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	Tzu-Shou (Ferrari) Huang
Student number	5915600

Studio	
Name / Theme	AR3AP100 2024-25 Public Building Graduation Studio "Public Condenser, Copenhagen"
Main mentor	Henk Bultstra
Second mentor	Florian Eckhardt
Third mentor	Sien Van Dam

Main mentor	Henk Bultstra	Project Design
Second mentor	Florian Eckhardt	Building Technology
Third mentor	Sien Van Dam	Theory and Delineation

Argumentation of choice of the studio. Initial Topic Interest in Power, Politics, the marginalized community, "the Ghetto	**Copenhagen: The World's Happiest City?** Copenhagen is celebrated as a global model of sustainability and innovation, often referred to as the "Happiest Place in the World" by the World Happiness Report since 2012. However, beneath this polished facade lies a "parallel society." Despite Denmark's robust welfare state, established in the 1950s to provide healthcare, education, social housing, and unemployment support, disparities persist. This research examines the political and urban transformations catalyzed by historical events like World War II, the Oil Crisis, and periods of economic stagnation. These events shifted governance from left- to right-wing, intertwining neoliberal policies with the welfare state. Privatization, gentrification, and industrial evolution reshaped urban spaces, marginalizing communities now labeled as "ghettos" and "parallel societies" in the Danish Ministry's controversial 2010 "Ghetto List." **Media Portrayal** The research also investigates media portrayals of Copenhagen, revealing a dichotomy. International media often highlights the city's innovation and privatization projects, such as By & Havn and the Lynetteholm extension. In contrast, local media portrays marginalized communities, such as Amagervest (site), in a negative light, emphasizing social issues like violence, drug use, and inadequate housing. How can we fix this?

Graduation project	
Title of the graduation project	Our Stories Begins with a "Seed": The Public Condenser to nurture, learn and grow

Goal	
Location:	Sundholm 46, 2300 Copenhagen, Denmark
The posed problem,	**Sundholm Amagervest: Marginalized Communities in Transition** Sundholm Amagervest, labelled a "ghetto," is home to marginalized communities, including immigrants, low-income families, refugees, and asylum seekers. Residents face unstable housing, poor education, and limited employment, undermining their hard power. Stigmatization and negative media portrayals further erode their soft power. Many residents work in undervalued low-wage sectors, while government programs aim to integrate them economically and reduce welfare dependency. Despite decades of revitalization efforts, minimal political support has stalled progress. While some residents resist integration and revitalization, others advocate for enhancing community assets like the machine hall and city garden. This research explores how media narratives can shift by highlighting positive role models and fostering societal change, positioning children as symbols of the future and "good citizens." **Hard and Soft Power Framework** Transforming Sundholm requires a phased approach. Hard power focuses on immediate improvements to housing, education, healthcare, transportation, and employment. Soft power builds on these foundations by fostering community identity through cultural initiatives, public art, and resident-led projects. Together, these efforts aim to redefine Sundholm as a vibrant, inclusive part of Copenhagen. **Resistance and Public Protests** Resistance to restrictive policies, such as the Alien Act, has spurred protests throughout the 20th century. A prominent example is opposition to the Ørestad Fælled Kvarter project in Amager Fælled, where activists have defended local biodiversity against urban development, highlighting the tension between growth and preservation. This research aims to develop design strategies that address Sundholm's challenges while fostering resilience, inclusivity, and sustainability.

research questions and	**Main Research Question:**
	How can we design an inclusive public condenser that reshapes Sundholm's identity as a hub for growth, learning, and ecological stewardship?
	
	Sub-Questions:
	
	    1. How can an ecological "Green Mile" reframe Sundholm Amager Vest's "parallel society" narrative?
	    2. How can architectural design promote mental well-being for children, community role models, and parents facing mental health challenges?
	    3. What design strategies can establish a self-sustaining ecosystem within the Green Mile, balancing biodiversity, native species conservation, and the needs of human and non-human inhabitants?

design assignment in which this result.	**Environmental Considerations and Design Approach** Environmental sustainability is dynamic and evolving. Spatial design and activities must actively raise user awareness about energy and sustainability. To create a sustainable future for Sundholm, the design integrates three key dimensions: • **Environmental Sustainability**: Deeply connected to nature, climate health, and human well-being. • **Social Sustainability**: Fosters cultural vibrancy, education, and community connection. • **Economic Sustainability**: Prioritizes resource efficiency, job creation, and long-term growth. **The Public Condenser: Redefining Spaces of Refuge** The Public Condenser is a hybrid design where architecture, nature, and community intersect to promote mental well-being, education, and social cohesion. This approach extends beyond human needs, creating a green space that serves as a refuge for non-humans; plants, insects, and wildlife—a living system supporting biodiversity. **Project Components** 1. **The Green Mile** At an urban scale, the Green Mile connects Ørestad Fælledby, the University, and Sundholm. It is an inclusive space fostering ecological awareness and community bonds. 2. **The Public Condenser Building** A vibrant gathering space for humans and wildlife, using bio-based materials and design elements for plant and animal integration. It promotes interaction with nature and inclusivity for all inhabitants. 3. **Collaboration with MIT Senseable Lab** A prototype developed in partnership with MIT Senseable Lab will launch in Amsterdam in May. It monitors biodiversity using cutting-

	edge technologies, enhancing ecological awareness and setting a standard for urban sustainability.

Process **Method description**	

Research by Design/Design by Research

Data Collection:
Fieldwork in Copenhagen involved interviews, observations, and socio-spatial mapping. These methods identified Sundholm's community needs, focusing on socio-demographic challenges, mental health, and integration barriers.

Social Data Analysis:
Data on Sundholm's demographics—mental health, age, illness, addiction, integration, and education gaps—will be digitized and analyzed to reveal spatial patterns critical to the Public Condenser's design.

Theoretical Framework:

1. **Education through Play**
   Drawing on Henri Lefebvre, Johan Huizinga, Paulo Freire, and Reggio Emilia, the research examines how interactive spaces enhance cognitive learning and social integration, particularly for vulnerable populations.
2. **Healing through Nature**
   Inspired by Roger Ulrich, Clare Cooper Marcus, and Rachel Kaplan, the research emphasizes biophilic design, incorporating natural light, greenery, and sensory elements to support mental health. The design employs bio-based materials and seamless indoor-outdoor spaces for restorative effects.
3. **Biodiversity: A Place to Nest**
   The design includes pollinator gardens, bird nesting structures, bat habitats, and community gardens for human and non-human inhabitants. Workshops for constructing bird nests extend sustainability initiatives to the wider neighborhood, creating green corridors linking biodiversity hotspots.

Literature and general practical references

The research focuses on how architectural spaces are conceived, experienced, and contextualized within socio-political, educational, and material frameworks. Key themes include the transformation of political power, the role of education and play in fostering learning, and sustainable design strategies. *Architectures of Dismantling and Restructuring: Spaces of Danish Welfare (2022)* provides insights into how architecture responds to shifts in welfare states and neoliberal restructuring. Johan Huizinga's *Homo Ludens (1955)* emphasizes play as a fundamental cultural and educational activity that drives creativity and interaction, while Reggie Miller explores the role of playful environments in enhancing engagement and learning outcomes. Chartier Dalix's *Accueillir le Vivant: L'Architecture Comme Ecosystème (2022)* highlights how integrating ecosystems into design can create sustainable, life-supporting environments. Public space typologies are explored through projects such as Koolhaas' Seattle Library and Stan Allen's *Architecture's New Terrain,* which analyze hybridized landscapes that merge function and identity. Case studies like the Yokohama Port Terminal and the EPFL Rolex Learning Centre provide additional perspectives on innovative typologies. Together, these references shape a methodology that blends socio-political critique, educational theory, and sustainable design to inform the creation of transformative and inclusive public spaces.

Neo-liberal and Welfare State architecture

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Education and Psychology and Play

-Dijkstra, Rients, Jason Hilgefort, Markus Miessen, Katherine Rosmalen, Daniel van der Velden, Bart Verschaffel, Linda Vlassenrood, Huib Haye van der Werf, Ester van der Wiel, and Jurgen Bey. The Architecture of Knowledge: The Library of the Future. Rotterdam: NAi Publishers, 2010.
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Nature and Architecture materials and Construction Methods
-   Smout, Mark, Laura Allen and Neil Spiller. Augmented Landscapes: Smout Allen. New York: Princeton Architectural Press, 2007.
    Corner, James. "The Agency of Mapping." In Landscape Imagination: Collected Essays of James Corner 1990-2010, edited by Alison Bick Hirsch, 197-240. New York: Princeton Architectural Press, 2014. ProQuest Ebook Central.

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)?

Graduation Project Overview

My graduation project aligns closely with the themes of my studio, master track, and MSc AUBS program by focusing on restoration, reuse, and the reimagining of existing spaces. Drawing inspiration from Japanese philosophies such as *wabi-sabi* and *kintsugi*, the project emphasizes finding beauty in imperfection and prioritizing design for marginalized communities over affluent ones.

A central component of the project is creating inclusive spaces that foster learning and play. Informed by neuroscience, the design encourages intergenerational interaction and connection, cultivating environments where children can learn and play while parents gather. By integrating these elements, the project promotes social cohesion and meaningful community engagement.

2. Relevance of the Graduation Work in the Larger Social, Professional, and Scientific Framework

Social and Professional Relevance
This research addresses pressing challenges in urban densification, the integration of marginalized communities, and sustainable design. By promoting inclusive design that considers diverse social needs and preferences in public spaces, the project seeks to balance multiple programmatic functions that foster social cohesion.

Scientific Relevance: Collaboration with MIT Senseable Lab
From a scientific perspective, the project integrates cutting-edge research in collaboration with MIT Senseable Lab. By April, a prototype will be developed and deployed in Amsterdam to monitor and track local biodiversity. This initiative aims to foster ecological awareness and advance urban sustainability through the use of advanced sensing technologies.

By setting a benchmark for city-centered biodiversity stewardship, the project underscores the importance of ecological health in urban design. The collaboration with MIT Senseable Lab highlights the potential for interdisciplinary partnerships to drive innovative, scalable solutions for urban sustainability.

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Planning

P2–P3:
Post-P2, the design will be refined based on feedback, addressing programmatic configuration, façade development, and circular design integration. Emphasis will be placed on spatial relationships and the connection between existing and new architectural elements. The design will evolve from conceptual layouts to detailed plans, sections, and elevations (scales 1:500 to 1:50), prioritizing functionality and interaction. By P3, the architectural framework will be prepared for detailed material and energy considerations.

P3–P4:
This phase focuses on detailed development, incorporating programmatic elements and materialization guided by transformative design research and reference projects. Façade fragments, construction details, and material strategies will be refined to prioritize sustainability and functionality. Diagrams and plans addressing energy performance, climate control, and construction will ensure design feasibility and coherence.

P4–P5:
The final stage includes detailed construction drawings, refined material choices, and a scaled physical model. These deliverables will articulate the project's architectural intent, sustainability objectives, and functionality. Final adjustments will resolve all design aspects for evaluation.