Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (ExamencommissieBK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Ayris Findik
Student number	6086292

Studio		
Name / Theme	Architectural Engineering Studio	
Main mentor	Thomas Offermans	Design
Second mentor	Mo Smit	Research
Third mentor	Paddy Tomesen	Building Technology
Argumentation of choice of the studio	The ability to shape my design proposal around a topic of personal interest and create my own assignment was a key reason for choosing the Architectural Engineering studio. I was also particularly drawn to the opportunity to work with timber, a material I am deeply passionate about, while benefiting from the studio's technical expertise in this area. Furthermore, the studio provides the freedom to seamlessly integrate theoretical exploration with practical, technical design, offering a comprehensive and balanced approach to developing my project.	

Graduation project	
Title of the graduation project	Ephemeral Roots - Continuity of Use and Components in Public Building Design
Goal	
Location:	Istanbul, Turkey

The posed problem,	In a world defined by constant flux and rapid societal change, architecture must confront its significant role in environmental degradation. With the construction industry responsible for 37% of global CO_2 emissions, placing serious pressure on architects and engineers to adopt environmentally responsible practices. In response, Western architecture has embraced concepts such as material passports and building lifespan strategies. While these approaches and circular design

	principles offer promising solutions, they often fail to fully address the complexities of future adaptability and long-term continuity. Despite these advancements, modern buildings often have declining physical, social, and functional lifespans, raising critical questions about their continuity, adaptability, and future use. Current strategies such as material banks and shearing layers address some of these issues, but they fail to account fully for the uncertainty of future demands or the natural deterioration of materials. This presents a significant challenge: how can buildings be designed to endure and maintain relevance in an uncertain future? This thesis seeks to redefine the concept of "permanence" within architecture, particularly in a Western context, by shifting from a static ideal to a dynamic and layered understanding, presenting it as a solution to the problem of disposability in architecture.

research questions and	How can a redefined understanding of permanence be integrated into contemporary public building to establish the continuity of the building and its components? Sub: How do these layers of permanence interact with sustainable design principles? Sub: In what ways do traditional craftsmanship, joinery techniques, and maintenance practices contribute to the contemporary understanding of permanence and its layered approach? Sub: What values ensure the buildings existence and continuity?
design assignment in which these result.	The general design goal is to create a "Culture Bank" (a multifunctional space encompassing a cultural centre, museum, archive, and library) that responds to societal and environmental transformations and adapts accordingly. The primary focus is on designing a

	timber-based structure capable of enduring "forever" through continuous maintenance and adaptable to unforeseen challenges. As the building integrates into the cultural fabric, it will also serve to preserve cultural heritage, embodying a layered permanence supported by various dimensions of adaptability. This approach seeks to harmonize continuity with flexibility, preparing the building to respond to the uncertainties of the future. The project is located in Istanbul's Belgrad Forest, a site chosen for its cultural, historical, and logistical significance. Istanbul serves as an ideal setting due to its dynamic and everchanging nature, reflecting the unpredictable future scenarios the project aims to address. Its deep history with wooden construction and position as a cultural bridge between East and West align with the building's mission to preserve and celebrate cultural heritage. Though not in the city center, Belgrad Forest offers excellent accessibility via transportation links and proximity to the airport, ensuring both local and global reach. The forest setting supports the project's focus on material flow and continuity, providing a sustainable timber source through protected forestation. This cyclical relationship between the building and its natural surroundings embodies resilience, adaptability, and environmental sustainability.

[This should be formulated in such a way that the graduation project can answer these questions.
The definition of the problem has to be significant to a clearly defined area of research and design.]

Process

Method description

The methodology for this research is centered on developing an evaluation framework to analyze case studies and inform the design process. This framework is constructed through an extensive literature review and theoretical insights into contemporary permanence and its connections to adaptability concepts and strategies. The evaluation axis comprises two main components: the first addresses "how" and "what" type of permanence buildings achieve, utilizing a "Permanence Matrix" based on established theories of permanence. This analysis is guided by key circular building strategies and refined by exploring recognized interventions that align with different forms of permanence, such as deconstruction and disassembly for relative dynamic permanence, longevity and durability for relative static permanence, material passports for absolute static permanence, and standardization and modularity for absolute dynamic permanence. The second component examines "why" buildings are valued for continued existence, applying established evaluation tools to analyze the cultural values that define a building's significance.

Literature and general practical references

Andersen, R., & Negendahl, K. (2022). Lifespan prediction of existing building typologies. Journal of Building Engineering, 65, 105696. https://doi.org/10.1016/j.jobe.2022.105696

Askar, R., Bragança, L., & Gervásio, H. (2021). Adaptability of buildings: A critical review on the concept evolution. Applied Sciences, 11(10), 4483. https://doi.org/10.3390/app11104483

Brand, S. (1994). How buildings learn : what happens after they’re built. Viking.

Ford, E. R. (1997). The theory and practice of impermanence: The illusion of durability. Harvard Design Magazine, (Autumn).

https://www.harvarddesignmagazine.org/articles/the-theory-and-practice-ofimpermanence/

The framework is applied to four case studies selected to represent different quadrants of the Permanence Matrix, showcasing how buildings achieve permanence while integrating adaptability strategies and interventions. The insights from this research serve as the foundation for the design phase. By applying the evaluation axis in the predesign stage, the design process becomes lifespan-conscious, allowing for the identification of a building's potential values and necessary qualities. Circular building strategies, adaptability dimensions, and associated interventions are used as determinants to achieve layered permanence.

The translation of these principles into design will focus on the use of timber as a primary material. Timber will serve as a tool to create a structure capable of accommodating all identified adaptability dimensions and interventions. Structural prototyping, supported by research by design, and testing across different scenarios will serve as the primary design methods, enabling the exploration and refinement of these concepts in practice.

Hamida, M. B., Jylhä, T., Remøy, H., & Gruis, V. (2023). Circular building adaptability and its determinants: A literature review. International Journal of Building Pathology and Adaptation, 41(6), 47–69. https://doi.org/10.1108/IJBPA-11-2021-0150

Ji, S., Lee, B., & Yi, M. Y. (2021). Building life-span prediction for life cycle assessment and life cycle cost using machine learning: A big data approach. Building and Environment, 205, 108267. https://doi.org/10.1016/j.buildenv.2021.108267

Pavlidis, A. (2018). Architecture: The art of permanence (Master's thesis). École Polytechnique Fédérale de Lausanne.
https://infoscience.epfl.ch/handle/20.500.14299/149211

Pereira Roders, A. R. (2007). Re-architecture : lifespan rehabilitation of built heritage - scapus. [Phd Thesis 1 (Research TU/e / Graduation TU/e), Built Environment].
Technische Universiteit Eindhoven. https://doi.org/10.6100/IR751758

Rose, A. (2019, September 12). Long-term building in Japan [image]. The Long Now Foundation. https://medium.com/the-long-now-foundation/long-term-building-injapan-796c4f0ad3e7

Schmidt III, R., & Austin, S. (2016). Adaptable architecture: Theory and practice (1st ed.). Routledge. https://doi-org.tudelft.idm.oclc.org/10.4324/9781315722931

Simpson, J. A., & Weiner, E. S. C. (Eds.). (1989). The Oxford English Dictionary (2nd ed., Vols. 1–20). Clarendon Press.

Touw, K. (2006). Firmitas re-visited: Permanence in Contemporary Architecture. http://etd.uwaterloo.ca/etd/kltouw2006.pdf

Stuer, H. (2023). Reimagining permanence in architecture: How adaptable and circular design principles can enhance the value and durability of buildings (Student
report). Delft University of Technology. https://resolver.tudelft.nl/uuid:a7f5fbb0-51f847b4-ae35-4dc893b8d95e

United Nations Economic Commission for Europe. (2023). Circularity concepts in wood construction. Geneva Timber and Forest Study Papers.
https://doi.org/10.18356/9789210024174

United Nations Environment Programme (2024). Global Status Report for Buildings and Construction: Beyond foundations:Mainstreaming sustainable solutions to cut emissions from the buildings sector. Nairobi.
https://doi.org/10.59117/20.500.11822/45095.

Precedents:

(Case Studies, the buildings that achieved a layered permanence)

Tamedia Office, Zurich, CH
Ise-Jingu, Ise, JP

Cardboard Cathedral, Christchurch, NZ Matrix
One, Amsterdam, NL

Reflection

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

My graduation project focuses on redefining the concept of "permanence" in architecture through timber-based construction. This work is rooted in the Architectural Engineering studio's emphasis on addressing contemporary challenges with innovative technical solutions. The studio's research-by-design domains—'Make,'
'Flow,' and 'Stock'—align closely with my approach. My project falls under the Flow domain, emphasizing dynamic adaptability, resource circulation, and the integration of materials and systems into continuous cycles. The 'Make' domain is also reflected in the structural prototyping and testing methods employed to explore adaptability dimensions.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

The construction industry's significant environmental impact highlights the urgency of rethinking building design and material use. My work contributes to this conversation by exploring how timber, as a sustainable material, can extend the physical, social, and functional lifespans of buildings, challenging the current problem of disposability. Through this, the project not only addresses environmental concerns but also advocates for a cultural shift in how we perceive and design for permanence in architecture.