

# aE journal

NR 14 2024/2025

Graduation **Architectural Engineering**

## What open design can do

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Building your own story **Alumni Interviews** p. 22-23



**Benjamin Bomben  
nominated for  
Archiprix 2023**



**aE alumni  
interview:** building  
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**15 years of aE!**  
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Students rethink Industrial  
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Atelier Rijksbouwmeester

**Discover student projects,  
design approaches & more!**

# News aE in action

## What open design can do 15 years of aE

Last summer, the Day of the New Architect provided us with a good reason to reflect on the 15 years of aE, assess our development in Architecture and Technology and identify opportunities for the future. How are we passing on knowledge, and where do our alumni go from there? What skills do students nowadays require for their professional lives?

### Form follows Technology

Initially, aE focused heavily on developments in technical and manufacturing domains. For example, early projects emphasized the polyvalent facade and the possibilities of parametric design. For students, this inspired the creation of industrially engineered projects where the beauty of these projects lay in the architectural translation of engineering concepts. They were characterized by the principle of form follows function, dictated by the technology deployed and the ideology of the time, resulting in unique and exceptional designs.

### Design as research

With the growing emphasis on sustainability and significant social challenges we must face, our approach has evolved. Navigating through technical possibilities and exploring their holistic potential became the central methodology of the studio.

This systemic approach led to numerous inspiring projects, such as transforming the industrial city of Parkstad into Garden City 2.0, learning from do-it-yourself initiatives and community-based strategies in Bandung/Indonesia, and harnessing innovation for the Marineterrein in Amsterdam. Various experimental sites and living labs in both rural, and urban environments across the globe have served as inspiration for developing strategies and visions for these projects.

Moreover, we engaged with stakeholders like the Amsterdam Medical Centre and the government to explore case studies from their existing building stocks. Students investigated opportunities for renewal within these vast structures, focusing on benefits for users, the community, and the very architecture of these constructions.

### What open design can do

Both existing building structures and new building systems have become architectural experiments. Emphasizing circular and adaptive design opens opportunities to enhance the sustainability of construction. How can intelligent standardisation lead to quality architecture? What material applications are conceivable? What expression is possible?

In Open Building (p. 6), we explore the structure and components, their coherence, and quality. In Second Life (p. 14), the focus shifts to strategies addressing social issues like social cohesion, energy transition, and biodiversity. Harvest (p. 18) considers ecosystems, material use, and flows, in relation to reuse and renewable resources for creating quality architecture.

Across all scales, the Paris goals are rigorously examined, from structure to nail. This makes tools like parametric design and solutions such as the polyvalent facade more relevant than ever. However, as designers, we must add meaning and value to these tools and solutions, connecting to both the context and the user needs and setting the parameters for good design.



## Archiprix 2023

aE Studio Nominee



aE Studio student Benjamin Bomben has been nominated for the National Archiprix 2024 competition with his project Hybrid Adaptability (see page 7). The project proposes an innovative prefabricated timber system to meet the expanding need for student housing on the TU Delft Campus, transforming underused parking spaces into timber student housing through an optimized, modular building method.

## CBE Award 2023

aE Studio Winner



aE Studio student Yeonghwa Choe has been elected as one of the two winners of the CBE Award 2024, in the category Buildings & Neighbourhoods. The Circularity in the Built Environment award recognizes the contribution BK graduation students make to the transition towards a circular built environment. Yeonghwa's design proposal consists in reusing a Korean modernist concrete high-rise apartment typology, for which he has designed an easy-to-assemble modular infill system (see p. 9).

## NPR Award

aE Studio Nominee



The National Renovation Platform (NRP) Award 2023 recognizes exceptional renovation graduation projects across the Netherlands. aE student Minh Nguyen was one of the 5 national nominees with his project Rural Wind Hub (see p. 19). Minh's study addresses the relevant question of waste related to renewable energy, namely, old wind turbine blades. His project suggests low-impact solutions for their re-use, focusing on life extension over recycling to save energy.

aE in action **News****Collaborations**

With the Office of the Chief Government Architect



aE students gathered for an afternoon meeting with the office of the Chief Government Architect, known as Atelier Rijksbouwmeester, to discuss industrial housing. The conversation ranged from sustainability to the often lacking “sense of place.” Topics like modularity and standardization were juxtaposed with spatial quality, adaptability, and identity, aiming to address today’s stringent housing needs effectively.

Later, Willem Hein Schenk, the former city architect of Haarlem, presented plans for reviving Haarlem’s Boerhaavewijk neighborhood. This late Post-War area is in need of social and technological upgrades, which provides a valuable opportunity for student projects focused on Post-65’ heritage.

**Exhibitions**

The future of post-war housing in Schalkwijk



A lecture-debate and exhibition event took place at the ABC Architecture Centre in Haarlem to discuss the future of the Schalkwijk area. The exhibition featured projects from TU Delft and TU Eindhoven students. Haarlem’s (former) city architect Willem Hein Schenk gave a presentation about the challenges the area faces, as well as Anne Sniijders and Daryl Mullhivil who introduced student works. Various stakeholders were present, including housing associations, architects, and municipality representatives. Through conversation, fresh insights were gained over themes such as densification, sustainability, demolition, public space enhancement, and community involvement, which helped to generate relevant ideas and visions for the future of the district of Schalkwijk.

**Activities**

Field trips and exchange visits



**Picture above:** forest field trip to Crailo

**Picture below:** exchange with students from Geneva, working on TU Delft campus renewal.

**Day of the New Architect****Goodbye Professor Asselbergs**

Professor of Architectural Engineering Thijs Asselbergs has been leading the chair of Architectural Engineering for exactly 15 years. On the 4th of July in 2023 his crowdedly attended

farewell symposium called The Day of the New Architect, moderated by Indira van het Klooster of Arcam, took place in the orange hall of BK City.



During the first part of the symposium his colleagues, Anne Sniijders, Mo Smit and Marcel Bilow presented the academic highlights of Architectural Engineering, such as the development of education (BES, Architectural Engineering graduation studio) and connections made between practice, society and academia.

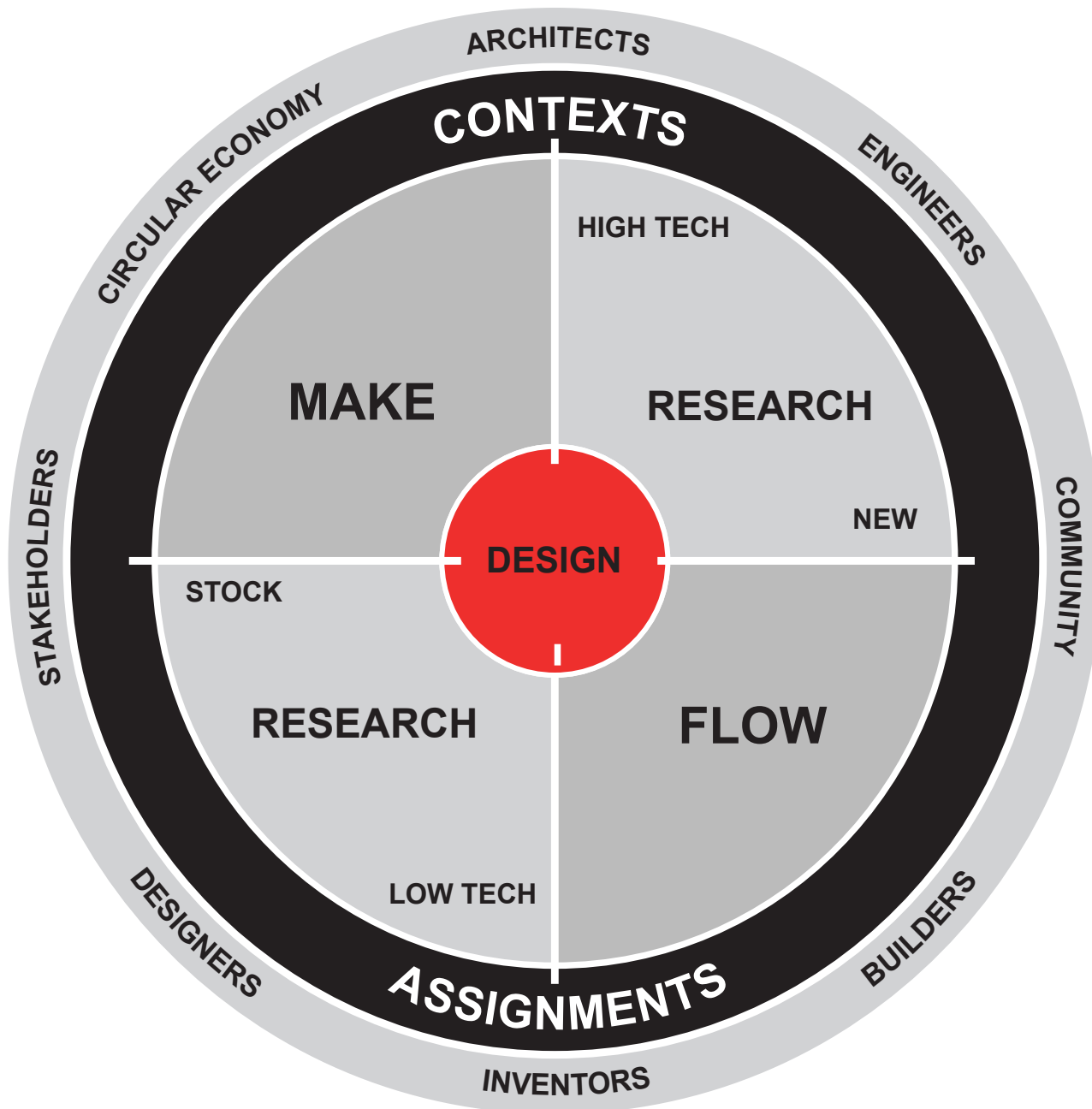
The second part of the afternoon was programmed with interesting contributions from the field of practice. Pieter Stoutjesdijk and Chris Aerts, former students of Thijs who both started their own companies in the field of digital manufacturing, made clear which role Thijs played in stimulating them to innovate the role of the architect within today’s design processes. Topics such as digitalisation, circularity and diversity were addressed in a series of lectures.

Thijs splendidly finished the symposium by reading his own farewell essay, About the New Architect, in which he positioned himself as a middle man of different generations and between theory and practice.

# Introduction aE Graduation Studio

## Approach

In the Architectural Engineering Graduation Studio we are looking for innovative solutions in engineered architectural design, while encouraging students to explore their role as architects in facing today's challenges. Understanding existing potentials, knowing the possibilities of renewal and discovering how to design, innovate and initiate change are central themes in the aE Graduation Studio. Under the guidance of a team of enthusiastic (guest) lecturers and tutors, students search for innovative technical solutions for diverse problems in various contexts. The three main research by design domains promoted in the aE studio are 'Make', 'Flow' and 'Stock', as described below on this page. Each domain requires a different approach and offers unique design solutions, while creating multiple value for the built environment together.



FLOW

In Flow we see buildings as structures interwoven with their wider system. The sustainable performance of buildings has everything to do with flows. Well managed flows of people and resources contribute to valuable, comfortable and healthy spaces and cities.



STOCK

Stock is about the potential of the existing by looking differently to what is already there, by making use of a technical fascination, in relation to current or future needs. Ideas for intervention can vary: the upgrade of existing housing stock, office buildings or product development of interiors.

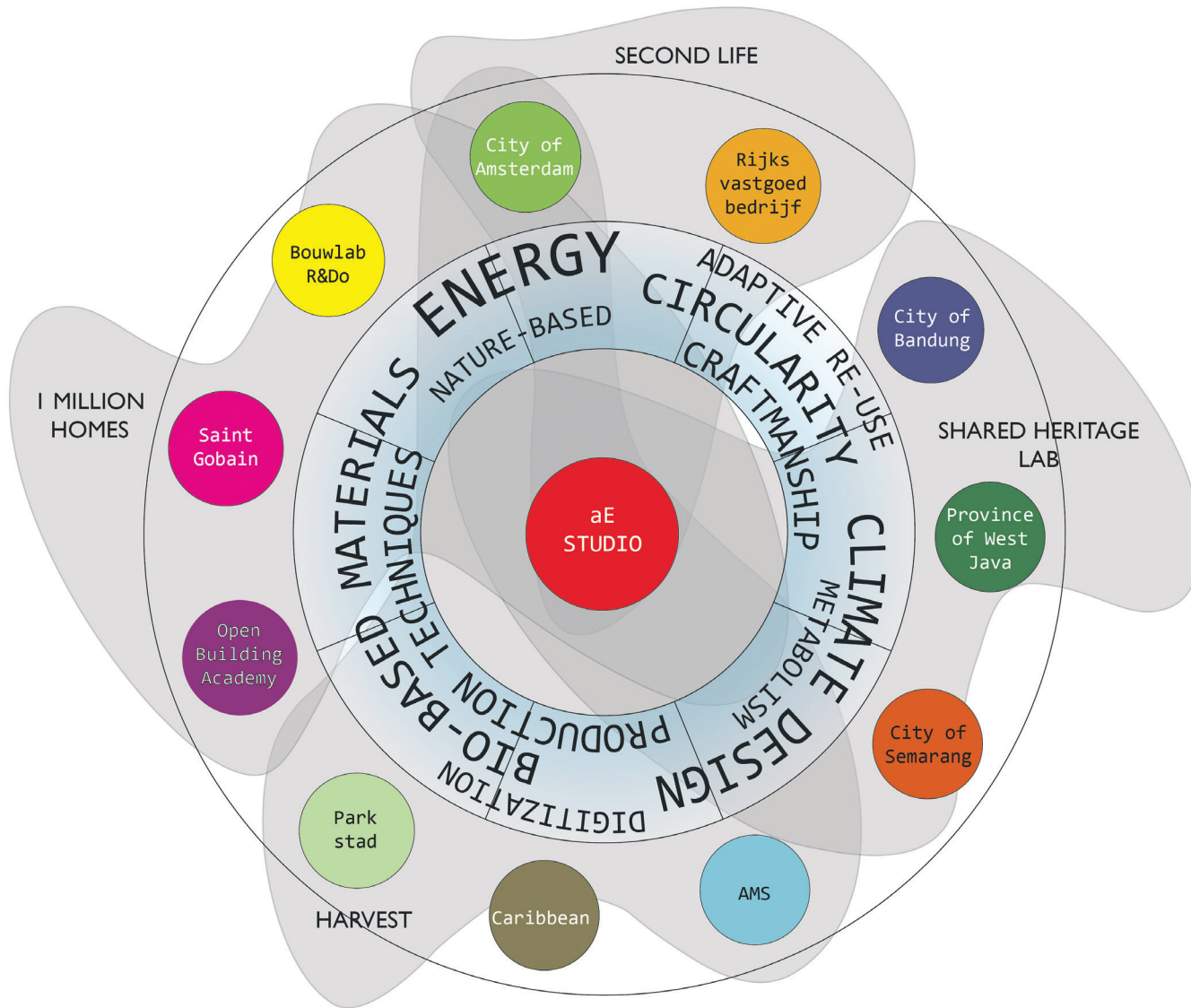


MAKE

Make is about new (digital) production methods, the (re)-use and development of materials and systems for existing and new applications. How do we change the future of our environment, our homes and our cities, using a bottom up approach towards a better and more sustainable future?

# Assignment Introduction

## Collaboration & Knowledge Exchange

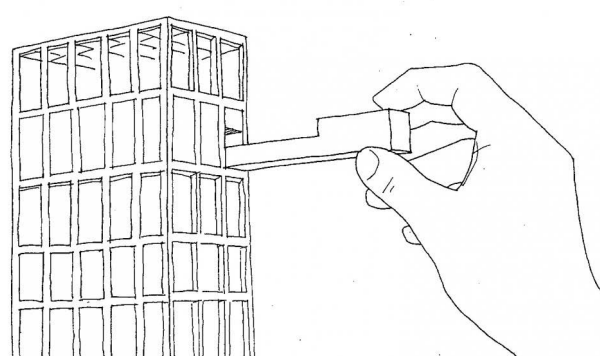


aE Graduation Studio combines design and technical innovation throughout all scales in architecture. In our Architectural Engineering program we seek innovative and inspiring architectural solutions for environmental and societal issues together with various stakeholders. With today's local and global challenges we are driven by the need to think differently about materials, craftsmanship, energy generation and efficiency, user participation and bottom-up or top-down approaches. In view of the current and constant changes of society, we need to see the built environment and the role of the architect in a new perspective. A vast amount of buildings are vacant and unused while a large percentage of the existing housing stock does not meet today's requirements. But also new buildings have to deal with changing circumstances. Smart and responsible solutions are therefore vital in refurbishing and designing new future-proof buildings.

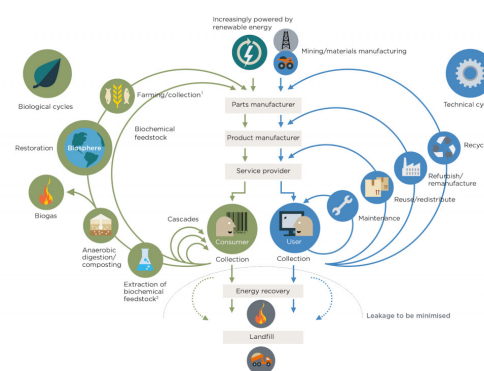
## Agenda



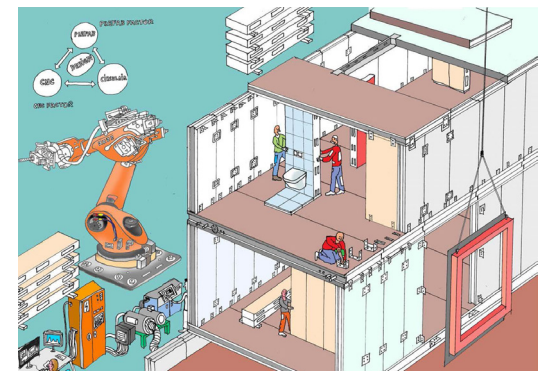
UN SUSTAINABLE DEVELOPMENT GOALS



OPEN BUILDING



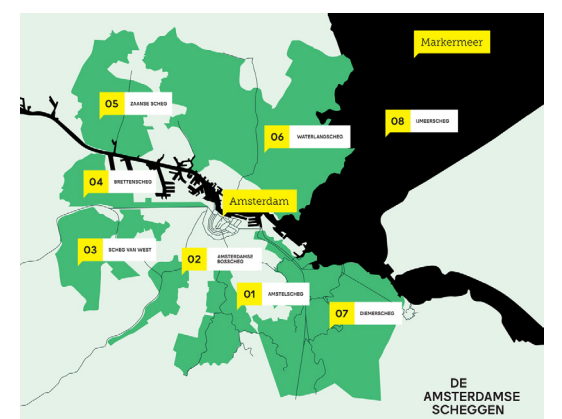
CIRCULARITY



DIGITALISATION



SECOND LIFE



HARVEST

# Program Open Building

## Adaptable Architecture

Industrial housing can help mitigate the housing shortage but tends to empower builders over residents, restricting housing adaptability. Can the “Open Building” concept, enhanced by digitization and automation, offer a sustainable housing solution while increasing flexibility resident input?

Industrial housing can alleviate the housing shortage but typically limits resident input and adaptability. Open Building, introduced by John Habraken in the 1960s, enables flexible, renewable housing by separating the structure (support) from the interior (infill), allowing easy modifications. Integrating this with digitization and automation promotes dynamic, resident-influenced designs and cost-effective mass customization.

To address housing needs, efficiently utilizing and transforming existing buildings is essential, alongside innovative financing and expanding mass customization to meet environmental goals and manage costs. Open Building research, particularly by aE studio graduates, is advancing adaptable living solutions. More details are available at [www.openbuilding.co/academy](http://www.openbuilding.co/academy).



### ENERGY EFFICIENCY

Mats Kolmas

The Komische Oper in central Berlin requires an extension to ensure its future performance capabilities. Amid an energy crisis, Berlin’s public buildings face severe inefficiencies, risking closure due to high operational costs. To address this, innovative solutions are sought. This theater’s design focuses on natural ventilation, mimicking light beams to engage users with Architectural Engineering’s playful essence.

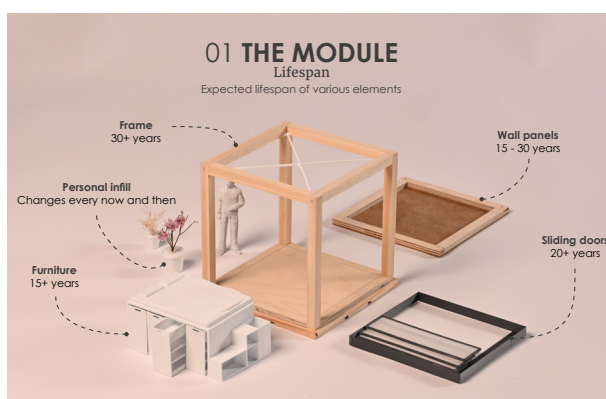
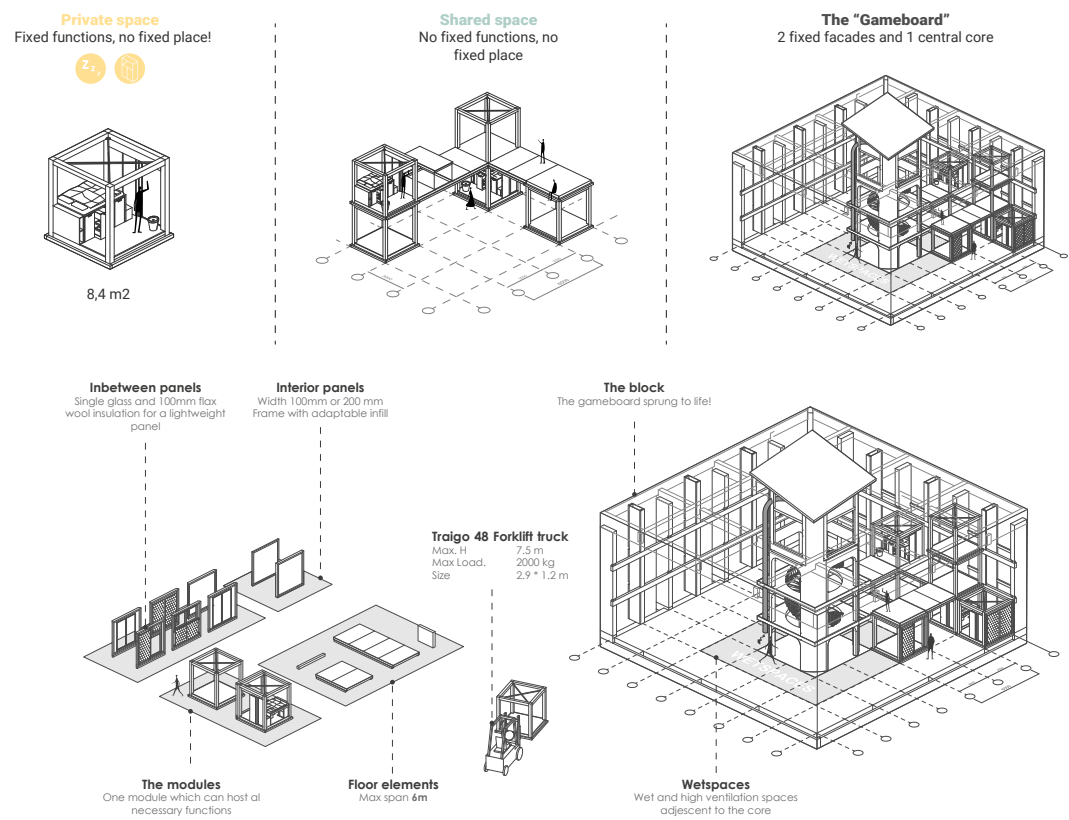


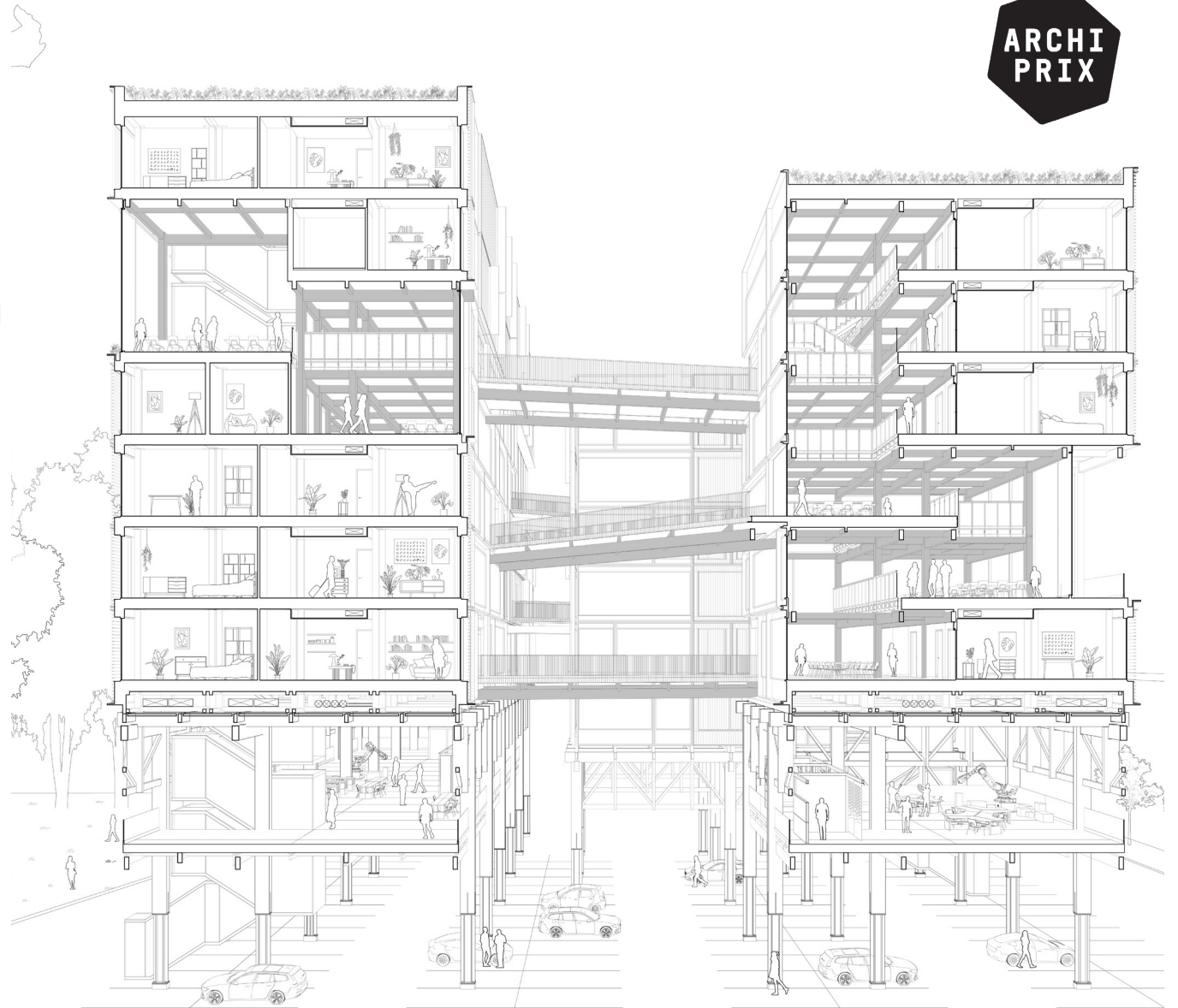
### ADAPTABLE CO-HOUSING



Daan Doelman

This project aims to address student loneliness through an innovative co-housing system. This co-housing system allows the building’s layout to adapt to the varying preferences of its inhabitants. By enabling residents to choose the extent to which they share their living spaces, it fosters social interaction and enhances both the social and spatial quality of their living experience. This approach results in a personal living environment where individuals have control over their level of communal engagement.

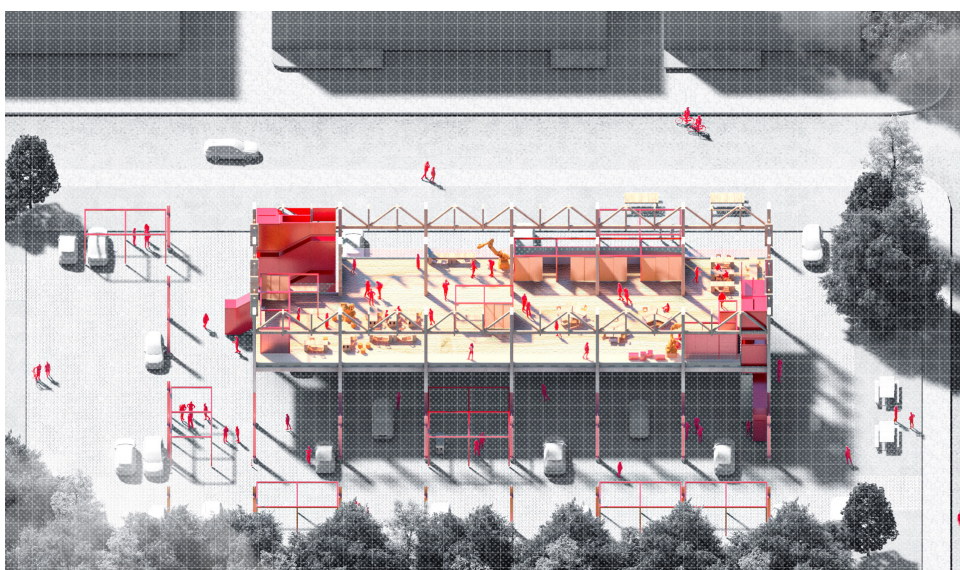




## HYBRID ADAPTABILITY

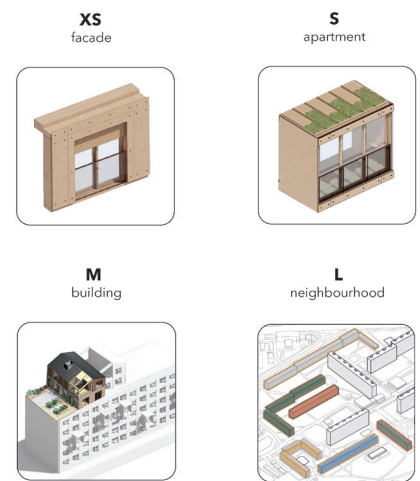
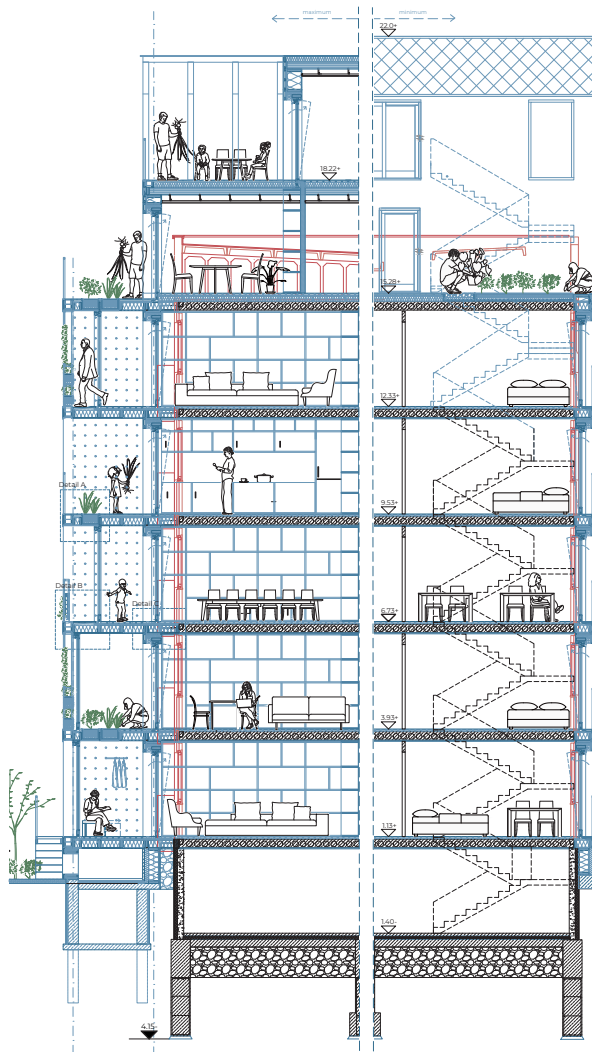
**Benjamin Bomben**

The project explores issues within the construction industry and TU Delft Campus. Looking to develop a prefabricated timber kit of parts system that is able to easily adapt to future social, environmental and economic contexts. The project explores the combination of 1D, 2D and 3D engineered timber systems in order to generate hybrid programmatic building typologies.



# Program Open Building

## Designing with Wood Components



### PLUG&LIVE



Marta Zapásnik

The focus of this project is to adapt Polish mass housing to diversifying lifestyles through modular architecture. Plug&Live design emphasizes adaptable architecture, prioritizing user-based selection and activating rooftops with greenery, energy production, and water harvesting. From XS (façade) to XL (country) scale, customization and expansion options empower residents while maintaining neighborhood identity and sustainability.



### LIVING LIGHTLY



Markus Chaez

The project addresses student housing scarcity by creating modular units that attach to existing buildings. These units, composed of bio-based fiber-reinforced polymer sandwich panels, are lightweight and adaptable, enabling easy integration without structural changes. Their flexible design accommodates diverse user needs, merging functionality with aesthetic appeal seamlessly.



### FORUM BOERHAAVE

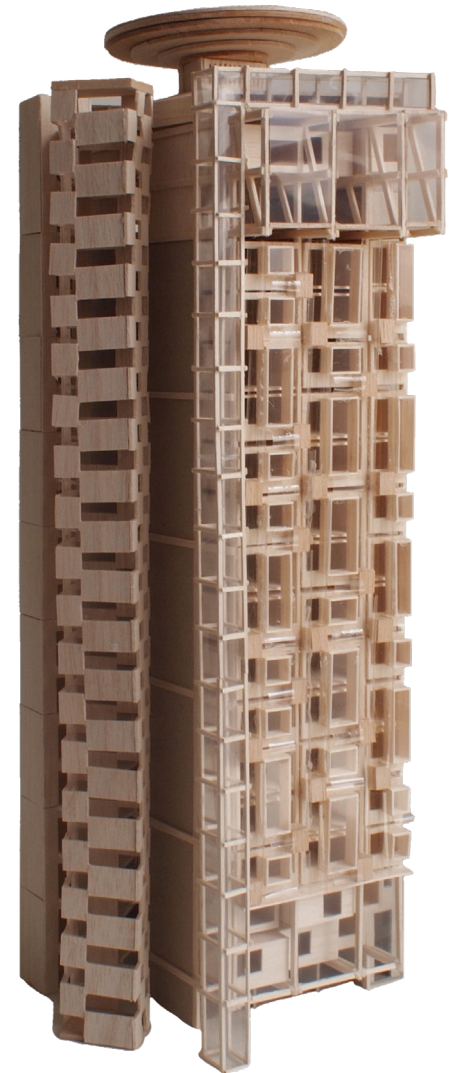


Leslie Ing

Forum Boerhaave is a community centre in Boerhaavewijk, linking the urban landscape to the Poelpolder. It is intended to be appropriated by the local population now and in the future, through its design based on Open Building principles. Harvesting and using local building materials, such as a space frame from Schiphol or a 3D-printed dredge from the river the Spaarne, a sustainable landmark is added to the neighbourhood.







**RE-LIVING THE CONCRETE CITY** 

**Yeonghwa Choe**

In the Post-Korean War in the 1960s, modernist concrete high-rise apartments, known as Apatu, were introduced to address South Korea's housing crisis. The culture of demolishing and rebuilding taller Apatu every 30 years persists. This project proposes reusing existing Apatu as vertical infrastructure, and adding a democratized infill system as an alternative reconstruction method.



**APRON CITY** 

**Tarik Alboustani**

This project explores system design in architecture, employing principles such as "Open Building" (as defined by John Habraken) and Herman Herzberger's Structuralism, within a computational framework. Structuralism differentiates the structure of a building from its infill. The project adapts an existing building through a new, innovative methodology. This approach is exemplified in the Marineterrein project in Amsterdam.



**CAMPUS VILLAGE DELFT** 

**Reinis Melgavis**

In response to the urgent need for student housing in Delft, this project aims to address the issue by prioritizing high-quality private spaces and fostering social connections among residents. The resulting project, Campus Village Delft, maximizes sunlight exposure, views and privacy while creating a sense of community. It uses thoughtfully designed collective spaces, connecting private dwellings of students through a collective courtyard.



**ADAPTABLE TIMBER COMPLEX** 

**Yanzhen Wu**

The project seeks to create a versatile timber complex, initially for student housing but adaptable to a mixed-use community. Climate considerations guide design for indoor-outdoor comfort. Flexible space plans and facades enable short-term adaptability and long-term transformation. Using timber frame and CLT panels, the design prioritizes durability and longevity with overhanging and breathing principles in facade details.

# Program Open Building

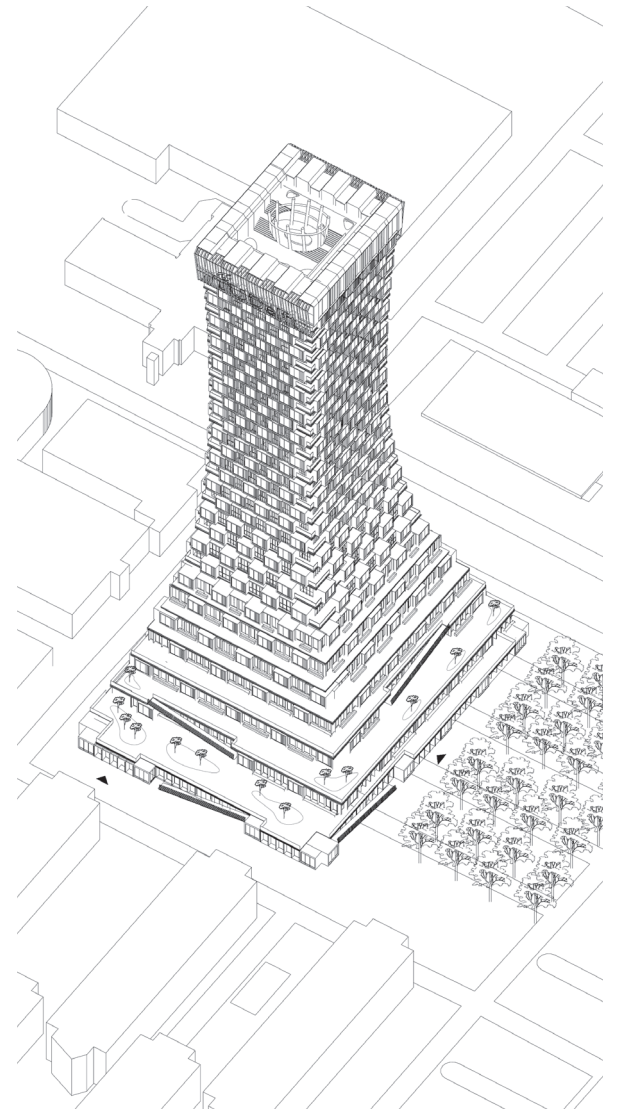
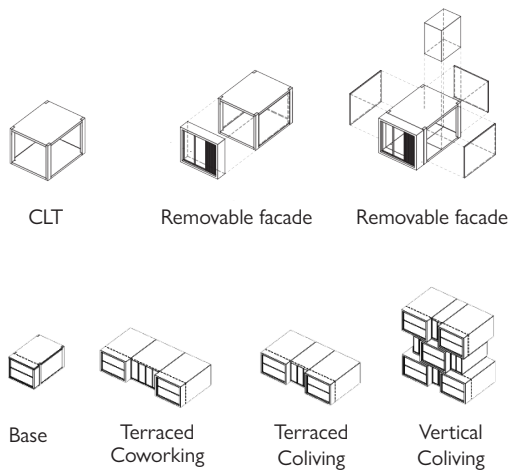
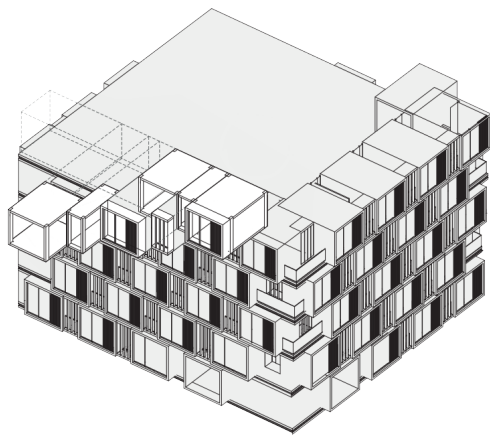
## Modular Building Blocks



### TU DELFT HUB **T**

**Przemyslaw Chmielarski**

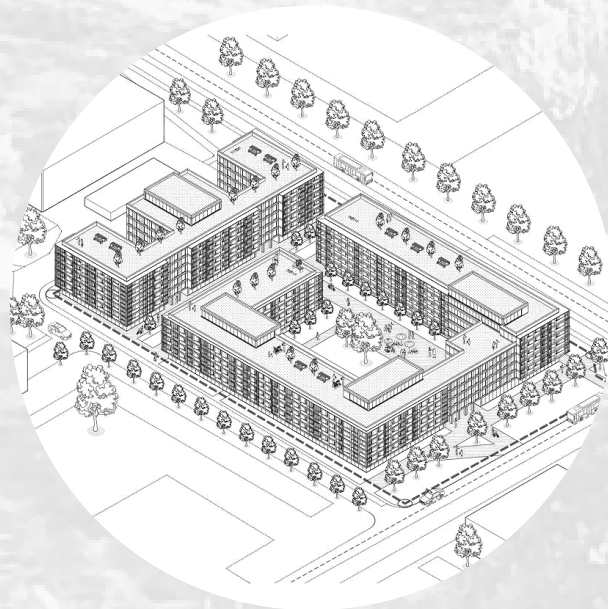
The rising demand for new buildings prompts a reassessment of materiality and adaptability in the built environment for sustainability. This project explores how material choices impact adaptability, focusing on spatial flexibility and high-rise mass-timber buildings. It aims to quantify spatial adaptability in case studies, offering valuable insights for future construction.



### SUSTAINABLE HIGH-RISE **T**

**Randy Rocha**

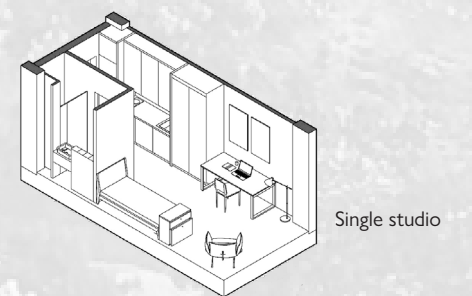
Amid population growth and urban expansion, reimagining urban density without worsening climate impacts is imperative. High-rises offer compact solutions, yet sustainability remains a concern. This project explores more considerate solutions which emphasize sustainability, livability, and inclusivity. The outcome: a vibrant, eco-conscious highrise fostering community engagement.



### MODULE+ **T**

**Pawel Andruszkiewicz**

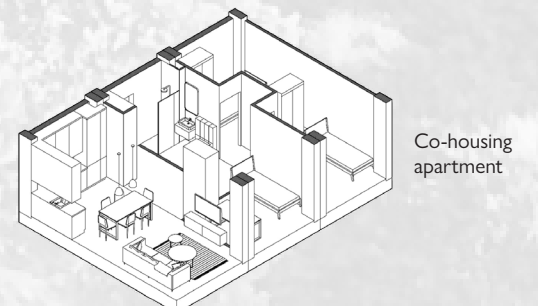
This project tackles the shortage of affordable, quality student housing with MODULE+, an experimental design strategy merging computational and modular architecture. It features individually crafted timber modules, an algorithm for layout optimization, and additional design directions for a conducive living space. Implemented in a student residential complex at TU Delft Campus.



Single studio



Double apartment



Co-housing apartment

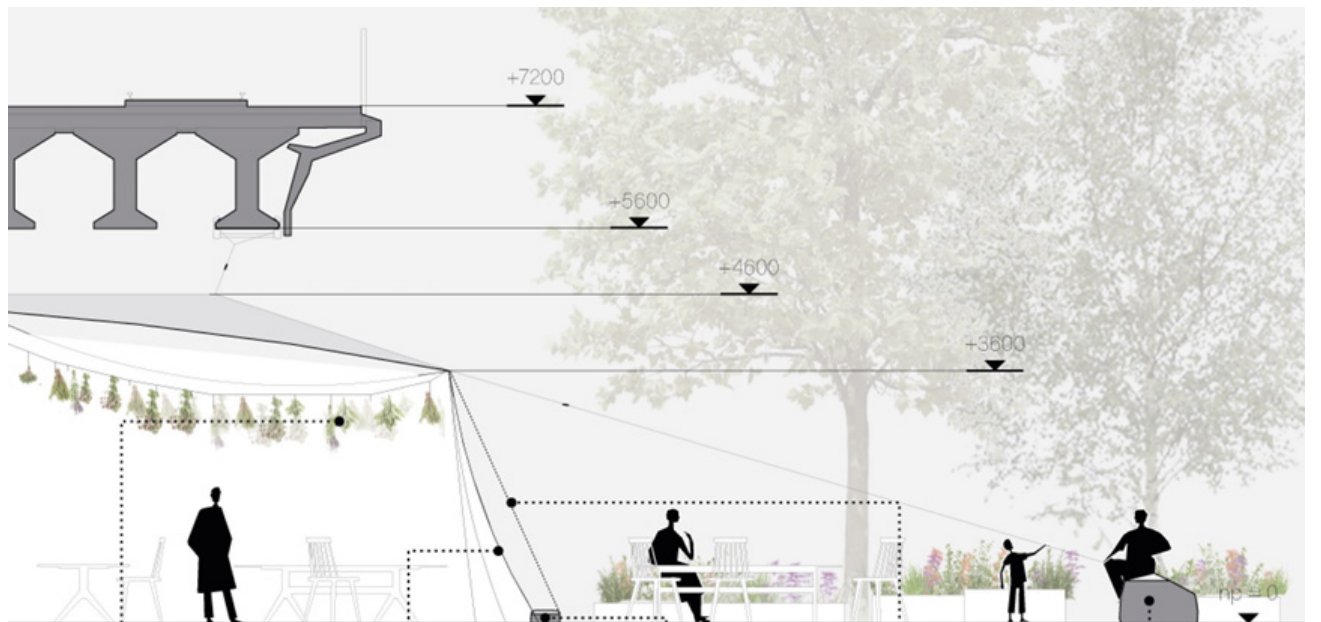
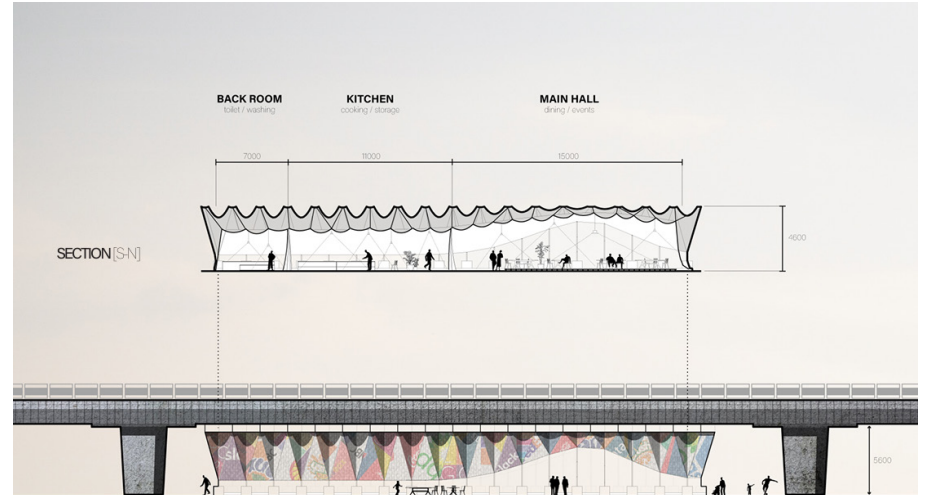
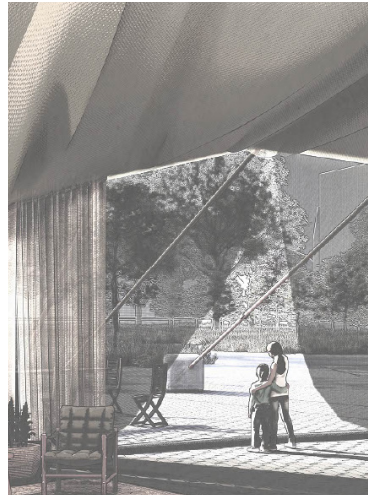
## Rethinking Structures



### LIGHTWEIGHT DESIGN+FLYOVERS

Arthur Hamelers

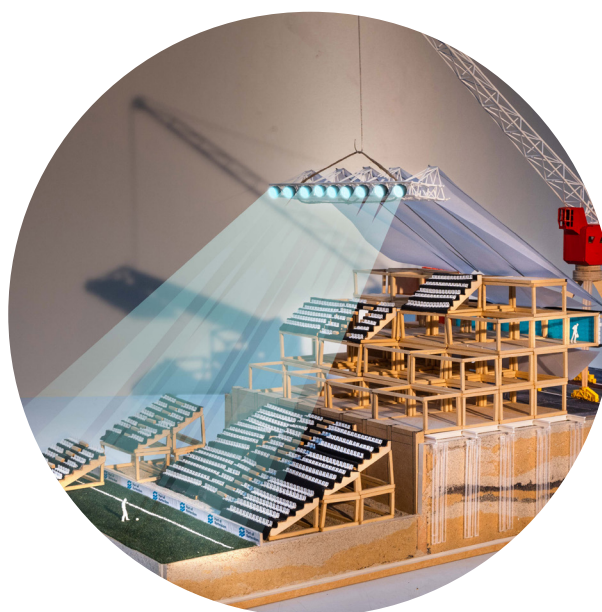
This project focuses on lightweight architecture as a means to reduce environmental impact and empower Rotterdam South residents. Tensile structures will be suspended beneath the oldest Dutch metro flyover, which now divides the city. This initiative aims to unify the city through small-scale interventions, from exhibitions to communal kitchens, using recycled advertisement banners as membranes.



### THE BERGWEG WATER STATION

Maximilian Lieser

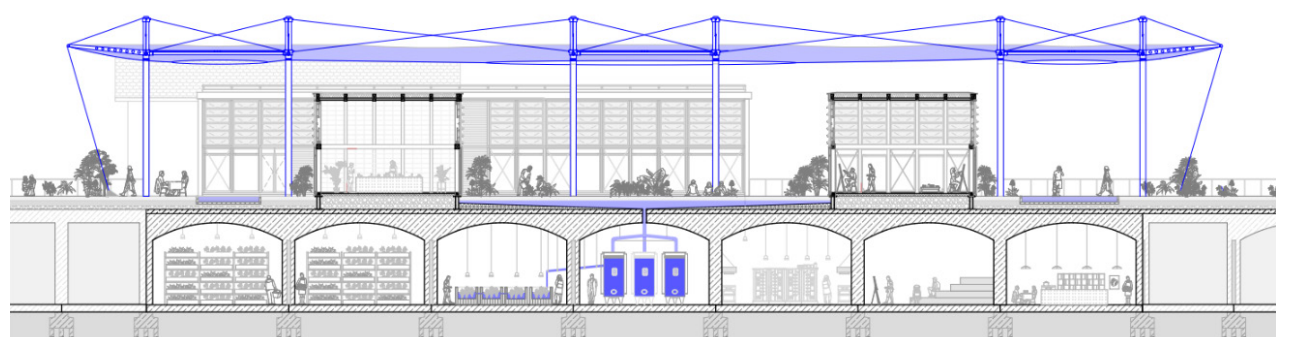
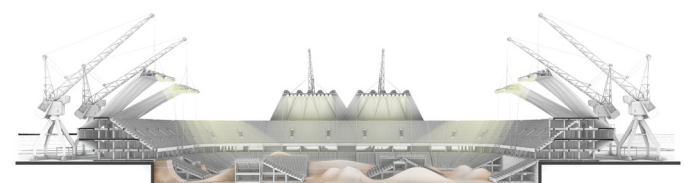
Hofbogen has seen substantial redevelopment since its 2002 closure, notably with the creation of Luchtsingel roof park in 2015 and ongoing efforts to convert its empty roof into a nature-inclusive park until 2024. This project aims to enhance Hofbogenpark and the local creative community by proposing a building addition at Bergweg station within the existing masterplan.



### TRANSFORMING EVENT SPACES

Tijmen Smith

The project challenges the folly of erecting permanent stadiums for short-lived international sports events. Instead, a modular stadium prototype is proposed, which aims to benefit locals long-term. It offers diverse sports, events, and cultural activities year-round, fostering community engagement and serving as a flexible platform for experimentation in architecture and arts.

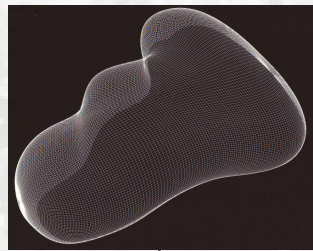


# 15 Years of aE!

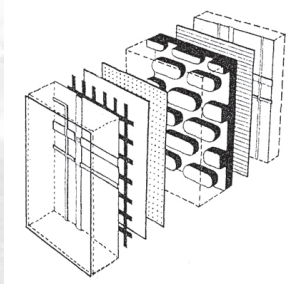
## 2008

### Birth of Architectural Engineering Studio:

for bachelor and master students with a technical fascination in Architecture. Inspired by several research groups of Architectural Engineering & Technology.



Parametric design gaining prominence in the architectural discourse & inspires the creation of a technology-focused studio.



Polyvalent facade: design taking root in technology



## 2012

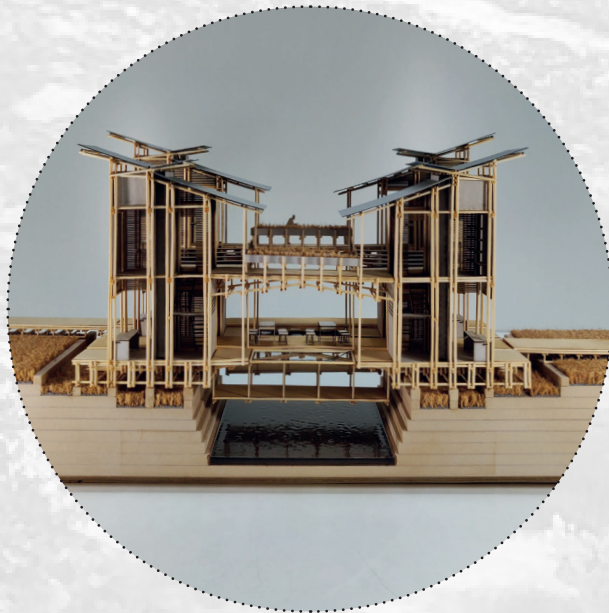
**Early stage:** Translation of Technology in Architecture, early stage of aE (Bernard Aukema - Hydrogen Architectural Machine).



**News of Progress:** Innovation for inspiration

## 2017

**Shared Heritage Lab, Indonesia:** Cross domain program (Heritage & Architecture, Urbanism, Landscape Architecture) in collaboration with Institut Teknologi Bandung.



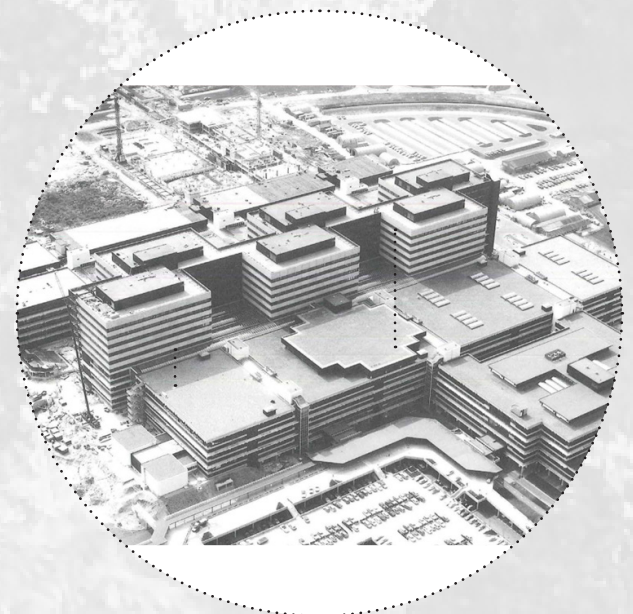
**News of Progress:** Innovation for inspiration

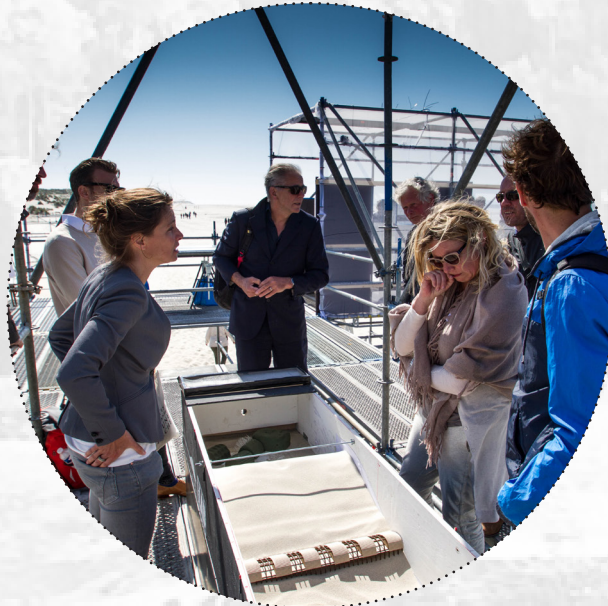


## 2018

### AMC

Redesign strategies for AMC, putting sustainability and circularity on the design agenda.





**Translation of Technology in Architecture, early stage:** students shortlisted for 10 most talented architecture students & others nominated for Archiprix!

## 2024/25 What comes next?



## 2015

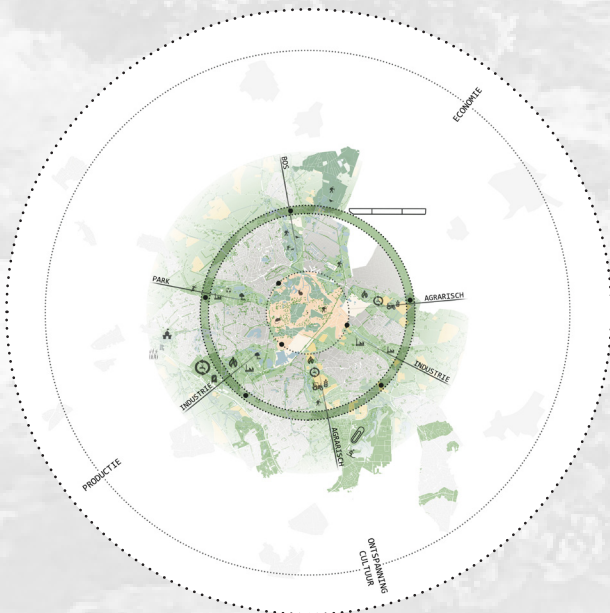
### Stuiflab

Contextualising technology as an experiment of art, science and architecture – in collaboration with Rijkswaterstaat, UT Twente and many others.

## 2015

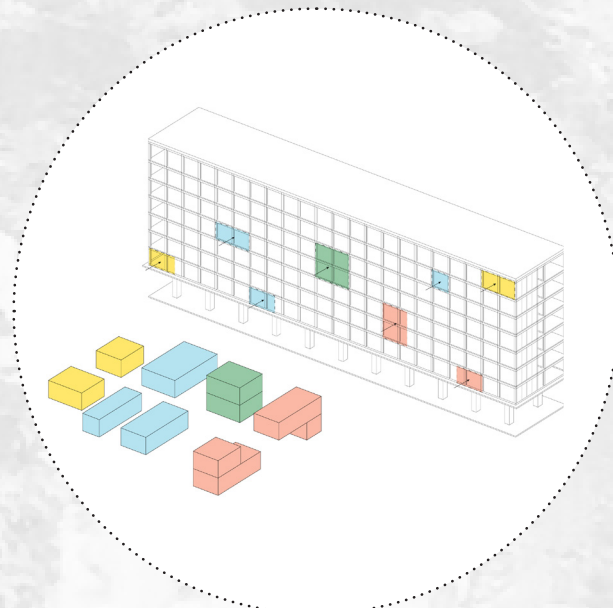
### Gardencity 2.0

Energy transition used as a starting point for generating visions of the future on multiple scales – in collaboration with Landscape Architecture, leading to the program Harvest\_BK.



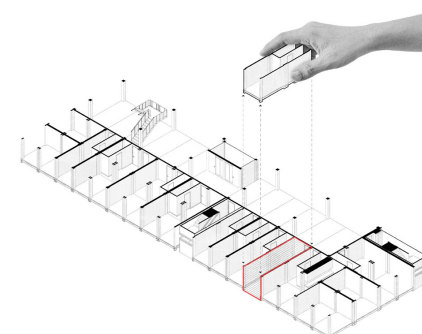
## 2020

Second Life and Open Building, strategies on building structures, it's components and the infill.



### How to create architectural quality with serial-produced (housing) systems?

Technological advancements, a growing need for affordable housing, and sustainability goals in the built environment are driving a significant shift towards serial-produced residential buildings. Numerous factories are springing up to manufacture 3D modules and building systems. This is sparking an increasingly important debate within the architectural field: what is the position of the architect within this context of serial, mass-construction? The key concern is the impact of this shift on architectural quality, questioning whether it is a direction we should pursue and contribute to. Furthermore, how should architectural education integrate these changes and prepare future professionals for them? The aE studio aims to understand the constraints associated with serial production, while exploring the opportunities it brings to create quality affordable housing for tomorrow.



# Program Second Life

## Strategies for Post '65 buildings @Boerhaave

The program “Second Life” focuses on the transformation of Post-65 buildings, (built from 1965 to 1995). Many of these are currently under the national spotlight, as they must be either repurposed or renovated to meet modern performance requirements. This is particularly relevant since demolition is no longer a solution in the current environmental climate.

In light of climate change, innovation in the construction sector is in the public interest. Utilizing existing structures (instead of demolishing them) can help cut CO<sub>2</sub> and NOX emissions, reduce the demand for new infrastructure and lead to a more carefully and sustainably designed built environment participating to healthier spaces and lifestyles.

Besides Post-65 residential areas, office areas are often characterized by monotonous clusters with concrete support structures. Students from the aE graduation studio have focused on the Brutalist Kruyt building at Campus Utrecht and the office complex at Campus Leeuwarden. Their goal was to explore these buildings' potential roles these buildings can fulfil in the contemporary urban fabric. Starting points for their designs included material circularity, energy management, and the creation of flexible work-living spaces.



### VIBRANT SPACES



Saied Alhau

This project focuses on the transformation of a vacant building in the Netherlands, shifting its purpose from a conventional office structure into a dynamic cultural hub. The aim is to create vibrant spaces that align with contemporary green sustainability standards and cater to the diverse social needs of the public, for example markets, workspaces and a rooftop garden, providing access to a wider audience.

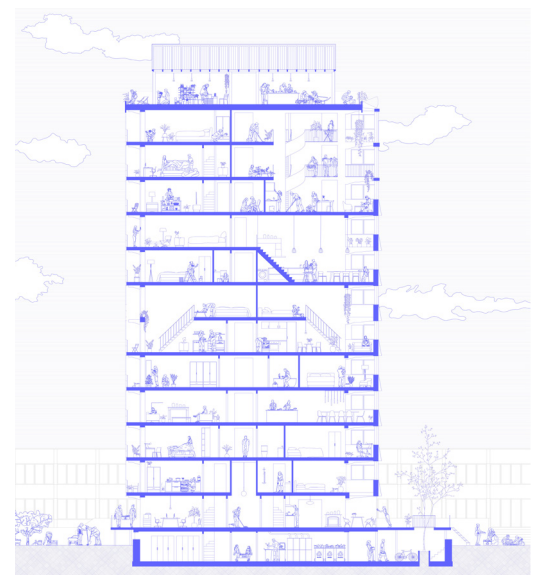
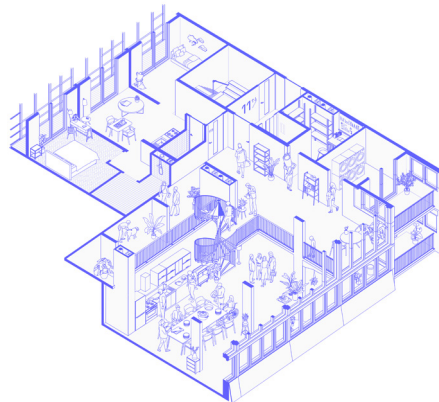


### COOPERATIVE TRANSFORMATION



Martin de Beun

How can Post-War neighborhoods be adapted for a circular future? What should our lifestyle be like in a such a future? This project shows how the re-use of an old structure, combined with a cooperative ownership model, can add value to both the building and the neighborhood, all whilst enabling a 2000-watt lifestyle.

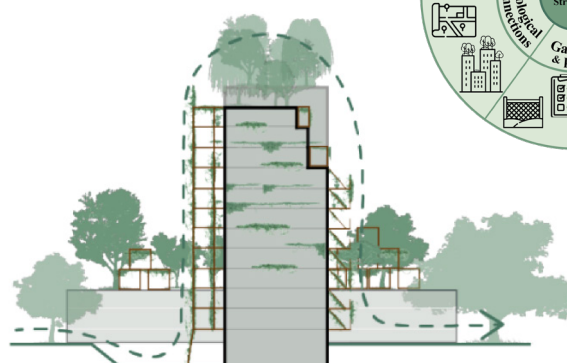
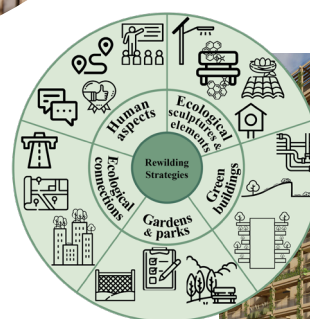


### REWILDING CITIES



Annekee Groeninx van Zoelen

Amid biodiversity loss and climate change, this project investigates the rewilding of urban areas through nature-inclusive design. It offers architects a toolbox for integrating nature into designs. These tools are used to transform a post-war flat into a community center with 35 housing units, with natural elements which facilitate autonomous ecological processes and support local fauna and flora.





**HEALTHY URBAN NEIGHBOURHOODS** 

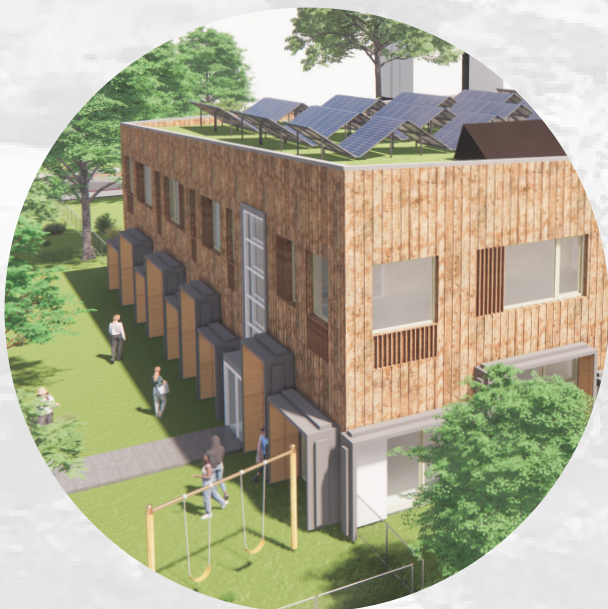
**Maxime Spapens**

Addressing urban densification and declining green spaces, this project offers strategies to support mental health. By integrating urban green infrastructures and fostering social connections, it aims to reduce depression and anxiety. Implemented in Boerhaavewijk, these strategies prioritize individual well-being, encouraging access to activities promoting mental health.

**A HEALTHY LIVING COMMUNITY** 

**Alaa Alden Alhamad**

An office tax building in Leeuwarden is transformed into a healthy living community, promoting physical and mental well-being, social engagement, and high quality of life through green spaces and amenities. The project features a double-skin façade ensuring natural light, ventilation, noise attenuation, and social spaces and is targeted to groups who struggle finding suitable housing the most.



**BUILDING COMPONENT REUSE** 

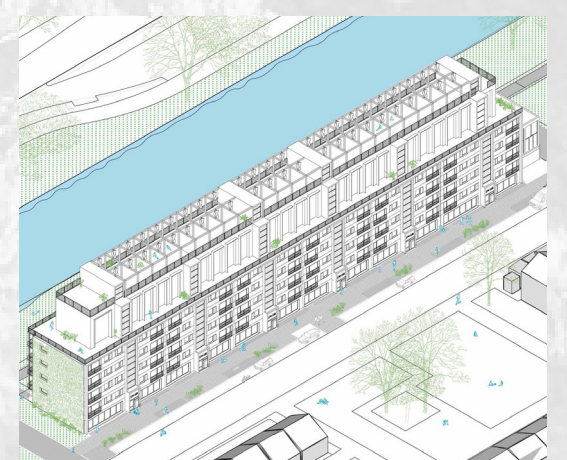
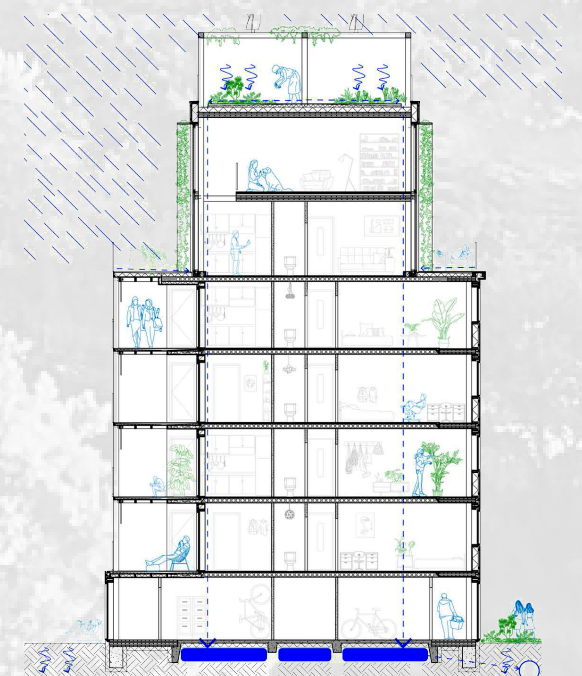
**Laura Hogenkamp**

This project showcases the reuse potential of building components whose value is often overlooked, in the hope to increase the reuse rate of these components in post-war neighbourhoods. The research-based design makes use of reclaimed materials for the redesign of a primary school in the Boerhaavewijk district.

**UNCLOGGING THE GRID** 

**Dick Klijn**

With the rise of all-electric buildings the load on the electrical grid grows. This slows down the energy transition and densification of existing neighbourhoods as the current grid is not capable of withstanding a higher load. This research-based project proposes a replicable strategy for renovating a post-war apartment building focusing on densification, flexibility, climate adaptation and overall quality of the neighborhood.



# Program Second Life

## Adding a New Layer @TUDelftCampus

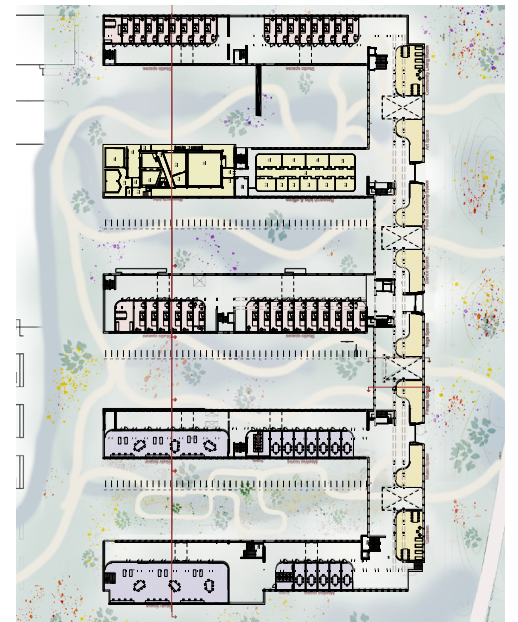


### THE NATURAL IN-BETWEEN PLACE



**Masja Rietveld**

As humans, our disconnection from nature adversely affects mental well-being, notably through urban stress. Integrating nature into urban spaces is crucial for stress relief. Biophilic design taps into our innate affinity for nature. Despite ample evidence of its benefits, architects lack practical application. This project offers a solution: a design guide translating biophilic principles into actionable steps, demonstrated through the renovation of the TNW building on the TU Delft Campus, addressing the prevalent stress among students.



STUDY STUDIO STREET RESEARCH



BEFORE



AFTER



### SUSTAINABLE GROWTH



**Mick van de Leur**

TU Delft faces conflicting priorities: ambitious sustainability goals versus expanding to 40,000 students. Historically, growth and sustainability clashed. The design proposes a solution by renovating Building 22 and adding biobased extensions, encouraging collaboration among faculties to creatively address pressing societal challenges with different perspectives.

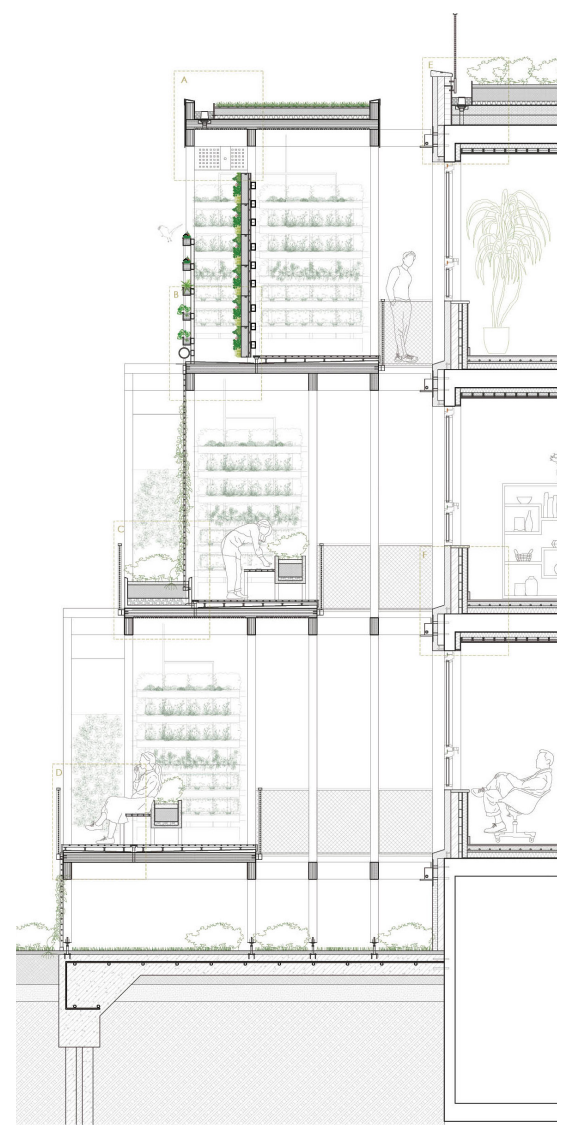


### BIOINTEGRATION



**Yuxin Yang**

Amidst global population growth, human actions increasingly harm ecosystems, endangering biodiversity. This project aims to counteract this trend by redesigning buildings with ecological principles. Through symbiotic design, structures can support biodiversity and energy flows. For example, it proposes converting the TNW building into eco-friendly student housing with integrated urban gardens, facilitating both physical and systemic ecosystem integration.







## PUBLIC SPACES THROUGH URBAN FARMING

**Scott Spoon**

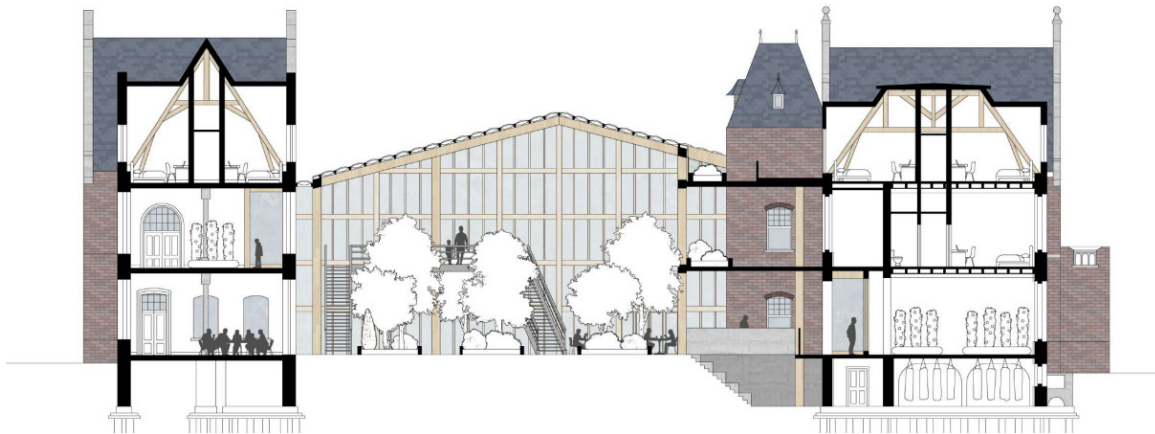
Urban farming fosters vibrant public spaces, offering locally grown produce at nearby eateries and shops. Tours and workshops enrich the experience, while sales of compost, DIY kits, and biodegradable materials supplement sustainability. Interconnecting farm inputs and outputs facilitates circular systems, reducing external dependencies and enhancing efficiency. Clusters of diverse functions, from production to social interaction, can integrate existing establishments for a robust urban farming ecosystem.



## LOCAL HERO

**Johannes Bohn**

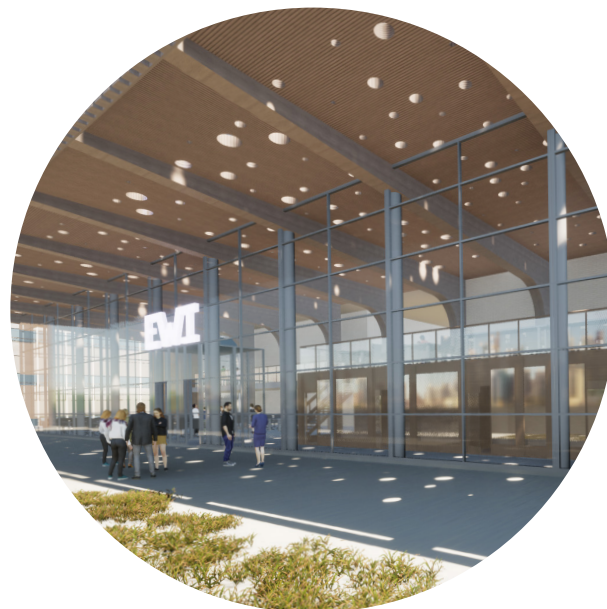
This graduation project focuses on rejuvenating the overlooked HaKa building in Rotterdam's Vierhaven area. Aligned with the 'Second Life' theme, it addresses site challenges and the building's 1930s industrial heritage. The aim is to establish a local economic hub, leveraging local production, CNC fabrication, material reuse, and energy independence.



## RECLAIMED MATERIALS

**Douwe de Jager**

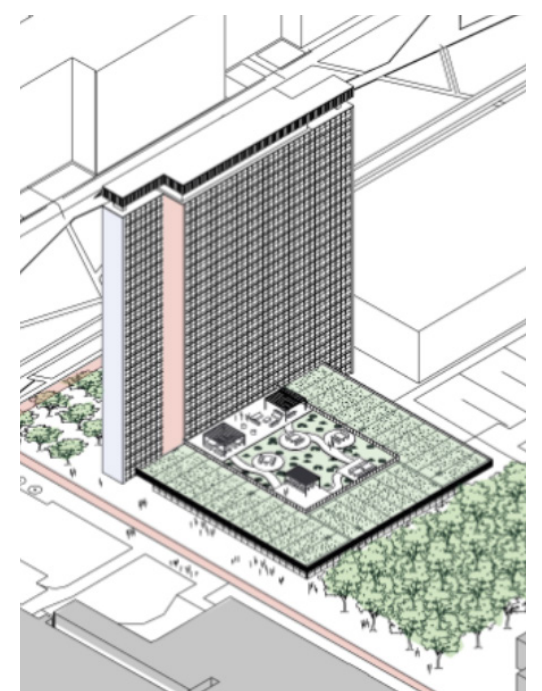
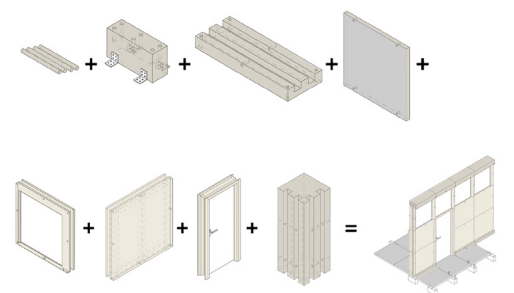
Reducing waste and transportation in the building industry involves reclaiming components. Building 22, Applied Physics at TU Delft's campus, can transition to student housing and public functions using reclaimed materials. This research evaluates interior components for future needs via R-strategies, paving the way for a sustainable building industry model.



## ADAPTIVE REUSE

**Youri Warfman**

The adaptive reuse technique applied to TU Delft's campus buildings addresses contemporary student housing needs. Rooted in Brand's shearing layers principle and Habraken's open building theory, particularly evident in EWI faculty, it emphasizes adaptability over time. Through a self-build system designed for disassembly, it creates flexible study spaces.



# Program Harvest

## Locally Sourced Architecture

Working on healthy cities, villages and landscapes asks for multi-scalar design strategies and decision making with regard to the integration of urban resource flows within the built environment. Circular value chain thinking is needed to find regenerative and inclusive solutions for the future.

Students from Architectural Engineering experiment with regenerative strategies leading to strong designs for productive and recreational landscapes, valuable neighborhoods, buildings and (infrastructural) objects. Sustainable solutions for urban resource management are increasingly organised in a decentral way and need to be spatially embedded and supported by local communities. This transition therefore requires new forms of design processes for the (re)development of urban areas.

As part of the cross-domain Harvest program, research is being done in the working fields of urban metabolism and urban ecology. Closing the loops of urban resources, such as water, materials, energy and food, forms the starting point for interventions leading to interesting new programs, biodiversity, joy and quality of life.

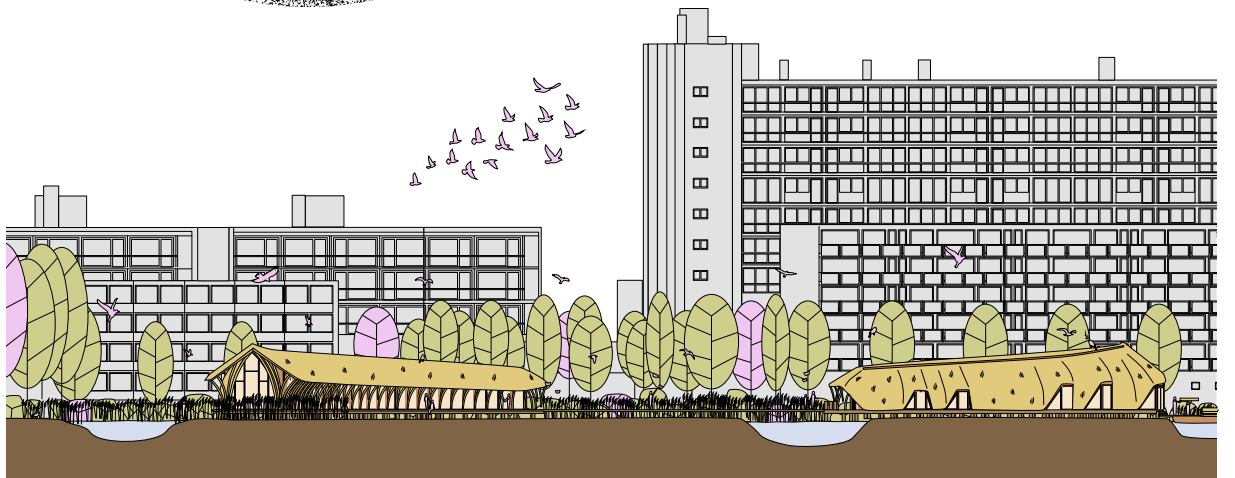


### RE-REED ARCHITECTURE



Miriam Kreysel

The study examines the use of Common Reed (*Phragmites Australis*), harvested locally, as a sustainable building material, assessing its entire lifecycle. In Haarlem's Poelpolder, this reed is used in constructing an activity center, transforming the area into a productive green space that enhances the recreational zone, which demonstrates the building potential of local materials.



### EMPOWER PLASTICS



Ivana Kafedjian

Global plastic overpollution, particularly acute in heavily touristed islands, prompts action. This project embeds recycled plastic in architecture, advocates sustainable tourism, and involves local communities. Located in Bali, it proposes a dual-purpose center with recycled materials, bamboo, and local elements, fostering community engagement and producing adaptable plastic roof tiles.



### SPATIAL PLANNING



Daniel Halman

Underprivileged groups often lack inclusion in public sector urban development plans. This study examines Kholpa, a traditional village in Dakar, as a model for lower-income urbanization. It advocates for an alternative to Western suburban planning, emphasizing social cohesion fostered by collective spaces and frequent interactions in historical settlement typologies.



### BIOBASED TROPICAL HOUSES



Marijn Soeterbroek

The project explores how bioclimatic designs using oil palm trunks in rural tropical buildings improve thermal comfort amid rising energy needs. It combines various climate-responsive design elements like solar shading and natural ventilation. This project proves how these vernacular structures excel in heat management, except in Kerala's unique tropical monsoon climate.

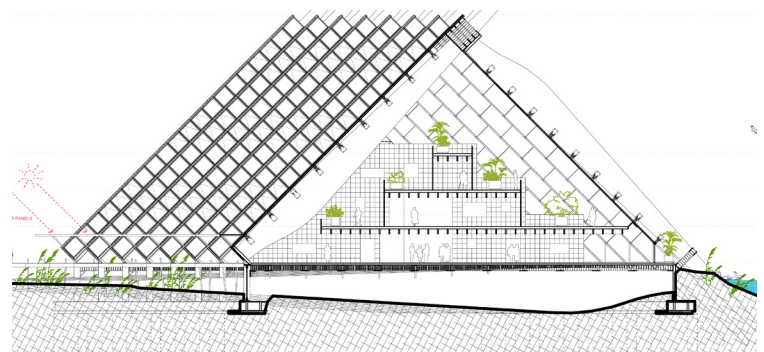
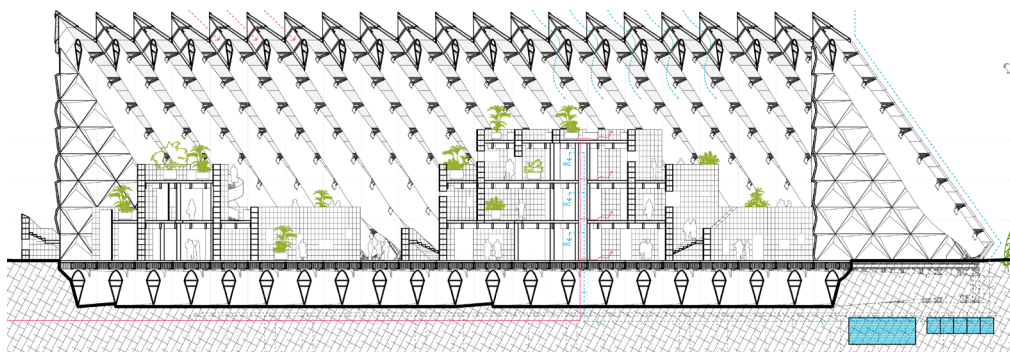
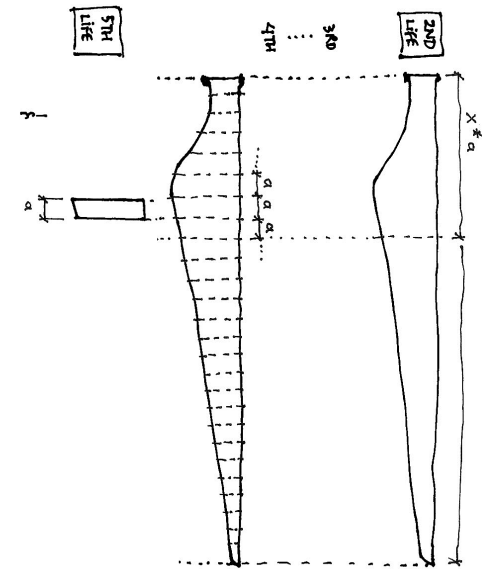
# Urban Mining



## RURAL WIND HUB

Minh Nguyen

In the realm of sustainability, the challenge of repurposing end-of-life wind turbine blades in the Netherlands has sparked a quest for innovative solutions. This study delves into integrating decommissioned blades into building layers via multiple-use cycles. Highlighting waste material maximization, a case study in Eemshaven reveals a promising approach harmonizing local construction needs with environmental stewardship.



## NATURE-POSITIVE ARCHITECTURE

Liam Verduin

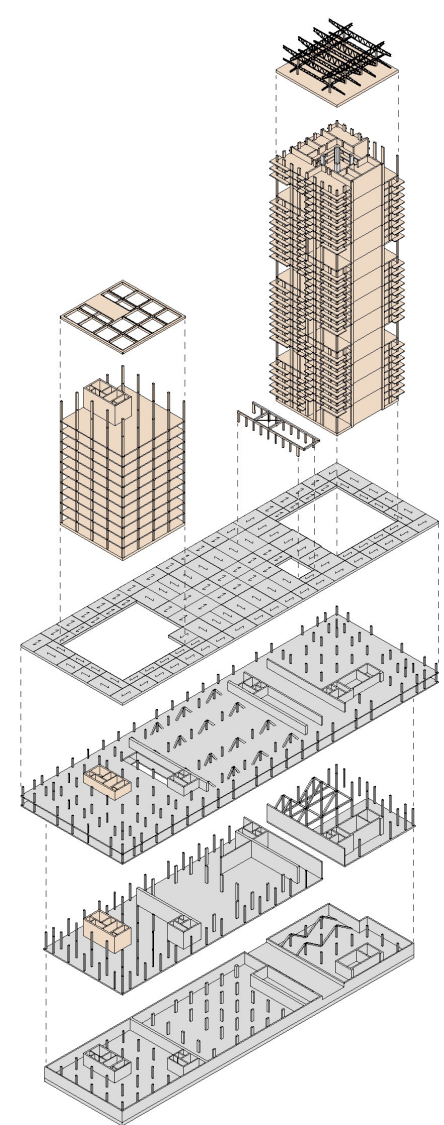
This project is founded on a regenerative approach which mutually benefits nature and the local community. Specifically, it uses oak wood and creates a relationship between communities and oak regeneration, supported by traditions such as winemaking and wood recycling. This project ensures the longevity and health of both the natural and human environments.



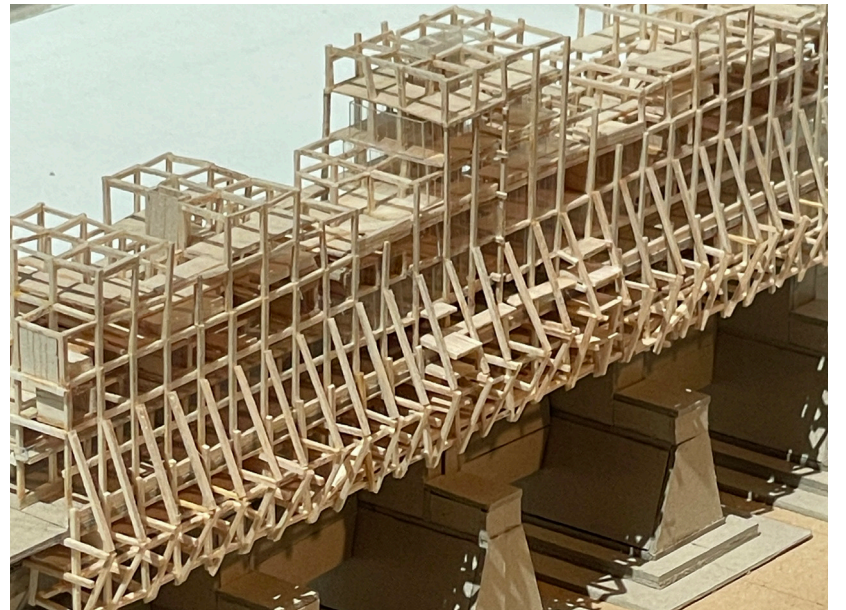
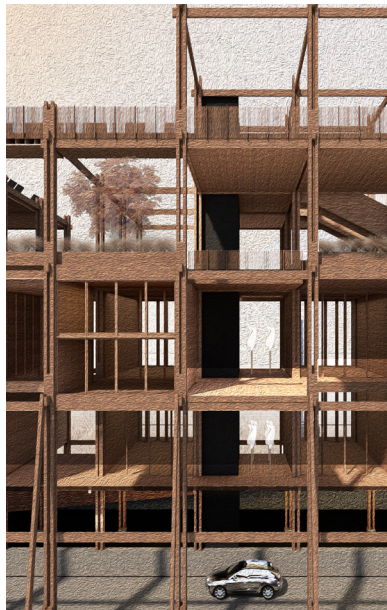
## LIVING WITH DATA

Yannick Bakker

This research explores synergies in data center, residential, and greenhouse programs within a mixed-use building. Focused on Sluisbuurt neighborhood, Amsterdam, it aims to integrate valuable flows like electricity, cooling/heating, and water use. The proposal combines data center, residential, and greenhouse programs alongside diverse public amenities.



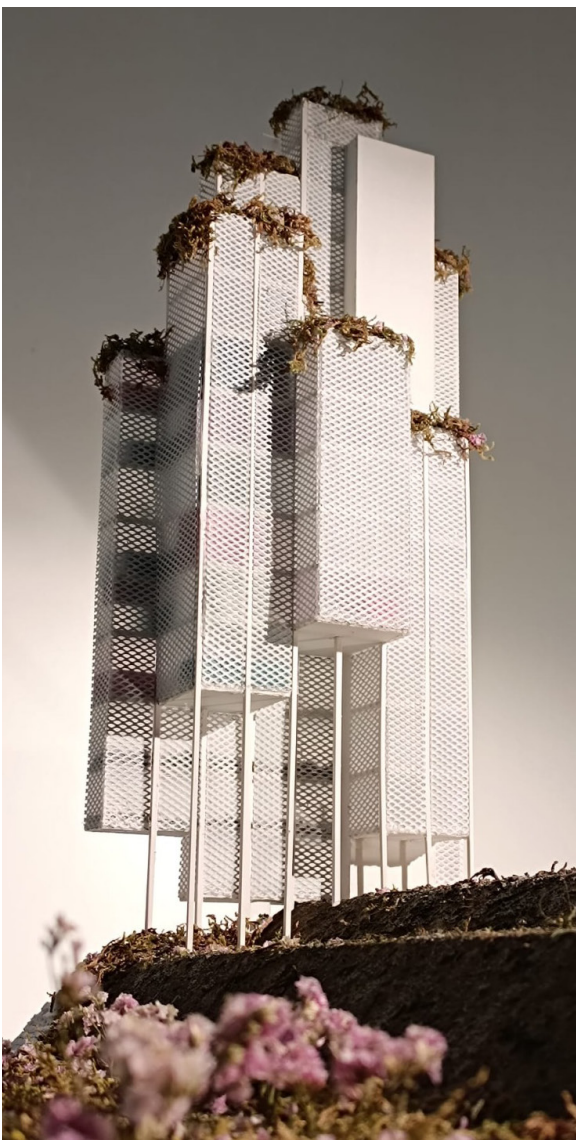
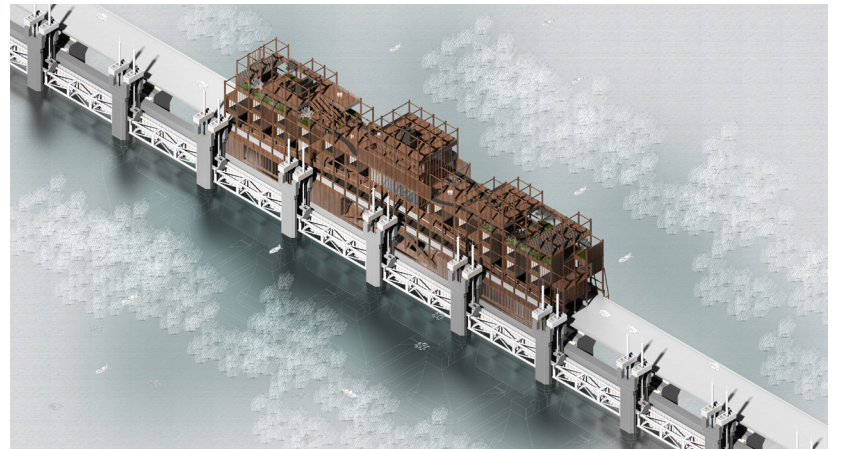
## Designing with Water



### THE LIVING BARRIER

Aphitchaya Wongnitchakul

This project explores innovative stages and future adaptations of existing flood barriers in the Delta Works to address rising sea levels. With elevated water levels threatening Zeeland estuaries, the project seeks to maximize Oosterscheldekering's multifunctionality and hybridity to support adaptation, local economy, and ecosystem.



### PLAN B: FUTURE WATERSCAPES

Baan Taweel

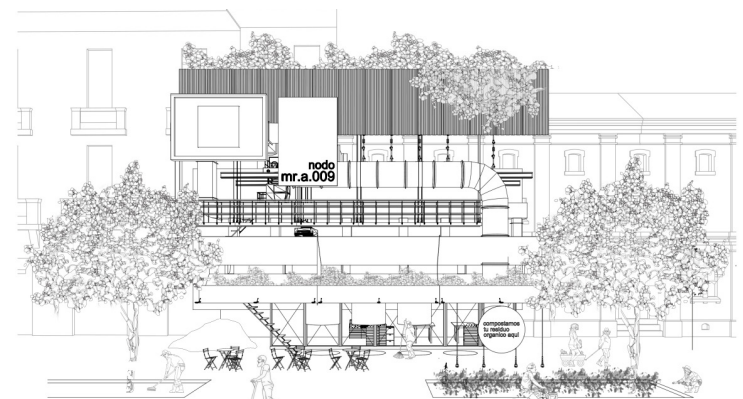
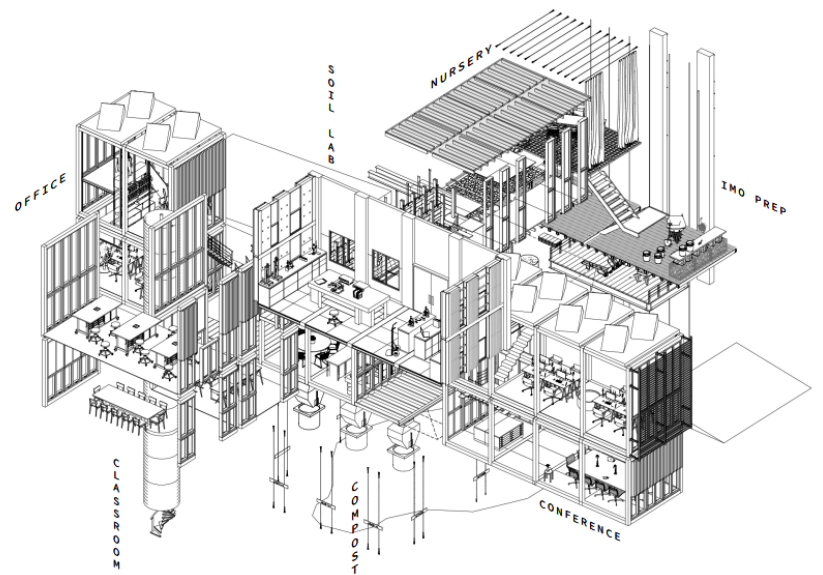
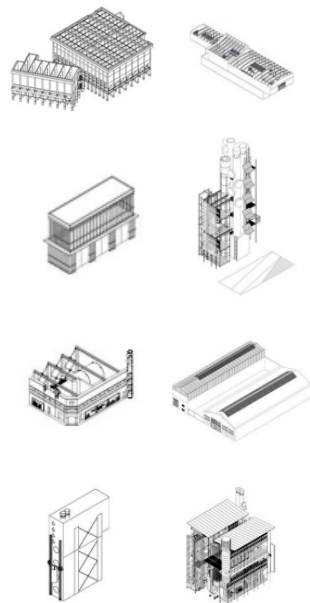
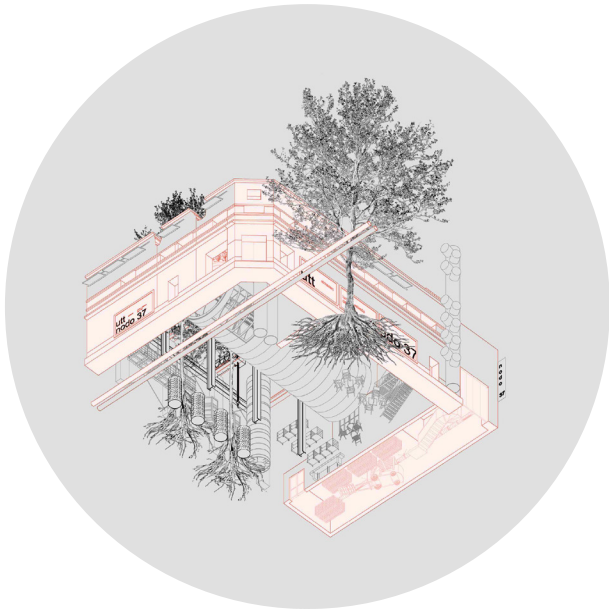
In envisioning 'PLAN B: Future Waterscapes,' the Netherlands reimagines its relationship with water. A central tower, serving as both water reservoir and housing, mimics the Indus civilization's approach. Its adaptable design integrates seamlessly with Delft's historic urban fabric, fostering sustainability and expansion.



### THE ARC OF THE NETHERLANDS

Melvin de Wijs

The Netherlands' renowned water management stems from its history of confronting water challenges, shaping its iconic polder landscape. This project delves into how this landscape and its structures must adapt to climate change. Emphasizing the country's unique relationship with water, it aims to develop architectural strategies for Flood Risk Management, crucial for housing projects in the Dutch Randstad.



## GUNKSPACE

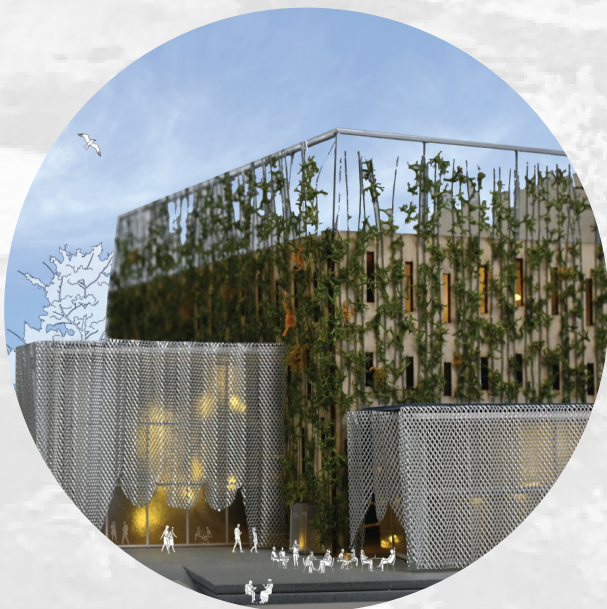
Josh Snow

By 2022, urban and agricultural land occupied more than 40 percent of the world's land area. Industrial processes deplete soil, pollute water, destroy biodiversity and increase CO2 emissions. Recovery from anthropic sprawl is crucial to prevent climate disasters, with a focus on soil health and agroforestry principles. The Gunkspace project integrates soil care infrastructure at various scales, from streets to entire hydrological basins. The first case study involves restoration of Matanza-Riachuelo basin in Buenos Aires, which is a model for global restoration.

## IDENTIFIED FLOODING LANDSCAPES

Renée de Vries

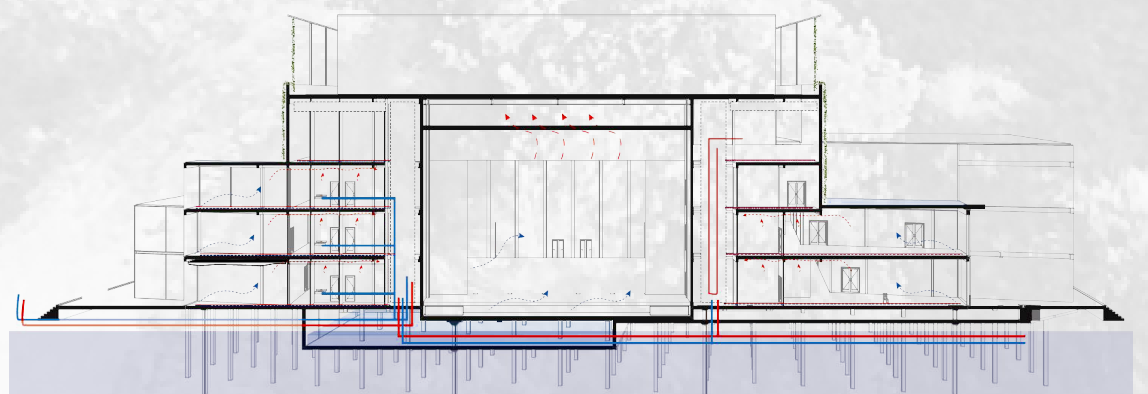
Global warming-induced climate change leads to more frequent extreme events like droughts and floods, posing challenges for Dutch buildings ill-equipped for such conditions. This project aims to identify flood-resistant foundation typologies for family homes in vulnerable areas. Through expert interviews, data analysis, and literature review, it proposes a hybrid solution considering social, political, and environmental factors alongside technical considerations.



## A NEW WATER SYSTEM

Nicole Hartmann

Heavy precipitation loads urban water system, causing flooding and sewer overflows. Cities thus implement systems to manage excess water, such as by storing it in reservoirs for later use. This project researches rainwater reuse to heat and cool buildings. The findings are implemented into the design of a new theater in Gouda. The building focuses on flood-resilience, district heating, efficient energy management and features underground storage, roof ponds and rain curtain walls.



# Alumni

## Interview with aE alumna Eileen Stornebrink



### When did you graduate from @aE Studio?

I graduated in 2020, during the Covid lockdown. The last six months of my studies were online, including my final presentation, which was a very strange experience. My project focused on Saint Maarten Island, which had been struck by Hurricane Irma in 2017. This theme was a student initiative, which led to eight of us working on the St. Maarten context, although each of us designed our own, separate assignments for it.

### After your graduation you started your own company – Studio Inscape. How can you relate your graduation project and your interests at the time to your current activity?

I had already started my company – Studio Inscape – well before completing my studies. I started at the beginning of my Master's program, together with two other students as we got to work on two interior design projects. We founded the company around these projects, but we really started to think about what this studio could become only once we graduated, as by that time, we had a better idea of what we were interested in. We first joined an idea competition organized by the Embassy of the North Sea, an Amsterdam-based organisation which focuses on the rights of all living inhabitants, including those other than humans. Our proposal consisted of an installation, or rather, a serious game which

helped visitors perceive the landscape from different perspectives. We searched for design solutions that could benefit human and non-human actors alike, and let their 'voices' be heard. It was important for us to demonstrate an alternative to human-centred, or profit-centred design. Our project was based in the southwest delta region of the Netherlands (province of Zeeland). The Watersoodmuseum gave us a chance to develop our project further (under the name 'Oosterschelde in Onderhandeling'). This experience gave the first direction to Studio Inscape, which started to develop around topics like water, landscape, and nature-focused design. We are currently working on a comparable project in Noord-Brabant, also dealing with water issues, notably flooding due to rivers that overflow with heavy rainfall. Just like with the first project in Zeeland, we are working with negotiation of space, and landscape organization, which is very much related to landscape architecture.

### How does your background as an architectural engineer influence you?

My graduation project focused on designing for extreme weather conditions, considering both technical solutions and social resilience against climate change and intensifying natural hazards. In the Netherlands, it is common to respond to climatic threats through advanced technology and infrastructure. However, in my project, I sought more holistic approaches. I looked for ways to enable communities and increase their resilience to natural hazards, which is a more timeless solution than a one-off construction that can only fix one problem at a time.

Today, at Studio Inscape, instead of only coming up with a solution, we try to look at problems in terms of networks. Sometimes, instead of designing something physical, we develop (communication) tools or methods (sometimes even games) to gain more insight into contexts. Social challenges can be solved using engineering thinking, but that does not mean that the solution must be technologically advanced. Sometimes, it can even be very low-tech – this careful combination of technological and social

aspects was highlighted in the aE studio and now influences my work.

As a young studio, we're often seen as creative designers. Our technical background contributes to our credibility when communicating with professionals from other disciplines. This helps us to integrate perspectives from different professional fields into our design conversations.

### Where or how do you see yourself in the future?

We started working as much as 4 days/week for Studio Inscape only since September 2023. Since then, we've aimed to establish a more balanced studio with a steady project flow. We want to expand our expertise to themes of circularity and biobased materials on both an architectural and regional scale next to our existing water-related and non-human design research.

Next to Studio Inscape, I collaborate with another aE graduate, Danique Landburg, who also worked on St. Maarten for her graduation. Together, we are using a lot of the knowledge we gained during our graduation year, especially in terms designing with local, traditional materials, in a low-tech, yet innovative way. For our common project in Surinam (called 'Bosse Bromki Pren'), we researched the potential of rammed earth and compressed earth bricks. We built a prototype there about 1.5 years ago, and we are now awaiting funding approval to construct a small pavilion/community centre, which could allow us to expand on our initial research.

My ambition is to continue working on these sorts of research and volunteering-based projects, similar to my graduation project in the Caribbean, with a strong societal impact and the opportunity to exchange with and learn from different regions and communities.

### Do you have any additional tips or experiences you would like to share with potential future aE graduates?

The strength of the aE studio is the combination of social and technological aspects. I would suggest being conscious of the way you use technological solutions, and making sure it is context-appropriate and that you are not using technology for its own sake.

I would also suggest organizing activities or trips related to your project, because that can help develop practical skills that are not taught at the university, but that are necessary when working on real projects, especially if you want to work as a freelancer or open your own studio. Personally, I learned a lot from organizing the trip to St. Maarten during my graduation, but you can already learn a lot from trips within the Netherlands, or by setting up various kinds of collaborations related to your project.



## Interview with aE alumnus Michal Kasperski



### When did you graduate from @aE Studio?

I graduated in the summer of 2022 with a project CirclVillage: Reviving the Rural, exploring models of regenerative communal living for the economic and social revival of the European Countryside. It later became a finalist of the national Archiprix and was shortlisted for the EU Mies Young Talent Award which gave me an opportunity to exhibit it during 2023 Venice Biennale.

### After your graduation you started your own company - Drip Visual. How can you relate your graduation project and your interests at the time to your current activity?

Working on a project based in a remote village of 500 people in Poland - the conditions of the site and existing structures were crucial to understand. I was looking for ways to first capture and then communicate complex dependencies in an accessible way to everyone involved - site owners, my tutors, engineers, permaculture experts, and locals.

So in parallel to design work that's what got me to explore 3d scanning, photogrammetry, VR, and real-time gaming engines and led me to develop

a full digital replica of the site and existing structures I used throughout my entire design process.

I realised that modern tools of digital communication have the ability to go beyond simply representational and visual aspects. They can and should inform decision-making, resolve conflicts early on, accurately simulate and be used to collect valuable insight if we make them interactive.

Those tools and challenges were the foundation of Drip Visual and the first freelance collaborations I had. It is easier to reflect on looking backward but at the time it was mainly driven by curiosity in exploring new and emerging technologies. Now together with my cofounders, we are specializing more and more in gamification and interactive real-time workflows and developing tools like PublicTwin to offer such holistic and interactive workflows more broadly for architects, developers, urban planners, and municipalities.

### How does your background as an architectural engineer influence you?

I think most importantly it instilled a unique way of problem-solving driven by curiosity and multidisciplinary thinking across scales - from detail to neighborhood - in a grounded yet creative way. The skill of leveraging emerging technology to identify and propose solutions for problems is universally applicable and is what we do at drip on a daily basis in this constantly evolving technological landscape.

### Where or how do you see yourself in the future?

I think we ask ourselves this question only for life to make us laugh at the answer we give five years from now!

The way I prefer to think about it is that every day I am trying to set up processes and build an environment that allows for continuous creation, learning, and adaptation. That includes

the company, our network, and my personal life. 'Where' and 'how' change so quickly these days that it almost becomes secondary - with a great team, continuous up-skilling, and an environment open for experimentation you can keep adapting continuously and remain receptive to change.

Currently we focus our trajectory on developing interactive digital tools to work with the most innovative companies and individuals (both technologically and socially) to help great ideas gain the exposure and engagement they deserve and accelerate much-needed changes. From products to neighborhoods, we imagine a more open and collaborative future in AEC industry and I would like to see DripVisual at the forefront of that shift in the future.

### Do you have any additional tips or experiences you would like to share with potential future aE graduates?

I think a lot of designers have an amazing background to become initiators of new projects, products and entire companies and it was relatively late in my academic path when I realised that you can take a more active role and trigger projects instead of seeking pre-defined commissions.

There is a set of basic entrepreneurial skills worth learning (and practicing) along with your design skills that are missing from a standard curriculum and would allow you to do it more effectively. I am trying to continuously expand those skills myself and would encourage everyone to do it. If not to set up on your own, they would help you to better understand how organizations are run and decisions are made in real life.

If you don't see a place in an organisation where your talents can flourish there are ways to initiate projects from the ground up and verify your ideas - and I think the TU Delft environment is great at facilitating that, so use those opportunities!



## Graduation Architectural Engineering



Kick-off meeting aE Studio nr. 31, 15 September 2023

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Thijs Asselbergs  
Thomas Offermans  
Yannick Warmerdam

### Building Technology Tutors

Arie Bergsma  
Engbert van der Zaag  
Ger Warries  
Gilbert Koskamp  
Marcel Bilow  
Paddy Tomesen  
Pierre Jennen

### Research Tutors

Andy van den Dobbelsteen  
Andy Jenkins  
Christien Janssen  
Craig Martin  
David Peck  
Dafne Swank  
Elise van Doorn  
Eric van den Ham  
Fransje Hooimeijer  
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### Collaboration

I Million Homes  
AP+E Architects  
AnnA Architect  
Atelier Rijksbouwmeester  
Bouwlab R&Do  
Bouwtuin  
Circular Community Foundation  
Elephant Studio  
Mauroparravicini Architects  
Nationaal Renovatie Platform (NRP)  
New Urban Networks  
Openbuilding.co  
Space & Matter  
Superuse Studios



### COLOPHON

aE journal | Volume 14, no 12/04/2024

Editors:	Anne Snijders Mo Smit Masja Rietveld Emilia Bonniot	Publisher:	Chair of Architectural Engineering
		Layout Design:	Bureau Arjan Karssen BNO
		DTP:	Masja Rietveld, Emilia Bonniot
		Print:	Muller Print & Sign BV