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	Amanda Hwa De Ai
Student number	5720494

Studio		
Name / Theme	AR3MET105 A Matter of Scale	
Main mentor	Klaske Havik	Architecture
Second mentor	Pierre Jennen	Building Technology
Argumentation of choice of the studio	I chose this studio because of the proposed framework that encourages the use of different methods during the process of research and design. I particularly want to explore how imageries and digital representations of architecture influenced our perception of material and physical space.	

Graduation project	
Title of the graduation project	Reframing Imageries of Industrial Surplus
Goal	
Location:	Maleva Quarter, Kopli, Tallinn, Estonia
The posed problem,	The Kopli peninsular was developed during the industrialization period under the rule of the Tsarist Empire and Soviet Union. It was planned as a large urban plan for military production, including supporting facilities such as vocational training facilities, worker houses and a brick factory. After Estonia's independence and the gradual shift into service-based industries, the extinction of the industrial landscape left behind patches of dysfunctional space that are up for grabs for private developers or anyone who cared to appropriate the space. Despite being by-products generated from modernization, industrial surplus is deemed functionless - the

	remainder of what is useful, and thereby valueless. These 'gaps' between developed areas should not become permanent forms of waste in the urban fabric but rather be reframed as valuable aspects of our urban ecosystem.
research questions and	An intensive study into the existing material and landscape would reveal the unrealized potential of surplus spaces. What are the textures and physical properties of surplus spaces? What are the existing values that can be reorganized to stimulate engagement between observers and materials of waste? How do different approaches add value and reframe perceptions of waste?
design assignment in which these result.	Today, construction waste in Tallinn mainly goes into landfills and reclaimed land, with less than twenty per cent recycled as building material. Thus, the design assignment aims to discover ways to reuse waste materials excavated from the industrial landscape and give them new meaning. The proposed program of a recycled brick production complex utilizes the brick factories left behind after the depletion of the local clay quarry and formalizes the practice of urban mining in Tallinn. Urban mining counters the adverse effects of demolition and excessive construction waste, ensuring that building materials are sourced sustainably from existing building stock. By incorporating waste material in designing fringe spaces, this design project aims to create value from previously unimportant places and functionless objects. The complex includes facilities for industrial research and production while housing exhibition halls and showrooms open to the public. Surrounding fringe spaces such as the

	adjacent landfill and train tracks are incorporated in the masterplan design.

[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 key design technique I would like to implement is urban mining - the reclamation of construction waste, from harvesting existing urban stock to their application as building materials in modern construction practices. Initial research into Maleva Quarter reveals the potential of reusing mineral materials in the project such as brick, ceramic and rammed earth, due to suitable raw materials found on site. A detailed harvest map would be produced in P3 to document building materials present for further design.

Then, an investigation of said materials would lead to methods of reusing, recycling and downcycling construction waste. The architecture design of my graduation work would stem from the limitations and properties of the materials harvested from the site. These methods would result in a material-focused design, much like spolia - where the structure of old buildings becomes decorative elements in more recent construction. The expression of the old material is also aligned with the program of a brick production facility that functions both as a factory and showroom.

Literature and general practical references

The concept of urban mining is well-established in the Netherlands and Belgium, pioneered by companies such as Superuse and RotorDC. Many researchers have also studied the various issues concerning the use of construction waste as building material such as its structural integrity and other limitations. Some companies also specialize in supplying sustainable materials such as recycled brick, earth-based plasters and waste collection centers. Existing data and knowledge regarding waste material would be consulted and tested in the context of my graduation work.

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)?

By considering industrial surplus at different scales such as the urban masterplan, architectural form and materiality, my graduation work would reflect the knowledge I obtained from various studios and courses during my master track.

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

With the rise of environmental consciousness, sustainability and material circularity are key issues in the current construction landscape. As seen in Tallinn, there is increasing awareness of the use and disposal of resources among architects, developers and government authorities. My graduation work is part of this collective effort to ensure that we maximize the potential of depleting building materials and negate the negative impacts of our industry.