

The thesis set out to explore how a building's facade, specifically for a pavilion, can serve both as a functional innovation fulfilling interior needs and as a dynamic interface engaging the public.

Addressing the architectural facets of the project, the design effectively captures the essence of a bio-based lab. Drawing inspiration from biology, the facade embodies fluidity and adaptability, with no fixed limits on design elements such as door placements or the scaling of triangular components. In this design, the size and positioning of triangles and rods vary, illustrating the concept of organic growth and change—elements coexist and interact without a predetermined hierarchy, much like cellular components within a living organism. This design philosophy not only mirrors the limitless potential of biological systems but also enhances the facade's interactive appeal. The variable scale and mass of the structural elements dynamically alter the viewer's perception, creating a visually captivating experience that actively engages the public. This architectural approach, characterized by flexibility and the harmonious integration of design elements, effectively encapsulates the dynamic and evolving nature of the bio-based lab, making the facade not just a boundary but an active participant in the architectural narrative.

While the functional integration of the design elements presents a more complex challenge, I have made significant progress in demonstrating the feasibility of the key components individually. The project explores the practical assembly of an exterior façade crafted from triangular elements, an internal frame, and the overall structural integrity of the building. My construction drawings and models substantiate the viability of these components standing alone. However, the seamless integration of these elements into a cohesive system remains partially unexplored due to time constraints and initial design strategies.

For example, further optimizations could enhance the efficiency and cost-effectiveness of these components, such as refining the vertical mullions of the interior frame. Additionally, the architectural design could be further tailored to the specific environmental and urban context of the lab, considering factors like sunlight orientation and local infrastructure.

While I have not fully demonstrated the complete integration of all components into a unified structure, I am confident that the groundwork laid provides a solid framework for future exploration. This work sets the stage for building technologists and architects to refine and realize the full potential of this design, affirming the project's foundational principles and its potential for real-world application.

Reflections

At the outset of my journey toward completing my Master's degree in Building Technology, I approached my thesis with a blend of anticipation and apprehension. My profound appreciation for the technical aspects of building technology has always driven my desire to fuse this knowledge seamlessly with architectural design practices. This endeavor posed a significant challenge: selecting a thesis topic that harmonized aesthetic design with functional practicality—a pursuit often perceived as overly technical for architects and excessively artistic for engineers.

This interdisciplinary path I chose aimed to encapsulate the essence of both fields. Marcel not only endorsed this integrative approach but also provided enthusiastic support, encouraging my exploration into innovative architectural solutions. Simultaneously, Anne's invaluable guidance was instrumental in refining my design process to achieve the high-quality architectural outcomes I aspired to deliver. This support profoundly shaped my educational journey, equipping me with a comprehensive toolkit to bridge the gap between engineering precision and architectural creativity as I advance in my professional career.

Embarking on my thesis was a journey much like any architectural design process, where each idea is tested and often discarded until one strong concept prevails. This experience was eye-opening, as it taught me how the focus of a project can evolve dramatically. 'The Maze' immersed me in traditional Asian architecture and simple wooden joints, while 'The Wave' shifted my focus towards the mechanics of movement, modern technologies, and bio-composite materials. 'The Flora' allowed me to explore architectural expression and conceptual design.

Each project phase introduced me to different elements and methodologies, enriching my understanding and skills in diverse aspects of architectural design. The final design, 'The Urchin', synthesized these learnings with advanced parametric design and detailed technical planning. Though the vast scope of the topic sometimes overwhelmed me, the consistent guidance from my mentors was pivotal. Marcel enriched my perspective with deep insights into material science, innovative building methods, and significant architectural references. Anne kept me aligned with the core principles of the project, ensuring my focus remained clear and pushed each project to each limits with her architectural feedback which resulted in all designs being the best version of themselves at their very end.

Be that as it may, whether I managed to succeed in answering the research question though is explained in the conclusions. Under the more personal touch the frame of refelctions allow, I am just expressing the feeling of pride of the final result, which feels like a collective achievement alongside my professors, Marcel and Anne. This project fostered a team environment rather than a conventional student-mentor relationship. The success of this endeavor is especially meaningful because it represents the culmination of reaching and pushing ones limits. There were numerous occasions when I had to discard my progress and start anew, but these restarts revealed the true potential of perseverance in design. Reflecting on where I started and where I have arrived, I genuinely appreciate the journey and the final outcome—it's rewarding to see how much can be accomplished through resilience and collaborative effort.