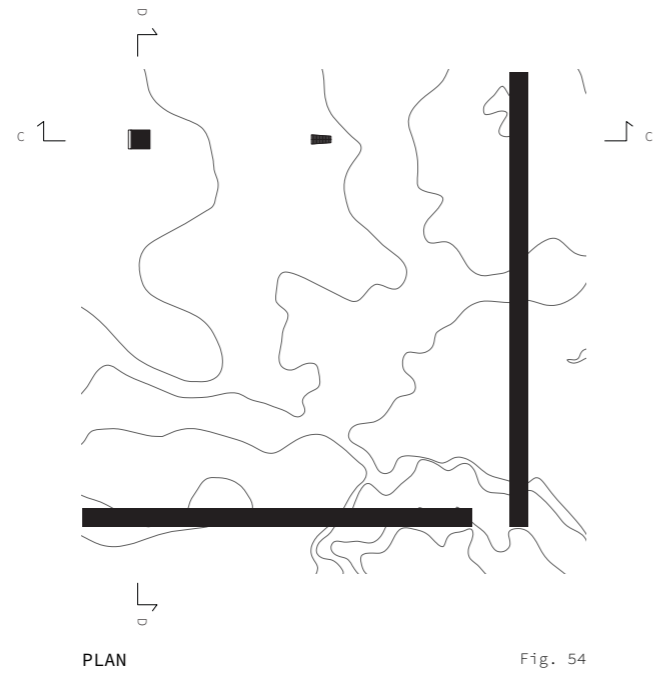
Fig. 52



Fig. 53

Collage / An entrance to the memorial





## ATMOSPHERES



MATERIALITY / TACTILITY

The materiality and rigidity of concrete in combination with the extreme scale of the structure creates a strong contrast with surrounding nature. The seemingly endless walls have a uniform materiality and lack tactile qualities. This further increases the otherness of the structure.



PERCEIVED WEIGHT / MASS

The perceived weight and mass of the stone is increased when it is placed, as if hovering, a few meters of the ground (figure 52). The tapering shape of the space increases this sensation.



TIME

The age of the structure is hard to read. Its scale and robust materials suggests that it has always been there, but the strong contrasts and otherworldliness of it, give the impression that it has landed to the site as if from nowhere.



HUMAN TOUCH

The lack of small scale tactility and the enormous size of the memorial lack the feeling of human touch.



LIGHT / SHADOW

The underground halls have strong contrast in light and shadow. The darkness of the corridor under the stone wall seems to emit a sense of threat that is increased by the light from above. Without the darkness of the corridor, the atmosphere of the space had a church like feel to it, and was reminiscent of an altar, but introducing a strong shadow changed the character of the space.



INTIMACY OF SPACE

Due to the enormous scale of the structure, the space lacks intimacy. The long corridors offer no hiding places, and the vast spaces do not give off the sense of safety or intimacy.



ACOUSTICS

The high walls seem to muffle the sound of the surroundings. The echoes of the site are increased with the even concrete surfaces. The reverberation of sound in the underground halls and tunnels is palpable through images.



SENSE OF ORIENTATION / SEDUCTION

Due to the contrast of scale between the structure itself and its narrow openings, the memorial does not have a welcoming atmosphere. It does however evoke a certain sense of curiosity or urge of exploration.



TRANSITION

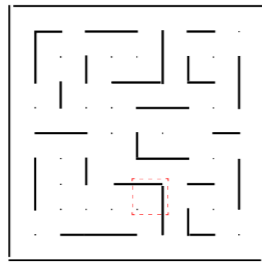
The spaces within the memorial have a sense of transition with its long corridors, walls and descending stairs. However, the memorial does not offer a sense of arrival or of reaching a destination, which increases the liminal quality of the space.



RHYTHM

The rhythm and change of scale in the openings increase the looming atmospheric qualities. The openings and portals of the memorial are not proportionate to their surroundings or to the human scale. The abrupt changes in the height of underground corridors, going from low staircases to high halls give off a sense of unpredictability.





YEAR 7000

## II

### INTERPRETATION

I rose from the sea to stand on hills.  
 The edges of my island disappeared with the waves.  
 I retired into the mainland.

I hid under leaves of ivy and blankets of moss  
 and became the terrain on which I stood.  
 Rains flooded my halls, and my origins became a tale  
 for the curious.  
 I fell into a slumber.

I was stirred from my slow burial.  
 My skin was uncovered, bruised and worn.  
 My wounds were restored with a substance unknown  
 and ethereal fabric flowed where fallen limbs had  
 once been.

Footsteps filled my corridors and prying hands  
 polished my walls.



Collage / Memorial wall

Fig. 58

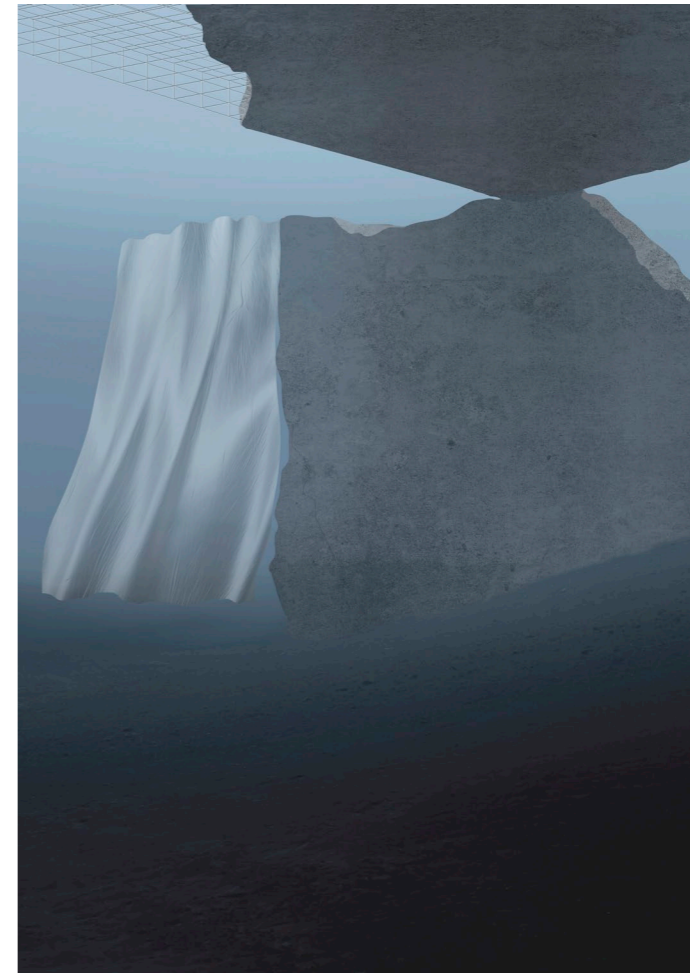


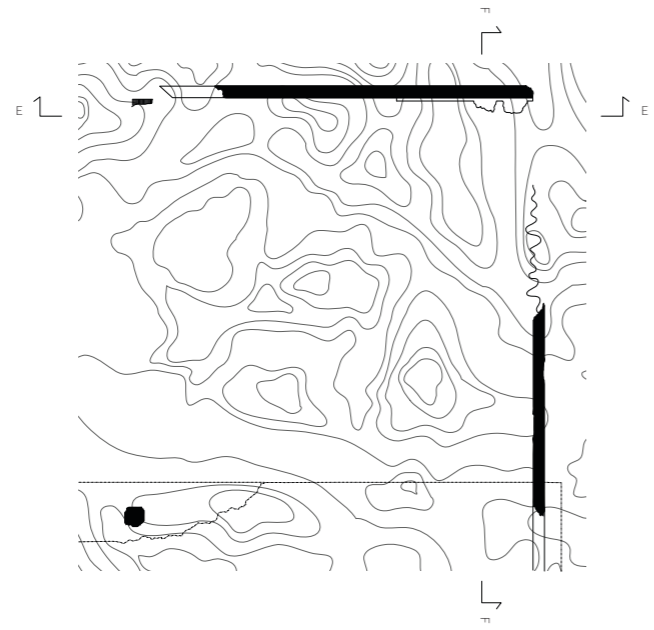
Fig. 59

Collage / Memorial and its re-interpretations



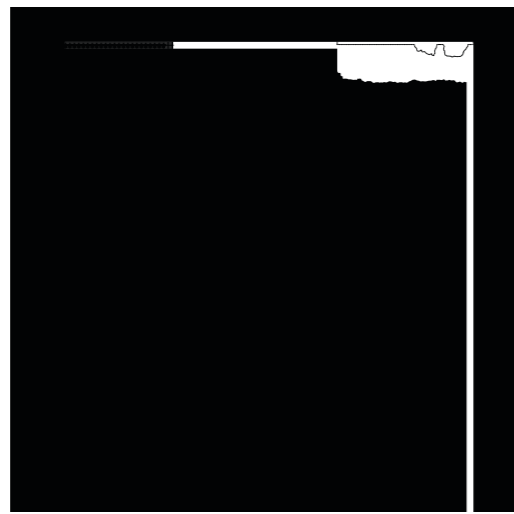






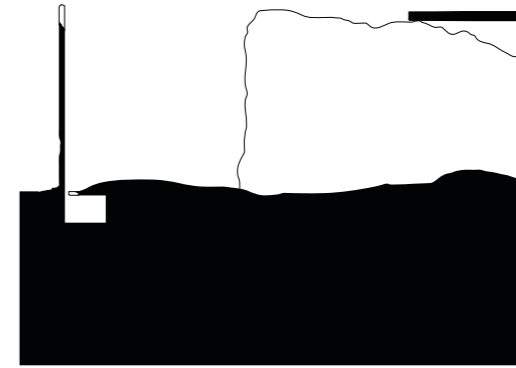
PLAN

Fig. 61



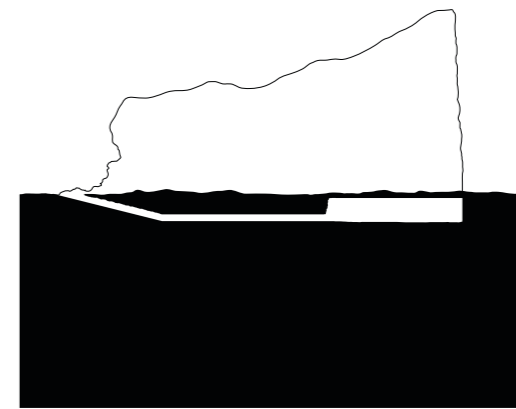
PLAN / UNDERGROUND

Fig. 62



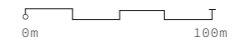
SECTION E - E

Fig. 63



SECTION F - F

Fig. 64





## ATMOSPHERES



MATERIALITY / TACTILITY

Contrasts in between the materiality of the concrete and stone and light flowy textiles, hanging light fixtures and metallic grids increase the tactile sense of the spaces. The cracks in surfaces of the original materials increase the sense of materiality and roughness of them.



PERCEIVED WEIGHT / MASS

The rough broken edges of the walls and ceiling increase the perceived weight of them, especially in contrast to the delicate nature of the textile and metal elements. How the ceiling is balancing on the last bits of unbroken wall in figure 59 gives off a sense of instability.



TIME

Contrasting materials and the broken elements of the structure show layers of time. The memorial seems to have sunken to the ground and stands as a part of the landscape.



HUMAN TOUCH

The sense of human presence is increased with the addition of the contrasting features such as textile and light fixtures. The added materials do however have an odd, slightly misplaced quality to them, as they are speculations of how future generations might aim to interpret the memorial as an archaeological site.



LIGHT / SHADOW

The light is sculpted through the long skylight following the wall and filtered through the broken parts of the ceiling. It reflects from the surface of the flooded hall, giving the space a misty quality.



INTIMACY OF SPACE

The large scale and height of the memorial does not relate to the scale of human body. However the way the structure has broken down, transforms the memorial, so it might be read as a landscape, rather than something man-made. The underground halls seem at first glance to be proportionate spaces, but their scale in comparison to human body transforms the nature of the space



ACOUSTICS

The acoustic qualities of these scenes, seem to be more still and less dramatic than in chapter 1, but the images do still hint at long reverberation times. The element of dripping water or the wind moving the flowing textiles increases the sense of sound in the scenes.



SENSE OF ORIENTATION / SEDUCTION

How the light falls in from around the corner in figure 60, has a luring nature to it, tempts to investigate further. The light fixture leads one onwards to follow it around the corner.



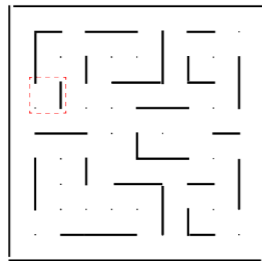
TRANSITION

The quality of the long corridors is that of a liminal space. Due to the corridors being underground, the path it gives is unpredictable and cannot be read from the ground level. This creates a sense of uncertainty.



RHYTHM

The long uniform stairways and corridors lack rhythm and warp the sense of orientation – a space that is constantly in transition with no pacing elements increase the looming quality of the space.



YEAR 12000

### III

#### ECHO

The snow fell for years and then not at all.  
 Water bled in, and the ice cracked my spine with a  
 quiet ease.  
 Wind softened my corners.

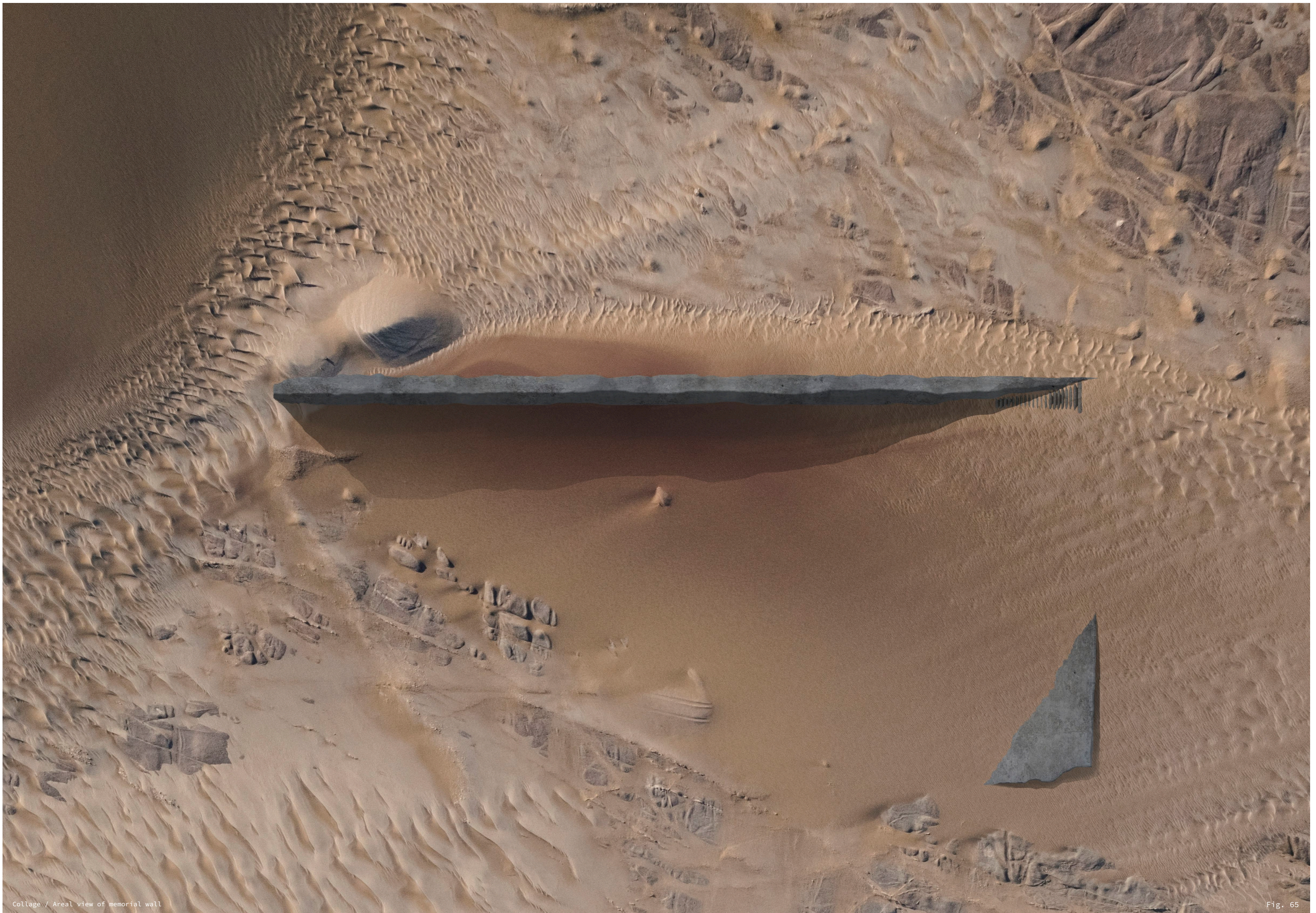
My walls fell to fragments like crumbling  
 mountain range.  
 My ceilings drift like tectonic plates, and collapse  
 with the sound of earthquakes.

The forests withered with the burning sun.  
 My shadows became asylum until even they grew  
 barren.

My edges fade out and dissolve.  
 The only sound is of my ruination.

Forget me not.









Collage / Monolith in the distance

Fig. 66

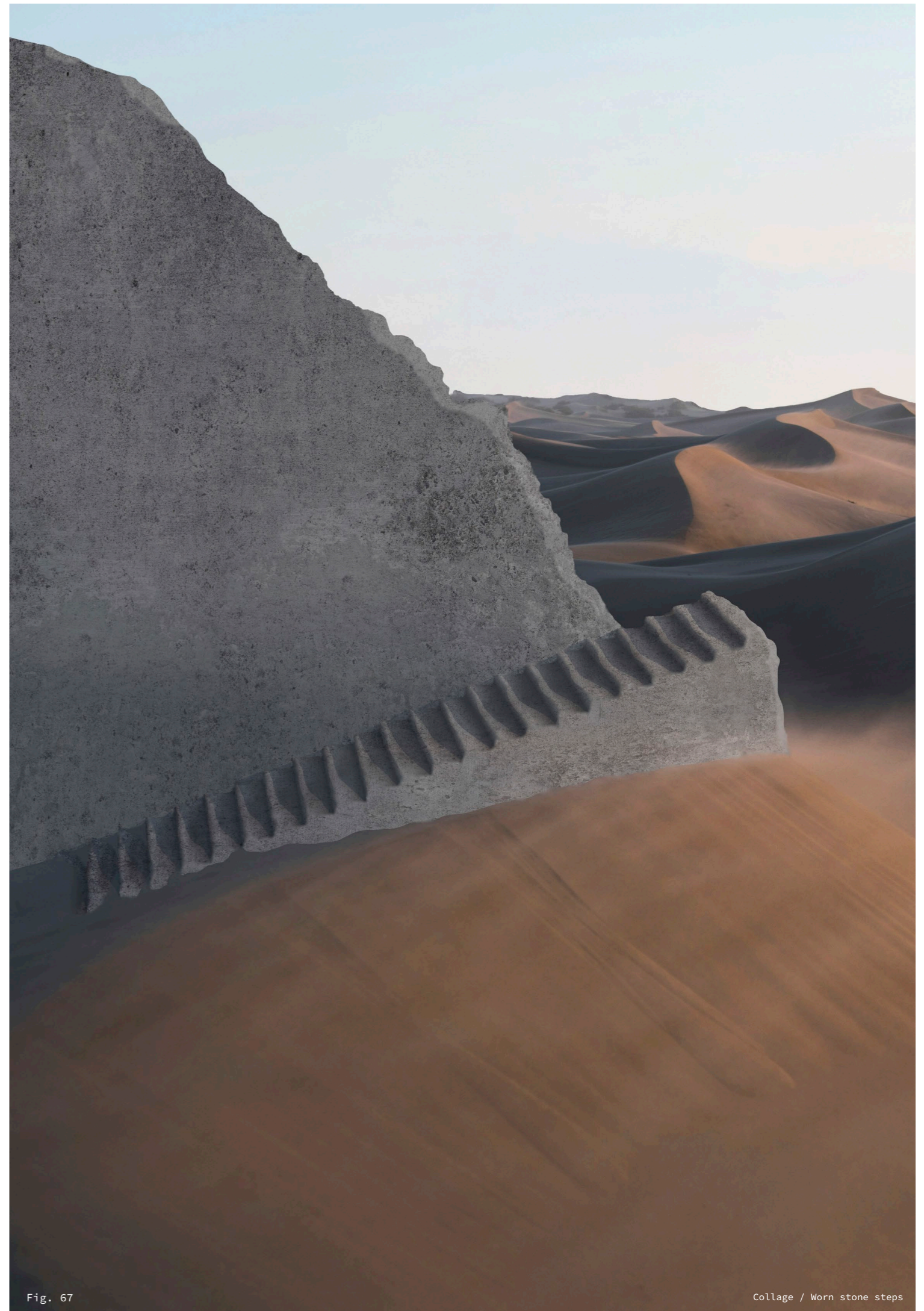
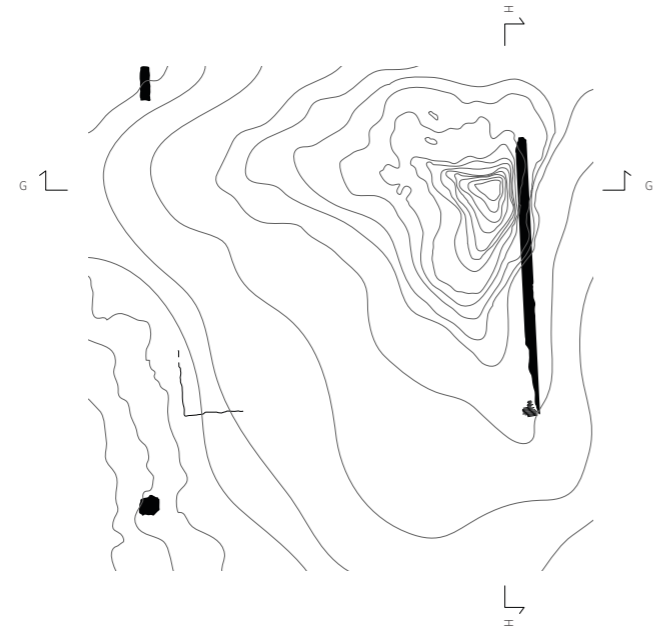


Fig. 67

Collage / Worn stone steps





PLAN

Fig. 68



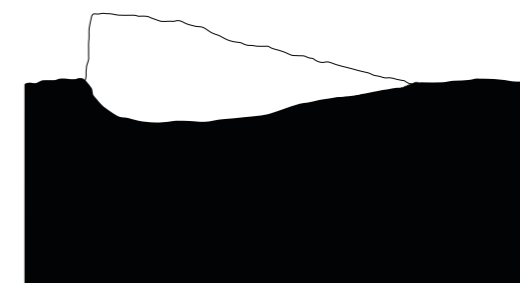
PLAN / UNDERGROUND

Fig. 69



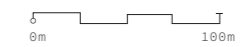
SECTION G - G

Fig. 70



SECTION H - H

Fig. 71



## ATMOSPHERES



MATERIALITY / TACTILITY

The materials of the memorial have been worn down with time and this gives them a more tactile and interesting quality.



PERCEIVED WEIGHT / MASS

The sunken walls and caved in ceiling that has been buried under sand tell of the considerable mass of the structure, but the perceived weight of the materials have lessened with age.



TIME

The layers of time can be seen in how the structure has fallen apart and how its dramatic forms have softened.. The memorial seems to be forgotten in time.



HUMAN TOUCH

The remnants of the rigid form of the memorial tell that this is a man made structure, even if the presence of humans is no longer prominent. The steps of the broken down stairs show impressions of touch – the hard material of concrete or stone has seemingly melted under the pace of people walking on them for millennia.



LIGHT / SHADOW

The high walls have sunken, but they still cast long shadows. The architectural control over light and shadow is lost as the structure has caved in.



INTIMACY OF SPACE

The sense of human presence in the form and the wearing down of the materials adds details and brings some elements of the memorial down to a more humane scale. The structure is still large in comparison to human scale, but the remnants of the memorial frame a space in the vast open landscape surrounding the area.



ACOUSTICS

The scenes and images seem still and silent, and whatever sound there is, is likely to disappear to the open landscape.



SENSE OF ORIENTATION / SEDUCTION

As the structure is now only defined by a few elements, the sense of orientation is minimal. The wall and the stairs descending and slowly disappearing under the sand give a sense of past directions and movement.



TRANSITION

The way the stairs have broken down, interrupt the ascending movement and remove the transitional qualities. The abrupt end of the stairs increases the sense of stillness and adds a vague feel of melancholy to the scene.



RHYTHM

As the site surrounding the memorial is open landscape the rhythm of the area is now defined on a larger scale, rather than in the small transitional qualities of the structure.



## EPILOGUE

This thesis started from the idea of interpreting the phenomenology of architecture as a medium of communication on deep time scales. I chose this topic with the hope of gaining a better understanding of the elements and aspects that play into the design of atmospheric spaces. Could they be warped or altered to form negative emotions or to tell of a possible danger or threat? Perhaps atmospheres and how we perceive them could be better examined from the inverse side of them?

These questions were approached through several explorations, each focusing on different aspects of architectural atmospheres. The experiments were analysed with the help of theory to understand the elements that play into the experience, and the consequent atmospheres of a space. A central part of the experimentation and design process, was to continually reflect over the sensations and perception of the material created. Often, I found myself asking others: "How does this image make you feel?". This constant reflection helped to guide the process of creating atmospheres and have those lead the process, rather than focusing on other parameters of the design.

The chosen method of visualization with collages, helped to play around with the elements of atmospheres such as scale, more spontaneously than what might have been possible with 3d models or traditional drawings. This visualization technique followed from the experimentation phase to the presentation materials. Following the method of storytelling, was also something that helped to aim the focus on atmospheres and the experience of space, rather than pure outlook or function.

*So, how can architectural atmospheres be used as a form of communication at the site of the final repository of Onkalo? The atmospheric qualities of architecture and how we experience and understand them, can be used to signal of the character or nature of a space, which in turn can be interpreted as a subtle form of communication. I discovered that altering and warping the scale of architecture to its context had an effect other atmospheric elements as well – it's as if by scaling the structure, I was also turning up the volume of the threatening nature of the memorial.*

Careful design and small alterations of the elements that play into architectural atmospheres can change the nature of a space. It is therefore possible to design a space that evokes a certain feeling, and that in turn is a form of contact with people experiencing that space.

Dissecting architectural atmospheres to its components does not fully encompass their effect. This could be compared to intellectualizing an abstract artwork to shapes and forms or reducing a symphony to its sheet music. Architectural atmospheres are to be felt, not explained. Having said that, this thesis work has given me a deeper understanding on how different elements affect and play into the phenomenology of space, going beyond sensory perception and focusing on our emotional responses.

Conveying complex ideas such as of the danger of nuclear waste buried in bedrock, is not something that can be communicated with architecture alone. The topic of nuclear semiotics, is at this time, an impossible task with no correct answers.

An unexpected result of the thesis process, was how much the method of storytelling came to guide the design outcome. In the beginning I chose the method, in hopes of it helping to tackle the enormous time scales of the project. Throughout the process of writing the stories and interpreting them to design, I felt as though I was slowly surrendering the initial design to the workings of deep time. I felt as though the story was doing the design, not me. This loss of control over a design outcome was an inspiring process. Where might the story take me next? So, to give an to answer the subquestion of the thesis: *How does the method of storytelling, guide the speculative design of architectural atmospheres?* I have found that applying the perspective of storytelling to the design on architectural atmospheres, adds the element of someone experiencing this space and inserting the architect into said space before the it is fully visualized. This allows the design process to start from the experience and feel of the space rather than pure form or function.

The aspect of storytelling, also gave an inspiring framework for the speculative life of the memorial and how it could be an interesting playground for many possible speculative design scenarios. As I reached the end of the design process, I became intrigued to think of the other possible ways of interpreting the story. What did the other instances of the life of the memorial look like? What if the stories were interpreted to follow another design path? For instance, one such design path might have been exploring how the architectural role or use of this type of superstructure such might change over time. This structure might have become the basis for walled in city, with ready-made load bearing elements. Or perhaps the site might have been submerged with rising sea levels, and the memorial

slowly adapted to its life underwater and grew to be an interestingly rigid base for a coral reef. All this, is to say, that the story and the design interpretation that followed are only one of *many* possible paths - the one I chose to follow, focuses on the atmospheric qualities of architecture over time. The perk of using this method of storytelling and interpretation, is that it gives seemingly endless design alternatives and allows architecture to grow and evolve with the story.

*How do architectural atmospheres change over deep time scales?*

With this thesis project and the story it followed, what I found was most durable of the atmospheric qualities in architecture, is the aspect human touch. Their beauty is that they gain with time. Older buildings seem to often have more atmospheric qualities to them. Human touch tells of a space that is lived in, a sense that a space has served a purpose and it shows traces of others who have been there before you. On deep time scales, structures fall apart, and the architectural qualities of their forms disappear with them. What is left, are the traces of human actions.

With this thesis, i hope to have inspired for a more intentional design of atmospheric spaces. I hope to highlight the importance of what we communicate with architecture and how the experience of a space can support that. After all, architecture has the capacity to carry a story of our time into the future.

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## LIST OF FIGURES

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**Figure 2. Binet, H.** (2019). *"The house never forgets the sounds of its original occupants."* [Photograph]. Helene Binet. <https://www.helenebinet.com/photography/can-lis>

**Figure 3. Tavalbi, R.** (2020). *Pyramids of Giza* [Photograph]. Unsplash. [https://unsplash.com/photos/brown-pyramid-under-blue-sky-during-daytime-\\_8yK4sUgyqU](https://unsplash.com/photos/brown-pyramid-under-blue-sky-during-daytime-_8yK4sUgyqU)

**Figure 11. Positiva.** (2020, October 9). *TVO - Posiva Oy image gallery* [Image]. Posiva <https://www.posiva.fi/en/index/media/material.html>

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**Figure 8. Koolhaas, R., Vriesendorp, M., Zenghelis, E., & Zenghelis, Z.** (1972). *Exodus, or the Voluntary Prisoners of Architecture: The Reception Area.* [Collage] MoMa Collection. [https://www.moma.org/collection/works/401?artist\\_id=6956&page=1&sov\\_referrer=artist](https://www.moma.org/collection/works/401?artist_id=6956&page=1&sov_referrer=artist)





