Mustakivi Art Museum:

The Atmosphere of Silence

P4 Reflection

Ke Ling Neoh 5764734

TU Delft Faculty of Architecture
Graduation Studio
Methods of Analysis & Imagination:
A Matter of Scale

Tutors:
Klaske Havik
Pierre Jennen
Willie Vogel

1. What is the relation between your graduation project topic, your master track (A, U, BT, LA, MBE), and your master programme (MSc AUBS)?

Aligning with the architecture track and the studio theme, 'A Matter of Scale,' the proposed graduation project confronts challenges across various dimensions. From a global standpoint, the project contributes to the ongoing global discussions on the relationship between architecture, atmosphere, depression and anxiety. On the city scale (Tallinn and Lasnamäe), the project aims to reintegrate Lasnamäe into Tallinn's cultural fabric while challenging and dispelling stereotypes associated with this Soviet district. Zooming into the scale of a micro district, Mustakivi, where the site is located, the initiative seeks to establish a new cultural focal point in the heart of the micro-district to enhance the community's sense of belonging and inclusivity. By transforming the museum into more than just a cultural destination, the proposed project will serve as a central hub connecting all of its surroundings, becoming a place that residents will experience on a daily basis. Lastly, concerning the scale of a building and its relationship with the human body, the project aims to explore the relationship between form, sound, visual and user experience. The project can be viewed as an academic experiment to study how architecture can foster calm and serenity through different atmospheres of space.

2. How did your research influence your design/recommendations and how did the design/recommendations influence your research?

The relationship between research and design is depicted in the diagram below (Diagram 1). The design process, regardless of geometry study, circulation study, material study, etc., is highly iterative, characterised by continuous feedback loops. Numerous 'trial-and-error' moments within the designing phase necessitate additional research or revisiting initial studies to provide the rationale for the final design.

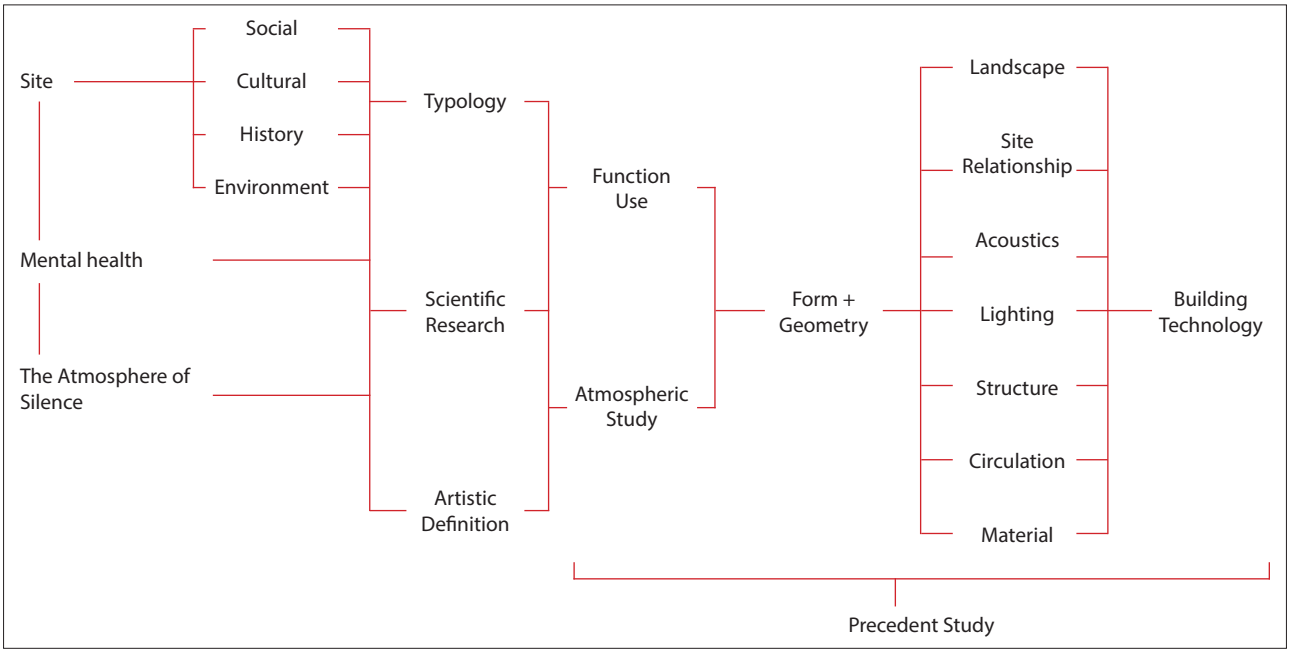

Diagram 1: Relationship between research and design.

3. How do you assess the value of your way of working (your approach, your used methods, used methodology)?

The project's initial research involved on-site investigation, literature studies on sound and space, and psychology/ neurology research papers to establish a solid foundation. This research laid the groundwork for the project's main design concept and strategy. As I have not previously explored the relationship between acoustics and mental health, the primary research goal is to expand my knowledge to develop the project effectively. During the design phase, I studied various precedents related to therapeutic environments, material, geometry, atmospheric and acoustic interactions, etc., to grasp how architecture can positively affect human behaviour and mental well-being through both concepts of community and solidity.

Given the project's complexity, I opted for digital methods over physical exploration, using BIM modelling, collages and renders. As the project emphasises atmospheric quality, there is a continuous iterative process and constant interplay between two-dimensional planning and its impact on three-dimensional experiences. The project also employs Pachyderm acoustic Simulation Script in Grasshopper to simulate the acoustic performance of primary spaces. Combining this simulation with research on the relationship between acoustics, geometry, and materials helps justify material choices and specific design decisions. Additionally, I also compared different material suppliers to evaluate the carbon footprint of various products, then used a sustainability calculation tool to analyse freight transportation emissions from the supplier to the site.

4. How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects?

The proposed museum challenges conventional ideas about sound and quietude within a museum space. While museum galleries are often viewed as mono-sensory places for visual encounters, the project seeks to expand the sensory scope by introducing auditory elements to redefine the museum's purpose as healing and introspective spaces. Besides that, the proposed project explores the interplay between firmness and granting users agency and autonomy to interact and interpret cultural spaces freely as they see fit.

Based on on-site investigations and interviews conducted in Tallinn, beyond Lasnamäe, it has become apparent that the neighbourhood suffers from negative stereotypes stemming from its Soviet-era history. Within Lasnamäe, the neighbourhood experiences a lack of gathering spaces due to the low prioritisation of social and cultural activities during the Soviet Occupation. Hence, the project seeks to reintegrate Mustakivi and Lasnamäe into Tallinn's cultural fabric, inviting broader city participation and dispelling stereotypes. Concurrently, it addresses the urgent need for indoor public spaces in this densely populated residential area. Ultimately, as a cultural institution, the proposed project serves as a catalyst for unity, bridging fragments and societal divisions from the city scale down to the scale of humans as an individual.

From an ethical standpoint, the project demonstrates a commitment to inclusivity and accessibility and recognises the growing importance of mental well-being. At the same time, it considers the diverse needs of potential users and environmental sustainability.

5. How do you assess the value of the transferability of your project results?

I believe the project's outcomes are highly transferable due to their relevance to mental health and well-being considerations, the exploration of the acoustic-visual connection, and finding common ground for scientific research and artistic expression. Examples of mental health considerations within the proposal include the program choice, ensuring users' comfort within the building, the circulation and spatial categorisation that separate community and solidity zones, and offering different functional values for various activities. Moreover, providing different atmospheric choices allows users to experience varying degrees of silence based on their preferences. Concerning acoustical-visual exploration, the proposal reflects a fundamental understanding of sound-space interaction and how visual elements play a part in it. Yes, the sound aspect of the project can definitely be developed further. However, it could still serve as a starting point for understanding sound's nature, adding to the project's transferability value.

6. Reflection on proposed design and Tallinn's climate

The consideration of climate factors occurs later in the design process. Given my unfamiliarity with projects in cold climates featuring heavy snow and freezing water, these elements are sometimes overlooked during the initial design phase. Consequently, they may be treated as an afterthought as I work to adapt the design accordingly. Dealing with snow loads and finding solutions for freezing water heavily relies on advanced building technology to ensure they function properly. If I were to work on projects in similar climates to Estonia in the future, I would prioritise climate considerations from the outset of the design process, ensuring that the climate aspect can be integrated seamlessly into the building form to optimise environmental performance.

7. Reflection on spatial atmosphere and acoustic study

This project marks my first experience working closely with atmosphere and acoustics. Through researching and experimenting with sound, materials, and light, I have gained a deeper understanding of the importance of design integration. All elements within a space should be viewed and designed holistically rather than as separate entities. For example, when working with the curtain wall elements at the main entrance of the proposed project, my initial approach was to apply general acoustic principles. So, I assumed flat surfaces would reflect sound, causing echoes and standing waves, so I opted for wavy walls to scatter sound waves. However, after conducting sound simulations with the actual volume and sound-surface interactions, sound movement is much more complex than I imagined. The simulation results showed that straight walls, depending on their surrounding condition, can sometimes diffuse and reflect sound more effectively than wavy walls. This project has been a valuable exercise in understanding the intricate relationship between spatial quality and human senses. While experimenting with those atmospheric elements, the iterative process also moved rather quickly throughout the design phase, teaching me how to make swift decisions to keep the project progressing.