

aE journal

Graduation architectural engineering lab

Xing Wang nominated for the Archiprix!

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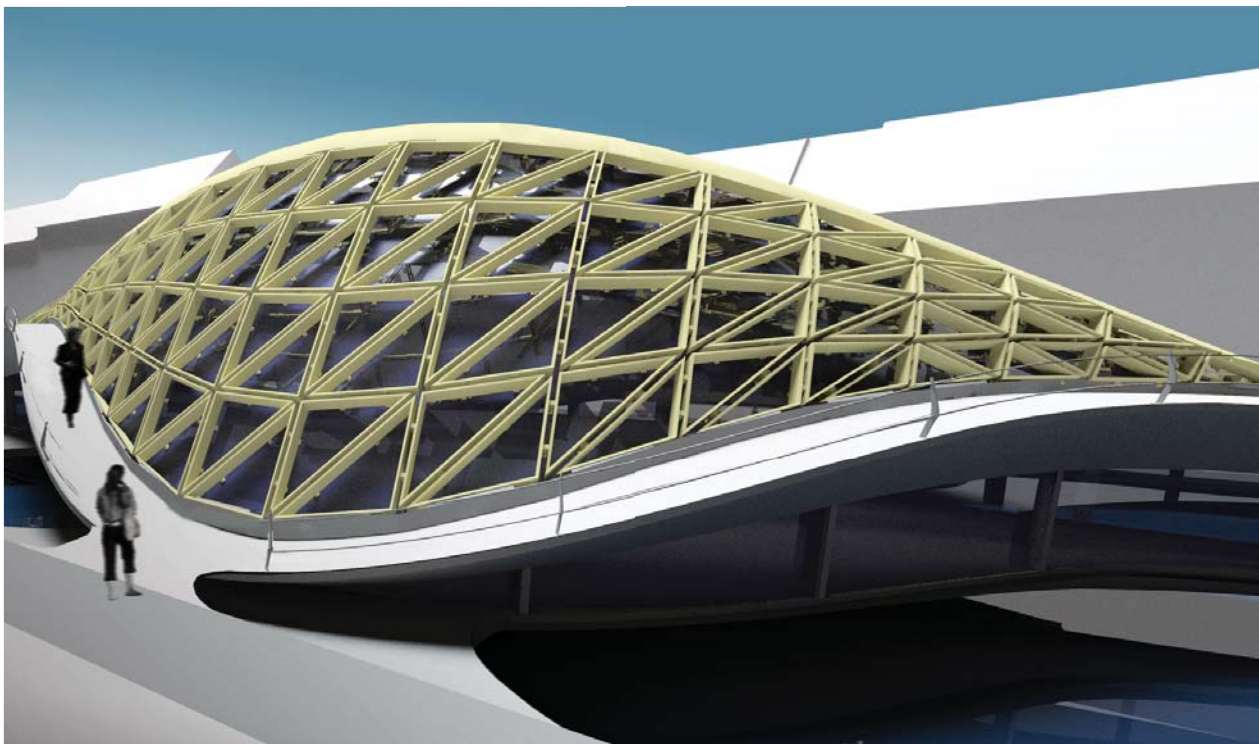
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XING WANG - aE LAB TU DELFT, THE NETHERLANDS

HAARLEM CANAL PAVILION

The Architectural Engineering master studio has delivered a series of thesis designs of extraordinary quality that have been rewarded with high marks. Based on a morphological study of Haarlem and its eastward-directed expansion plans Xing Wang has decided to increase the density of the inner city of Haarlem by designing the Haarlem Canal Pavilion. It is a multi-functional pavilion built on a Haarlem canal, connecting the Haarlem railway station to the city centre. The design culminates Xing Wang's fascination for parametric design in relation to CNC driven manufacturing. The project is a continuation of a small pavilion design as part of the MSc3 studio. A double curved surface built with 2D irregular pentagons was parametrically designed. The elements were then ready to be CNC machine milled. The thesis design was made with triangles of different shapes and dimensions.

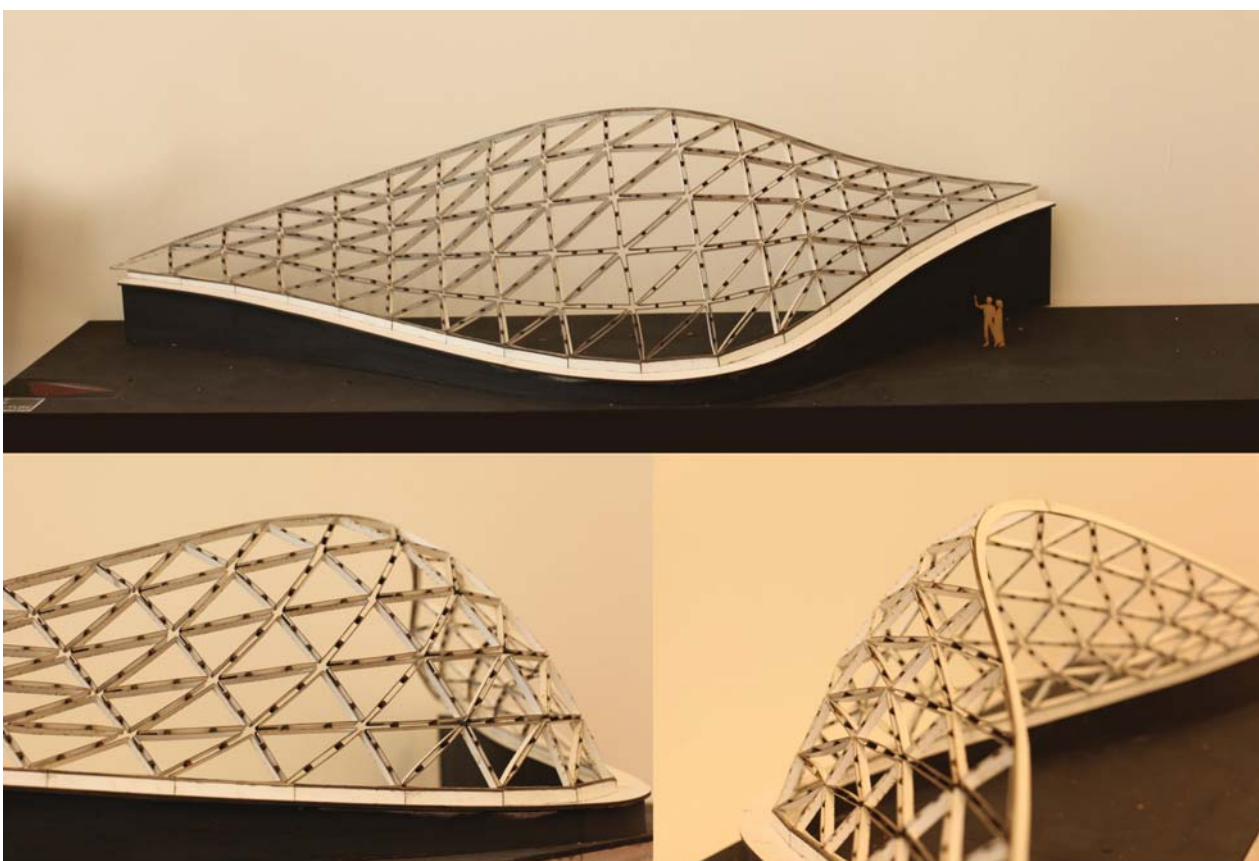
To quote his tutors in B-Nieuws:

'With his approach to parametric design attached to the parameters sustainability and especially industrial engineering (CNC), product development and detailing, he addresses to the (potential) problems with regard to building industry and free form design in particular as for avoiding potential construction failures and related necessary excessive budget reservations. By doing so he makes both complex building forms and free form design better controllable and the development and free form designed buildings better within reach.'

Xing Wang has integrated architecture and engineering and has extended the meaning of Architectural Engineering.

Tutors: Jan Engels, Arjan van Timmeren

images : www.xing-wang.org



Architectural Engineering is growing up

In 2008, the chair of Architectural Engineering welcomed two new professors. From the start Patrick Teuffel and Thijs Asselbergs put a strong emphasis on integration. As such, integration of technology and architecture would be the key theme running through the studio. Three years later, how has this vision held up? By Marcello Soeleman

TA: "It's being a specialist and a generalist at the same time. Regarding the theme of integration, we have sought to collect some excellent teachers from the Building Technology chair to fill the role of specialist without losing sight of the bigger picture. They can make the technical component in your design stronger, yet have a feeling for the architectural assignment. Andy van den Dobbelsteen regarding climate design for example, and Mick Eekhout, Joop Paul and Rob Nijse regarding structural engineering, are able to do just that."

PT: "In our research, most of the PhD researchers are architects from their background, yet with a technological fascination. So when they research a technical component, one student for example is conducting research on smart composite materials, they always address the question of the application of this component in architecture. It's not only about the smart composite material."

MS: How is this idea being put into practice in education?

TA: "In the MSc-1 we provide a Toptech course for all MSc-1 students: a seminar on Building Technology. In this course, teachers from Building Technology are integrated in the assignment. Students have to analyze an existing building from a technological point of view, and propose a technical improvement. This is a very nice exercise to get to know some famous buildings, like the Kunsthal in Rotterdam and Sanatorium Zonnestraal in Hilversum, while laying the focus on technology."

"The AE graduation lab from the beginning has been our darling. There have been very nice developments there already, and we are seeking to reinforce that even more. We can say with pride that we've already had a Dutch Archiprix nominee, Marco Koops. The Archiprix is of course an excellent instrument to test the level of your students, albeit a very subjective one; yet it does set some standards to live up to. Then there is also Xing Wang, who graduated with a 10: he has made an ingenious analysis of the medieval city of Haarlem, in order to superimpose a completely new program into

the historical moat, the Nieuwe Gracht. It was technologically marvellous while also having a strong architectural component. It's fascinating to see how a, in this case, Chinese student views the historical Dutch city. The project really pushed the envelope. All students have great projects of course, but it's very nice to see these developments."

PT: "For the graduation studio, we are as of now also working with PhD students: they present their research to the graduation students, so the PhD students can become a second or third mentor of the graduation students. These pre- and post-graduation students can reinforce each other: the graduation student can learn from the PhD student, while the PhD student gets some work done for his or her research. It's a win-win situation. As of now we only incorporate PhD students into the graduation studio, yet it's perfectly possible in my mind to involve them earlier, in MSc-1 or 2 for example."

MS: In what other ways does Architectural Engineering embed itself into the Bouwkunde education?

TA: "For Bachelor 5 we have our own Minor, called Archineering. And as we've said, we provide Building Technology teachers for the architectural programs, trying to tie them in to boost the technological knowledge of students."

MS: Regarding research, much of it seems to be technologically oriented. Of course we like to see all the interesting projects and research going on at the Building Technology department, but what kind of research would be typical of AE and not just of A or BT?

TA: "That's a good question. Throughout time, from the 80s until now, there has been a shift in technology research, from a product development orientation to a more climatic orientation. Not because of popularity but because of the conscience that the climate is changing on a global scale. It could be challenging to see what students mean when they say that their fascination is aimed at climate. It should not be about passive houses and good energy

efficiency, but it should regard the link between climatic technology and aesthetics. Of course in this field we are lagging far behind the car industry for example, where many innovations already have taken place. Buildings are of course one-off projects, whereas cars are produced by the millions, but there's a very important assignment for us builders in that regard."

PT: "Within the Architectural Engineering research program, the central theme is adaptive building and adaptive systems. As of now, we have four PhD students. Charlotte Lelieveld is developing smart composite materials that react to changes in temperature by changing geometry. Mauricio Morales Beltrán is working on adaptive structures reacting to seismic events. This might not be very applicable in The Netherlands but he is from Chile, so there it has a lot of actuality. Giancarlo Mangone studies the impact of vegetation on the climate in and around buildings, and Florian Heinzelmann conducts research generated by the ReVolt House project. All of these research projects have adaptability as their starting point. It is now reaching a critical mass; we are regularly producing publications in conference journals and books. But new PhD students are of course welcome."

"From an academic point of view, it's no problem if the research subjects are not readily able to be produced. But at least it's good to have an idea about how to do it. But still, there are possibilities to bring research developments into practice. We once took part in a competition, together with Thijs's architecture firm, my engineering firm and two PhD students, for a smart material house. And of course the ReVolt House is being built, while a research project is being linked to that project. So there are many interrelations that can be utilized."

MS: The Building Technology track is changing: it's going to incorporate Hyperbody and RMIT into their program. How is cooperation with these two studios going? And are there opportunities for cooperation with other studios and tracks?

PT: "Hyperbody's subjects touch on interactivity more than on adaptability, but of course there is overlap. In RMIT, adaptability is also a theme; yet it's in much larger time scales. So there is also a link there."

TA: "Of course there are many opportunities. We want to become a strong technological player for Kas Oosterhuis (head of the Hyperbody chair, ed.), and for RMIT it's essential to reevaluate cultural heritage. Over half of the building activities in the future are going to be on reuse, that's also an important reason that for the Toptech course we

feature old buildings that are to be reused.”

“Regarding cooperation with other studios and faculties outside of Hyperbody and RMIT, we are limited in our means. Still, the faculties of Aerospace Engineering and Industrial Engineering are interesting partners. We try to incorporate those faculties already into our interdisciplinary Minor program, Archineering.”

PT: “I’d also like to stress Civil Engineering as an important partner. We always have to see how cooperation will practically take shape, bureaucracy here at TU Delft can be quite frustrating, but yes there are many opportunities.”

MS: **Integration is not easy. There is always a danger that the result is a building where a piece of technology is a mere ‘add-on’, but doesn’t really add much to the project.**

PT: “Well there’s always a danger that students who are interested in engineering are not the best designers and vice versa. Of course ideally you’d want to have someone that can do both, but everyone has his or her strengths and weaknesses.”

TA: “If there is one important point of criticism, I’d say that it’s design skill. You only achieve good integration if you’re capable at designing. Don’t forget that students are educated at AE to become architects. This studio is not intended as some

kind of ‘smuggler route’ for engineers to become an architect: we have to find the right balance. Our graduation studio mentor Jan Engels is handling this excellently, by the way. You should be educated as a broad, strong, generalist Master graduate, who realizes that the third component of Vitruvius, Firmitas, is an important part of the whole. One very important way to achieve this is inspiration. When I lecture for example on a Toptech lecture, I ask students: when you wake up tomorrow, will you have another view on building structures, or on climate?”

MS: **What are the most important steps from now on? What will be your focus in the near future?**

TA: “First of all, we want to let the world know what we are doing, through this journal of course, but also through exhibitions, articles in magazines, you name it. We want to display how we are incorporating the high-end, technological knowledge of Building Technology into architecture.”

“There’s not going to be reorganized much in the near future. We are only in our fourth year. The studio is growing up, so to speak: we’ve planted a tree, growing roots and some knobs start to appear, but now the trunk has to become thicker. We’re not cutting it down now, as all too often happens according to Dutch tradition.

We need to listen to our students, teachers and staff, to further improve our education and research programmes. But there will be no great changes. The only thing that needs to change is the name of this faculty. It’s called the Faculty of Architecture! I’d say that there’s quite a lot more to do here besides that...”



Final bachelor project - BT

BSc6

The assignment is to design a pavilion. This small building will be designed out of the themes CONSTRUCTION, CLIMATE and MATERIAL. Proceeding from these themes the spatial and functional qualities of the building will be formed. Naturally the coherence between these themes is at the centre of the design. Nor the program or the site are the guiding theme but the fascination which lies in a building technology starting point.

By means of research in materials, experimenting with simple tests and by making models and drawings the structure, spatiality and the form of the building should be explored. In this project de materialisation and detailing shall be researched until the last screw.

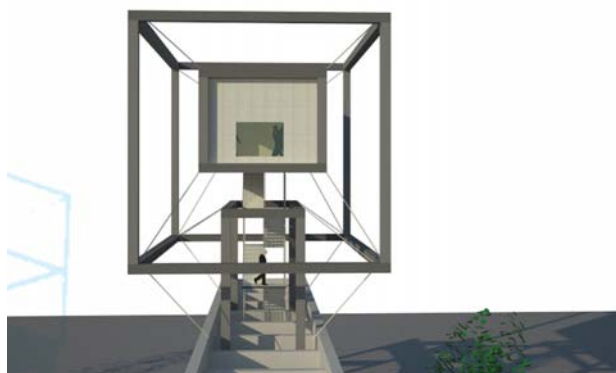
Tutors: Tjalling Homans, Suzanne Groenewold-Stengs, Hans Kalkhoven
Coordinator: Jan Engels



Model project Nienke Verhaar

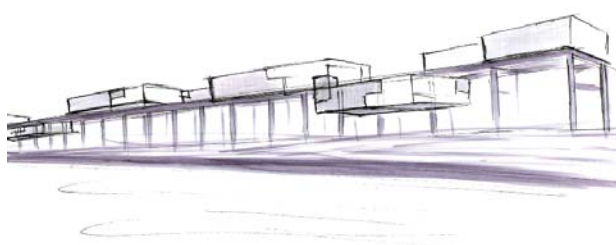
RIANNE ROELEVELD: ROPE

First the challenge started for me to build a building out of rope. Rope visualizes tension forces and as the project progressed my fascination developed. It resulted into this: a pavilion in which a balance is made between tension and pressure forces. The construction is held together in a miraculous way and as a result all the attention goes to the tension forces. This made them optimal visible.



LUUK GRAAMANS: LIGHT

'Constructed from light' has been a search for a fully transparent and translucent pavilion. The conventional technics have been rejected and a research has been done to find a structure made out of (experimental) high-quality polymers. By using traditional Japanese structure methods it has been possible to attach the elements seamlessly without using additives. In the pavilion there is no obstruction of natural light, the experience in the pavilion is inseparable connected to its surroundings.



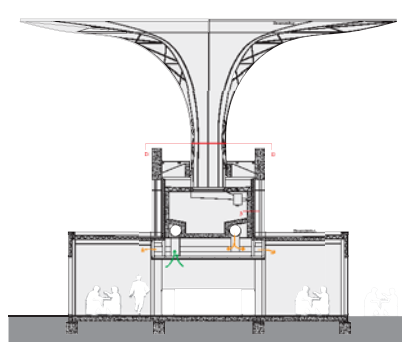
OLGA VAN DER VELDE: ETFE CUSHIONS

I wanted to design a building which has light rooms and a light structure. To accomplish this I have made a steel cage with ETFE cushions. These cushions have extraordinary insulating and transparent qualities. I have solved the problem of the greenhouse effect with a special FiWiHex-ventilation system, which is used a lot in greenhouses: very appropriate, because the building consists of a restaurant and a market garden, which delivers vegetables to the restaurant.



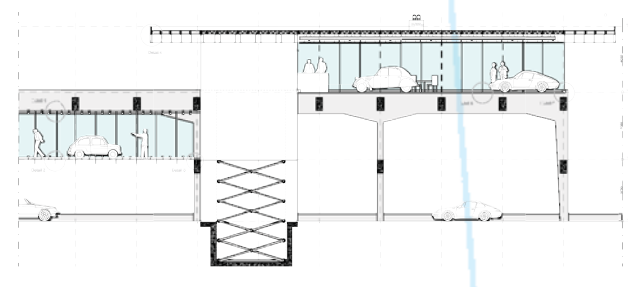
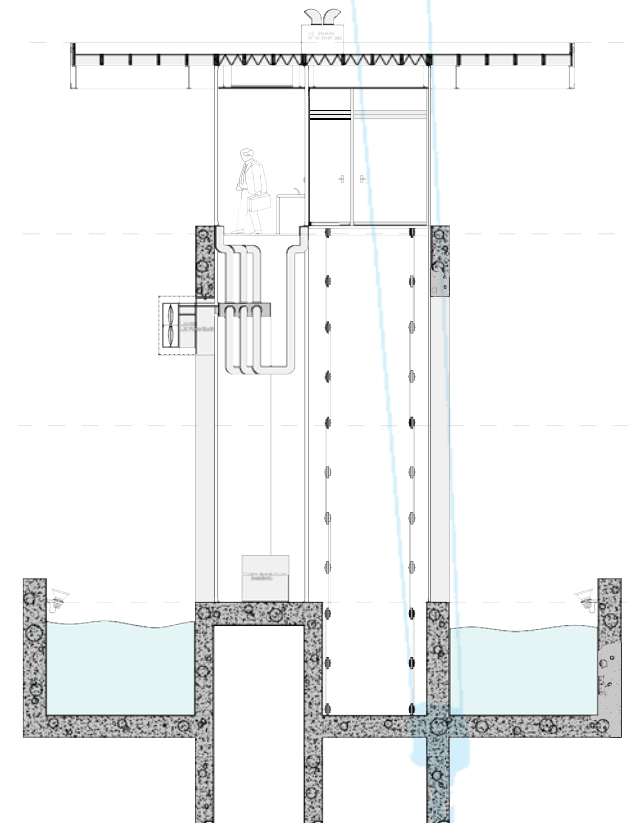
NIENKE VERHAAR: RAINFALL

The program was completely free, it gave a lot of freedom as well as some difficulties. Normally I worked from a list of requirements, but now I had to fill this by myself. I learned to work from a fascination. My fascination was rainwater: To capture enough rainwater and use it. I have done research into the possibilities. For a carwash, laundry and toilets rainwater can be used very well.



DAMIEN MULDER: GLASS

The structural qualities of glass form the starting point in my design. I have tried to make these as clear as possible in my design. The structure is made out of glass and carries a massive looking roof. Because of the large glass façade, a lot of solar heat comes into the building. Therefore I paid a lot of attention to the climate design to make this glass pavilion possible.



Toptech

MSc1

Delft Seminars on Building Technology

The Master course Delft seminars on Building Technology (DSBT). Is the last compulsory subject on Building Technology before the students final graduation project starts. The seminar DSBT concentrates on the assembly of and the mutual integration of structure, climate and façade. We developed this seminar, based on seven case study projects, especially to study this interaction. The case studies are documented in books, magazines, internet pages and blackboard. Most importantly students make their own excursion

to two of the case study projects. With the help of measurement tape, notebook and photo camera the start of the seminar is there. The redesign is the key element in this assignment. It challenges the students to analyse and criticise existing building fragments designed and engineered by well-known architects. This process triggers the students fascinations on architecture and building technology. We will not only concentrate on the façade, but also climate design and structure design. Especially the integration and

the cooperation of these disciplines form the backbone in the designs. We call that Architectural Engineering.

In the course several design tools are used to help students to develop a critical and sharp eye for the huge possibilities a strong cooperation between Architectural- and Building Technology Design can bring.

Arcam, westraven, zonnestraal en mas

1. Discussion, argumentation and verifying.

In the work groups students discuss with colleague students and their tutor. Also, there is a serie of lectures called TOP TECH. These series of lecturers will address known and unknown topics in the case study projects. These practical issues will be seen in the light of the known theory. You will see and understand how the academic values are interpreted in practise. What are the compromises made in the process from design to realisation? How pure are the chosen solutions if we relate them to the theory?

2. Observations and notations.

A visit to two case study buildings in real life. Making the right observations is an art in itself.

3. Analysing and diagramming.

To determine what is important for the student to do in this seminar it is crucial that they can analyse and interpret gained knowledge and will be able to show the result in clear diagrams.

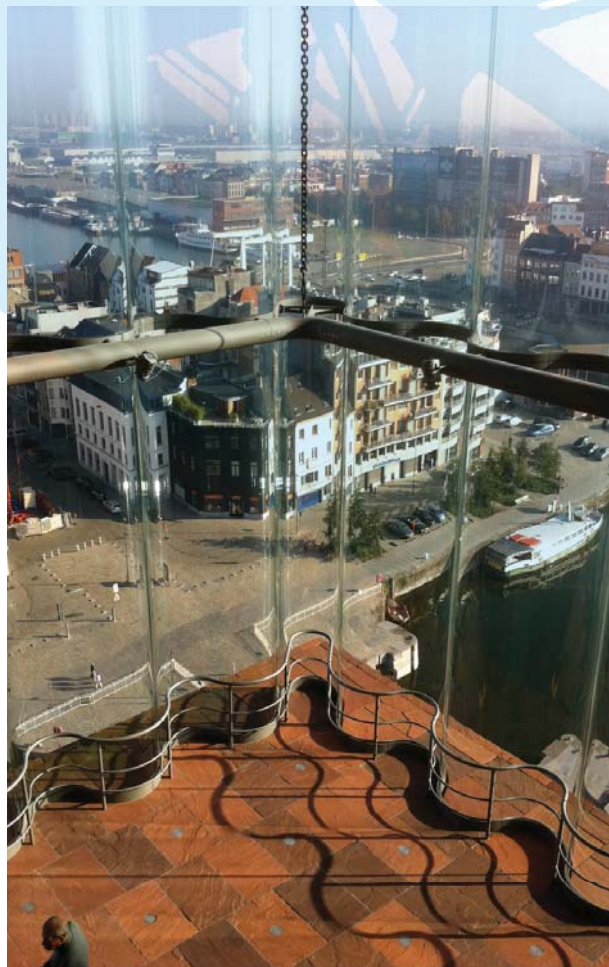
5. Reading and writing.

In this assignment students write an illustrated article to discuss and explain the reasons and arguments for a redesign proposal; a fragment of one of the seven case study projects. The article will be a critical report of the findings during the redesigning process. The illustrations in the article are diagrams, sketches and drawings and are drawn by student.

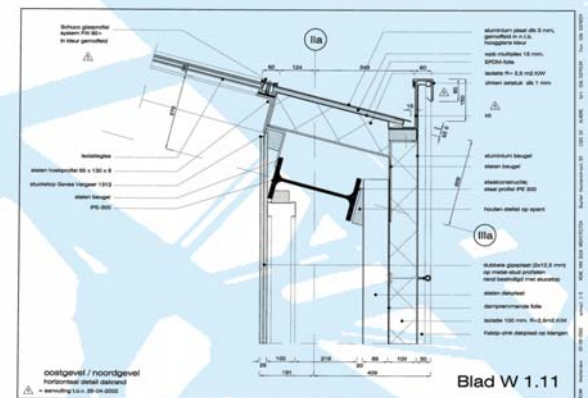
4. Sketching and drawing technical specifications.

The redesign needs to be visualised in the scale of 1:20 together with the complicated details in 1:5.

The redesign is the key element in this assignment. It challenges you to analyse and criticise an existing building fragment designed and engineered by well known architects. This process should trigger your own fascinations on architecture and building technology. It is tempting to concentrate on the facade only but it will not generate the best designs. The redesign should incorporate the following aspects; climate, structure and facade. Especially the integration and the cooperation of these disciplines form the backbone in your design. We call that Architectural Engineering.



MAS, Antwerpen



Detail ARCAM, Amsterdam



ARCAM, Amsterdam



Westraven, Utrecht

aE lab^{03/05}

MSc3/4

Eastwards Haarlem

Like Amsterdam, Haarlem has a history that goes back to mediaeval times. The area between these cities contains all elements of infrastructure one can imagine: highways, waterways, railways, airways, nondescript industrial areas and peaceful rural places with abundant green and recreational water. If Haarlem wants to expand it has to do so eastwardly. Twelve aE master students have collaborated in developing four master plans East of Haarlem, inspired by a specific theme. A transit oriented development, based on the presumption that a satellite of Schiphol airport will be built in the North Sea; a plan that emphasizes the use of sustainable energy; an Urban Green scenario making connections between the green areas around Haarlem; and a Water City plan, un-reclaiming land thus giving Haarlem a new waterfront. These master plans in turn provided the context for individual designs ranging from a large airport terminal like building to small scale industrialized housing.



DESPOINA PAPADOPOULOU: EXIT THROUGH THE PRISON

The subject of this thesis is the controversial case of a prison facility; a space with a very unique nature as it aims to enclosure and detention. Even contemporary alternative proposals do not really answer to burning questions like: 'What services contemporary prisons should offer?' Does design matter? Or: 'Can architecture be a helping tool in the rehabilitation of prisoners?' This project is tackling these issues. A different physical layout of prison facilities was the desired product of this project, which would enable a new symbiotic relationship between the prisoners and the world and affect the traditional scepticism towards delinquents. The second aim of this project was the formation of

a pilot program, a new approach concerning the services a prison should offer to both "users" and society. The physical layout of the prison would stem from this functional program.

The testing location of this new typology is in the area east of the old Haarlem: the scheme locates the new prison in the east edge of the city, where the existing Panopticon prison is. It is considered to be the new landmark for the city, enriching the urban fabric and allowing for an enhanced active communication with relatives / friends / public, which is part of the community-based program, contributing to inmate's future integration.

The new structure is detached from the ground and the non-negotiable height becomes the

"wall" between the prisoners and the outside world. It gives back to the public this part of the city after approximately 110 years of being blocked by Metzelaar's prison.

This proposal is to show dissociation with everything the Dome represents. That is why the new structure does not blend with the Dome but it evolves around it trying to "reach" the city. It presents a gently rising ramp structure with changeable heights, blurring the image of the Dome and the city's skyline. The new prison avoids entrapment by the existing and tries to dismantle the Panopticon's function denouncing its centre, the eye tower.

Tutors: Jan Engels, Arjan van Timmeren



Jerry Volkman: The Wall

The master plan suggests to inundate parts of East Haarlem thus creating a new waterfront for the city.

This plan includes Haarlem's panopticon the circular prison with its characteristic dome. The prison site has been transformed in a museum island that connects the city centre to the waterfront theatre (Ieke Selen's thesis design) and the factory buildings to be redeveloped as art galleries. On the museum island a new IMAX theatre and exhibition building have been

designed with a strong geometrical shape: a semi-transparent cube revealing the sphere shaped theatre, respectfully counter balancing the old prison dome.

The cube was positioned next to the water with great care and the main structure was subdivided in seven sub structures: the IMAX screen that can be removed like a big visor, the amphitheatre, the exhibition ramps, radiant floors, the south facades with structural glazing, the cantilevering

roof and the spine that supports the theatre. All substructures were independently designed through computational calculations and then combined with the integrity of a Swiss watch.

Tutors of this dual track graduation: Ype Cuperus, Kees van Weeren



Eastwards exposition in ABC Haarlem with mayor Schneiders of Haarlem

Daniel van Kersbergen: Schiphol Interchange Station

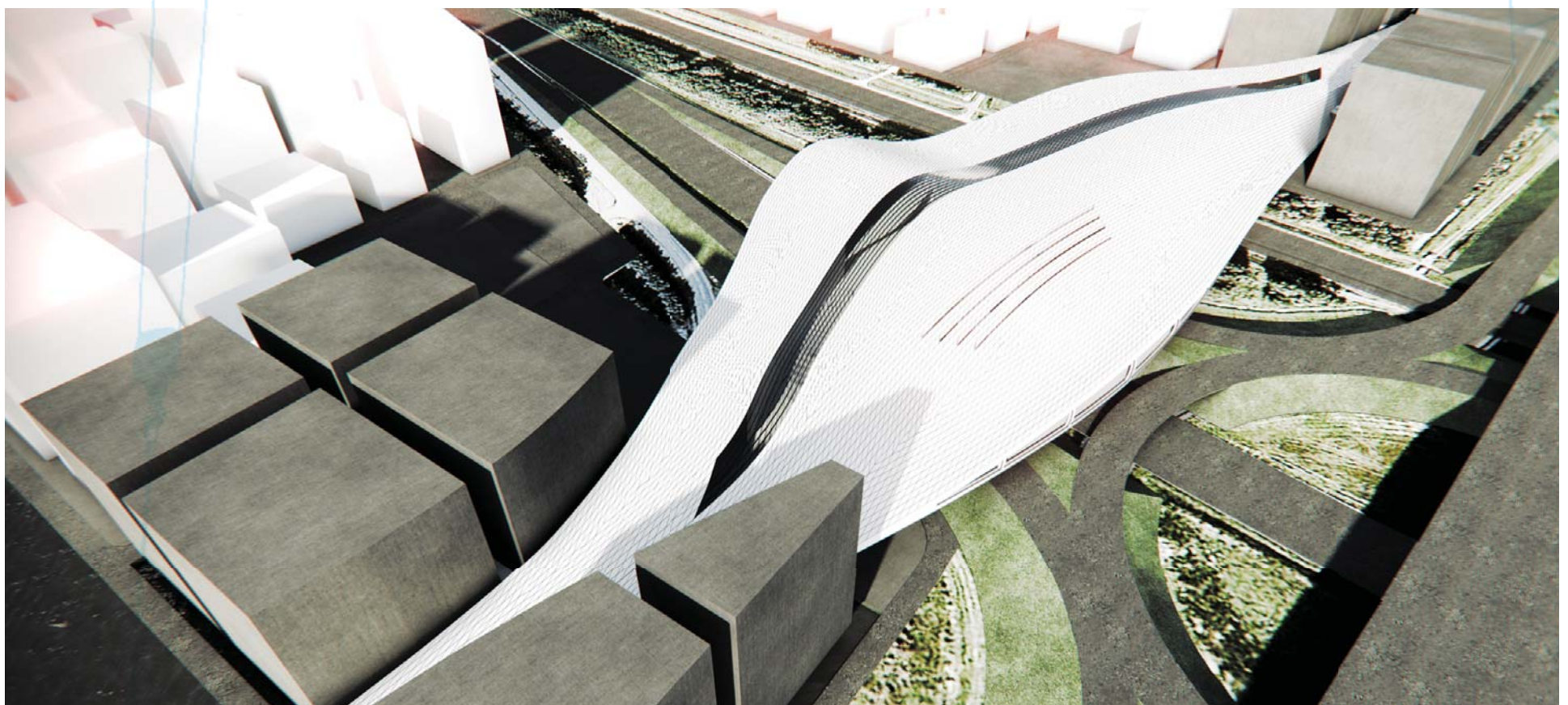
This project is the centre point of the T.O.D. Eastward master plan: Transit Oriented Development.

If Schiphol airport is extended with a satellite in the North sea, a new traffic interchange node is needed in between Haarlem and the A9 A200 Rottepolderplein intersection. From the viewpoint of the car traveller the building with fluid shapes presents itself as the gateway

to Haarlem. Its surroundings provide long and sort term parking, kiss and ride as well as retail facilities. First the interchange station was developed on situational considerations. The overall shape of the roof was then determined and optimized using computational studies on natural ventilation by prevailing winds and extensive daylight studies. The computational studies were validated by light research on physical models.

The results were fed back into the architectural design.

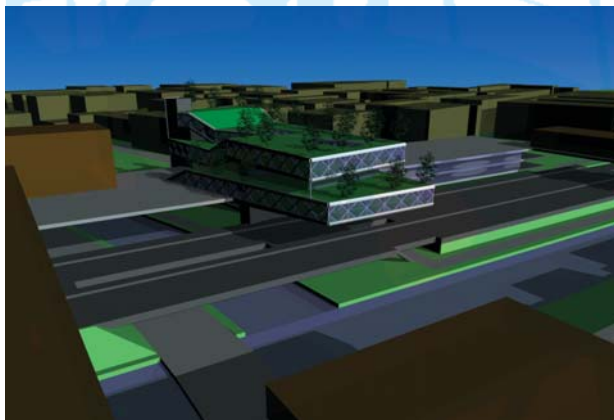
Tutors of this dual track graduation: Ype Cuperus, Michela Turrin, Florian Heinzelmann



KARINE CHARLEBOIS: SPAARNWOUDE'S NEW HUB

Spaarnwoude is the entry point of Haarlem when coming from Amsterdam. However, at the moment, Spaarnwoude is not acting as a gateway and even less as a destination point in its own right. The railway and the Amsterdamsevaart create a strong division between the industrial North and residential South of the city. The graduation project therefore aims to reinstate a connection between all parts of Spaarnwoude by providing a new central hub where all forms of transports (rail, bus, pedestrian, cyclist, vehicular and maritime) meet high density area with 24h activity. The main building – the heart of this new hub - captures the essence of the new development with its auditoriums for conferences and film projections, exhibition halls, shops, offices, meeting rooms as well as its train station hall and bus station and even rowing facilities. The spiral configuration of the 42m-long cantilevered structure above Spaarnwoude's new train station was made possible by the development of a unique way of combining trusses and this formed the core of the technical analysis part of the graduation project.

Tutors: Thijs Asselbergs, Kees van Weeren, Wim Kamerling

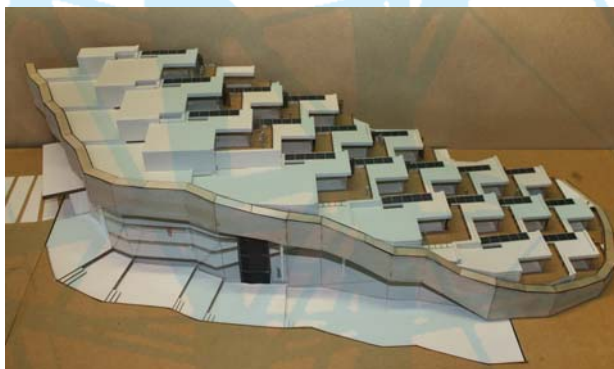


REIN ROOSMA: HOUSING ENERGY

This housing project is located in the Haarlem Eastward master plan called Sustainable Energy. Sustainable housing in this case is defined in terms of technical life cycle and energy efficiency. This has resulted in a robust amphitheatre shaped superstructure that allows all dwellings to face the sun. An ingenious scheme of packing the units contributed to a compact building with minimal heat loss. The one sided oriented dwellings were compensated with light wells and large sun decks. The artificial hill gives space to retail and public functions and is integrated in the traffic flow towards the nearby railway station.

In addition this project was the vehicle for an extensive study on passive and active energy saving as well as energy generating strategies as a driver for sustainable architecture.

Tutors of this dual track graduation: Ype Cuperus, Siebe Broersma



ANNE-MARIJE SCHEFFE: TREE VILLAGE

'How can nature and housing be combined?' And 'What is the best way to build for a community in a natural environment with minimal impact on its surroundings?' In search for these answers a quiet place in the Urban Green master plan east of Haarlem was allocated to design a cluster of dwellings. Based on case studies the ideal community size was determined. In order to keep the surroundings almost untouched the dwellings were lifted from the ground on tree shaped structures. The dwellings are modular and off site manufactured from timber and fibre based materials with minimum transportation costs and environmental impact. The system design can be adapted to different site requirements. As a consequence of the modular approach a family of furniture like interior elements were designed and mock-ups were built., thus combined all scale levels from master-plan to interior.

Tutors: Ype Cuperus, Arjan van Timmeren



AUKE VERBRAAKEN: SUSTAINABLE EDUCATION

Next to the Dong Eung Lee's energy city building in the Sustainable Energy master plan a building for educational purposes was designed, housing a university department as well as a museum that demonstrates all aspects of sustainable living. The design was based on the tiras energetica: reduce energy demand, use sustainable energy and if necessary use fossil energy as efficient as possible. Base on these principals the building is shaped and oriented to get the maximum energy saving and generation for the surrounding wind flow. The building's high atrium in combination with a airplane wing shaped roof element generate a cooling draft propelled by natural wind that is available in abundance.

The facades are optimised for summer and winter conditions and include facilities for shading, thermal insulation, energy storage and energy generation.

Tutors: Ype Cuperus, Andy van den Dobbelssteen

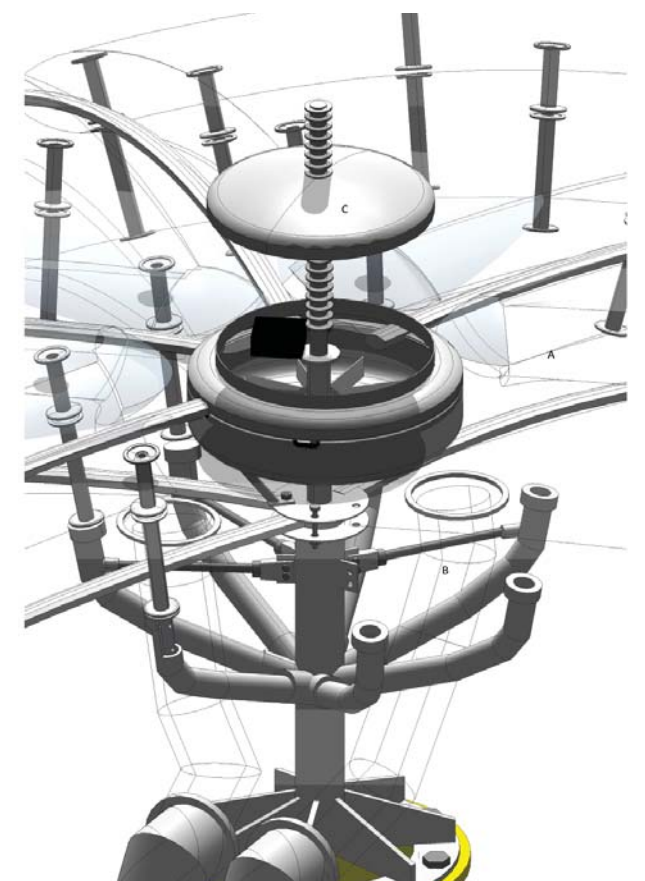


TIM VELDHIJS: SWIMMING PARADISE

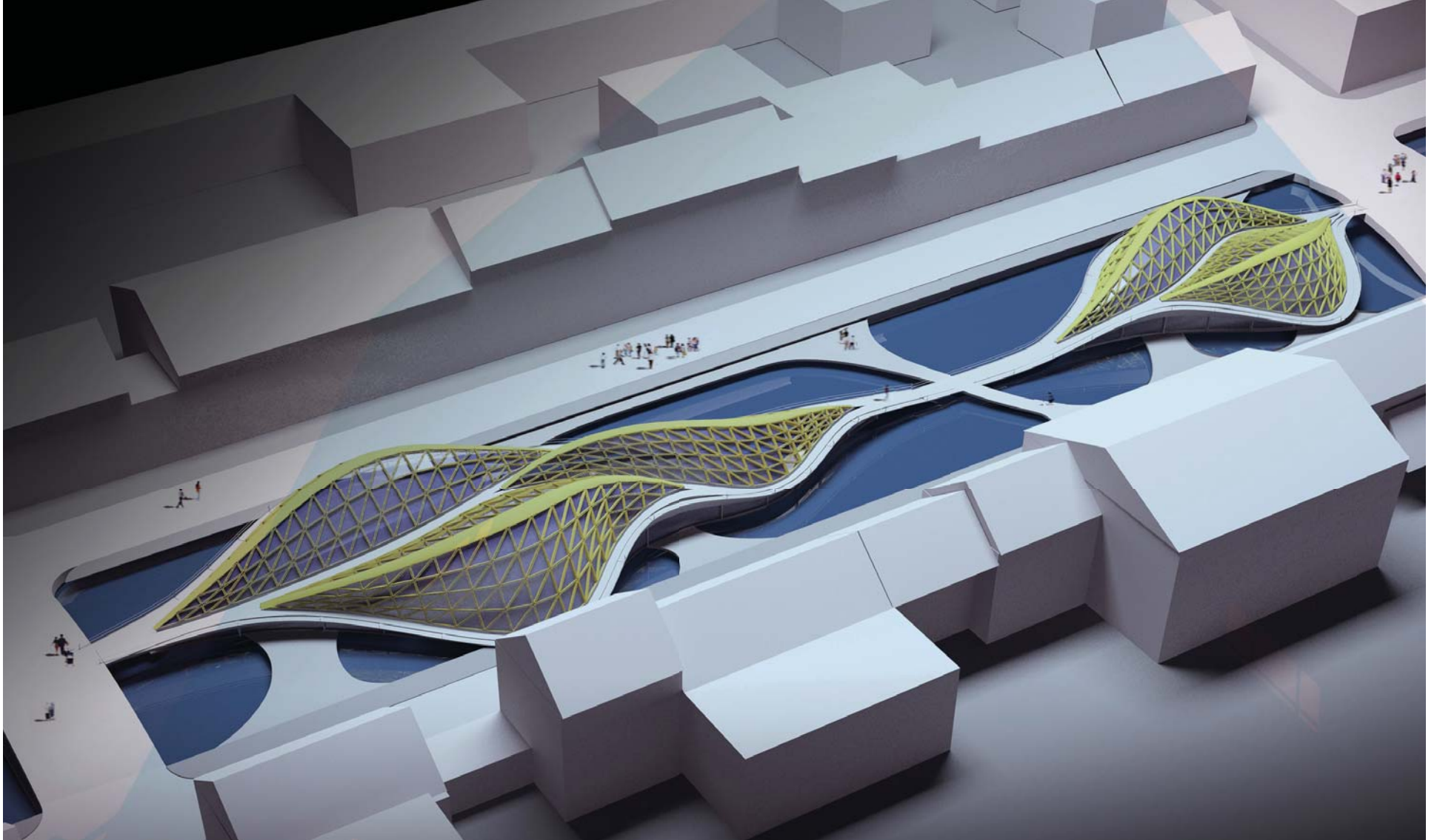
In the jointly determined master plan Urban Green, east of Haarlem Tim Veldhuis has designed a building that makes people smile. It is a tropical swimming pool folded into the landscape with a structure that was inspired by the structure of coral reefs. By keeping a strict separation of master plan, the client's brief, the functional lay-out and the flow of architectural spaces the support structure and the envelope could be designed for off site production in a isolated process, while the overall coordination was assured.

In all stages of the design process hands-on models were made to investigate the possibilities and limitations of options considered with regard to the structural design, thermal and energy performance aswell as the light conditions during day time and after dark. A modular support structure was developed that carries transparent lightweight ETFE cushions. The tension line connections between the cushions were built real size and tested in the laboratory. The project encompassed all scales from the master plan to product and production design, demonstrating the fun of architectural engineering.

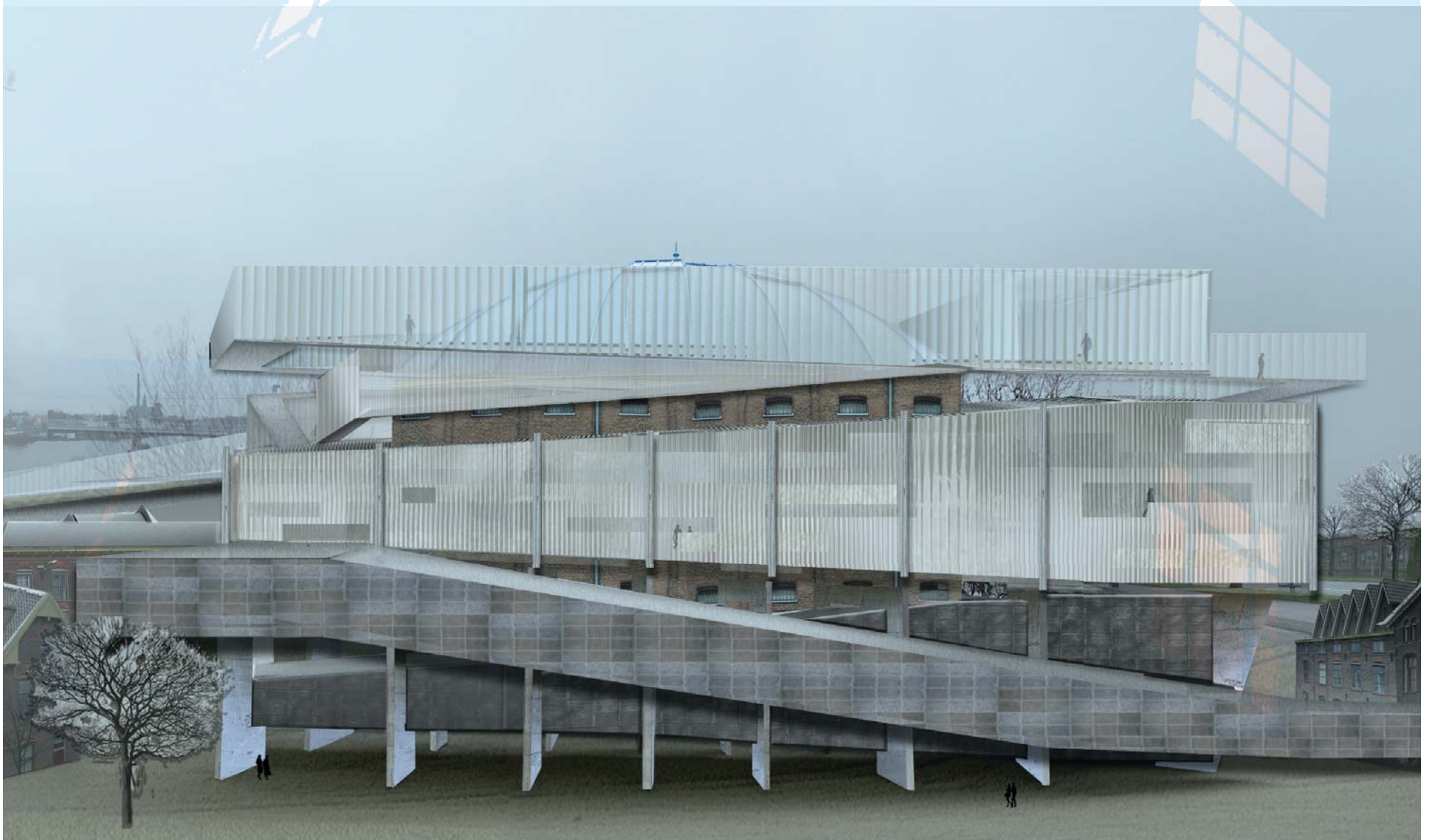
Tutors of this dual track graduation: Ype Cuperus, Arjan van Timmeren



aE nominations for Xing Wang, Despoina Papadopoulou



Haarlem Canal Pavilion, Xing Wang



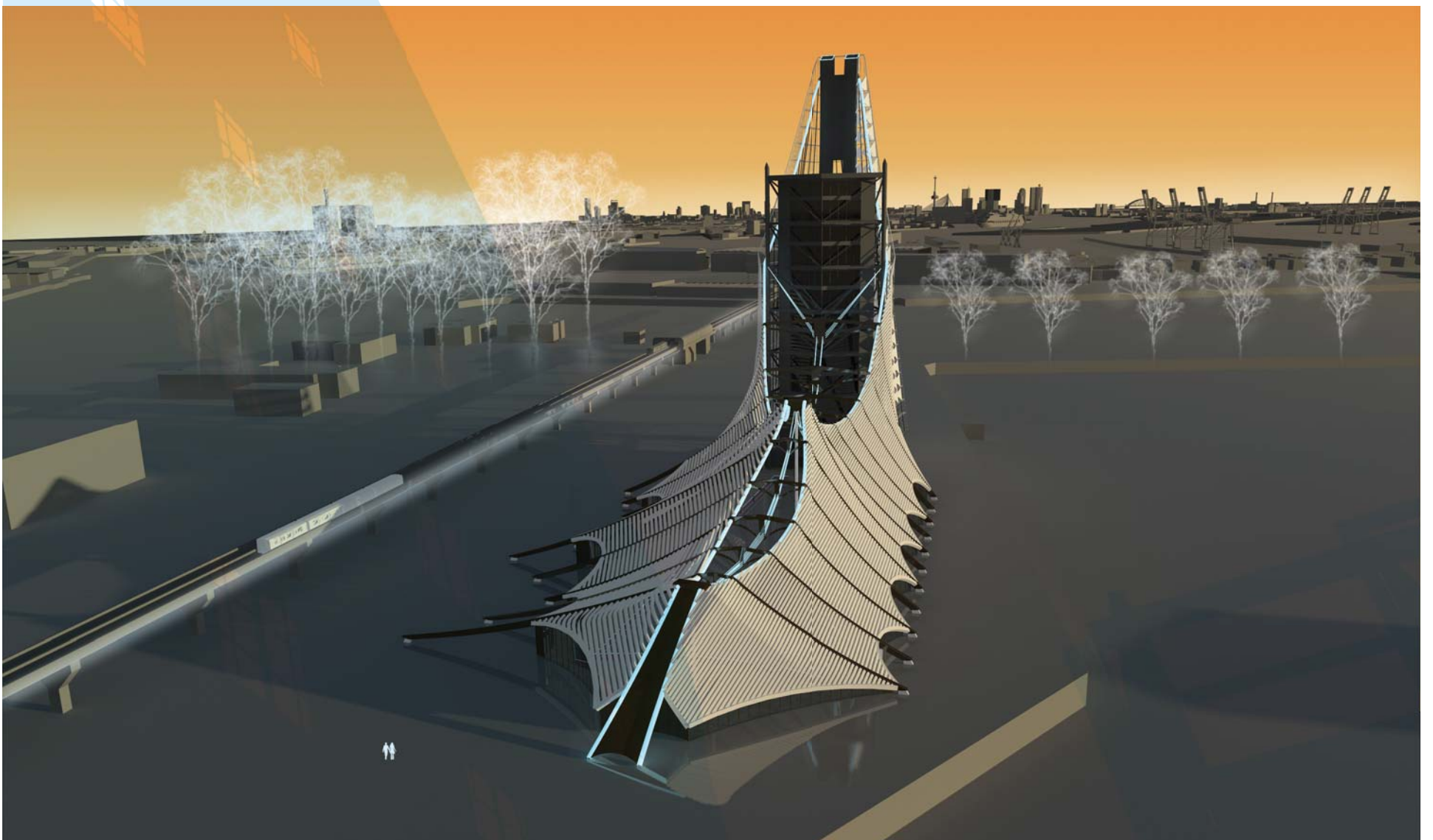
EXIT through the prison, Despoina Papadopoulou

Archiprix selection

Jerry Volkman & Jasper Hendriks



The Wall, Jerry Volkman



Suspended Veil, Jasper Hendriks

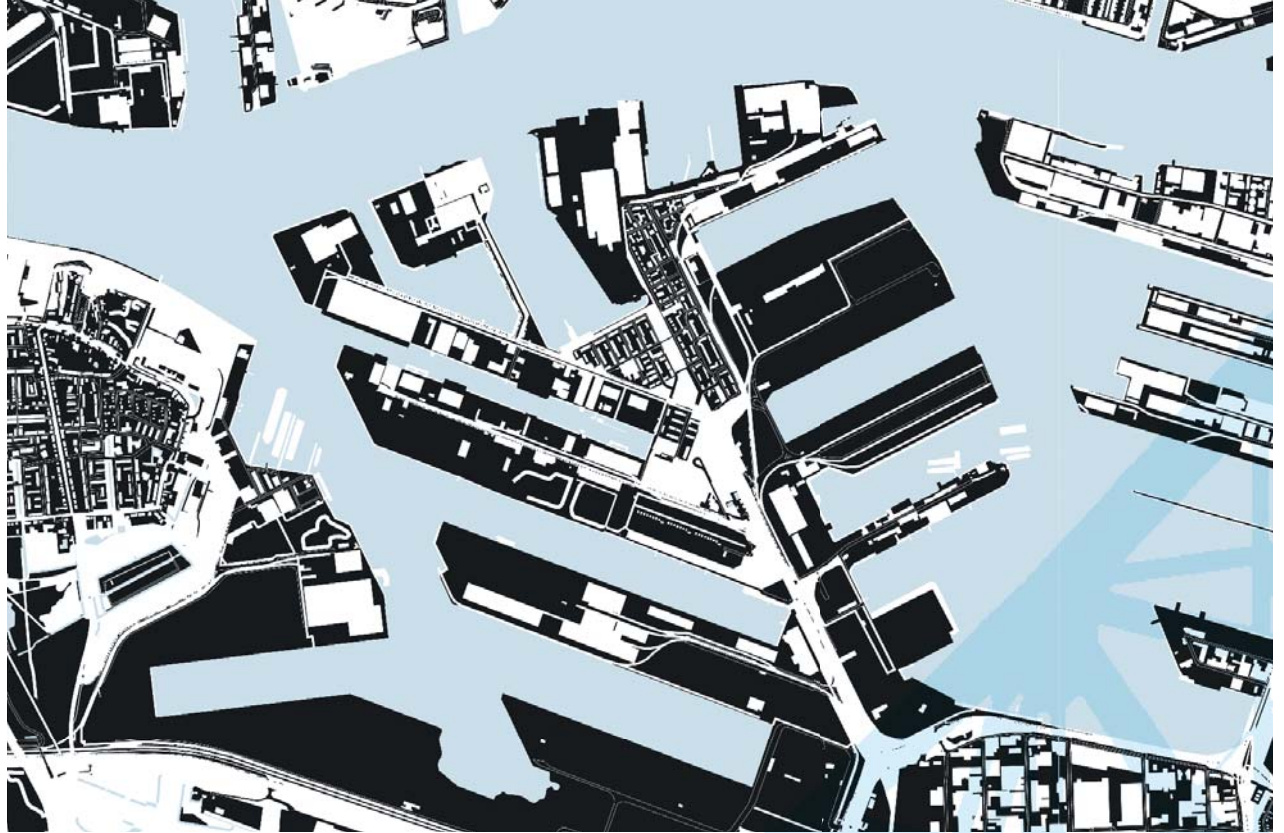
aE lab⁰⁴

MSc3/4

RDM Rotterdam

Rotterdam is (one of) the largest port(s) of the world. Docklands and shipyards are industrial areas we turn our backs to by default. They can be found at the edges of the cities we live in, far away in our appreciation, physically many times very close. As ship-handling moves seawards to accommodate larger ships the old shipyards have become redundant. The Rotterdam Kop van Zuid development and the Amsterdam Westerdokskade are precedents of wastelands turned into high-density housing, combined with cultural functions. However, is erasing what exists and replacing it with something new the only option? Or can the hidden beauty of the industrial landscape be captured as a start for something never done before?

This is the challenge of the RDM site, which is a large redundant dry dock with adjacent halls for shipbuilding. In addition it includes the young industrial archaeology of post WWII industrial building in combination with post war housing for the labourers at the Heyplaat suburb nearby.



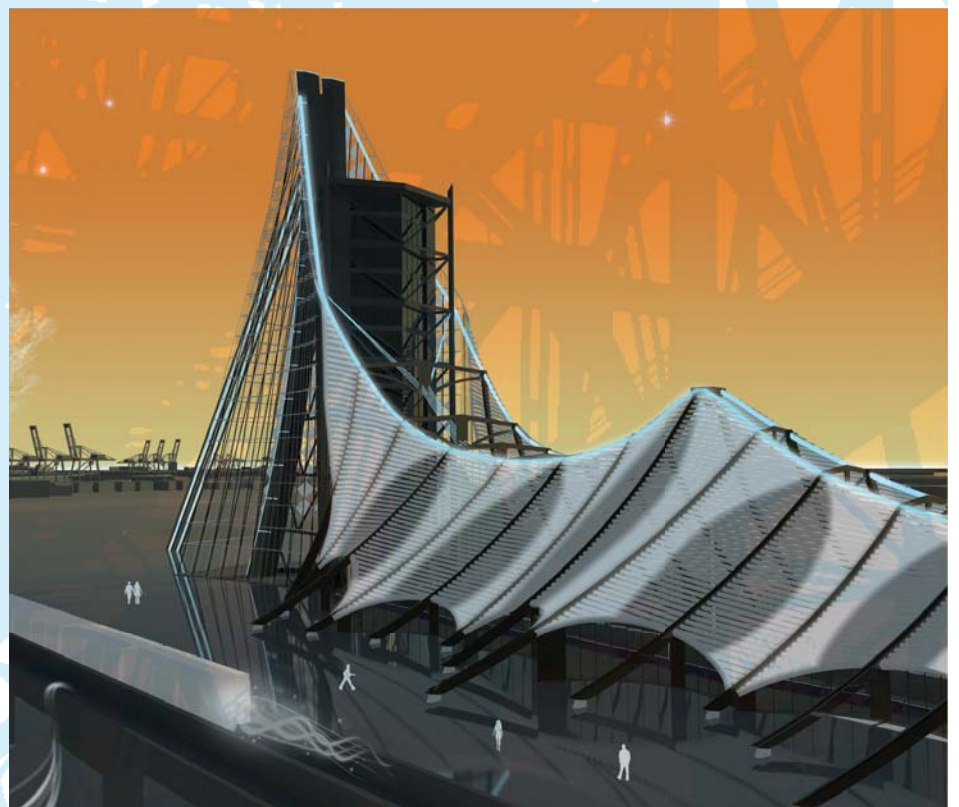
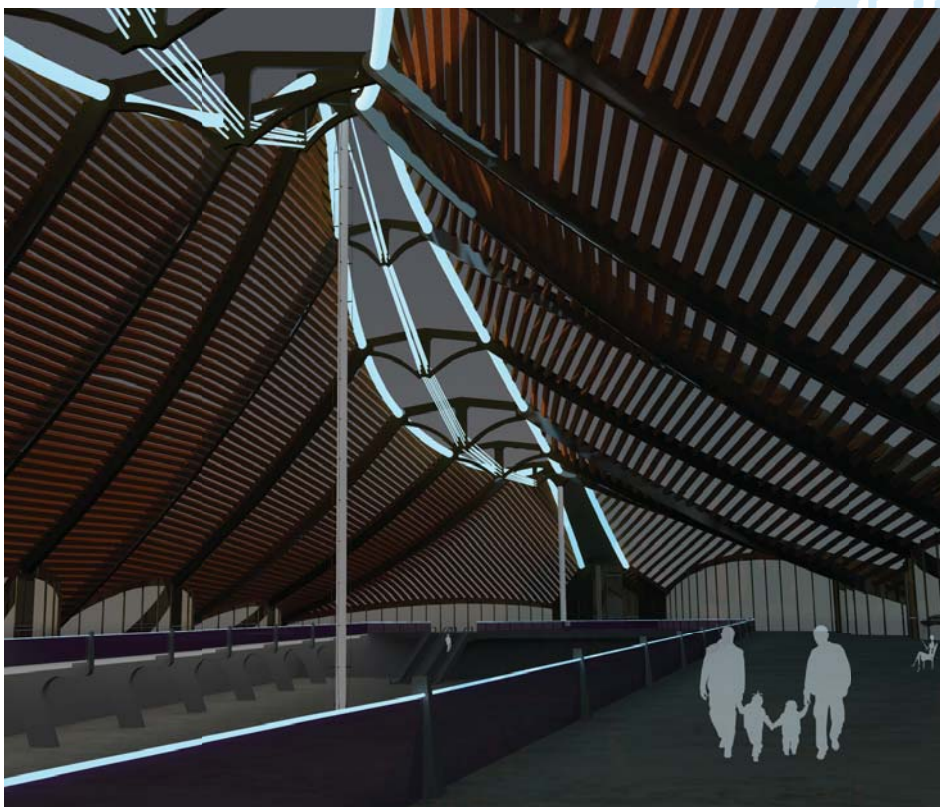
JASPER HENDRIKS: THE SUSPENDED VEIL (ICOONIA)

The objective of the Suspended-Veil project is to attract highly sophisticated residences; catering industries and innovative businesses among the educative status within the Heijplaat area as a medium for city marketing. Its design aims to accomplish this effect by creating a visual impression of a beacon along the shoreline of the Nieuwe Maas and reconnecting the area with its surroundings. The design concept is inspired by a spider's web and in addition the way how a cocoon like lampion-flower (the Physalis Alkekengi) is composed. This kind of material translates the visual appearances of weaving into spatial relations based on a tensional setup throughout the building. A veil which covers

the total ground floor has an open-closed character and gives the ambience inside more the impression of a marketplace than a culture palace. A combination in relief and transparency for creating the pattern, which contains on one hand enough privacy and gives on the other hand a reasonable amount of daylight. The futuristic appearance of the weaved building skin and its levelled anticlastic identity which covers the space inside the building, creates a whole new meaning to the dynamic visual concept in relation to private and public interaction. The aim is to use the museum of contemporary art to revitalize and re-energize the Heijplaat area and by doing so creating a gateway between the

village and modern society in Rotterdam. The building will not only accommodate different kind of art collections, but will also be available for other functions within the region of creative industry. Studios, where artists can expand their creativity (sculpturing & painting). Workshops will be held to educate and find the creativity within one another. A theatre for displaying all sorts of media. And of course in addition: a cafeteria, administrative offices, lounge areas, shopping and parking facilities.

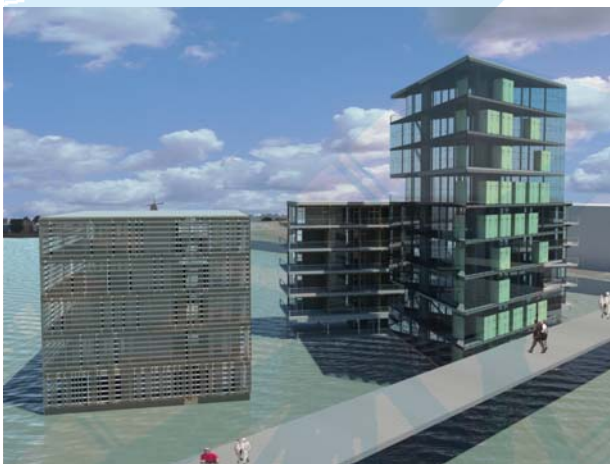
Tutors: Jan Engels, Frank Schnater



LISEN HABLÉ: FLOATING CONFERENCE HOTEL

This project involves the design, and design process, of a dynamic six-story floating conference hotel at the RDM campus, Port of Rotterdam. The unique aspects of building on water, e.g. the ability to move with the tides, are used to create an innovative floating design. The conference hotel consists of a central, fixed building and two floating structures. Concrete is used for the foundations and construction of the central fixed building and is an explicit feature in the interior materialization. The two floating structures use light wood constructions for the buildings and concrete and steel for the floating base. The chosen materials highlight whether the respective building is fixed or floats while at the same time ensuring consistency in terms of architectural design. The technical research explores the dynamics of the floating structures and the impact of building height on the requirements for a sufficiently stable, floating base.

Tutors: Jan Engels, Wim Kamerling

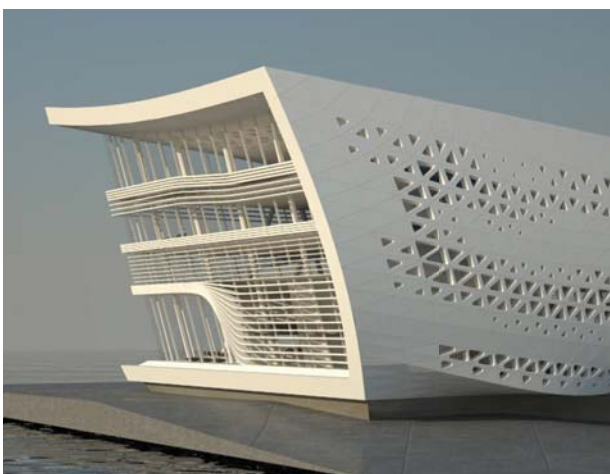


THEOTULP: THE SUN; CREATOR OF DELIGHT

Robert Venturi et. al. (1972) characterized buildings as a 'duck' or a 'decorated shed'. 'Duck' refers to a drive in restaurant in the shape of a duck 'where the architectural systems of space, structure and program are submerged and distorted by an overall symbolic form'. In a 'decorated shed' (...) systems of space and structure are direct at the service of program, and ornament is applied independently from them'.

The university library situated at the RDM Campus in Rotterdam looks like a book and has many visual references to bended pages as in books. On Venturi's scale this building is definitively a 'duck'. In the design the paradox of library light is identified: In order to read books we need light, books on the other hand deteriorate if exposed to light. The book metaphor is extended towards the façade ('cover') and its sun shading louvers ('pages'). This makes it a library that puts the user central rather than the content.

Tutors: Jan Engels, Frank Schnater, Truus Hordijk



KOEN BARENDRECHT: CAR MUSEUM

The Netherlands needs a museum for cars and automotive technology from design, manufacturing use and recycling, this project fills in that gap. By locating the new museum at the RDM campus a natural link is made with the design department of the College of Rotterdam. The design addresses the relation between museum daylight and museum fatigue. In general museum fatigue kicks in at about 30 minutes after which the visitor's interest in the exhibited objects begins to decrease. The solution was found in varying the light conditions of different museum halls. The bridge like building overpassing built volumes for services has a transparent facade that adjust the daylight to the requirements of the exhibition halls.

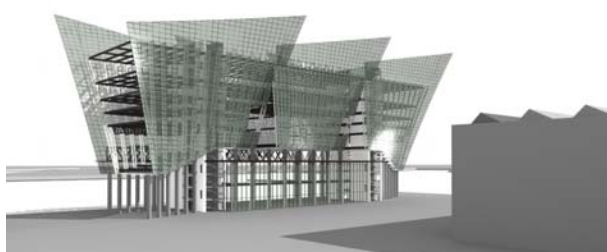
Tutors: Jan Engels, Frank Schnater, Truus Hordijk



MARCO VISSER: THE VARIABILITY OF STREAMS

This design, an event centre which is part of the Architectural Engineering double track, focuses on two elemental streams: The variability in streams of people, when a certain area is usable in several ways, was part of the first semester. The second semester focuses on the stream of air through the design. The event centre can be used for 3 basic scenarios: Basic Theatre, Theatre new style (public in the centre) and the central stage scenario. In every scenario the stream around the centre is different and this is exactly where the design program is made for. Whereas a place in one scenario is used as a stage it can be used for tribunes in a different scenario. To prevent that the ventilation of the building costs a lot of energy the variability of the air stream around the building is used. The shape of a climate axis is based on the variety in wind direction on the location. The holes in this axis and the shape of the main facade make sure that an air steam can be used for generating energy and for the stimulation of natural ventilation.

Tutors of this dual track graduation: Jan Engels, Arjan van Timmeren

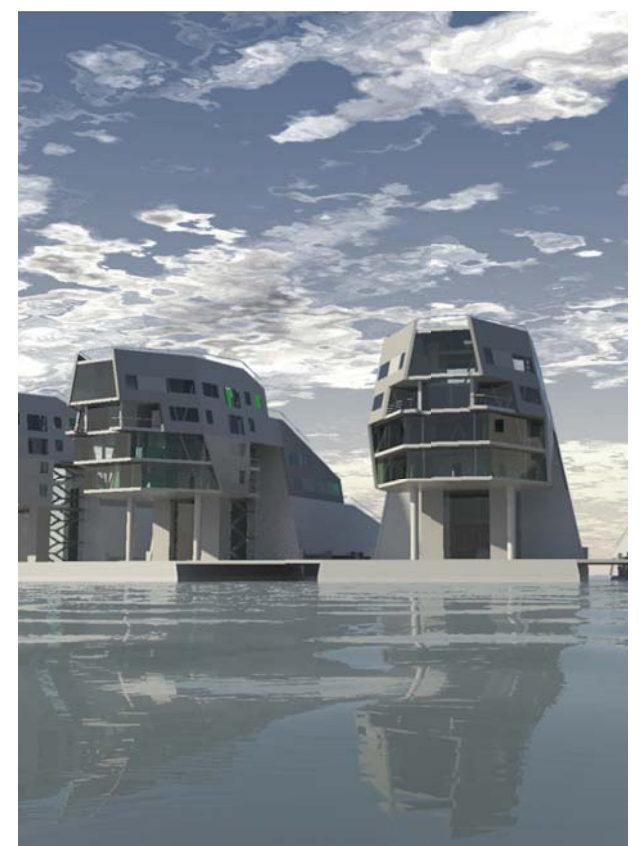
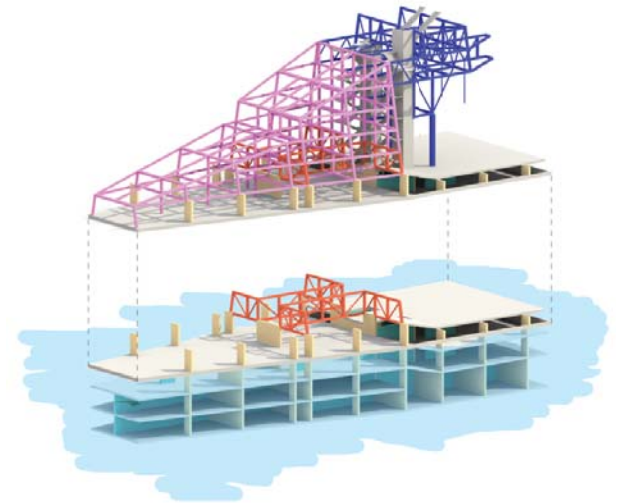


STEVEN GOEMAN: THE OLYMPIC STADIUM

FLEET 2028

History shows that many cities that have hosted a mega event saw themselves ending up with white elephants: buildings unfit for any economic use. This problem is addressed by making a floating stadium for the Rotterdam Olympic 2028 in the Rotterdam harbour. This project aims to reuse and reduce materials and resources incorporated into the massive Olympic building demand. The stadium consists of 30 floating elements connected by temporary stadium modules. After the games the floating elements can be reused as housing units elsewhere in the Netherlands and abroad. Dividing the stadium into multiple elements instead of making one floating structure will increase its sustainability. It will multiply the post-Olympic use options. Simultaneously the adjustments, necessary for this usage are minimized. Part of the stadium is left in the Rotterdam Waalhaven to be converted into a floating living quarter, as one of the new floating communities.

Tutors of this dual track graduation: Jan Engels, Arjan van Timmeren



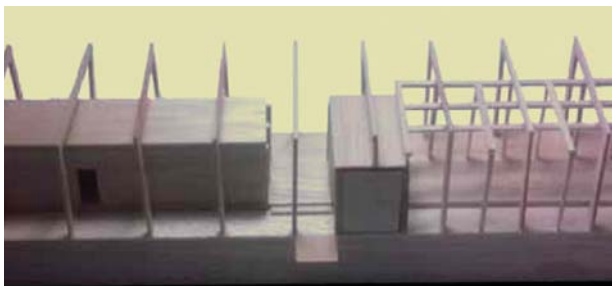
Northwards Amsterdam

The aE6 lab has selected the northwest Amsterdam docklands Buiksloterham as the location for their thesis design. The site was studied and explored by making architectural designs for a pavilion, based on engineering fascinations. These are the works of the students who proceed with their final design.

BEREND STRIJLAND: ULTRA HIGH PERFORMANCE TRUSSES

In this scenario the redundant KNSM dry dock will be used as floating ice skate rink in winter that can be replaced by a floating swimming pool in summer. Parallel to the dock a pavilion is planned for supporting functions such as facilities to change clothes and a café. The range of portals has been subject of study to apply high performance concrete. The properties and production techniques were studied; the stress performance was identified. Based on these high strengths the minimum dimensions of the portals were then calculated. In the final design the portals draw the outlines of the building with a timber frame and timber panels.

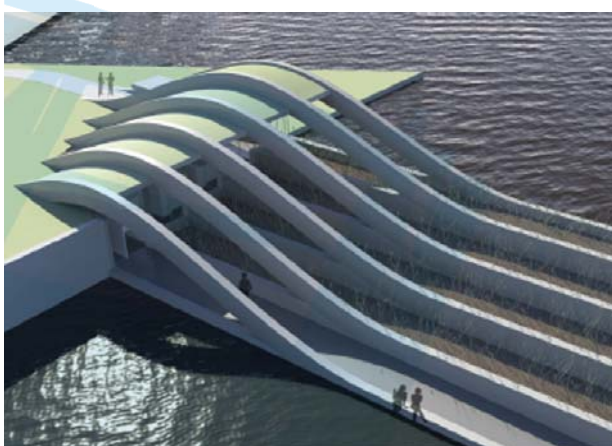
Tutors: Kees Regtop, Ype Cuperus, Kees van Weeren



VINCENT LOUER: THE NATURAL CLEANED SWIMMING POOL

Rather than cleaning water by adding chemicals, this project examines natural filtering techniques. Filtering water with wetland can be very interesting on the shore of the IJ. In this way the water from the IJ can be treated and can become suitable for use. The water can be filtered with wetland plants or so called helophytes. The study reports on the plants, the water quality and gives indications for the size of the wetland needed. It is demonstrated in a test project that uses IJ water for a swimming pool.

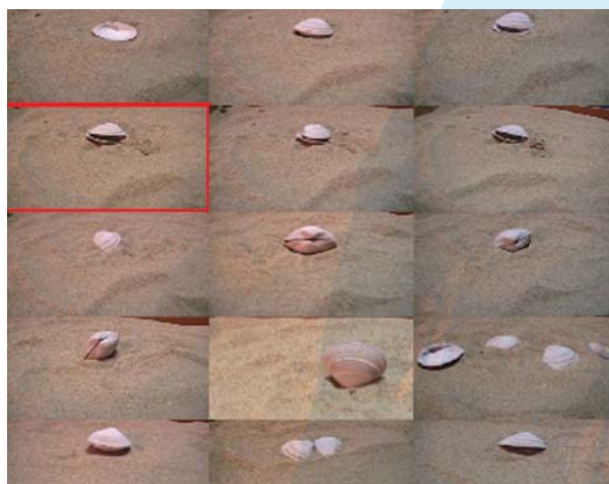
Tutors: Kees Regtop, Ype Cuperus, Leo de Ruisscher



JAAP BIJLSTRA: SHELL WITH TENSIONED SKIN

The shape and structural forces of a clamshell inspired this project. There is no structural joint in building with the relative strength of the clam muscle. Therefore different principles needed to be explored. The final proposal shows a shell roof with carbon fibre reinforced composite. The skin as made of a glass fibre reinforced plastic, combined with a PTFE / Teflon fabric, combining the best of two worlds of tension and weather resistance. The roof needs tension cables to stay up. All dimensions are underpinned with computer-aided calculations.

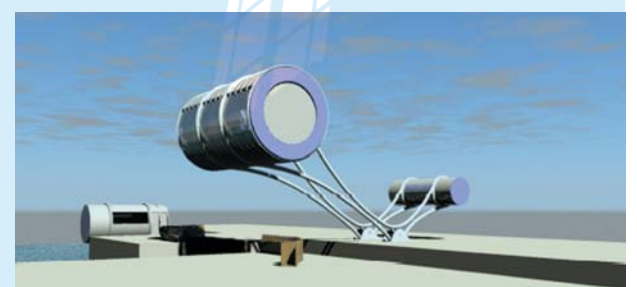
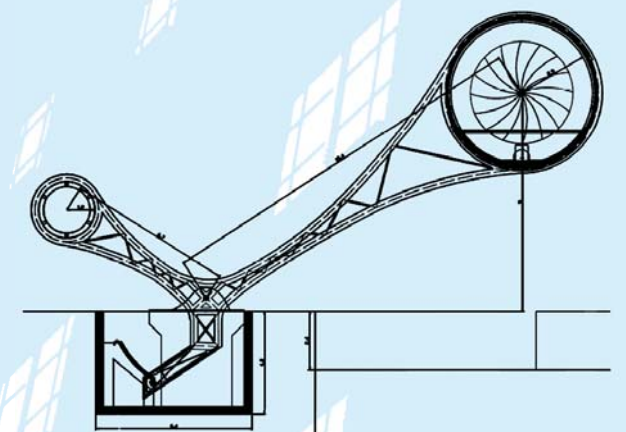
Tutors: Kees Regtop, Ype Cuperus, Wim Kamerling



MIRRE VEERMAN: THE BRIDGE

This pavilion design combines the fascination for large adaptive spans and kinetic architecture. It has resulted in a balanced structure that moves a cylindrical space up and down. The challenges lay in three distinct themes; the main construction, the pavilion and the situation. For the main construction the biggest (researched) challenges are the movement of the construction and the design of the construction. For the pavilion these are rotation of the pavilion, weight of the pavilion and construction of the pavilion. In the last theme, the location, the research is about the positioning of the whole design and the entrance. In the final analysis the outcomes of the detail studies were combined in the design.

Tutors: Kees Regtop, Ype Cuperus, Patrick Teuffel



LEX OOSTROM: INFORMATION PAVILION
BUIKSLOTERHAM

This floating pavilion was designed on the knowledge that an object has higher buoyancy if it is lighter and result in little under water volume. This contradicts with the stability that is increased by a low point of gravity. Priority was given to low weight, stability was ensured by anchoring the floating volume with tension rods. An extensive comparison of construction materials has resulted in a system of hollow tubes made from recycled plastics. They interface with a dove tale connection that assures waterproofing; the hollow tubes can be filled with thermal insulation. This system was used for the floor as well as the roof structure, distanced by a façade with steel columns.

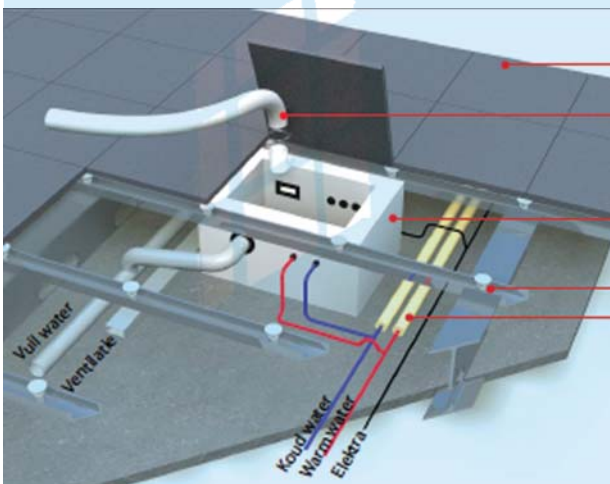
Tutors: Kees Regtop, Ype Cuperus, Arjan van Timmeren



BERT VINKE: FLEXIBILITY IN USE

This pavilion addresses the question how to build for an unknown demand in an uncertain future. In search for the answer a box in box concept was developed. A larger volume contains a 'box' that can be freely moved over a raised floor. The study contains a catalogue of floor systems and flexible cable, pipe and duct connectors. The interfaces for mechanical electrical and plumbing have been investigated and the box dimensions were the result of extensive dimension studies. The pavilion seems to float over the water, however it has a fixed land connection.

Tutors: Kees Regtop, Ype Cuperus, Frank Schnater



LISETTE KOOIMAN: WIND CATCHER

The windy location as well as the brief to design a pavilion inspired to design an exhibition space that demonstrates how a building can be ventilated naturally and efficiently, driven by ambient wind. First the wind properties in relation to object shapes were described; natural ventilation was investigated in terms of pressure differences. The open to wind location as well as the requirement to make the pavilion visible at a distance resulted in a wind catcher shaped building. In order to catch the wind from all direction a circular plan was made. Between roof and façade a natural vent system was designed. The wind performance of the building was calculated using Computational fluid dynamics.

Tutors: Kees Regtop, Ype Cuperus, Peter van den Engel



YANNICK LIEM: CRANE PAVILION WITH SUSPENDED GYROSCOPES

This project aims to renovate the crane, and give it a new function while maintaining its iconic appearance. In this project, the feasibility of using precession of a gyroscope in order to 'carry' a building is tested. The physics behind gyroscopic behaviour are explored and explained, and using that knowledge, a sketch design has been made for a pavilion. Out of several possible solutions, a variant with a spinning ring on a magnetic levitation track has been delved into deeper. Given the scale of the project and the possible size and weight for the flywheel, the ring would have to spin faster than current precedents prove possible.

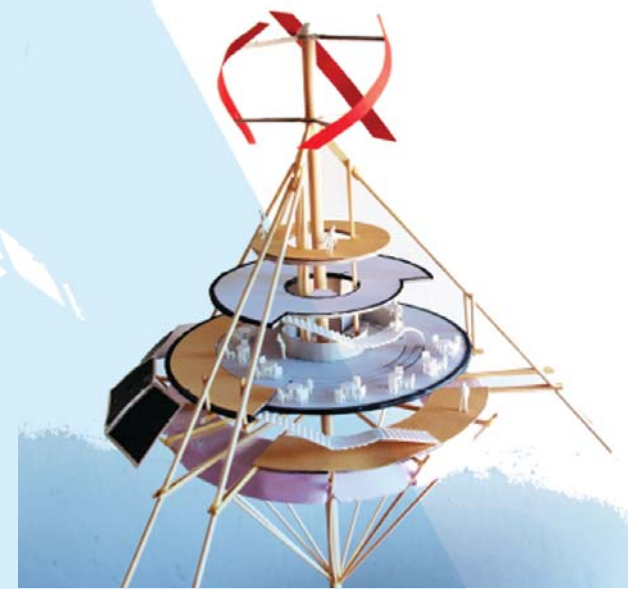
Tutors: Kees Regtop, Ype Cuperus, Kees van Weeren



BERNARD AUKEMA: H₂ IN ARCHITECTURE

This project is a research about the possibilities if hydrogen in architecture as an energy carrier. The energy for the pavilion will be generated using solar panels and a wind turbine. Excess electricity can be used to generate hydrogen from water through electrolyse. Hydrogen can be compressed and stored in tanks and used for heating when needed. Since the round pavilion floats, it can easily be rotated in order to direct the solar panels towards the sun. The pavilion counts three levels that accommodate a restaurant.

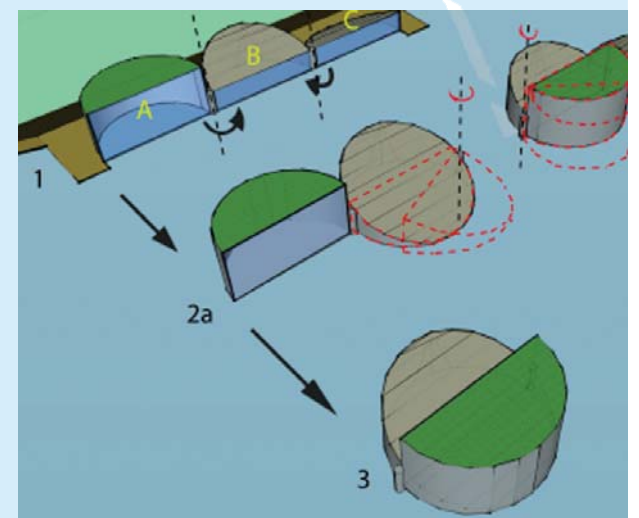
Tutors: Kees Regtop, Ype Cuperus, Andy van den Dobbelen



JAN-KEES DE VRIES: ADAPTABLE FLOATING PAVILION

This design addresses the question if a floating multi functional building can be conceived that optimizes the energy properties of floating on water and responds to changing needs over time. Interventions to respond to change can be translation, displacement, rotation rising and falling, adding elements, repositioning and internal change. The pavilion consists of vertical semi cylinders that float, hinge and rotate, thus creating an extravert summer building for stage performances and an introvert winter building for indoor activities. The study is complemented with a catalogue of floating related construction methods and materials.

Tutors: Kees Regtop, Ype Cuperus, Arjan van Timmeren



aE lab⁰⁸

MSc3/4

Scheveningen Harbour

Scheveningen has a long history as a Dutch fisherman's village and as the seaside resort of the Hague. As the Norfolk terminal that connected Scheveningen to England, became redundant new wastelands appeared to be developed. The municipality of The Hague has published its future potential in the report Scheveningen Harbor, Pearl at Sea. The Scheveningen harbor and its surroundings will serve as the location for the Architectural Engineering MSc4 studios. The site contains all elements for exciting master plans with space for residential and commercial buildings and for cultural purposes. The buildings to be designed will be the vehicle for technology driven architecture, exploring ways to build for an unknown future with new technologies in the field of material science, structural and computational design, climate design, product development, green building and new management strategies. Fixing what can be fixed, with options left open for what we cannot foresee.



AE LAB 08 - STARTS SPRING 2012 - ENROLLMENT BEGINS NOVEMBER 28!

SOLAR DECATHLON - REVOLT HOUSE

REVOLT HOUSE –TU DELFT'S FLOATING, ROTATING, SOLAR-ENERGY HOUSE

The warmth of the sun and coolness of the water. The ideal combination for a great day at the beach, but also the perfect combination for a house. ReVolt House, a student project from the TU Delft, is a floating and rotating house, exclusively powered by solar energy. The house will be built and participate at the Solar Decathlon 2012 in Madrid and competes against 19 other international Universities.

Floating

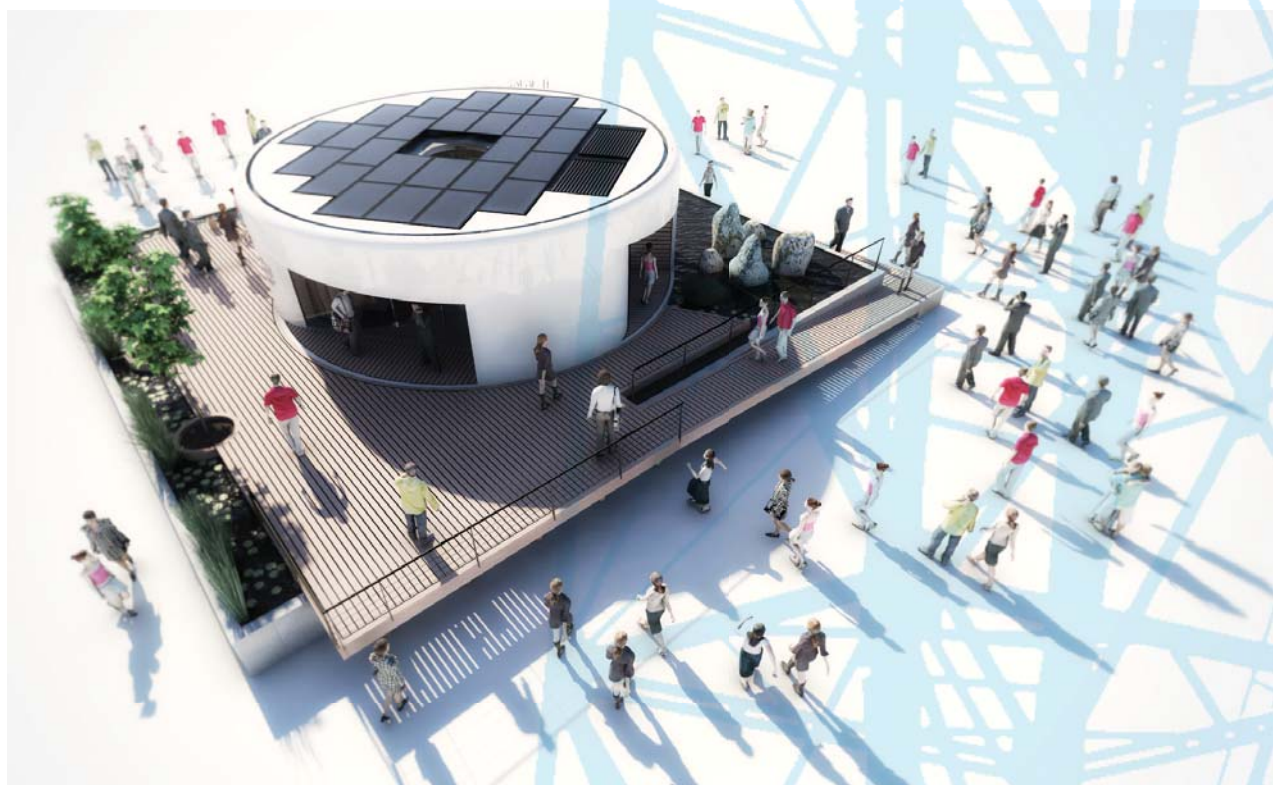
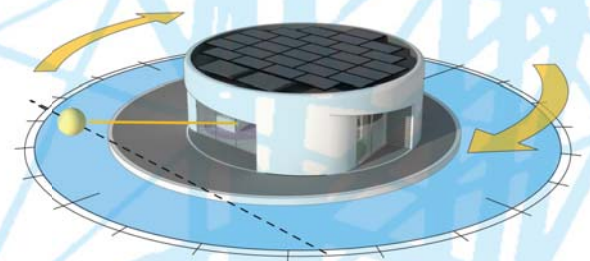
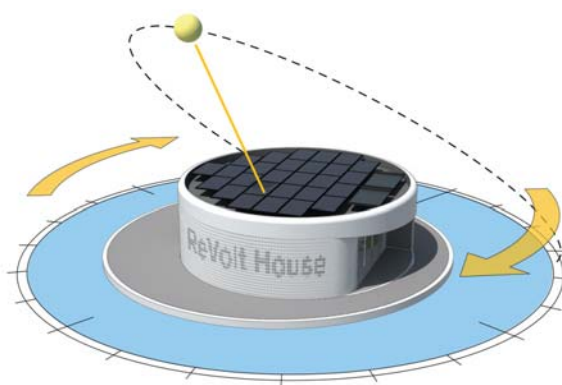
The floating house is related to the sheer amount of water available in the Netherlands. We would like to contribute to housing on water and additionally show how to solve that in a sustainable way where the water/landscape aspect gets tightly interwoven with the architecture and energy concept of our house.

Rotating

The house will rotate along the sun path because of climatic and energy aspects. It can be guided by the mechanisms or by the inhabitants. Therefore they have the possibility to i.e. wake up bathed in morning light or dine during the sun set.

Effects

Since water reflects the sun rays we further expect having an impact on the interior of the house in terms of daylight availability but also atmosphere. We aim to combine sustainability, low energy consumption, movement and special landscape features into a unique lifestyle and design.



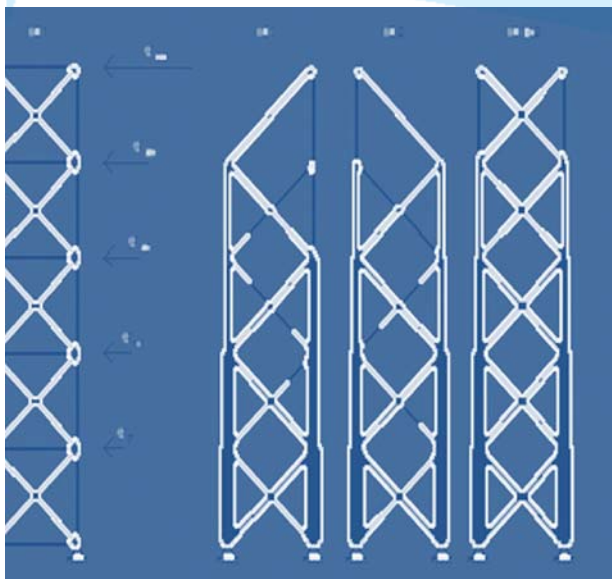
exploring the future

PhD

MAURICIO MORALES BELTRAN: ADAPTIVE SEISMIC RESPONSIVE STRUCTURES

The project aims to design an optimal adaptive structural configuration for earthquake response. In the seismic context, adaptive structures are related to the implementation of active motion control systems. Therefore, this refers to the optimization of shape from the energy exchange between the building and the ground on which it is built, based on the development of a topologically-optimized structural system and the integration (embodiment) of the control devices within the structure. This original design for a structural system will provide fundamental insights into how the adaptive systems can be applied in seismic design of buildings. These insights will lead to direct improvements in the seismic performance of buildings and will open new fields for the architectural design.

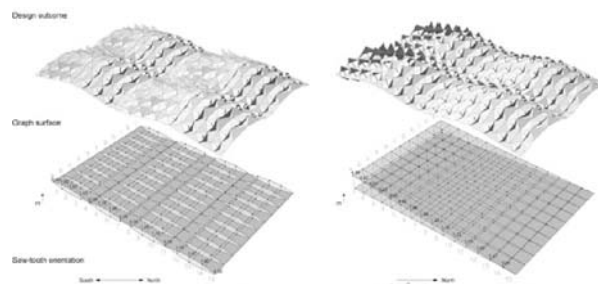
Supervisor: Patrick Teuffel



FLORIAN HEINZELMANN: ADAPTIVE DAY-LIGHTING STRUCTURES IN LARGE-SPAN ROOFS

The development of static building climates as standard design solutions for the building environment has significantly reduced the performance potential of buildings, building systems, occupants, and the contextual environment. This constructed separation between the human and natural environment contributes to the reduction in a project's performance potential. An alternative solution for thermally conditioning the built environment is to develop dynamic, climate responsive buildings that generate a range of hybrid microclimates that allow occupants to inhabit spaces that are optimal to their personal thermal comfort range throughout the day and seasons. The research is focused on generating a rigorous design process for integrating hybrid microclimates into the internal building environment, with particular emphasis given to optimizing building and occupant performance. The resultant built environments significantly improve the performance and adaptability of architectural designs in a broad range of economic, social, and environmental parameters.

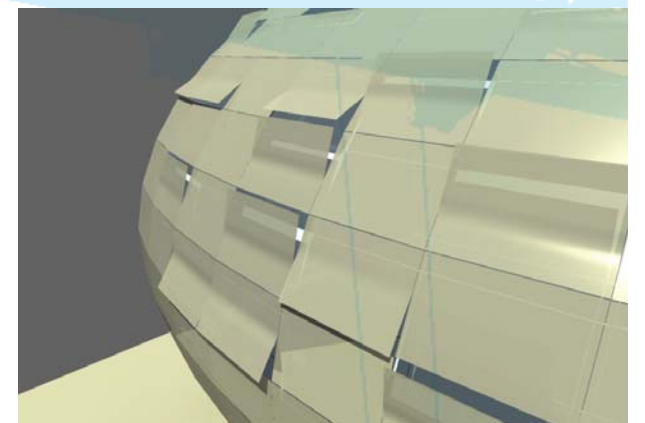
Supervisor: Patrick Teuffel



CHARLOTTE LELIEVELD: THE DEVELOPMENT OF A SMART COMPOSITE COMPONENT FOR THE REALIZATION OF AN ADAPTABLE ARCHITECTURAL ENVIRONMENT

For the realization of an adaptable architectural environment, a smart composite is developed, which enables a flexural shape deformation and recovery with the use of intrinsic properties of smart materials. Smart materials dispose over responsive and sensoric properties, which means that they can react on changed external stimuli with a physical reaction. The objective of this research is the fabrication, characterization, validation, optimization and performance of the smart composite. After the fabrication of the smart composite by embedding shape memory alloys actuators (flexural deformation) in a shape memory polymer matrix (to fixate the deformation), a digital model is developed to simulate the performance of the smart composite. After validation of this model with experimental results, the model can be used as a design tool for a further development and optimization of the smart composite.

Supervisors: Patrick Teuffel, Kasper Jansen



GIANCARLO MANGONE: ACCOUNTING VEGETATION

Developing a rigorous design process + metric system to integrate + quantify the effects of vegetation on the built environment and its occupants.

The PhD research is focused on generating a rigorous design process for integrating exterior vegetated corridors and systems with the internal building environment. This process will inform design projects from the conceptual phase through design development. A metric system of evaluation will be developed to quantify and qualify the resultant effects of the developed design solutions on the internal building environment, its occupants, and the natural environment. Based on preliminary research and case studies, the resultant vegetated built environments are expected to significantly improve the performance and adaptability of architectural designs in a broad range of economic, social, and environmental parameters.

Supervisor: Patrick Teuffel



Who is who in aE?

Thijs Asselbergs

With his appointment as Professor of Architectural Engineering since September 2008, two of his passions converge: the stimulation of young design talent and technological innovation in architecture. Asselbergs conceived the term *zappi* for an imaginary material that can be used for everything. It was devised to assist the architect-engineer, the archineer, at least in a metaphorical sense, in creating his technological innovations. Asselbergs has his own design office aTA/architectuurcentrale Thijs Asselbergs in Amsterdam.

Henriette Bier

Assistant Professor - Expert in computer-based systems and methods applied to architectural design.

Marcel Bilow

Owner of Imagine envelope bv since, senior researcher since 2006.

Andrew Borgart

Since 1997 he has been working as an assistant professor of structural mechanics at the Faculty of Architecture and also lectures at the Faculty of Civil Engineering. He teaches several courses in structural mechanics and special structures for the Master's degree programmes AE, BT and Building Engineering (Civil Engineering). Borgart conducts research in the field of structural morphology of complex geometric structures, specialized in the relationship between form and force of shell and membrane structures.

Ype Cuperus

Assistant professor Architectural Engineering. Director of OBOM Open Building Strategic Studies. OBOM Open Building Strategic Studies investigates and advises on Open Building, user oriented building for future change, and Lean Construction, create value and banish waste in the construction process. Specialises in the synergy between the Open Building and Lean Construction. Mentor graduation lab AE, main focus on research.

Hans Daane

Structural –and civil engineer. Director; advice/construction office JCD (1982-present). Buildingstructures, lightdesign, offshore en powerstations. Assistant professor, "ontwerpen van draagconstructies" (1992-present).

Andy van den Dobbels

Professor of Climate Design & Sustainability since 2009, longer already advisor, member of various juries and expert author www.duurzaamgebouwd.nl, amongst others. Conducts research on sustainable building, fundamentally the climate design of buildings, but with special focus on sustainable energy systems for the built environment. The essence is 'smart & bioclimatic design', for which local circumstances will be deployed with optimal effect for urban and architectural plans, in order to get to a sustainable use of resources.

Elise van Dooren

In her work as a design teacher and researcher, Elise combines three fascinations: architecture becoming architecture by its materialisation, a sustainable environment, and the didactics of learning to design. In the minor Archineering, developed by herself, these fascinations are a central focus. In her research she focuses on making the design process more explicit. She developed a course about the design process and didactics for students and a course the 'design didactics' for teachers and is together with Luc Willekens the instructor in these courses.

Florian Eckardt

Architectural firm Florian Eckardt BNA. Mainly works with private clients, and strives to make designs for the homes in which the personality of the clients can be recognised. His other fascination is designing a sustainable environment.

Mick Eekhout

Octatube Space Structures bv since 1982, professor since 1992. The company is specialized in design, research and development, engineering, production and installation of complicated spatial structures in architecture, applications worldwide. The speciality of 'design & build' of complicated architectural building parts of buildings is aimed at, amongst others, roofs and facades.

Jan Engels

Architektenburo Ir Jan Engels, teacher. Work terrain of the firm is new build, conversion, and extension of private homes, shops and offices. Oriented towards utility and perception value of buildings and interiors, and office innovations. Has been working as teacher in a lot of courses for a long time, and is now lab coordinator and first mentor of the graduation lab AE.

Jelke D. Fokkinga

Employed as guest tutor at the TU since 1993, and the municipality of Rijswijk (building inspector, sustainable building and urban development) since 2007. Interested in the Good, True and Beauty in the human existence; dabbles with wood, kitchen garden and bees.

Bas Gremmen

Gremmen Architectuur <> Interieur since 1991, teacher/lecturer since 1998. Interested in designing complex and intelligent spatial concepts for architectural and urban assignments. Aims to design future resistant plans. Specialised in projects in inner cities, like 'Living above Shops', re-development and design of office buildings, industry, apartment buildings and individual housing. New build as well as renovation, big and small developments.

Suzanne Groenewold-Stengs

Owner /Architect GS architecten BNA since 2004 and co-founder maatschap GL architecten since 2011, guest teacher since 2004. Besides new build, renovation and refurbishment projects, also interior assignments in various sectors. The user and the location are the most important parameters at the starting point for a design. In every project comfort, functionality and atmosphere are constantly guarded. Synergy between current architecture and sustainability are of importance.

Eric van den Ham

Associate Climatic Design Consult since 1991. Teacher building physics/climate design at Civil Engineering since 1998 and Architecture since 2006. Climatic Design Consult (CDC) is a consultancy office in building physics/climate design and installations. Climatic Design literally means "designing adapted to the climate": the internal adjustment of building, construction, installations and (local) climate, offers sustainable accommodation with optimum living and working comfort and little energy consumption.

Erik Hehenkamp

Ontwerpers A'dam since 1994, tutor since 2009. By designing architectural events the firm innovates models for contemporary society. Debates on social issues are organized and experts are invited to participate in architectural projects and events. The goals are strategic planning and sustainable projects, with specialities in re-use of buildings and building ensembles, advising and supervising.

Florian Heinzelmann

Founding cofounder/partner of SHAU, Rotterdam and Munich (2008), project manager of ReVolt House, PhD researcher, tutor since 2010. His research covers the morphology (parametric design), materialisation (smart materials) and

evaluation (daylight comfort, energy) of adaptive daylight systems in large-span roof structures. He further is project manager of the ReVolt House, the TU Delft entry for the Solar Decathlon 2012.

Gerrie Hobbelman

Teacher Applied mechanics since 1974. Graduated Civil engineer with great interest for Architectural (loadbearing)constructions. The field of applied mechanics is very important to understand and design loadbearing constructions. This is always emphasised during teaching and illustrated with many examples from the practice of building. How forces go through a construction is more important than the exact calculation of the values of them.

Sjap Holst

Architect BNA. His architectural office ECO-DESIGN is realizing since 1985 projects with added value for people as well as environment. Specialized in bio-ecological and sustainable building (board member VIBA), in particular earth construction (member CRAterre), he gained large experience with earth building projects home as well as abroad such as Belgium, France, Italy as well as Latin America. ECO-DESIGN aims for a symbiosis between architecture and art. See www.arTchitecture.nl

Tjalling Homans

Studio Tjalling Homans since 2007, guest teacher since 2009. The bureau focuses on architecture in the full width; from urban planning till interior design. The interaction between the client, the users, the project partners and the builders inspire and nourish the design process. The challenge always lies in creating a surprising but natural architecture, which tempts the users to bind themselves to a space or building.

Truus Hordijk

Associate Professor Building Physics since 2010, teacher Bouwfysica since 1998. My specialties are: Light and Illumination, with special attention for Daylight. Apart from these also Sunshine and Wind nuisance in the Urban Environment.

Pierre Jennen

Design studio OvO since July 23, 2007, guest teacher since 1998. Specialised in small scale living facilities for people with limitations from body or age.

Hans Kalkhoven

Architect bij Studio Leon Thier. guest teacher since 2007. Mostly works on designs for complex buildings where integrated design is the main focus. Special interest in details and technique. During the last few years refurbishment (of e.g. listed buildings) is the sphere of activity of the studio.

Wim Kamerling

Lecturer structural design since 1982. Interested in shells, floating buildings, pre-stressed structures, fusee ceramicque.

Hans Karsen

Hans Karsen c.s. architectuur en stedenbouw since 2000. Before employed as project-architect, team leader and partner at e.g. atelier PRO and van Tilburg & Partners(now TIB architecten). His body of work is very divers. From interior to urban designs and master plans. The focus lies on housing often in combination with other functions, health care facilities, schools and multi-functional accommodations. This resulted in a large expertise in projects with complex inner-city and village fitting-in issues and an intense mix of functions. Hans Karsen is a guest teacher since 2001.

Tillmann Klein

Owner of imagine envelope since 2008, leader „Facade Research Group“ since 2005.

Ulrich Knaack

He worked as architect and general planner in Düsseldorf on projects including high-rise, offices, commercial buildings and stations, succeeding in national and international competitions. Today he is Professor for Design of Construction at the TU Delft where he developed the Façade Research Group and organises interdisciplinary design workshops and symposiums with themes like facades, High Rise and complex buildings. Since 2009 he is head of the Department Building Technology and since 2011 dean of the faculty at Detmolder Schule für Architektur und Innenarchitektur at the Hochschule OWL. Author of several well-known references books, articles and lectures.

Gilbert Koskamp

Jos Lafeber

Director at Drost + van Veen architecten bv, Rotterdam, since 2007. Guest teacher Rotterdamse Academie van Bouwkunst, since 2005. Journalist/art and architecture critic for several magazines and newspapers, since 2003.

Peter Luscuere

PG Luscuere BV since 2010, professor since 1992. Independent consultant with specialties in cradle to cradle, conceptual consulting, exergy and China. Other fields he works in are sustainability, contamination control, operating theatres, integral design, energy and exergy in the built environment and health care buildings.

Giancarlo Mangone

Giancarlo Mangone is currently principal of Symbiosis : Sustainable Design + Consulting, based in West Palm Beach and Delft. His practice has developed projects throughout the world, including the US, Puerto Rico, Europe, China, and Africa. He is also pursuing his doctoral research work on the performance potential of vegetation and hybrid microclimates on the built environment at the Delft Technical University Faculty of Architecture in the Architectural Engineering Chair.

Hubert van der Meel

Henk Muhl

Ir. Henk Muhl is architect, lecturer and teacher in the Faculty of Architecture, TU Delft since 1992, and has taught as a visiting lecturer at academies in Holland and Belgium and co-editor of books. He has been a member of several architectural firms and has been involved in numerous projects: hospitals, shopping centres and housing developments. Presently he is concentrating on teaching design. He is interested in the relationship between a creative impulse, professional discipline and technology : A culture of technology.

Mauricio Morales Beltran

PhD researcher in the field of Adaptive Structures since 2011. His main expertise and interest are in structures in Architecture, teaching using scale models and the relationships between shape in nature and geometrical patterns. He is an architect (1999) with experience in teaching and with interdisciplinary studies in Structural Engineering at the Universidad Mayor (2008), Santiago de Chile. Professional practice in Architecture Offices and consultant Structural Engineering professional practice for companies and offices in Antofagasta - Chile. Teaching experience for 10 years at the School of Architecture, Universidad Catolica del Norte, Antofagasta – Chile.

Rob Nijse

Civil engineer ABT since 1979, professor since 2007. Complex architectural buildings home and abroad. Specialism in application of construction glass.

Hans Nout

Architectural firm NOUT architecten since 1986, guest teacher since 2002. Specialised in commercial and industrial buildings and housing. Great interest in assignments with an exceptional starting point, in which functions and activities with changing and peculiar character, and with varied use have to be combined. The firm strives for sustainable and harmonious design in architecture and urban settings.

Roel van de Pas

Guest teacher since 2005, BURO BOUWSTOF since 2011. I have been working at JHK Architecten in Utrecht for ten years, where I obtained much experience in the design and realisation of mainly large scale renovations, new office and commercial buildings, schools and several interiors. Since 2005, I pass on my experience and passion for architecture to young and talented designers as guest teacher with a lot of devotion and joy. Curious for new challenges, I decided this year to develop myself further as independent architect under the name BURO BOUWSTOF.

Joop Paul

Managing director of Arup since 2000, professor since 2007. Manages projects and staff in the Netherlands and is leading a multi-disc group with specialists in building structures and services, sustainability, master-planning and urban design, lighting design and product development, fire, bridge design and civil engineering, and transaction advice.

Huib Plomp

Assistant professor since 2000.

Kees Regtop

Job Roos

Braakma & Roos Architectenbureau since 1981, teacher. The bureau is specialised in redevelopment. Apart from that they develop new build on historical locations, and redevelopment and restauration of listed buildings. The firm has great experience in big and small projects.

Frank Schnater

Owner rsv architecten since 2002, lecturer since 2006. Interested in complicated small to midsized projects, varying from procedural, to structurally complex or spatially difficult. Housing of private clients, commercial and industrial building and professional clients. Apart from specific projects also (mass)models and competitions.

Martin Smit

Martin W Smit Architects. Guest teacher since 2000. Specialised in projects for education, healthcare and landscapes. He used a critical attitude towards his own thinking and design processes for his dissertation, and reflected upon the two. From this dissertation he developed a strong interaction between intuition based concepts and rational approach.

Martin Sobota

Partner Cityförster Architecture & Urbanism since 2005, teacher. Prime field of interest is 'The City' – a complex system which functions by diversity, vividness and the interaction of its different elements: 'The city - just like the forest - is defined by its constant change.' Specialises in urban design, housing, parametric architecture, urban development, marketing strategies, design concepts for the public realm and research on 'The City'.

Laura Stevens

Architect and Creative Director Building Passion, guest teacher since 2008. Her books, "Strong Women in Building" (Dutch edition) and "Building Passion - The International Edition", make women in the building industry more visible, with the goal to balance the gender unbalance in the top two layers of decision makers. Her experience as architect, consultant, technical and urban planning manager and vice director with the Dutch railways building department come together as she teaches at both The Hague school of Technology, Innovation and Society as at the TU Delft.

Martin Tenpieri

Expert and assistant professor Building Physics, member of the task force acoustics in sports halls and a board member of the Dutch-Flemish Building Physics Association, for which he also organises the bi-annual 'Kennisdag Bouwfysica'. He educates on the fields of building and room acoustics, low-energy architecture, and the materials and system needed to achieve such buildings. His research focusses on low-energy and passive housing, the influence of occupants on energy use, and new materials that may help in reducing the energy consumption of buildings.

Patrick Teuffel

Patrick Teuffel received his PhD on the application of adaptive systems in architecture and engineering at the University of Stuttgart. He founded Teuffel Engineering Consultants in Stuttgart, specializing in special and lightweight structures. Since 2008 he has been Professor of Architectural Engineering at TU Delft, where he founded the Adaptive Building Systems research group for smart and performative design and adaptive systems in the architectural engineering context.

Arjan van Timmeren

Associate professor Green Building Innovation, Engineering & Product Development, and Partner/architect in Atelier 2T Engineering & Design. The office is dedicated to Climate Integrated Design and Research, with emphasis on (green-) innovation, bio-climatic design, sustainability and self-sufficiency. His office and research group are involved in building projects in and outside the Netherlands, varying from product development, individual housing and business centres, to large 'climate neutral' city districts. He received several (inter)national awards for his work and has seats in International Scientific Advisory Committees, Quality Teams and Expert Panels.

Jan van der Voort

Partner Attika architecten Amsterdam since 1990, teacher since 1989. The firm makes designs for architecture, urban planning and interior design. Specialised in the themes building in water-environments, schools, shopping areas, housing, restoration. Making autarkic plans lead to expertise in the area of sustainability.

Arno de Vries

Arno de Vries architecten since 2008, guest teacher since 2010. Works on designs for architecture and urbanism, freelance supporting design and building process, advising private clients and urbanism, writes texts and editing, and supports the selection of (European) request for grants.

Luc de Vries

Ger Warries

Architects office 'Warries architect' since September 2006, guest teacher since 2000. 'Warries architect' makes architectural and urban design and studies, with a focus on sustainability and flexibility. Amongst its clients the firm has corporations, (care) institutions, municipalities, project developers and private clients. Clear concepts are the basis for the design, which will be shaped through knowledge and experience into a convincing and clear solution up till the last detail. Info: www.Warries.nl / LinkedIn / BNA / Architectenweb

about BouT

student association

BouT

BouT is the student and practice association for Building Technology. We are a platform for students and alumni, PhD students, researchers and other academic staff and commercial enterprises. Within our network we aim to exchange building technology related knowledge and experience. We are located at the Architecture Faculty near the Building Technology studio space on the second floor. Our board consists of Msc students who commit to the association for at least a year, next to their study activities.

What do we have to offer students?

- Knowledge sharing with companies (visits, internships), other students and professors
- Free magazines
- Detail, Bouwwereld, Cement and many other magazines available at the BouT office to read
- RUMOER 3x a year
- PDF version of Science, Processing and Design and the Jellema series

Events: Company visits | Annual studytrip | Symposia

Throughout the year we organize events that complement the Msc curriculum. Excursions to companies within the field of building technology offer insights in what to expect after graduation and gives you the opportunity to gain knowledge. Discussions with people that have experience with the 'real life' of engineering might bring you to different conclusions for your design. Every year we organize a week long studytrip. Among visited locations are Dubai, Munchen and last year Madrid. During the week, we try to emphasize the importance of building technology within the architectural world by visiting relevant projects. We also let ourselves get surprised by the unknown parts that cities have to offer. In collaboration with other associations or companies we organize symposia. Lectures, workshops and discussions about prominent subjects within the world of engineering will fill a day.

Publications: RUMOER | Journals

To keep you up to date about everything happening in and around the Building Technology world, you receive a copy of our RUMOER magazine. This periodical (3x a year) is revolving around a different BT-topic each time. There are interviews with people in the working field, prominent companies contribute to exchange their knowledge and interesting projects are being explained. It is also a platform for graduates to present their project. Next to our own publication, we also have a small library of building technology related magazines like Detail and Bouwwereld. These are available for you to read at our office.

Student membership: €10,-
Become a member through our website.

Website: www.praktijkverenigingbout.nl
Mail: info@praktijkverenigingbout.nl
Office: BK 02.west.090

AMAR SJAUW EN WA - AE GRADUATE AND WORKING AT CEPEZED

"When I had to choose a Master program, the only Master that came close to my fascination was Architectural Engineering (aE). The combination of architecture and engineering was a subject that has fascinated me even since I've started my architecture education.

At that time the aE Master program was still in a development stage. Students played an even larger role in the feedback towards how the program could be filled in than you would normally expect. You have a large extent of freedom in choosing your own design subjects. From making the most innovative construction to the most sustainable building design possible. No subject was a taboo. This actually is a key aspect of designing, especially when engineering plays a large role. Every option has to be kept open until it is more certain, or even proven, that a chosen path in a project is the most ideal one. On the other hand it never can be 100% proven that only one path is the best or most aesthetic. That is also the thin borderline between science and the more subjective part; if a design is perceived as "beautiful"! Luckily the teachers also understand this contradiction and try to guide the students in the best way possible. However, the final responsibility lies at the students because in the end it is their own project. In practice this becomes reality even more.

MSC 3-5 GRADUATION PROJECT: ECOGREEN RECREATION COMPLEX

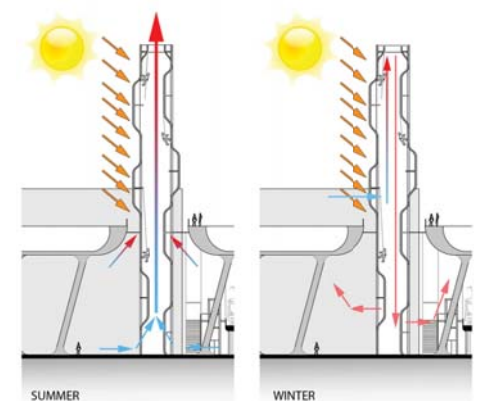
My graduation project is a design of a multipurpose sports complex and is located in the harbour area of Rotterdam. Different sports and recreational facilities are in the building and are combined with sustainable solutions.

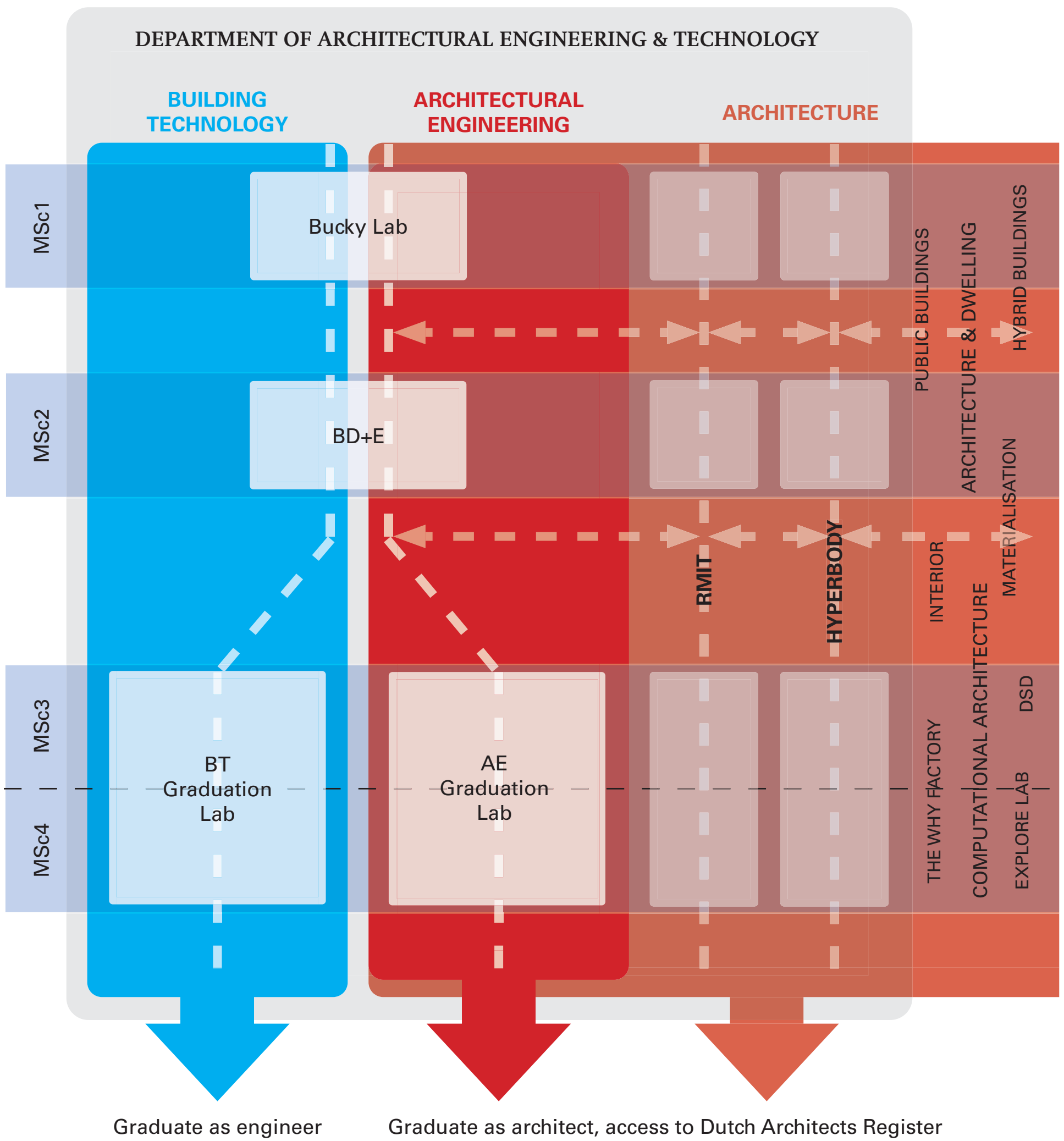
This building uses the basic elements on earth that shaped our world as we know today. Water, daylight, air and earth are used in the climate system and can be felt in the perception through the building. Not all elements are felt at the same time and at the same place. These are perceived by the users in the area where it is needed for the Engineering part of the building. For example, the wind can be felt when climbers go through the climbing tower. This gives a new level of experience in climbing and also serves the natural ventilation in the complex. The different flows of water can be seen through the central area of the building. Here the whole process of water filtration is in the form of plants and installations that are visible through parts of the floor. Daylight guides the users through the building to the places where facilities are placed or vertical transportation. All these elements have their own unique place in the building and give a new experience in both sports and sustainable Architecture.



Now, more than a year after my graduation, I don't have any regrets in choosing this Master program which turns out to be a good foundation in the path in finding and developing my own signature in Architecture and Engineering. For the students and actually for everyone who is reading this, I have some last words of advice: Don't let dreams become a barrier in thinking that it is hard to realize them, just do it! When there's a will there's always a way of realizing a goal!"

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COLOPHON

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