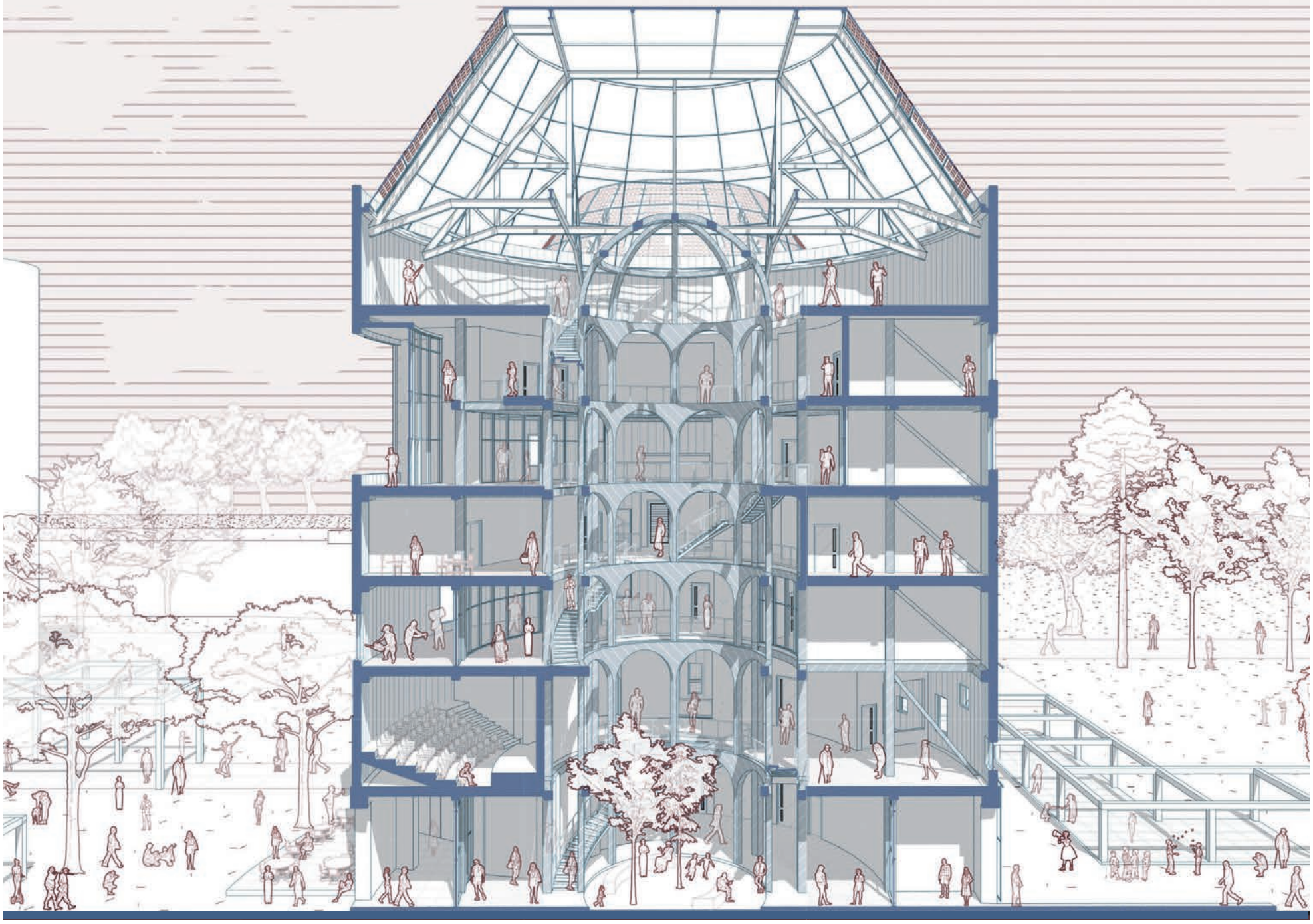
journal 2022/2023 NR 12

journal

aE studio / NR 12 2022/2023



News aE in action

Introduction Innovative Design across Scales

text **Thijs Asselbergs**

Redesigning the Delta

Jon Kristinsson designs floating islands that convert ocean waves into electricity.
Buckminster Fuller draws inspiration from foam bubbles in the surf of seawater to create limitless, large, lightweight spatial constructions.
We are now adjusting to the rising sea levels and tidal waves on our coastlines. One design theme from the aE studio asks how we, as architectural engineers, can integrate energy production into our designs. For example, the infamous Dutch Delta Works are ready for a new future, and polders across the Netherlands are returning to their flooded state. How can you install (re) new(ed) storm surge barriers across all (urban) scales? Can multiple functions be integrated into design solutions? How can value be added through design of new landscapes and water boards, such as energy-producing dykes and polders? In the coming years, the aE studio will participate in the re-designing of the Delta Design research program within the Faculty of Architecture and the Built Environment, with their partners and under the direction of the Urbanism department.

Redesigning Space for Living

Another current theme within our faculty, and one that the aE studio contributes to, is the concept of future-proof and adaptable homes (1Mhomes). This can be done through re-use (Second Life) or by developing new concepts. Future residential environments should contribute to the closing of material and energy loops in relation to adaptability and consumption. Not just at building-scale, but also to add value to the urban-scale structures in our cities and rural areas. The construction industry wants to innovate. They are looking for industrialised design and implementation solutions. Digitised designs that are directly linked to optimal, automated production methods. We work on mass customised & prefabricated design.

Can the energetic use of materials be optimally integrated into an environment (Harvest) and how can this be done across various scales? We are not only working on valuable solutions in the Netherlands, but also for Indonesia and the Caribbean. This newspaper provides insight into the different approaches that teachers and students utilise: make – stock – flow. By anticipating that new construction can be the renovation of tomorrow; how can we implement re-use for optimal collaboration with new additions? Furthermore, how can we understand the use of data for design, implement digitisation and robotisation, think about applying new financing systems, consider optimal lifecycles in different design solutions, integrate circularity into thinking-for-design, optimally densify or dilute existing structures, and use more wood and bio-based materials as standard?

Open Building

Architecture as a profession is constantly changing. We want to prepare young designers for their future role where they'll collaborate with stakeholders from many external initiatives. However, we are happy to build on the lessons from history. For example, the Open Building philosophy developed by John Habraken in the 1960s. By re-introducing Stewart Brand's 1990s layers to the Open Buiding concept, we can create additional value.
By this method we learn how to make design solutions adaptable across different scales of varying life cycles. We no longer demolish but anticipate adaptability and demountability. Buildings and their surroundings require their spatial quality (culture) to be in balance with their economic quality (lifespan), whilst permitting us to focus on innovation (technology). We innovate across the scales, from building to neighbourhood; from material to indoor climate; from structure to implementation; from chair to city. Together, we strive for adaptable spatial qualities.

NRP Prize

aE Studio 2nd prize

aE student Tslil Strauss won the 2nd prize of the NRP Masterprize 2021 with her graduation project "Urban Transplant - The Value of Deconstruction and Re-use of Structural Concrete" (see page 12). The jury greatly appreciates the future-orientedness of the approach for deconstruction as an alternative to the demolition of buildings. A dual site in Brussels provides a proof of concept for the host and donor idea of urban transplantations, thereby showcasing also the social and cultural dimension of deconstruction and re-use processes.

CBE Award 2021

aE Studio 1st prize

aE student Eleonora Farcomeni won first prize in the cross-scale category of the Circular Built Environment Award 2021 with her project Food Community House, a local circular economy approach to reduce our environmental footprint (see page 16). The Brettenzone in Amsterdam funtions as a showcase of her participatory approach to re-install processes and places for local food and building material production within the city. The jury praised the holistic approach of the project, which has been elaborated across scales and disciplines.

Archiprix 2022

aE Studio Nominee

aE student Natasha Cleaver has been nominated for Archiprix 2022 with her project Local Production Centraal Beheer Apeldoorn (see page 11). The project convincingly shows how value can be created by using local and renewable resources for the retrofitting of existing buildings. Indepth contextual research identified valuable resources from local industries and the rich natural environment around Apeldoorn. Centraal Beheer in Apeldoorn, a structuralist icon, served as the perfect showcase for the participatory biobased retrofitting approach.

aE in action **News**

Excursions Open Building & Dutch Design Week

text **Camille C.S. Gbaguidi**

After almost two years of online education, we are back in the classroom, and Excursions are finally a roadmap element of the aE Studio again!

Thijs Asselbergs introduced us to the architects Caroline Kruit, Tom Frantzen and Jos de Krieger who were the guides of our excursion in Buiksloterham from the Open Building projects to Schoonschip, a floating circular neighbourhood project by Space & Matter, until the sustainable boat office park De Ceuvel. We were able to visit and discuss the advantages and challenges of Open Building in terms of technology, layout and financial aspects. The common guiding theme throughout our visit was the topic of "Participation" in architecture.
In November we visited the yearly organized Dutch Design Week and got inspired by many of the thought provoking and innovative design solutions. We visited the exhibition The Art of Changing Direction by Floris van Alkemade, which reminded us of our potential as designers to tackle societal challenges. Highlight of the day was a visit to the Exploded View Building, where designer of the building Pascal Leboucq guided us around the mind blowing range of innovative circular and biobased materials on a 1:1 scale.

Touching Cellulose

International Lecture Series and Student Workshops

In the spring and fall of 2021 the first edition of Touching Cellulose, an open online lecture series on timber construction took place, accompanied by an international workshop for students of the Royal Danish Academy, TU Darmstadt and TU Delft.

The lectures were given by international specialists in wood construction and wood research from various renowned institutes. Among the topics addressed were baubotanik, hybrid elements in coniferous and deciduous wood, building physics in timber construction, circularity in joinery, craftsmanship and wood building culture, non-engineered timber, adaptability, digitization, robotic production and assembly, wood modification and future technologies.

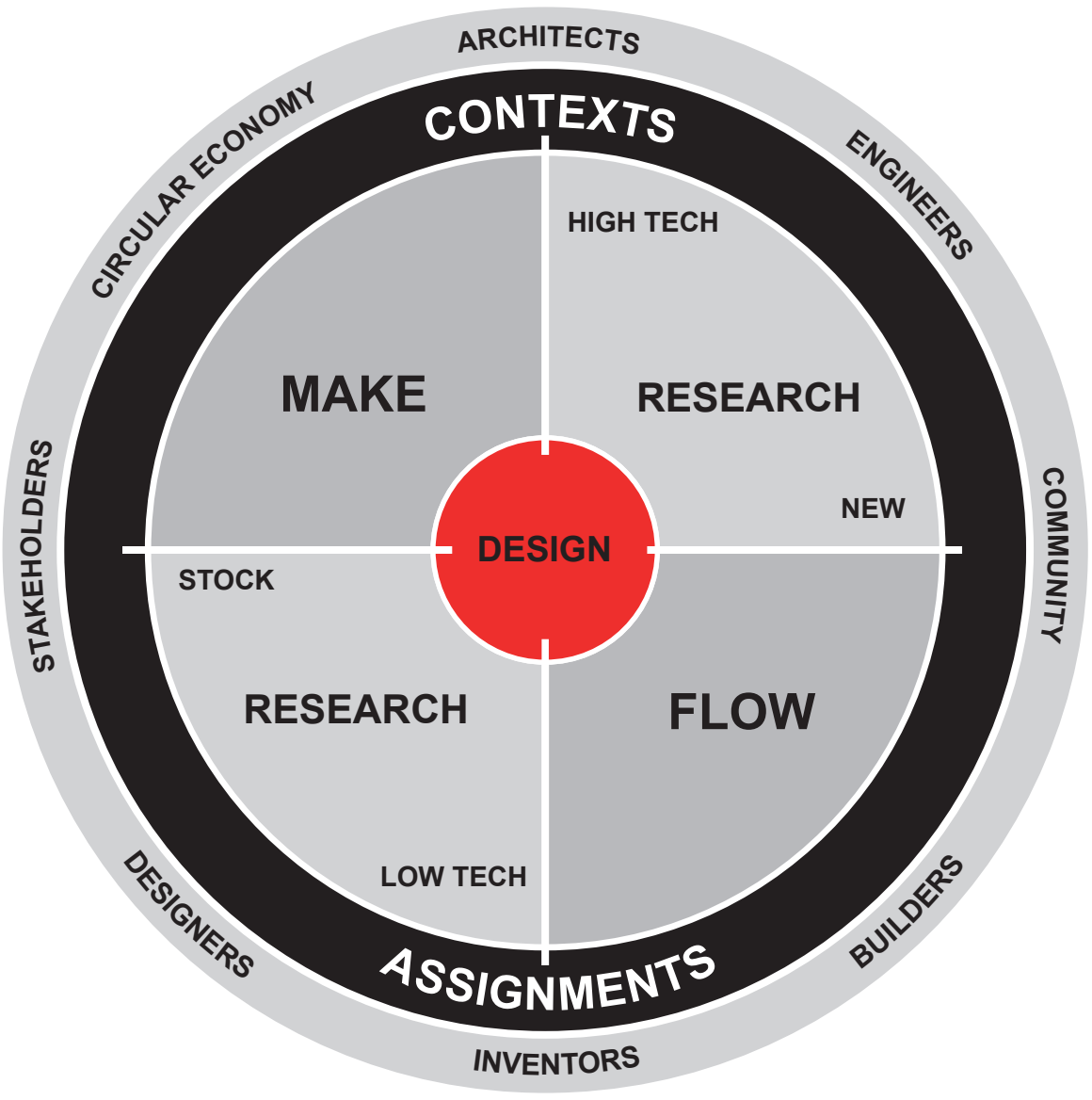
You can view videos of the lectures via
www.bk-wood.nl/touchingcellulose/past_events/

Due to the pandemic the international workshop was replaced by local workshops on the participating schools. On several occasions there were joint online feed-back sessions and presentations. The Delft workshop hosted by Gilbert Koskamp and Pierre Jennen took place in the model hall of BK.

As part of the Touching Cellulose programme a group of students also participated in a one day nature inclusive facade construction workshop organised by Stichting Bouwtuin under guidance of Mo Smit at the Groene Afslag in Laren. Using local wood, reed and bamboo they created three nature inclusive facade prototypes as habitats for birds bats and bees.

A publication about the Touching Cellulose workshops will be launched this summer!

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/Intecture 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 / Intecture 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

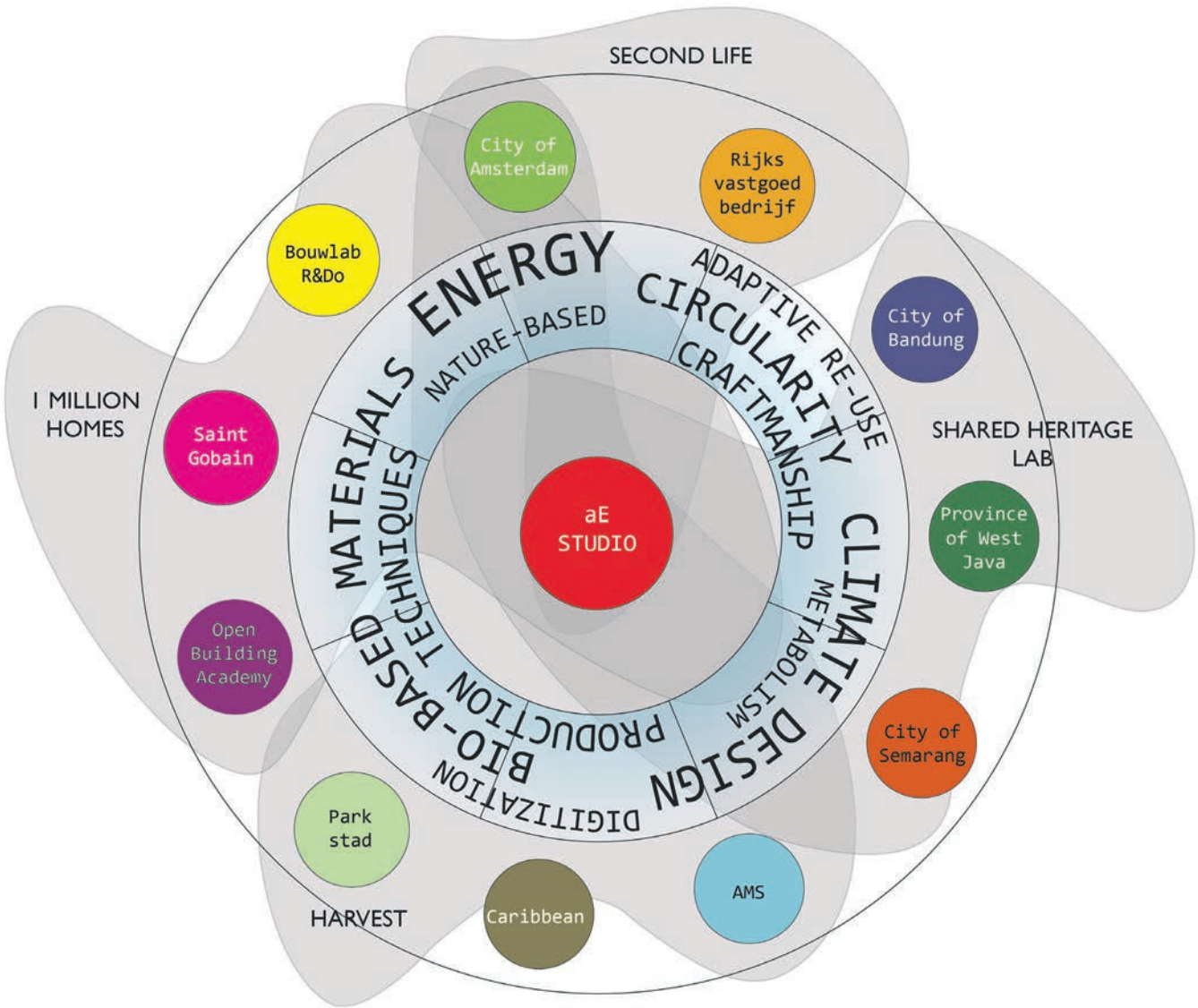
Stock is about the potential of the existing by looking differently to what is already there, by making use of a technical fascination, in relation to current or future needs. Ideas for intervention can vary: the upgrade of existing housing stock, office buildings or product development of interiors.

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**

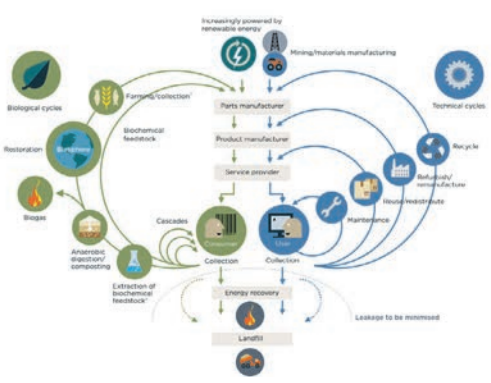
Collaboration & Knowledge Exchange



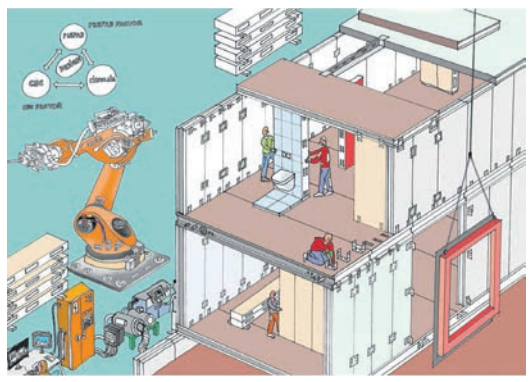
Architectural Engineering combines design and technical innovation throughout all scales in architecture. In our Architectural Engineering program we seek innovative and inspiring architectural solutions for environmental and societal issues together with various stakeholders. With today's local and 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

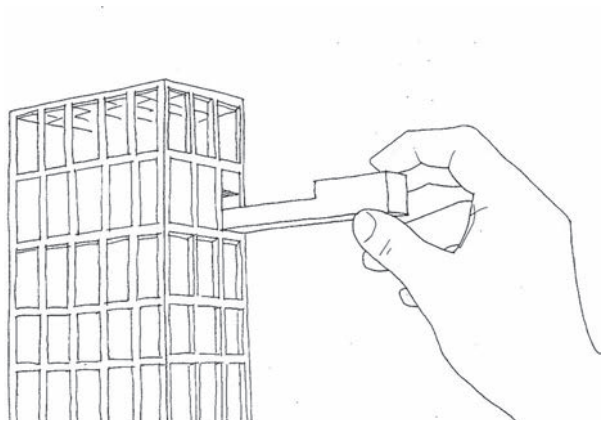
SUSTAINABLE DEVELOPMENT GOALS



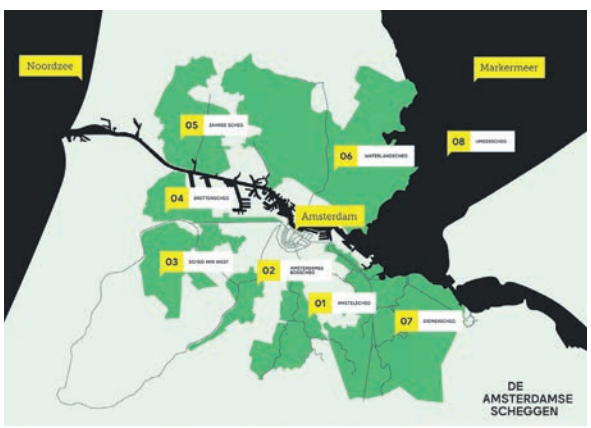
CIRCULARITY



DIGITALISATION



OPEN BUILDING



HARVEST

SECOND LIFE

Program | Open Building

Exploring the Circularity Potential of Open Building

text **Thijs Asselbergs**

Large-scale industrial housing can contribute to reducing the housing shortage. In the past, however, this has strengthened the position of builders, and thereby limited the influence of residents and the adaptability of the housing stock. How can Open Building, in combination with digitization and automation, contribute to a sustainable solution for the housing shortage and at the same time give residents more influence?

Open Building is an architectural and urban development approach, in which renewability and adaptability are central. About dimensioned building in the basic construction (the support) is combined with light construction of the built-in (the infill). Open Building was developed since the 1960s by John Habraken and various colleagues. Now it inspires a group of architects who connect through the Open Building platform. In Open Building, the built environment changes part by part in a continuous and dynamic process of design and construction. A distinction is made between different layers, which change at different speeds and to which design and decision-making are geared to. The layers are also reflected in the technical systems in construction, which are linked together in such a way that one system can be replaced or adapted independently of the other.

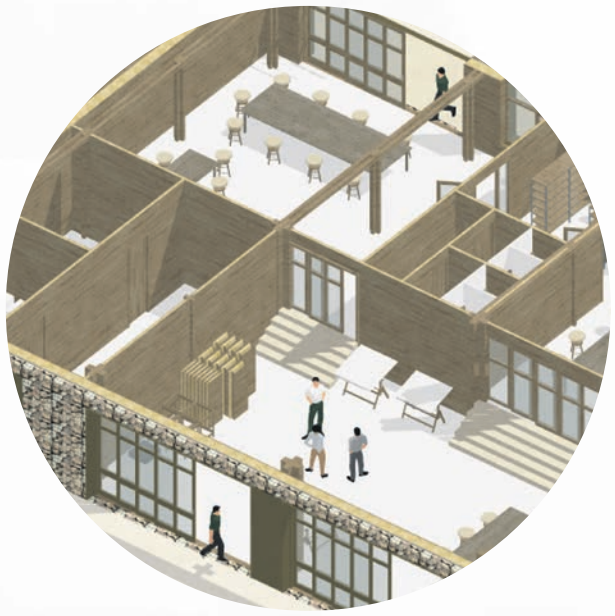
Open Building offers a structure to achieve the necessary renewability and adaptability. Digitization and automation in design, production and logistics are in full development. Mass customization reduces additional costs for non-standard designs, and large-scale industrial construction and residents' influence can go hand in hand. Open Building in combination with support and installation can contribute to a sustainable answer to the unpredictable housing demand.

In addition, the high demand for homes can also be achieved by using existing homes more efficiently and by transforming non-homes. Many existing buildings have carrier qualities, even if they have not been developed according to Open Building. To take advantage of the opportunities, existing carriers must be identified, new financing constructions explored and possibilities for scaling up mass customization must be further explored. In order to achieve the CO2 targets, preservation of valuable buildings and limit housing costs, it is also better to renew existing buildings. Within the domain of Open Building, graduates from aE studio conduct design research and show their results that can contribute to adaptable and valuable environments. See also www.openbuilding.co/academy.

NET POSITIVE OPEN BUILDING

by **Jules van Hoof**

The projects aim was to create a high-density, mixed-use (circular) neighbourhood based around the principles of nature-based solutions combined with the 'Open Building' concept to transform the Western Harbour Area into a publicly oriented nature inclusive environment. This project strives to bring back the balance between liveability and socio-political, environmental and economic behavioural patterns within the city.



RESIDENTS FOR CIRCULARITY

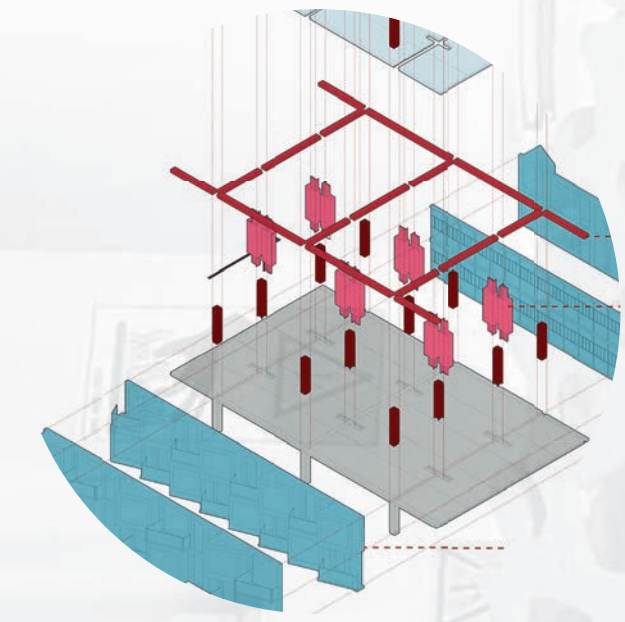
by **Melanie Berends**

The project takes a user perspective on circularity. With the circular solution of a modular infill system, residents are invited to not only design, but also asssemble, disassemble and reassemble the infill system. In this way, circular solutions become part of the intrinsic motivation of residents.

OPTIMUM FRAMEWORK

by **Bob Spitz**

Buildings are responsible for 40% of the global energy use and over 30% of global greenhouse gas emissions. To minimize environmental impact, building designers are increasingly looking beyond traditional design methods to optimize building designs for low environmental impact. This project's building structure is conceived using generative design methods in order to minimize its environmental impact.



AFFORDABLE FLEX HOUSING

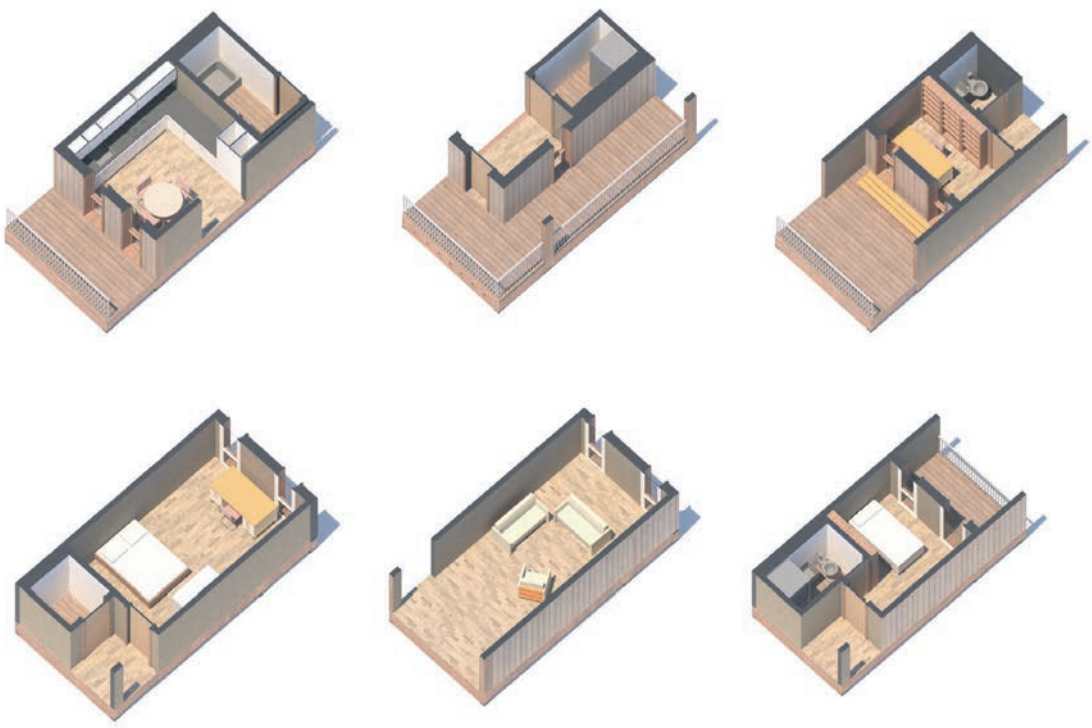
by **Jin Ye**

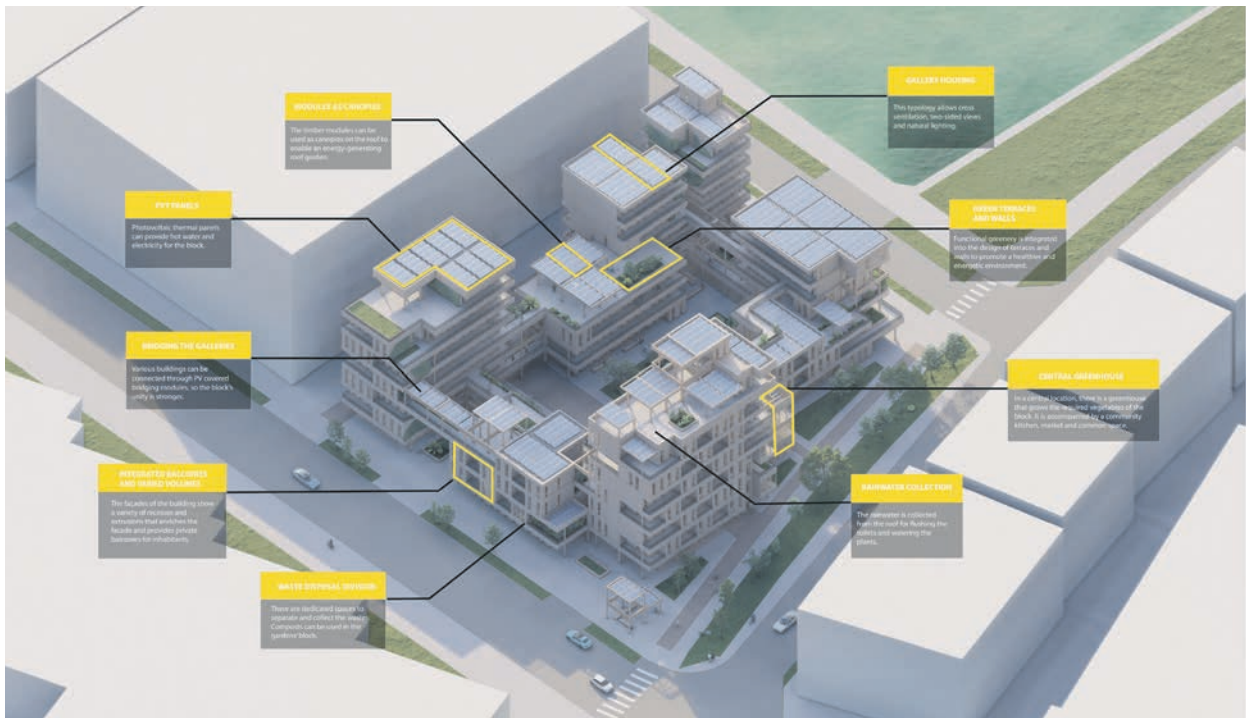
The shortage of affordable housing has been a global phenomenon. Housing as a commodity becomes luxury with a significant profit margin when there is scarcity. However, having a place to live is a basic human right. This design for a co-housing project provides an answer to this challenge by means of a cooperative development approach and by providing room for diversity through customization principles.

MODULAR HABITAT

by **Sahar Golchin Far**

The goal of this project is to design a high-quality affordable circular housing complex. The challenge lies in finding a balance between creating a circular and high-quality result and making it as cost-effective as possible. Circularity in this design will focus on using prefabricated timber modules that are designed for re-assembly and can be insulated and finished with locally available materials. Prefabrication of timber has the potential to create high-quality results in a safer work environment and to scale up the production with lower costs. The project also entails the circular use of other resources such as energy and water, including the particiation of residents hereby, while enhancing the aesthetic and social quality of the neighbourhood.





Program I Open Building

Open Building and Biobased Construction

ON SITE FOOD PRODUCTION

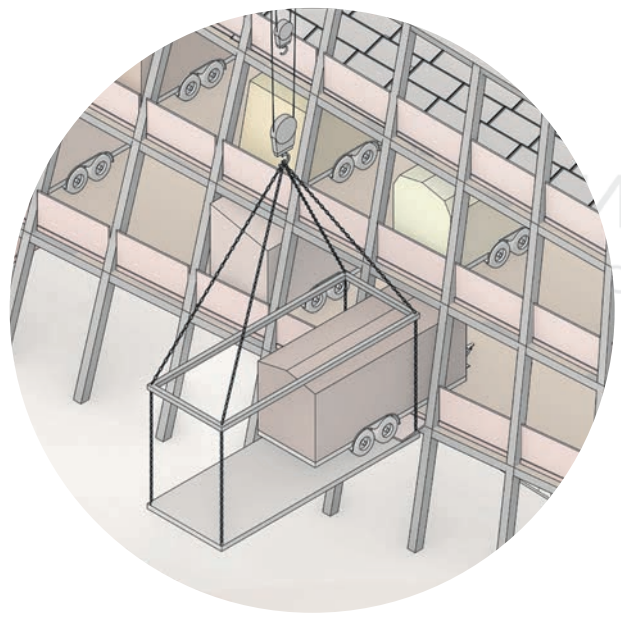
by **Sander van Rosmalen**

While the housing shortage in the Netherlands is rapidly increasing, it is needed to meet energy goals. To push further the development of sustainable neighborhoods, implementing food production and black water sanitation on site are part of the vision. Based on data provided by the Dutch nutrition centre, the amount of food needed is of 36 m2 per capita.

FUTURE PROOF TIMBER

by **Hanneke Kieft**

Looking at future housing by taking adaptability as a starting point to create a future-proof building with a suitable home for all. Growing and shrinking homes in order to adapt them to the people instead of the other way around. A wooden gridded structure offers guidance, but also possibilities through the large standardization in elements.



VARIETY OF BUILDING BLOCKS

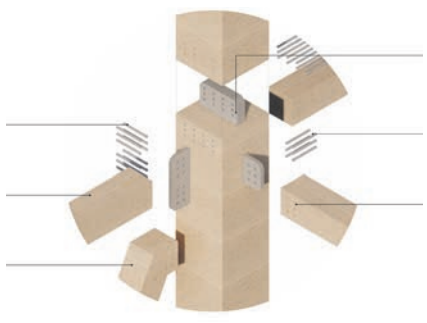
by **Dries Brøns**

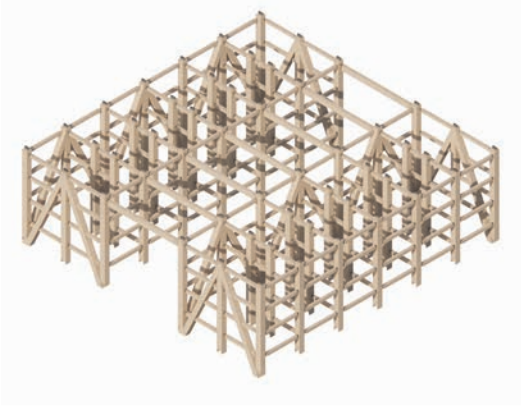
For this project the Open Building principles from John Habraken act as an inspiration for the design of a permanently flexible structure located on top of the former slipway in the NDSM docklands in Amsterdam. A variety of building blocks create a community full of social, creative, commercial and professional possibilities meant to promote diversity, arts and technologies in NDSM.

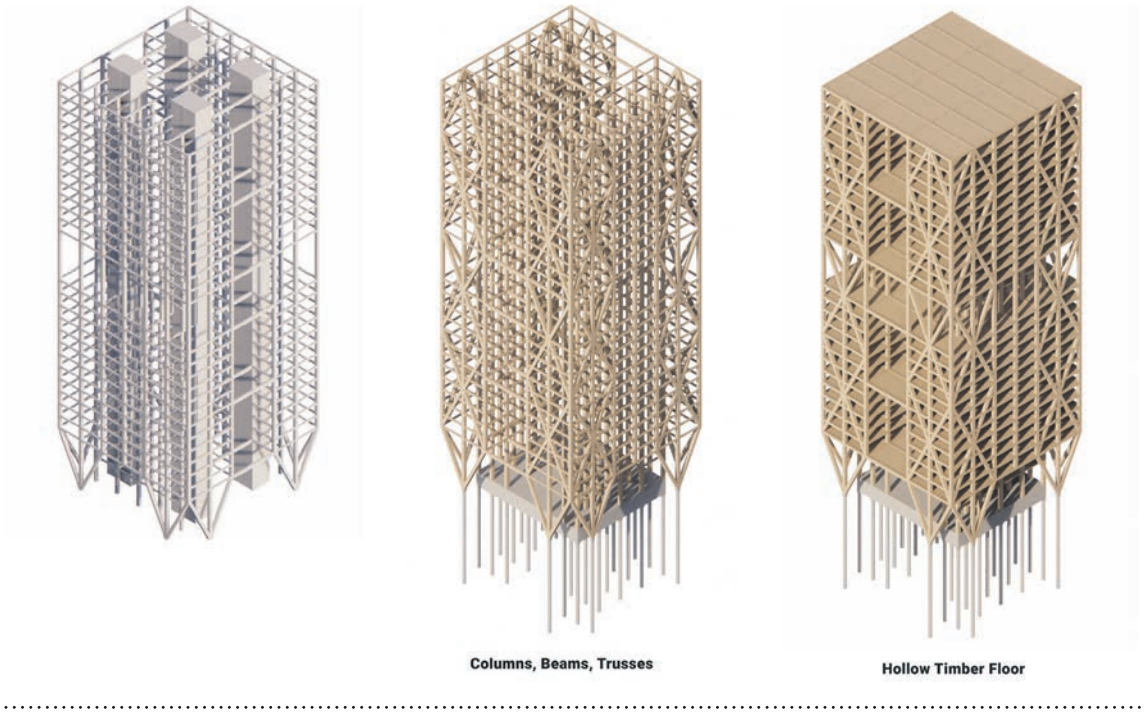
DEMOUNTABLE HIGH-RISE

by **Tim Stins**

The aim of this project is to tackle the dutch housing challenge by incorporating the latest innovations regarding demountability in timber-based high-rise construction. Demountability is favored to enable adaptability of the building's function throughout its lifespan and to enable the re-use of building elements for secondary use. The use of time as a design ingredient reduces greenhouse gass emissions during the production process.



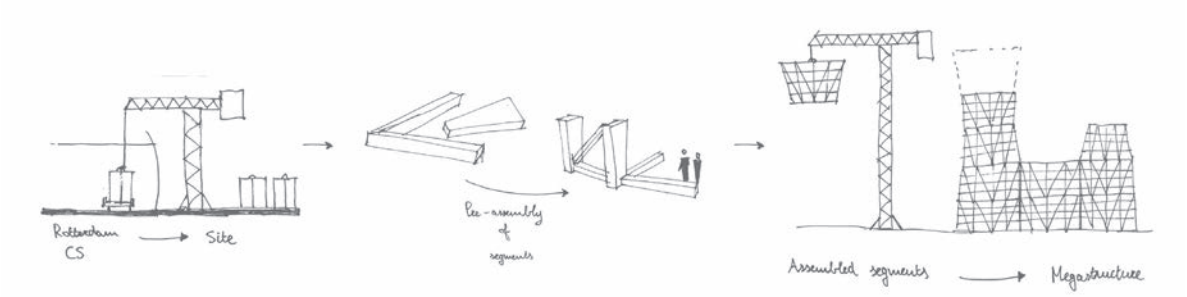


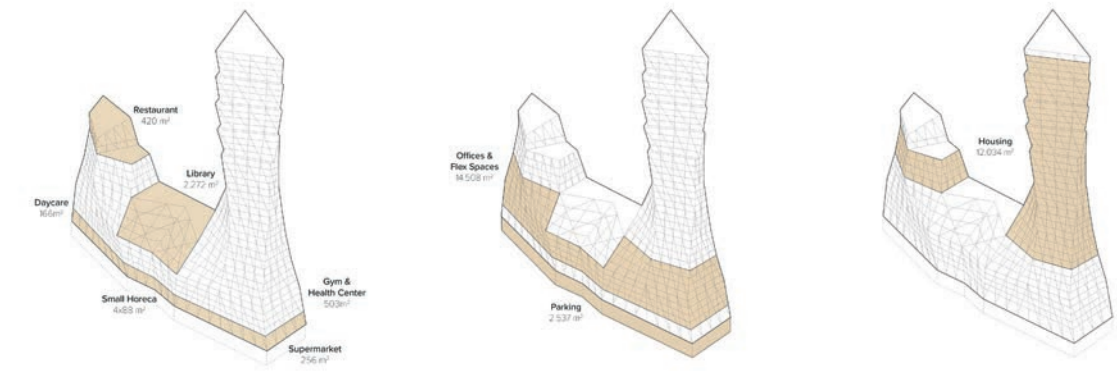


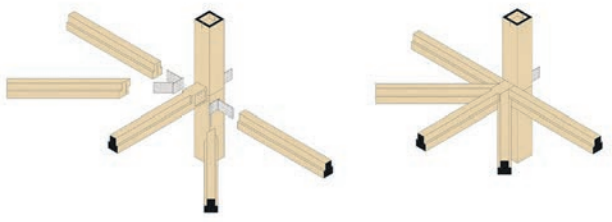
ENGINEERED BAMBOO

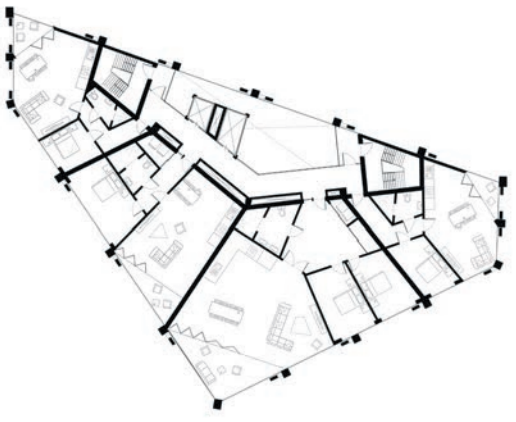
by **Luc Thomassen**

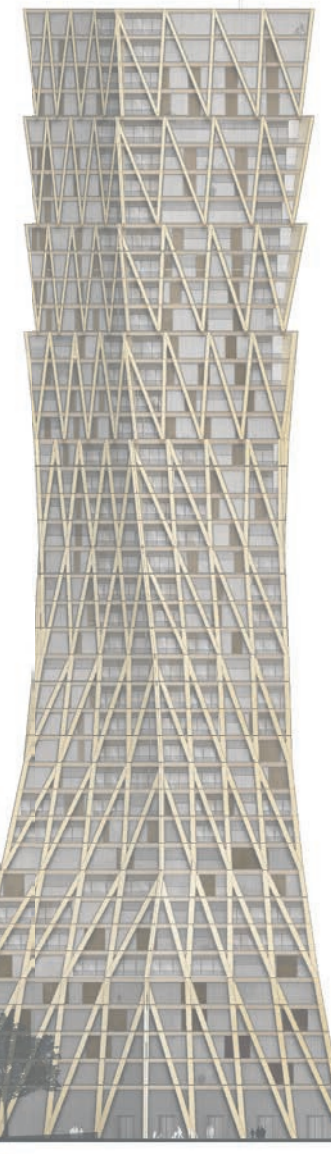
Engineered European Moso bamboo has favorable mechanical properties and shows great potential for large scale application in architecture due to its high renewability and competitive sustainability performance. In this project the practical application potential of engineered bamboo is investigated through the design of a high-rise residential tower next to the Central Station in Rotterdam.

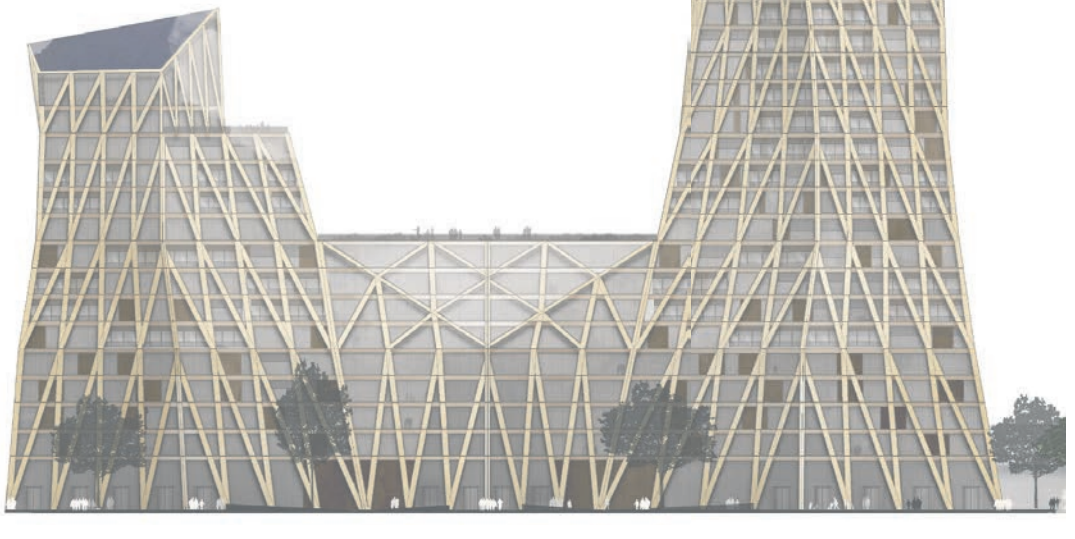






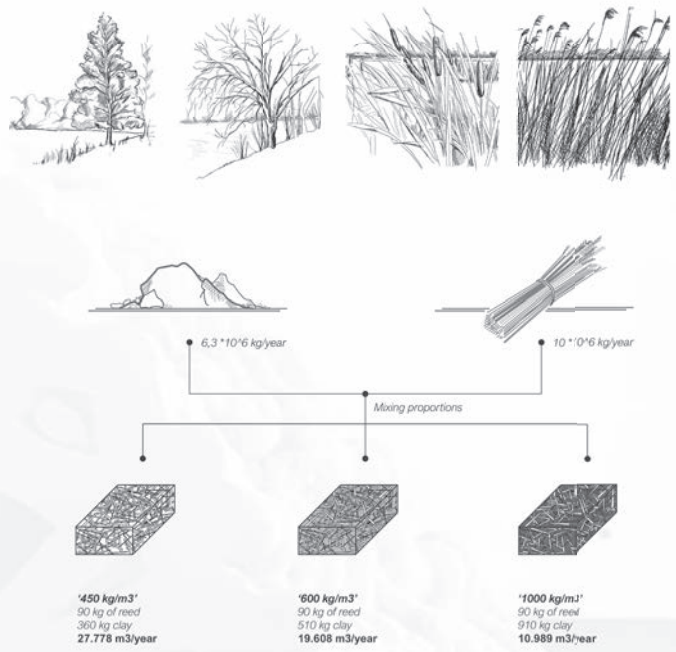


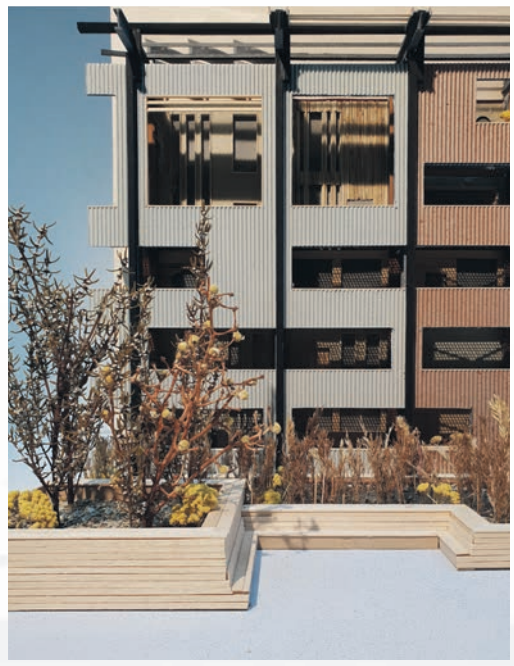




Program | Open Building

Community-based Open Building

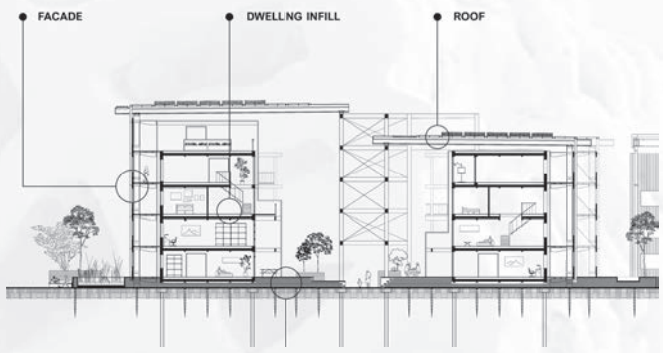


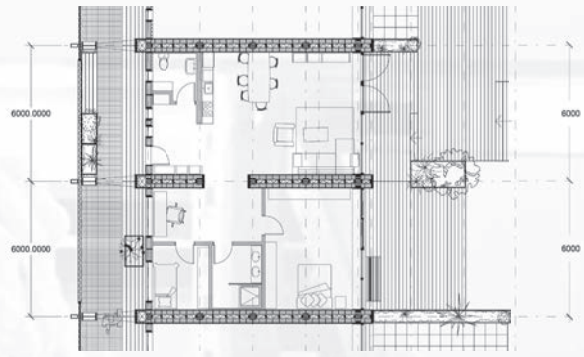


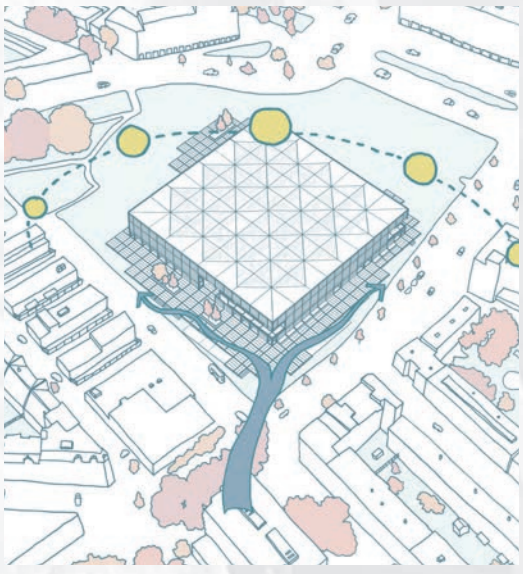
URBAN LIGHT EARTH

by **David Velu**

In this project light earth construction, a rural building method using local earth, wood and fibres, is assessed on its urban potential. Connected to the eco-system services of the Amsterdam wetlands for fibre supply (reed, cattail) and the residual earth flows of the city, the co-housing design proofs how abandoned industrial sites can be turned into ecologically and socially thriving neighbourhoods.



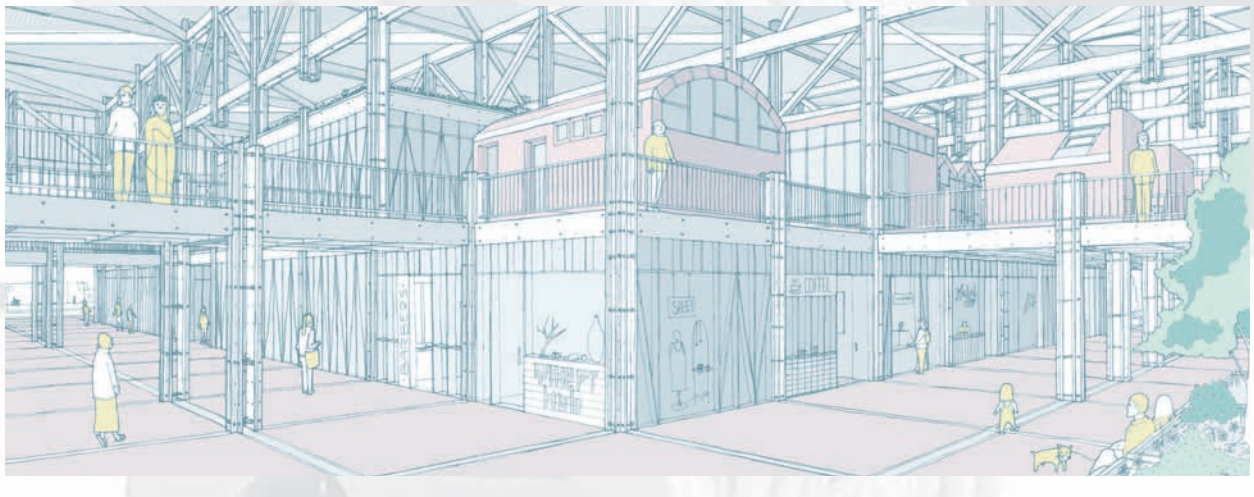


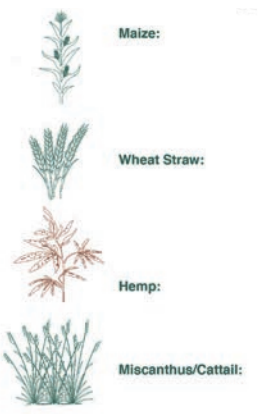


HOMELESS CITY

by **Edmund Thomas Green**

In the Netherlands many municipalities fail to recognise some of it's most vulnerable groups: the homeless. The Temporary City represents a more humanistic image of homelessness; one that challenges the 'us' versus 'them' dichotomy. A detailed building programme in Rotterdam ensures activation of the ex-homeless and integration of the public through third spaces. The homes are derived by a process of self-build technologies and open building principles.

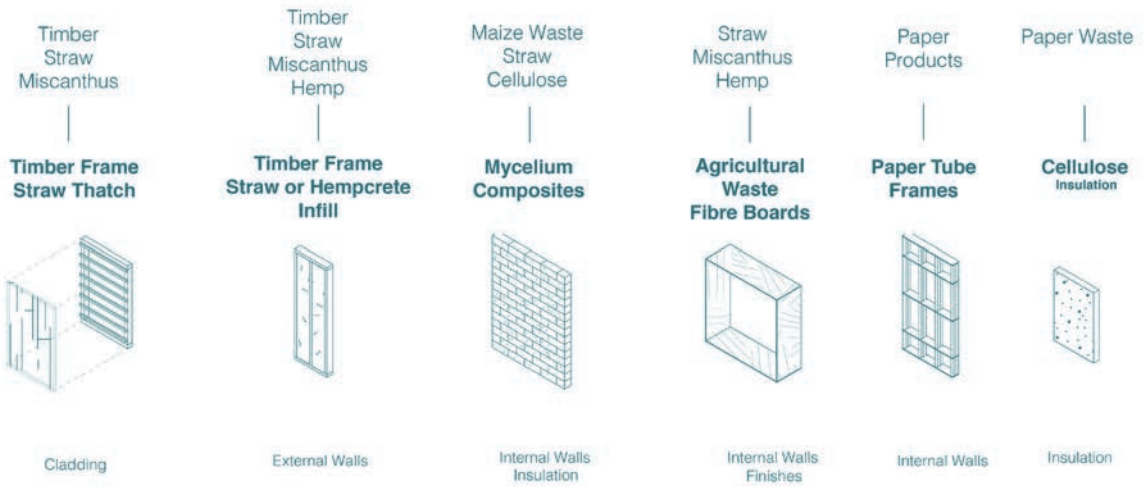


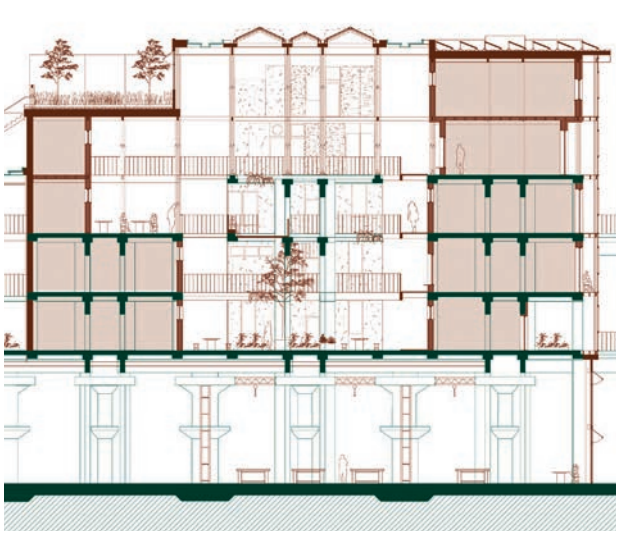


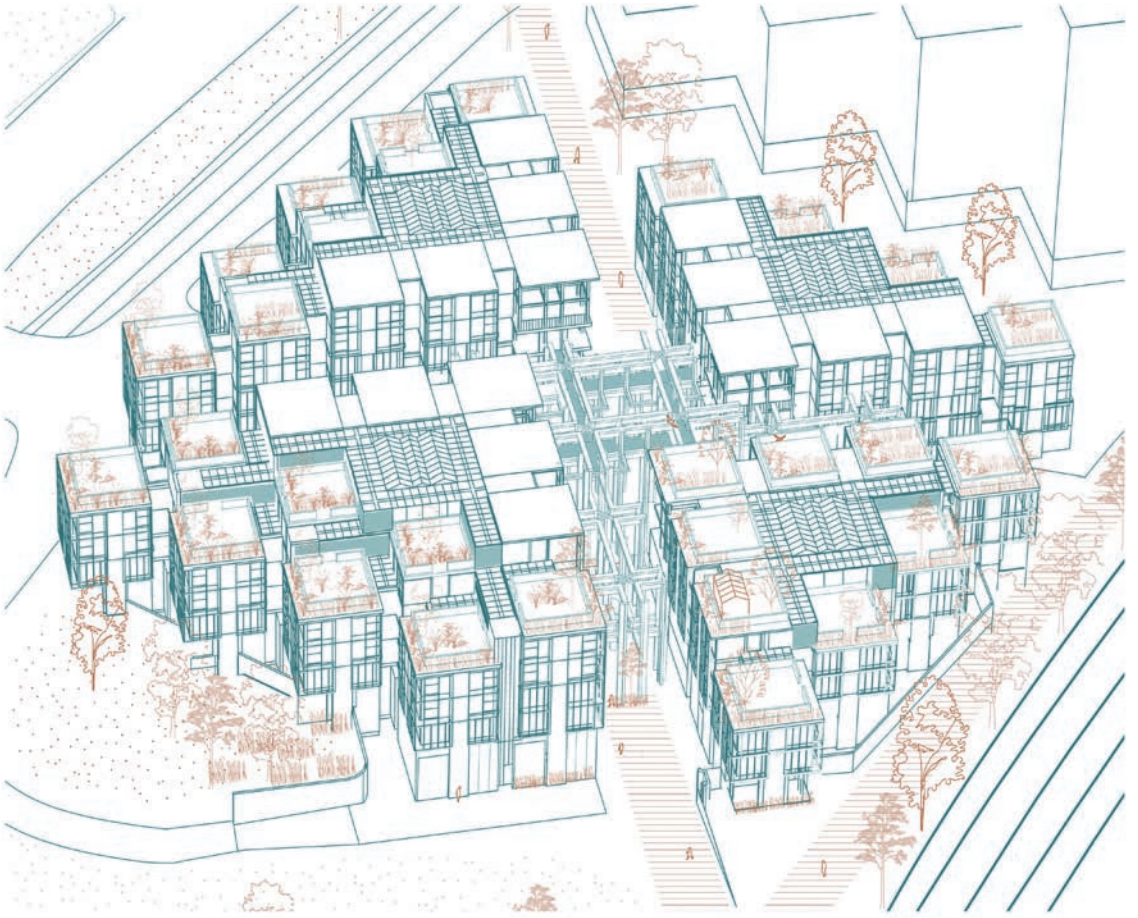
LOCAL PRODUCTION

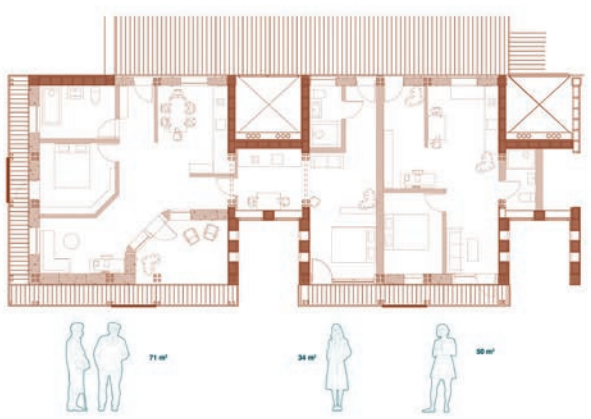
by **Natasha Cleaver**

The proposal transforms Centraal Beheer in Apeldoorn, the structuralist icon of Herman Hertzberger, into a place to manufacture, trade and live with local materials. The design focusses on the residential program, demonstrating how local material supply can generate housing in a participatory way, responding to individual needs and engaging residents in the design and build process. The project makes use of regional resources, specifically from the agricultural land, the paper making industry and the Veluwe forests.









Program I Second Life

Perspectives on Construction

text **Anne Snijders**

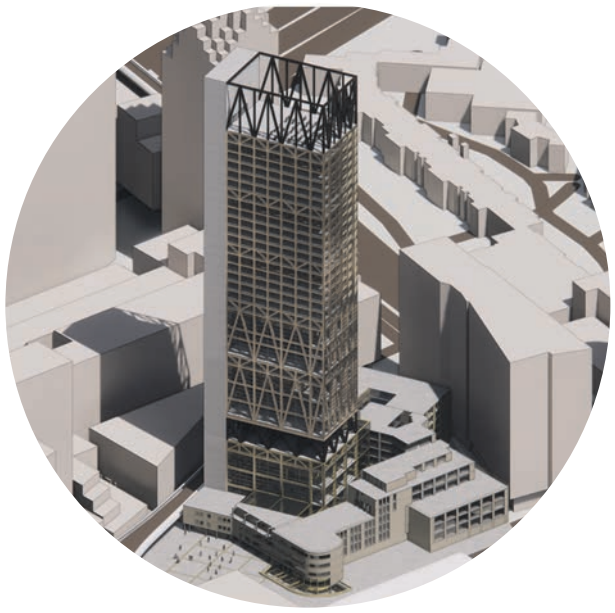
Second life puts a "second life" on the agenda for Post 65 buildings in general and specifically those of the government. We all know the headlines about CO2 emissions, material scarcity and the depletion of scarce resources. This will certainly not diminish, the problems are piling up. Exceeding nitrogen values is the latest news, resulting in protest and conflicts.

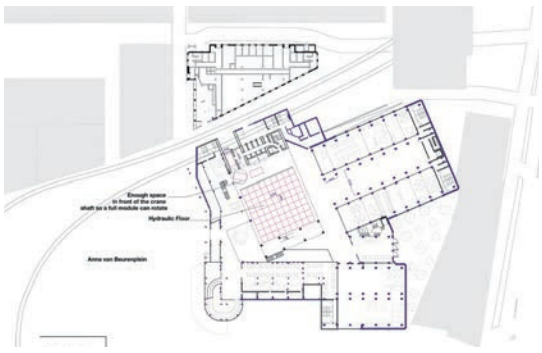
The construction industry has a substantial share in these problems. Continuing with old known methodologies as "end of lifespan" is simply no longer the way. But how? Regarding climate change, innovation in construction is of public interest. In addition, buildings and their components that are produced with a lot of energy and CO2 emissions deserve a second life. By putting the topic of "Second Life" on the agenda, we have made a start to put this complex matter on the map, whereby the existing building stock is seen as an opportunity.

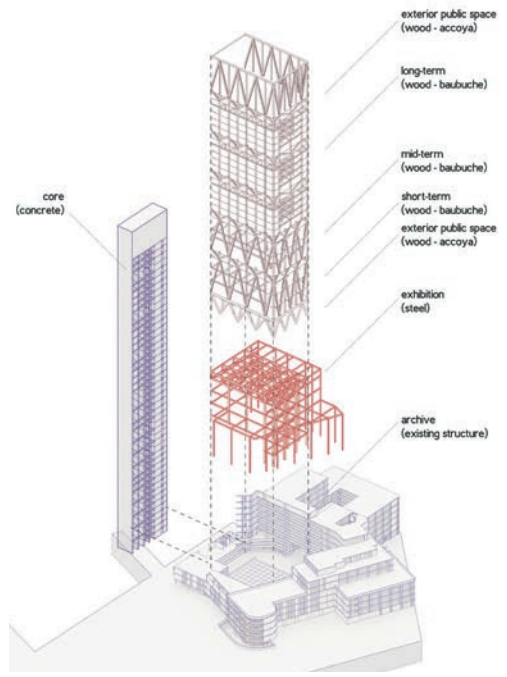
Use of existing structures will diminish CO2 en NO2 emissions. It will diminish the question for more infrastructure and built environment but asks for better and carefull design related to climate goals and a healthy living environment. Space can be re-used for flexible working environments or harvested for urgent societal questions such as the pressing housing question. Skin renovation and transformation will be part of research. New business models will be needed, as well as strategies for material use and the degree of adaptability.

The focus is in particular on office buildings from the period 1965-1995. Many of these buildings are in the spotlight locally and will be given a different function or renovation in the near future. History and appreciation also play an important role in this. They are often monotonous colossi, often with a valuable concrete support structure.

In collaboration with the Central Government Real Estate Agency has been worked on meaningful examples for five case studies. Students of the aE graduation studio worked through "research by design" on the existing structures with the aim of investigating their potential and discovering the function they can fulfill in the contemporary urban fabric. Material circularity, energy management and flexible living-work environments were used as a starting point for design.
It's not only a search for technical interpretation, but is often a search for intelligent solutions, aimed at a combination of a long lifespan, user-friendly design and a wealth of architectural innovation.



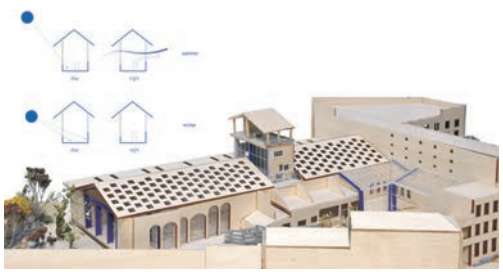


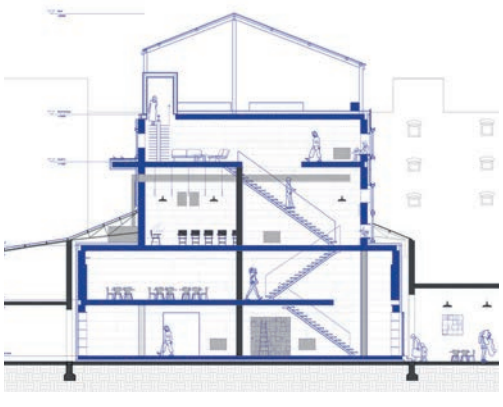


ARCHIVES AND DIGITIZATION

by **Stelios Poliviou**

The project considers not only the re-design of the National Archive building but the wider re-design of the site, as an important piece of urban fabric to the city of the Hague.All things considered, the National Archive is to be visualised as a more public place and a piece of public infrastructure that responds to a multiplicity of challenges.

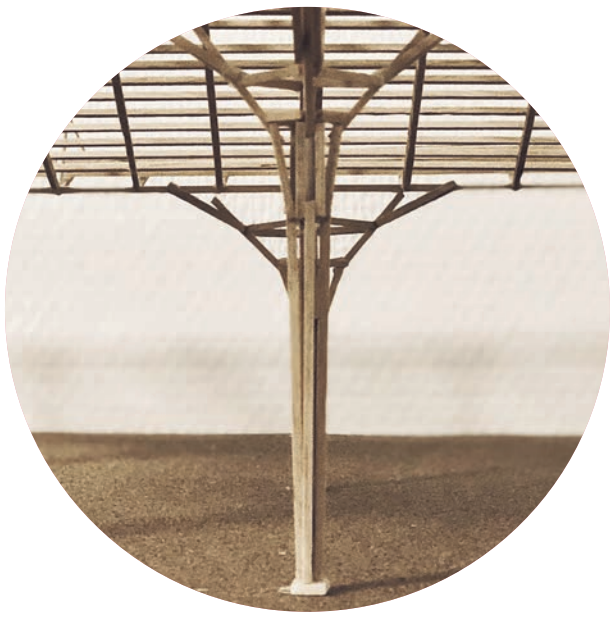


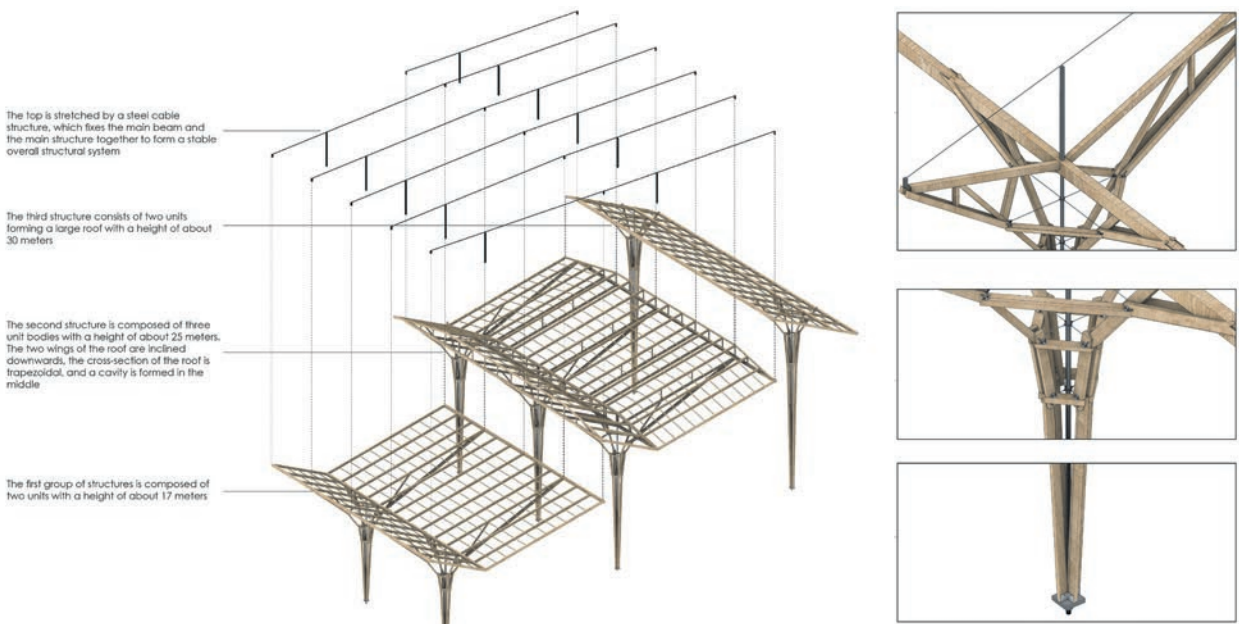


URBAN TRANSPLANT

by **Tslil Strauss**

Deconstruction has environmental, social and economic benefits since it allows the reuse of existing materials. Reuse within the construction industry has the potential to reduce waste streams while decreasing the demand for excavation of natural resources. The paper proposes a system for reusing in-situ concrete in new construction.

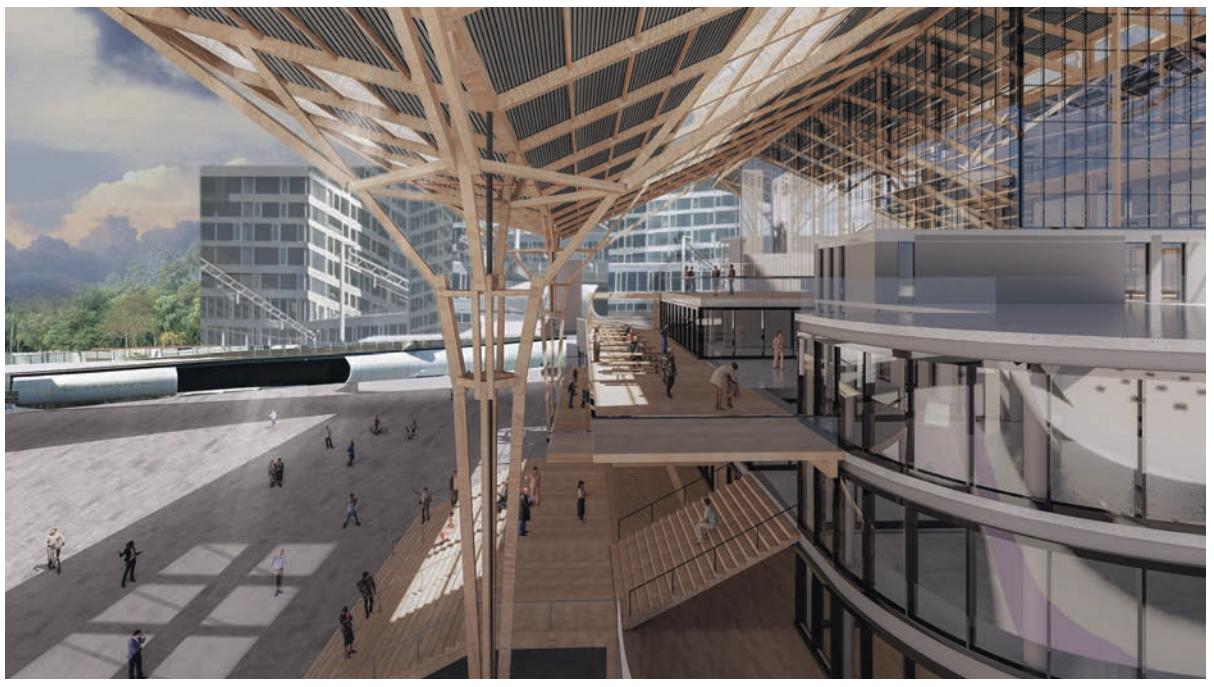


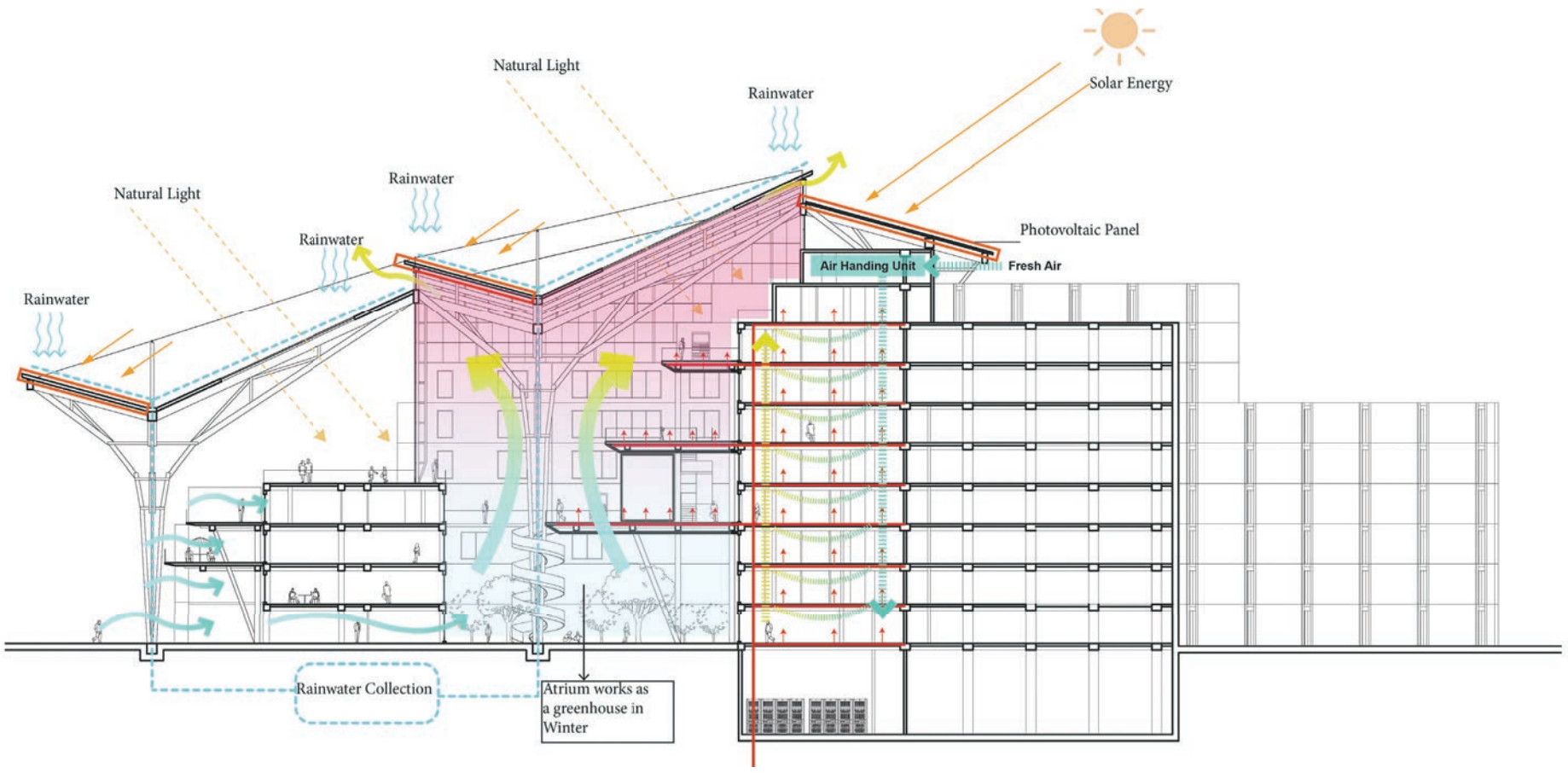


NATIONAL ARCHIVE

by **Qi Jing**

The National Archives of the Netherlands in The Hague, which was built in the 1970s using a reinforced concrete structure, faced many problems now. The functional requirements of decades ago have been saturated, and the lack of architectural space necessitated a new renovation of the building. The design is aimed to make the entire building "light". The "lightness" here is not only the visual perception of the building volume, but also the "lightness" of the entire building energy system and construction process. Wood is chosen as the main material in the project to form a light structure system based on the original concrete building, creating a different spatial experience and environment for the citizens.





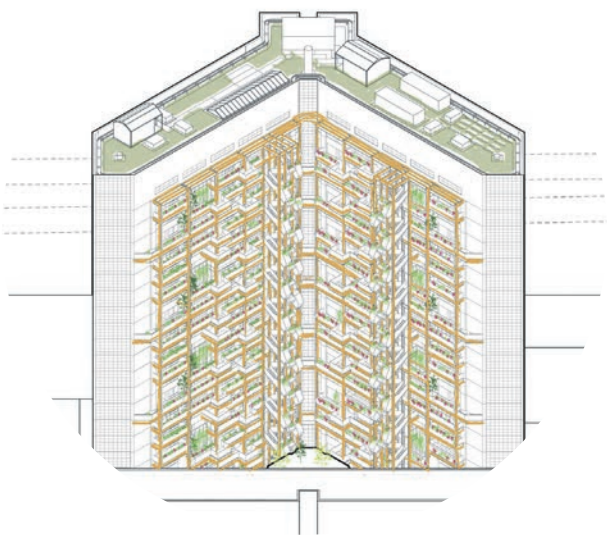
Program | Second Life

Ideas for the Knip

text **Anne Snijders**

Which opportunities does design with residual flows, design for disassembly, design with bio-based materials for the built environment offer?

In the formerly monofunctional Sloterdijk area, design experiments were done on how the combination of technical themes with a residential program lead to a strong link with the context and its users.
The 20-storey Knip - originally designed for Reed Elsevier but commissioned by the Dutch tax authorities - served as a case study that was stripped to its essence. Oriented east to west, lying in one of the "green fingers" the city has, the building offers many starting points for designs that focus on social cohesion, renewed lifespan and a healthy living environment. Industrial and monotonous solutions from the 20st century were being questioned. The result is a plea for lively public plinths open to the people. Second skins or facades in the tower offer numerous variations based on needs for collective and individual use and utilize a beautifull view, climate and comfort.



CIRCULAR WASTE TREATMENT

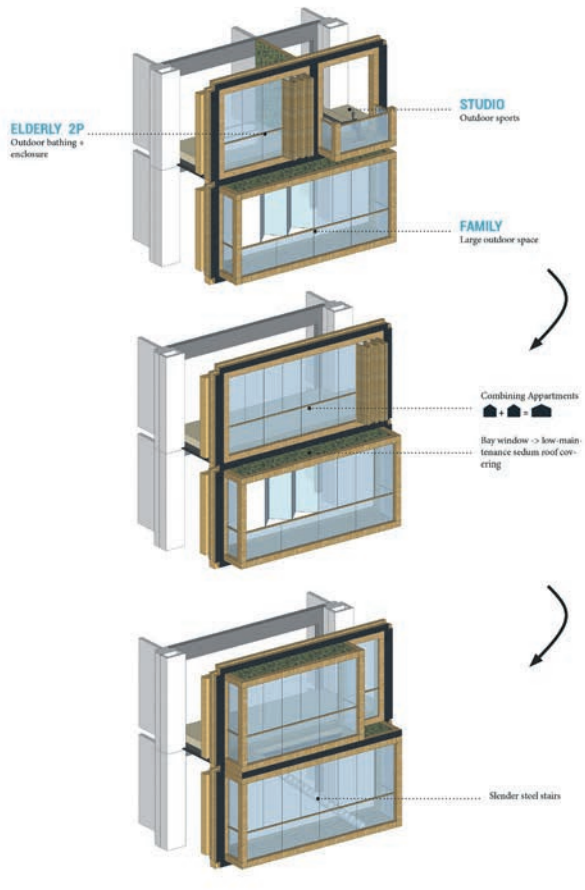
by **Xiaohu Yan**

This project explores the possibility of implementing a decentralised and circular household organic waste treatment system within a high-rise residential building in Amsterdam. The combination with designed shared space and treating facilities in the second facade creates the opportunity for community cohesion between elderly, students and starters. Green will be the bonus.

KAIZEN TOWER

by **Oscar Snethlage**

A building is a complex composition of materials and products that can be measured at various levels. Goal of the research was to create insight in the demountability of the Knip and how to upgrade this when designing a residential transformation. The design focussed on a kit of parts for an adaptive facade. Aim was to create a vertical village, with green collective spaces and customized apartments.



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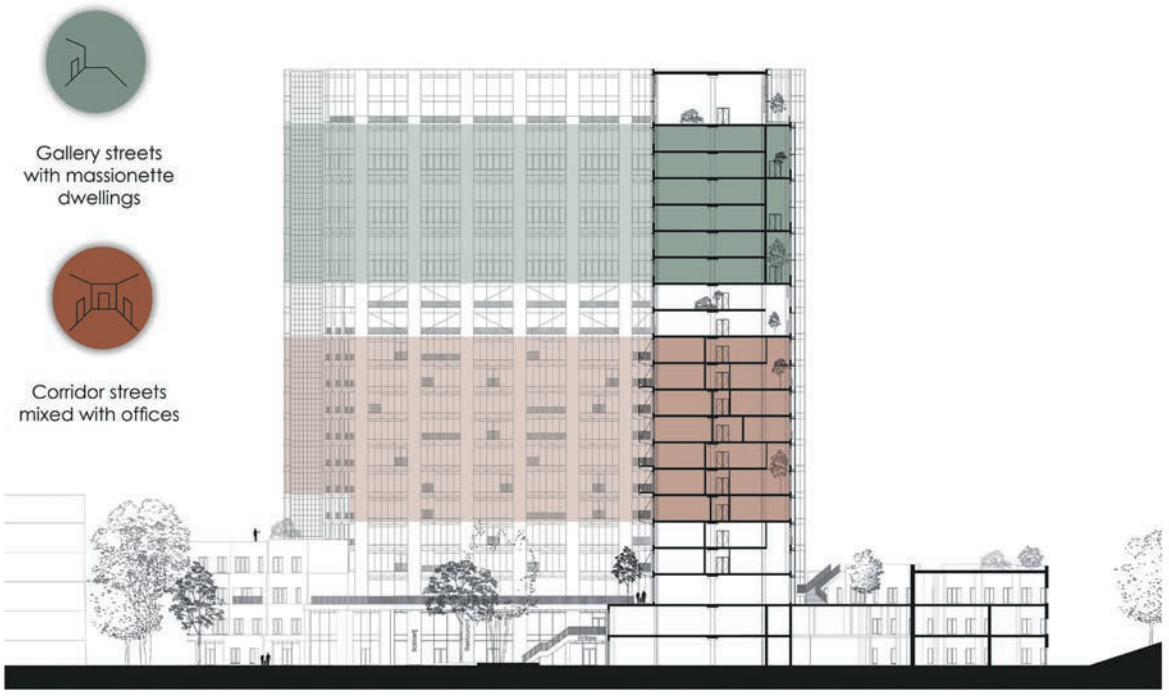
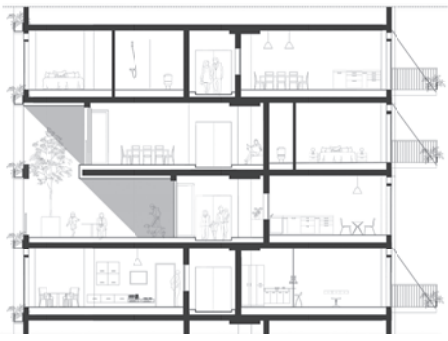


A REFLECTION OF SOCIETY

by **Denise Kiers**

In this project the Knip is – in answer to several Amsterdam city goals – transformed into a vertical neighbourhood: Collective Private Commisioning groups live in corridors which function like streets. These streets have a high permeability and adaptability in the high rise and a strong focus on nature inclusiveness in the low rise.



SYMBIOTIC HARMONY

by **Sasha Adema**

Going from a monofunctional office area to a nature-inclusive lively neighbourhood. Creating a building that not only supports its own ecosystem, but at the same time forms a valuable addition to the urban quality of the neighbourhood. Base for the design was the thematic research which focussed on the relationship between the urban heat island effect and what architecture can do.

COMMON HOUSES

by **Sharon Lim Yu Jung**

The Common houses project suggests housing typologies which have small footprints and a typical configurations based on ''engawa'' – in-between space connecting to gardens for example veranda space. Reed is being used in several configurations, from warm welcoming material in the plinth, to semi transparant fence material near the galleries and insulation material in the interior.

Program | Harvest

Rethinking the Garden City Concept

text **Anne Snijders & Mo Smit**

Working on healthy cities 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 took the chance to rethink the concept of the Garden City and 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 has been 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. By looking back to earlier stages of urban developments and by innovating the urban concept of the Garden City, which combines the best of the city with the best of the countryside, past and future will be connected in a sustainable and valuable way.

FOOD COMMUNITY

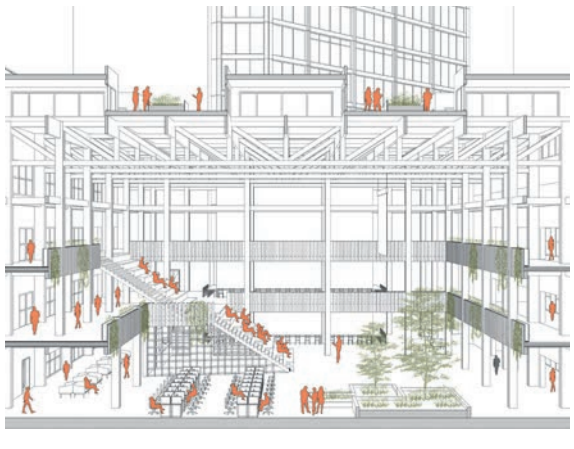
by **Eleonora Farcomeni**

Would it be possible to create a communal food system on neighbourhood scale, which encourages a more conscious relationship of citizens with food? This research question led to the development of The Food Community House, a modular pavilion made of locally sourced materials, such as reed and willow. The house plays a central role in a food system which combines gardens and fields used for organic food production with social activities such as harvesting and communal preparation of food.

FUTURE OF FOOD PRODUCTION

by **Michal Siupik**

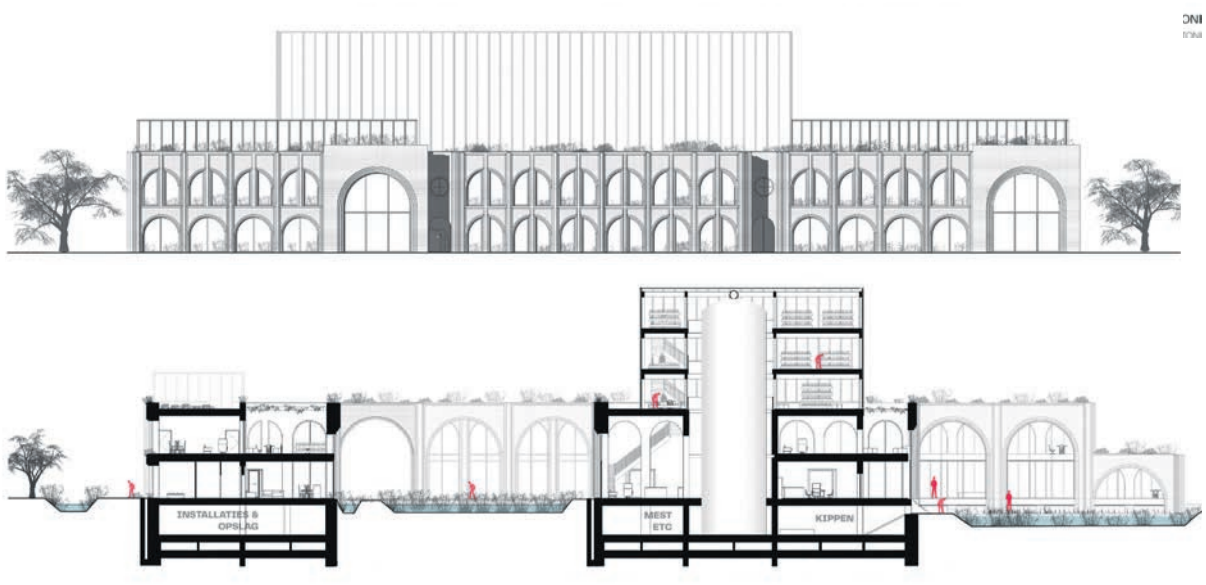
Food and agricultural land become scarce, additionally farming industry's water consumption, carbon emissions and land use are growing. At the same time, the growing office vacancy in Dutch cities creates an opportunity to introduce urban agriculture. This project focusses on the transformation of a former tax office in Amsterdam (De Knip, Sloterdijk) into an educational institution for urban farming. The building showcases how urban farming works and how food production can be integrated within an urban setting.



MULTIFARM

by **Hilde van de Pol**

From the research into neighbourhood scale food production and water purification, design strategies have been developed for the Multifarm: an urban farm constructed out of local earth with health care facilities in Amsterdam. The research provided insights how urban farming activities could provide mental health benefits for vulnerable neighborhood members. The Multifarm has been designed in such a way that it forms a valuable node within the neighbourhood's social and ecological system.



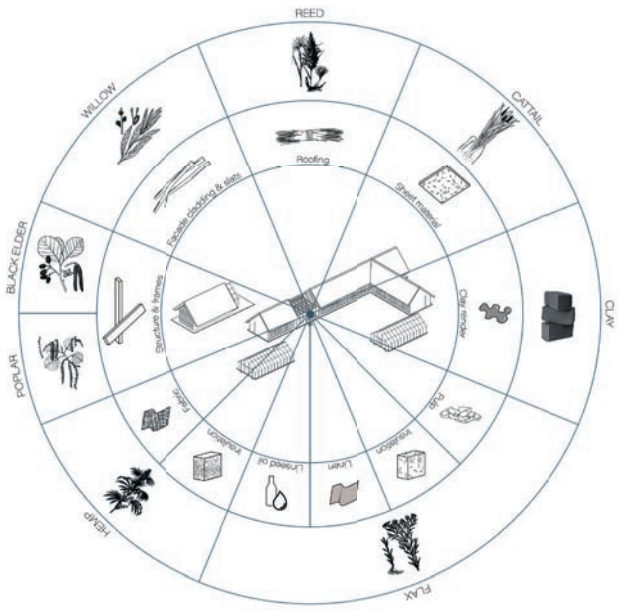
Program | Harvest

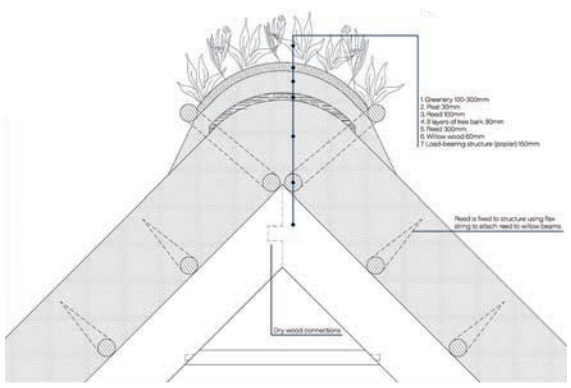
Towards Regenerative Production Landscapes

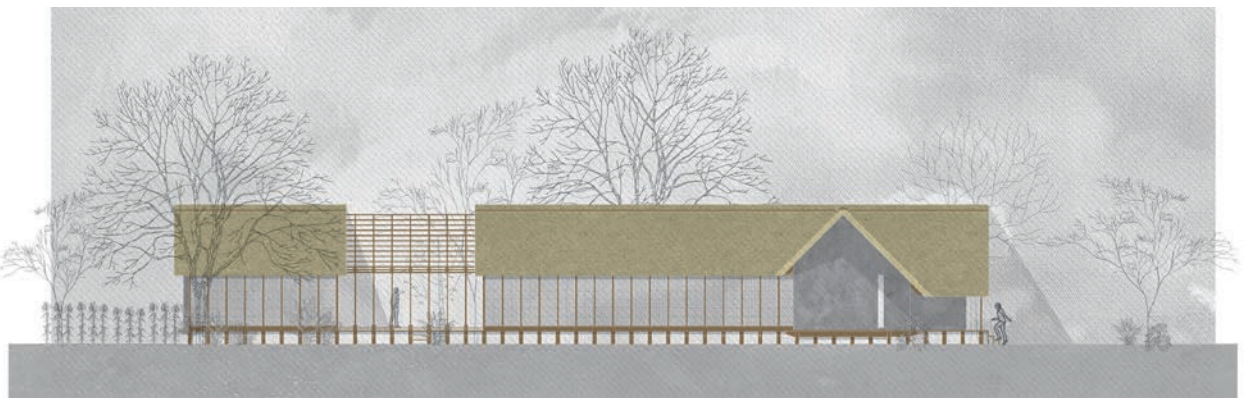
FARM OF THE FUTURE

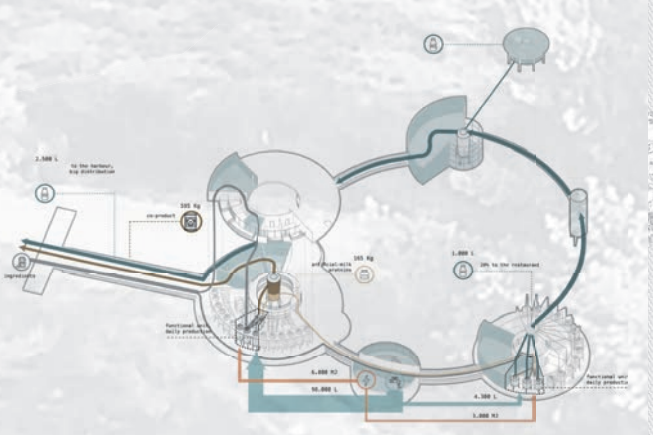
by **Roos Köbben**

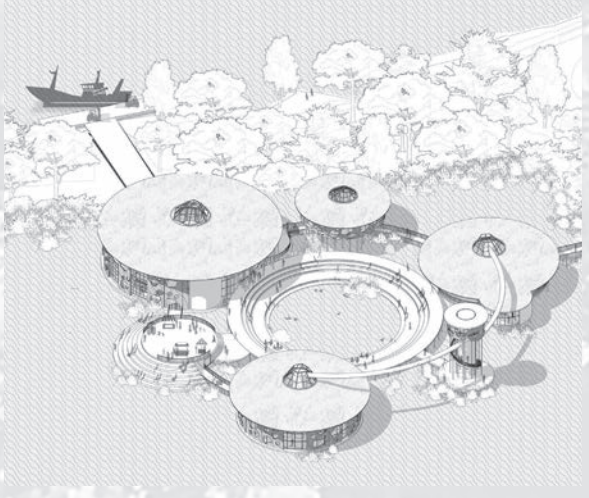
The Groene Hart region in the Netherlands currently faces many issues, of which soil subsidence of the peat meadow landscape is the most urgent. The problems are mainly caused by the dairy industry, currently covering 80% of the region. This project challenges these issues with the design of a circular, zero-impact farm, its activities focusing on the production and manufacturing of biobased construction materials.







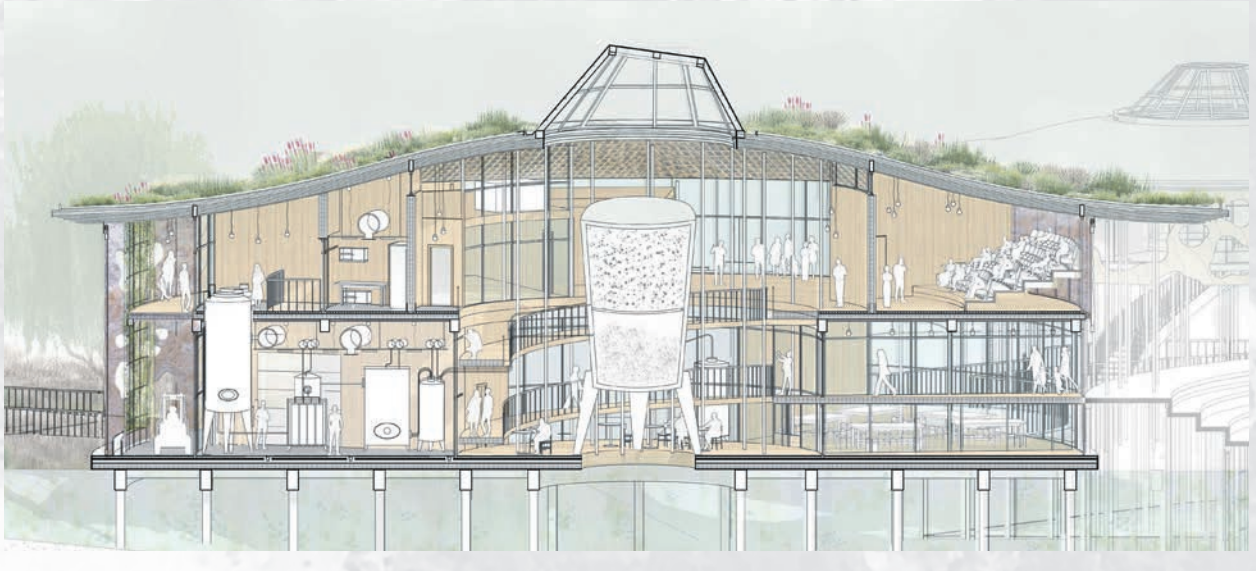


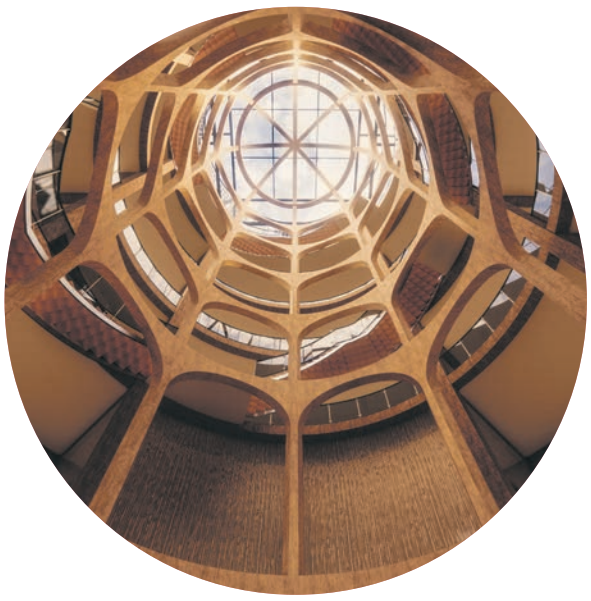


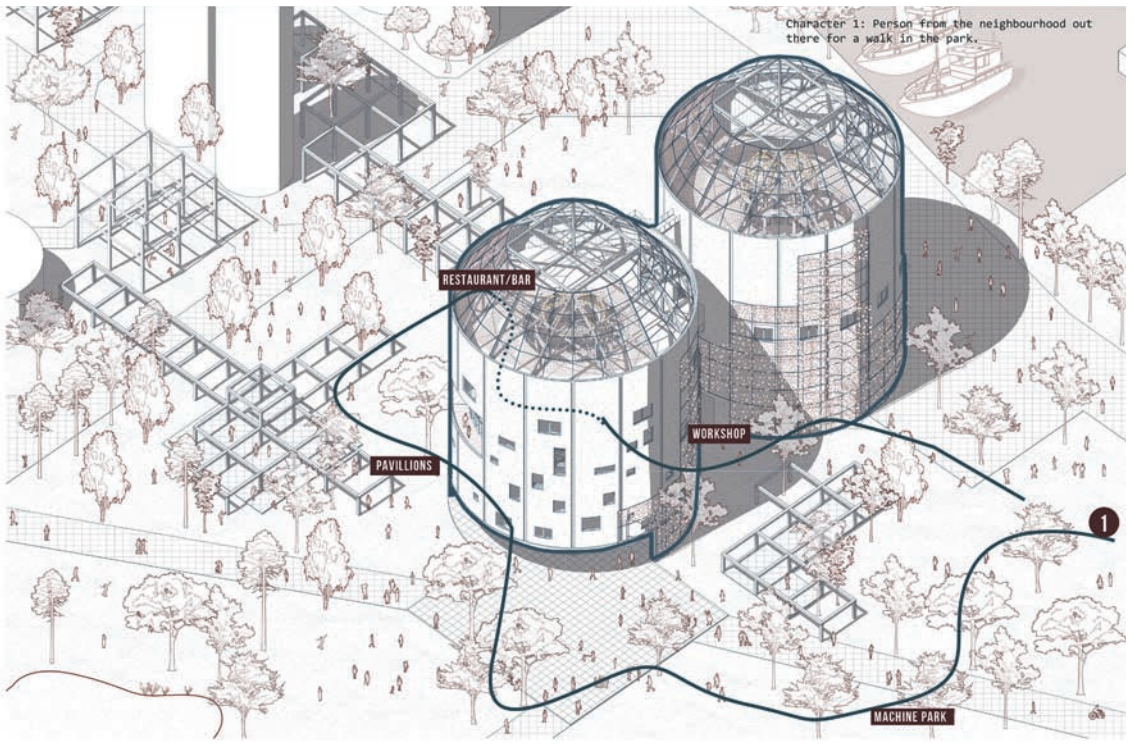
MILK FARM 2.0

by **Elisa Pastorelli**

The Netherlands is a dairy country and has the highest livestock density in Europe. This causes numerous environmental issues, such as GHG emissions, water use and energy consumption. This project therefor proposes a radical paradigm shift. A floating cowless milk farm has been designed, based on principles of cellular agriculture, sustainability and ecology, synergizing nature and technology and doubling as an educational and social hub.



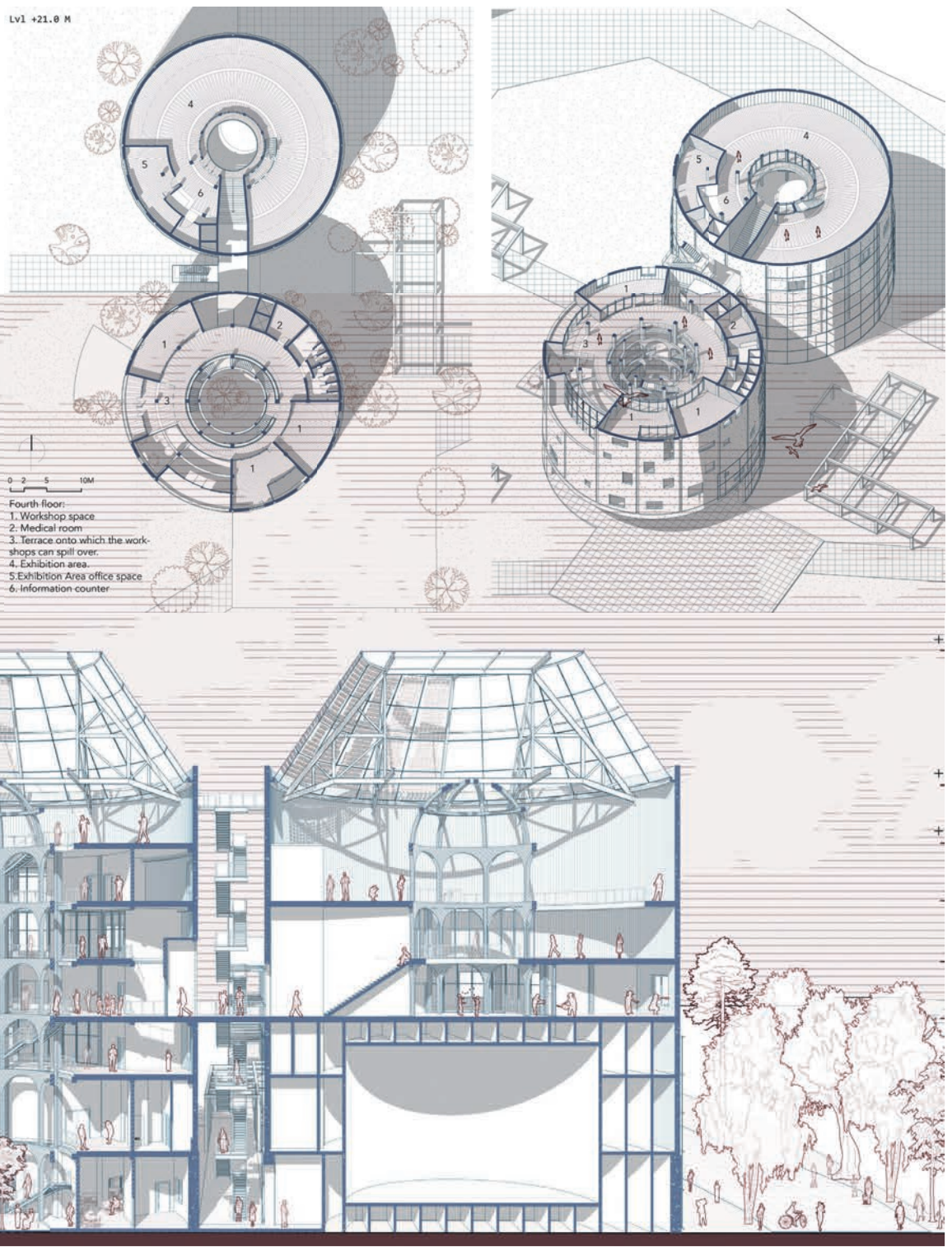




MODERN INDUSTRIAL HERITAGE

by **Darshik Parejiya**

To reduce carbon emissions and restrict global average temperature rise, coal power plants are being decommissioned in the EU under the Paris Agreement. In the next few decades, defunct coal-powered plants would pop up all over the world. This thesis therefor explores the possibilities of integrating defunct coal power plants into the city by re-using and re-programming existing structures and materials on-site; an idea to conserve the local distinctiveness, while enhancing landscape qualities and the sense of place.



Context I Abroad

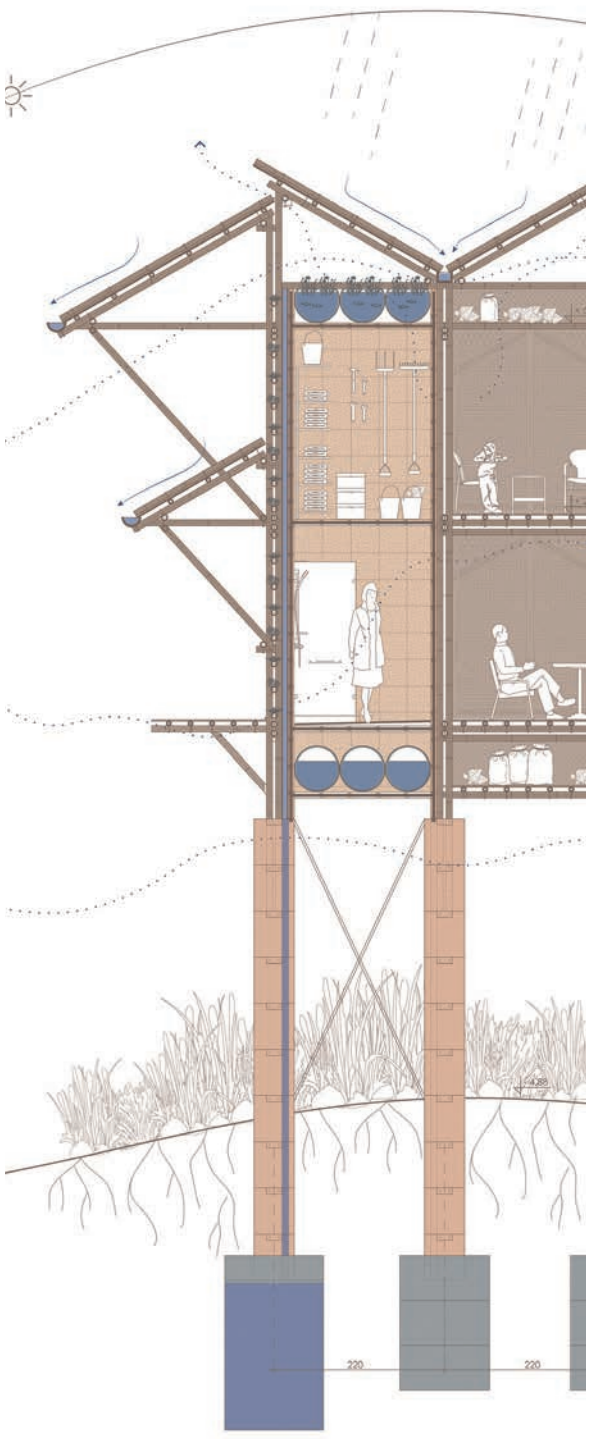
Social-Ecological Design Approaches around the Globe

text **Mo Smit**

Over the last couple of years aE Studio has focussed on Indonesia and the Caribbean as the Abroad research by design contexts for students' projects.

Long term international collaboration projects, such as the Shared Heritage Lab (Indonesia) and the ongoing Islanders at the Helm research project (Caribbean) enable students to develop their graduation projects abroad.

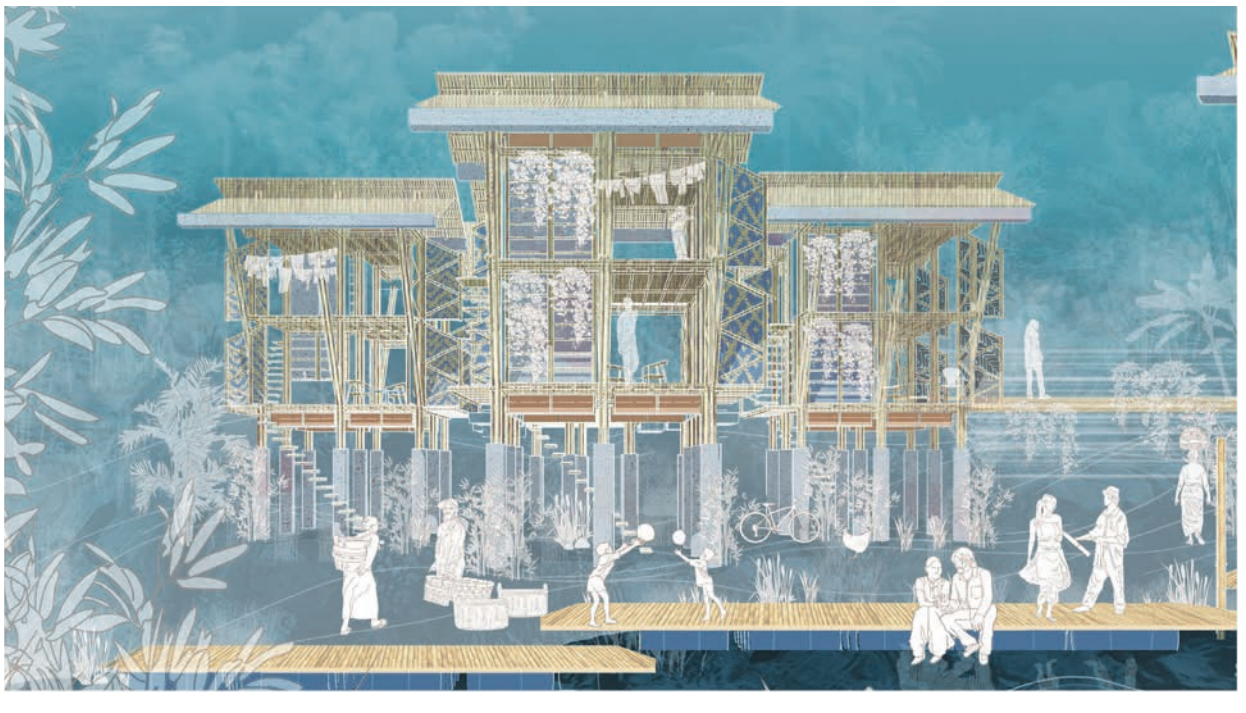
Through working in these culturally diverse contexts, where often has to be dealt with many social, ecological, technical and economical issues at the same time, students are challenged to critically reflect on their position as an architectural engineer and what can be achieved by design. The engagement with the historical dimension, different cultures and their habits, creates life changing experiences and enriches their design horizon. The active role of the community in the design and development process, the low-tech attitude with regard to construction, the sensitive ways to passively handle the climate and the regenerative and circular strategies with regard to material use have become key ingredients of any aE Studio graduation project abroad. The social-ecological design focus, adopting a systems approach, is "sensitive to scale and people, is future oriented and centers social needs in design" (Richard Graves et al). Last year, besides Indonesia and the Caribbean, students have also developed graduation projects in other countries abroad, such as Ghana, Taiwan and Greece (Moria).



LIVING WITH WATER

by **Aga Kus**

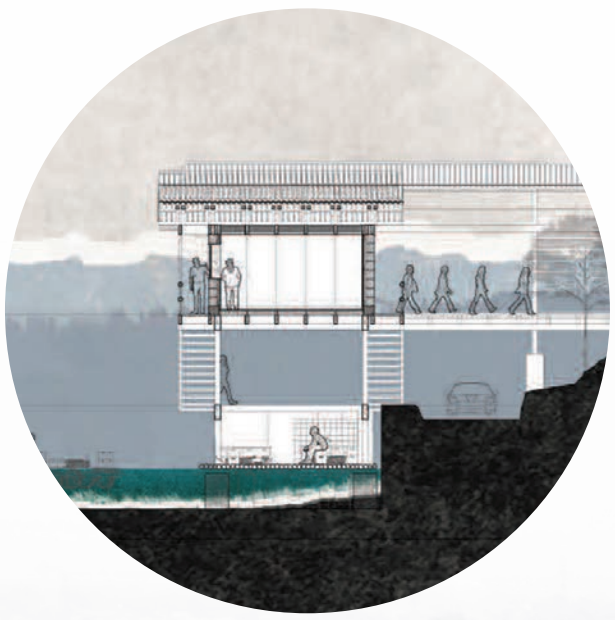
In many rapidly growing cities of Indonesia, such as Bandung, the areas of informal settlements are increasing. They are erected on hazardous lands, often in flood-prone areas next to rivers. This project investigates the traditional ecological knowledge embedded in Sundanese settlements, such as Kampung Naga and Baduy, by studying the water-related characteristics of the landscape, the settlements and the homes. The design for a riverside kampung housing typology strives to empower the community by setting a sustainable example of living with water and reusing locally available resources, such as common reed, bamboo, and recycled plastic, to build resilient homes and enhance economic opportunities.



REGENERATIVE RUINS

by **Alex da Costa Gomez**

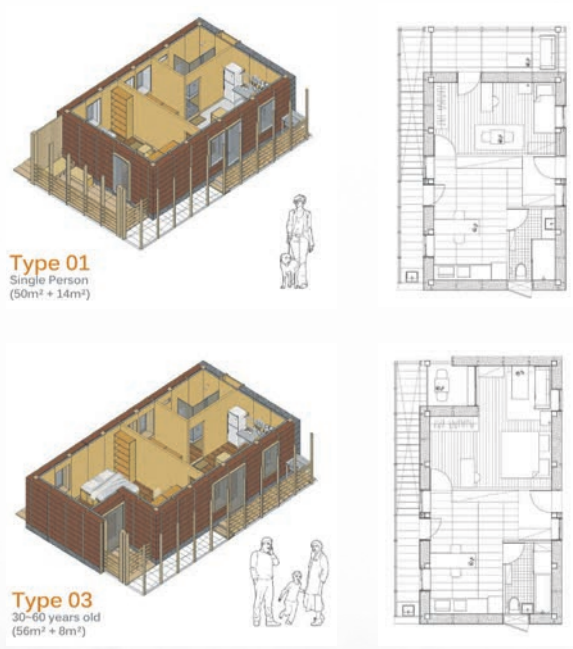
‘Regenerative Ruins’ focuses on the neighbourhood Otrobanda, centrally located in Willemstad (Curaçao). For its fresh water supply, the island is dependent on a centralized desalination plant, which neglects the natural water cycle. The trend to live in suburbs led to an exodus of Otrobanda, leaving many empty monuments behind. A solution to both problems is found by transforming a dilapidated monument into a regenerative water production space, offering Otrabanda a flourishing water courtyard.



TAINAN WATER VILLAGE

by **Henry Li Wang**

The coastal district of Anna in Tainan (Taiwan) contains beautiful villages, famous for their aquaculture industry. The industry not only influences the communities’ culture, but also the architecture and the landscape. However, local communities are facing many difficulties, such as over-development, flooding and poor living quality. This project aims to renovate the culture of living with water by developing flood proof water villages by means of a landscape sensitive circular self-built approach.



CONTAINER HOUSING GHANA

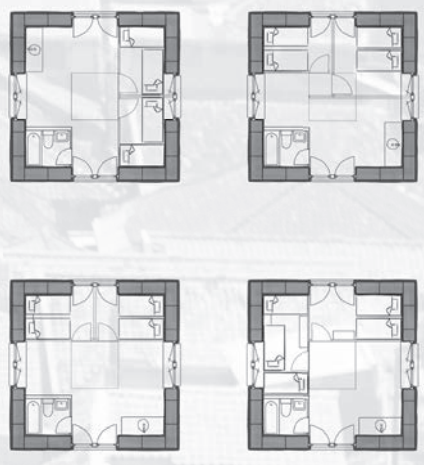
by **Bari Cobbina**

Ghana is enriched with diverse cultural values and traditions especially with respect to traditional architecture. In the city of Tema there is a huge demand for student housing close to university. This project therefor researches the potential to use discarded shipping containers as a base for a climate and eco-friendly student living experience, making use of local resources and bearing in mind the climatic and cultural influences of Ghana.

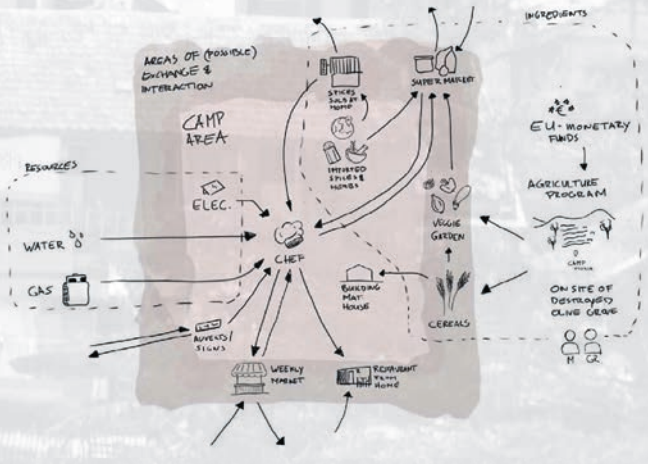
RETHINKING MIGRATION

by **Marcel van der Maas**

A non-site specific strategy for designing refugee camps in a participatory manner has been developed, enhancing beneficial exchange between refugees and host communities. Research has been done into low-tech straw bale construction methods, allowing refugees to build their own homes. A simple construction manual helped to answer the question how quality can be created with very little means.



Examples for interior wall placement of refugee strawbale home



Value model of agriculture programme for synergy between refugees and host communities

Alumni

Interview with aE alumni Sae Adipurnomo

When did you graduate @aE Studio?
On the 2nd of February 2018, I graduated with the project "Pray for Rain". It is a project about reconnecting living with its 'ecology'. I was fascinated by the idea of architecture that plays a significant role in solving environmental and social issues.
I was born and raised in Indonesia. So, to get a chance to do a graduation project in Indonesia, which brings together my culture and the knowledge that I gained during my study, was a beautiful challenge.

After your graduation you started to work at Gemeente Amsterdam. What does it have to do with your gradation project or preferences?
The objective of "Pray for Rain" was to meet the need of the dwellings and use this as a tool to provide a solution to deal with the water challenges. Its aim was to improve the living and working conditions and environment in Cigondewah, Bandung, Indonesia.
I started my graduation by doing a research about different water systems, and was really inspired by the water system in Kampung Naga. This is a rural area in West Java that has a strong circular tradition for their water management but also in the material use.
The project resulted in a water system integrated in architecture from an urban scale approach to the material use in details.
During the research and design process, I realized that the solutions for the goals above were happening mostly in the public space; in the shared stairwells, shared balconies, patios, small alleys and the fields.
These public space aspects really interest me. Seeing the job vacancy at the Municipality of Amsterdam, I had the curiosity to learn about the public space of Amsterdam. I am interested in how all the different layers work together, what the challenges are and how it can be designed well in response to the rapid changes in the city. Currently I have been designing bridges as part of the public space design team in different areas of Amsterdam.

How does your background as architectural engineer influence your current role within the organisation?
aE Studio has taught me a lot of skills that I can apply to my work; the way of analysing and addressing an issue and designing architecture that touches many layers, such as environmental and social aspects. The environmental aspect that I'm facing now, that I see as a beautiful challenge, and is becoming my goal for every project, is to design a circular bridge. How to be able to use less material, reuse local materials or create a modular system so that a part of the bridge or the bridge as a whole could be reused again in the future.
When looking at the social aspects: a bridge is not only a physical element that connects two parts of an area but also becomes a space for people to interact, a space that will be owned by the public.

Where or how do you see yourself in the future?
In the future, I see myself expertise through the gained knowledge learned from the different projects, from the people I worked with and the actual citizens. The public space will be more important than ever. And I hope that circularity will not only be one of the visions for designing a bridge or other architecture elements, but will be a standard requirement. I hope to be able to continue contributing in reaching this aim.

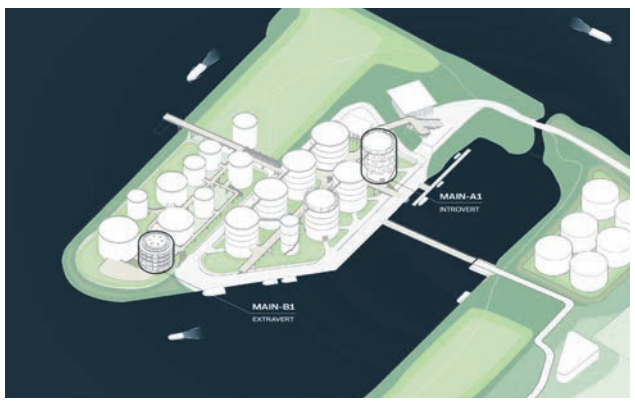
Interview with aE alumni Coen de Vries

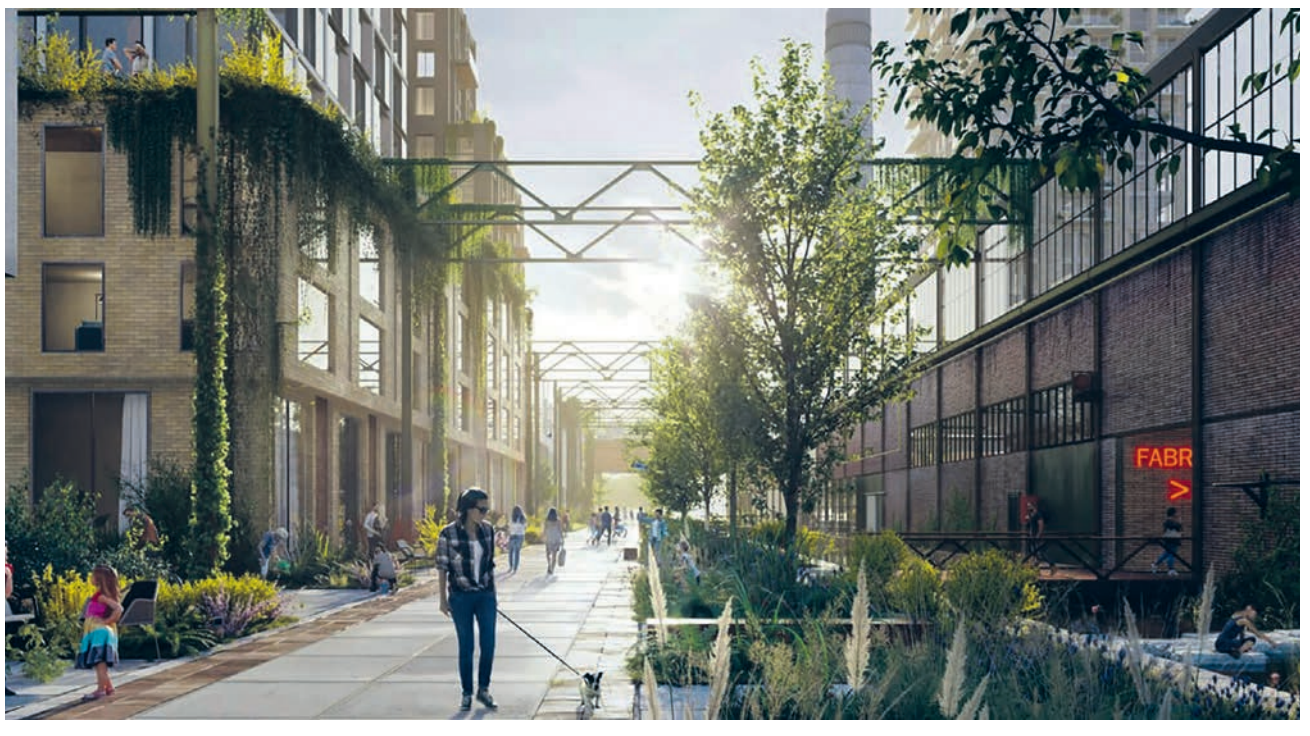
When did you graduate @aE Studio?
I graduated from the aE-studio at the 28th of January 2021, in the midst of the corona-pandemic. A period in which people rethought their way of life and reinvented their living space and local outdoor areas: green and pleasant areas just outside the front door. This, combined with the worlds' urgent desire and reason to reduce the reliance on fossil fuels, led to my project: the transformation of a former oil-related port area (Petroleumhaven, Amsterdam) into a mixed-use and green neighbourhood.

After your graduation you started working at Mei architects and planners. What does it have to do with your graduation project or preferences?
My own focus – strengthened during my graduation project – and Mei architects and planners share a common idea: to start a project with investigating and valuating what's already there; the current site, building(s) and specific layered context. Mei is one of the Dutch offices that specializes in the adaptive reuse of existing structures, giving them an extended, futureproof life. These changes and additions to the existing stock as well as the new-built projects are designed in an innovative way: using circular (and timber) constructions, flexible and adaptable floorplans ('Open Building') and characteristic aesthetics.
To truly comprehend the specific and layered context – e.g. architectural, urban, social, natural, and historical – of a building or site, I believe it is necessary to observe and design it at various scales. The Mei-portfolio exemplifies this broad scope, ranging from large-scale urban projects to the smallest detail in expressive architectural design. Furthermore, the social component of new places and spaces that an architect creates is crucial to me and Mei: for whom do we design and what do these people need? And how can we, as designers, have an impact on a vibrant and strong community to help these projects grow to a pleasant neighbourhood?

How does your background as architectural engineer influence your current role within the organisation?
The aforementioned variety in scale levels, as well as the ability to design integrally on these levels, is a key skill that characterises an architectural engineer. This manifests itself, for example, in a strong emphasis on the 'make-ability' of projects and design proposals already in the beginning of a project. This 'early-stage engineering thinking' assists in achieving the desired end result, while also allowing time and space for the development of creative and innovative design solutions to do so.
Another aspect of graduating from the aE-studio that empowers you as an architect is the broad frame of reference in sustainable, circular and innovative design methods you bring with you: the diverse group of students, teachers, and projects, each with their own technical fascination and design direction, results in a true encyclopaedia of design ideas, solutions and tools.

Where or how do you see yourself in the future?
In the future I hope to continue developing nice and pleasant places and spaces for people to live, work and recreate. In the current crises regarding the climate, the extreme demand of housing and the depletion and scarcity of resources, these spaces and places need to be created in a smart, innovative and futureproof way. To achieve and boost this within the current system, I believe architects – myself included – must have an entrepreneurial mindset and work closely with developers, investors, and consultants, or perhaps develop your own projects. If I find this role within Mei or as an 'entrepreneurial architect' myself; we'll see!





aE Studio MSc3 & MSc4 Graduation Studio

Kick-off meeting aE Studio 27, 2 September 2021

Design Tutors
Thijs Asselbergs
Annebregje Snijders
Mauro Parravicini
Mo Smit
Roel van de Pas

Building Technology Tutors
Ger Warries
Gilbert Koskamp
Paddy Tomesen
Marcel Bilow

Research Tutors
Andy van den Dobbelsteen
Christien Janssen
David Peck
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Nico Tillie
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Pieter Stoutjesdijk
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Serdar Asut
Taneha Kuzniecow Bacchin
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Design of Construction
Environmental Technology & Design
Landscape Architecture
Structural Design & Mechanics

Collaboration
1 Million Homes
AnnA Architect
Atelier Rijksbouwmeester
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Mauroparravicini Architects
Nationaal Renovatie Platform (NRP)
New Urban Networks
Openbuilding.co
Space & Matter
Superuse Studios

Programmes
1 Million Homes - Open Building | Thijs Asselbergs | m.f.asselbergs@tudelft.nl
Harvest BK | Annebregje Snijders | a.snijders@tudelft.nl
IBA Parkstad | Annebregje Snijders | a.snijders@tudelft.nl
Islanders at the Helm - Caribbean | Mo Smit | m.j.smit@tudelft.nl
MaCuBs | Thijs Asselbergs | m.f.asselbergs@tudelft.nl
Second Life | Annebregje Snijders | a.snijders@tudelft.nl
Shared Heritage Lab | Mo Smit | m.j.smit@tudelft.nl
The New Architect | Thijs Asselbergs | m.f.asselbergs@tudelft.nl

COLOPHON

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Editors: Thijs Asselbergs, Annebregje Snijders, Mo Smit, Mauro Parravicini, Camille Charlotte Sèssito Gbaguidi

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