

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@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	Kim van den Bosch
Student number	4660404

Studio		
Name / Theme	Technologies & Aesthetics Form Studies & Design of Construction	
Main mentor	Geert Coumans	Architecture
Second mentor	Claudia van Leest	Building Technology
Argumentation of choice of the studio	The choice for the Technologies & Aesthetics graduation studio is driven by its distinctive pilot nature, offering students the freedom to shape the studio based on personal interests. The studio's emphasis on climate change aligns with the evolving architectural landscape, providing valuable insights into real-world challenges. Particularly intriguing is the focus on biobased building materials within the 'material' pillar, aligning with my passion for sustainable architecture. This choice ensures a purposeful and relevant engagement with the studio's objectives.	

Graduation project	
Title of the graduation project	Sensory Synergy <i>in the landscape of Groningen</i>
Goal	
Location:	Lauwersoog, Groningen, the Netherlands
The posed problem,	The prevailing dominance of the visual sense in architectural discourse has led to a significant oversight in the comprehensive understanding of sensory architecture. The problem at hand questions whether aesthetics in architecture is solely visual or if it involves other senses as well. By exploring this issue, the study aims to emphasize the significance of multi-sensory architectural design, proposing

	a more inclusive approach to aesthetics. The goal is to redefine traditional views and create opportunities for enhancing architectural experiences beyond visual perception.
research questions and	How can architecture enrich the overall user experience by actively engaging each of the human senses?
design assignment in which these result.	The design proposal is crafted based on thorough research into sensory perception, specifically exploring the inherent sensory attributes of the Lauwerslake area. This comprehensive investigation has led to the development of a program and corresponding design strategies. The material research complements these efforts, providing valuable insights into utilizing materials for an enhanced sensory experience. Moving forward, the design assignment will delve into the particulars of the Sensory Gallery and Artist in Residence studios. It will illuminate the identified target group and articulate design guidelines drawn from the extensive material and sensory research conducted.

Process

Method description

This research will be carried out using multiple research methods. Existing theories will serve as a guideline for developing arguments and defining key concepts within the research. Literature review will be conducted to gain insights into these existing theories and to gather information regarding sensory perception. Given the experience based nature of the subject matter, a part of the research will be executed through a carefully designed experiment.

Literature Review

The literature review to be undertaken in this research is used to gain a basic understanding in sensory perception. Furthermore, the defining of guidelines for multi-sensory user experience will rely on established theories, such as J.J. Gibson’s influential work on ecological perception theory (1981).

Finally, multi-sensory design strategies will be examined to facilitate the translation of these theoretical foundations into practical design strategies. This comprehensive literature review will provide a knowledge base for the forthcoming research, bridging the domains of material science, sensory perception, and architectural design.

Experimenting

An experiment will be conducted to gain deeper insights into the tactile experience of several carefully selected materials. The research of Dümen et al. (2022) offers a method for evaluating haptic or tactile material qualities. Participants can touch, lift or apply pressure to the material samples, therefore experiencing its texture, temperature, hardness, stiffness, elasticity and weight. Therefore, a total of 30 participants, from varying ages, will be presented with 18 material samples. The participants will have all other senses shielded, so that the results are fully based on tactile perception. The findings could provide insights for designing with a focus on the tactile sense.

Site Analysis

When endeavoring to integrate sensory qualities into a design, understanding the specific sensory characteristics of the design location is crucial. In this context, the design location of Lauwerslake in Groningen underwent a comprehensive analysis. Utilizing sensory mapping as a valuable tool, the location was examined for sounds, views, touch, smells, and tastes. This holistic approach ensures a nuanced understanding of the sensory landscape, aiding in the effective incorporation of these qualities into the overall design.

Literature and general practical references

The framework of the research forms the primary review of existing theories, serving as a guideline for developing arguments within the research. To establish a strong foundation, key concepts will be defined.

User perception

According to J.J. Gibson's ecological perception theory (1981), individuals perceive their environment solely based on the information it offers and make precise judgments according to the sensory information they receive. It suggests that perception is an active process influenced by the properties of the environment (Ben-Ze'ev, 1981).

In the context of the research, this theory could emphasize the importance of sensory qualities to the user's perception.

Multi-sensory

The term multi-sensory is, according to Vermeersch's PhD dissertation *Less Vision, More Senses. Towards a More Multisensory Design Approach* (2013), expanded from adding various senses together to the interplay of those senses. These senses can be understood as the five traditional main senses: "the sense of sight, the sense of hearing, the sense of touch, the sense of taste, and the sense of smell." (Maclachlan 1989, p. 3) Though other senses have been added, such as the sense of temperature, the sense of pain, the kinaesthetic sense, which involves various parts of our bodies.

Multi-sensory design

Multi-sensory design is defined by Schifferstein's publication Multi sensory design (2011) and claims that designers are more likely to achieve success in creating deliberate experiences for individuals, such as feelings of delight, trust, or care, when they possess an awareness of the messages communicated through various senses and understand how these messages contribute to the overall experience.

Sensory quality

Quality refers to the extent to which an object or entity meets a defined set of characteristics or standards. According to the research of Dümen et al. *Unfolding the material: A proposal of a multi-sensory experience oriented material exhibition medium* (2022), sensory evaluation methods can be used to determine if a materials meets these sensory qualities.

Many philosophers, however, doubt that one can provide any successful explanation of sensory qualities - of how things look, feel, or seem to a perceiving subject.

User experience

User experience can be defined as a user's perceptions and response, resulting from the user or anticipated use of a product, service, system, or space. User experience includes user's emotions, beliefs, responses, preferences, responses, and accomplishments before, during and after use (Vermeersch, 2013).

Experience with a product or a space occurs via various interfaces and one significant interface is the material (Dümen et al., 2022). Material experience can be defined into experiential levels: sensorial (sensory properties of materials), interpretive (associated values), affective (evoked emotions) and performative (referring to the human interaction).

Bibliography:

Ben-Ze'ev, A. (1981). J.J. Gibson and the ecological approach to perception. *Studies in History and Philosophy of Science*, 12(2), 107–139. [https://doi.org/10.1016/0039-3681\(81\)90016-9](https://doi.org/10.1016/0039-3681(81)90016-9)

Dümen, A. Ş., Koyaz, M., & Çeliker-Cenger, Y. (2022). Unfolding the material: A proposal of a multi-sensory experience oriented material exhibition medium. *Materials & Design*, 219, 110740. <https://doi.org/10.1016/j.matdes.2022.110740>

Maclachlan, D. L. C. (1989). *Philosophy of Perception*. Prentice Hall.

Pallasmaa, J. (1996). *The eyes of the skin: architecture and the senses*. <https://ixtheo.de/Record/1651593418>

Schifferstein, H. N. (2011). Multi sensory design. *Network Conference on Creativity and Innovation in Design*. <https://doi.org/10.1145/2079216.2079270>

Vermeersch, P. W. (1997). *Less Vision, More Senses. Towards a More Multisensory Design Approach* [PhD dissertation]. Katholieke Universiteit Leuven.

Apart from these theories, additional literature will be employed for the research.

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)?

The overarching theme of my graduation project aligns seamlessly with the studio's focus on climate change and the evolving demands on material use. While the studio explores technical design innovations in response to climate challenges, my research delves into a critical aspect often overshadowed in architectural discourse—the sensory dimension. Specifically, my investigation questions the predominant visual-centric approach to architectural aesthetics and advocates for a more inclusive understanding that engages all senses. This aligns with the studio's goal of exploring the architectural form language in relation to landscape and climate.

In the MSc AUBS Architecture track, this dual exploration reinforces the importance of an approach to design, in which technical advancements and sensory considerations converge to shape the future of architectural language. The emphasis on experimentation, digital and physical models, and collaborative research aligns with the studio's methodology, offering a comprehensive framework for developing innovative and responsive architectural solutions.

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

My graduation work, centered on broadening architectural aesthetics to encompass multisensory experiences, is relevant across social, professional, and scientific dimensions. In the social realm, it contributes to the creation of inclusive spaces, acknowledging and accommodating diverse human experiences within the built environment. On a professional level, the research addresses a pivotal gap in architectural discourse by advocating for a departure from exclusive visual dominance, fostering a more comprehensive approach to design. Importantly, the material-focused research integrated into this work adds a crucial scientific dimension. By systematically exploring the properties, innovations, and applications of materials in the context of sensory design, this research contributes to the scientific understanding of how material choices impact the sensory experience. This dual emphasis on aesthetics and material science underscores the comprehensive and interdisciplinary nature of the research, enriching its contributions to the broader discourse on architectural design.