A Creative Journey through the Open Campus

Graduation Report

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Research Plan (AR3A010)
Public Building Graduation Studio (AR3AP100)

Vertical Campus
2023/2024

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ORIENTATION

EXCURSION TO LONDON & OXFORD

- Study and site visit of historical and contemporary campuses
- College VS. Campus

PRIMARY INVESTIGATIONS

- Literature about Hybridity and Hybrid Learning Spaces
- Collection of existing hybrid buildings and vertical campuses

GROUP WORK

SITE ANALYSIS (group)

- Psychogeographical Map
- Stakeholder analysis
- Mapping of power dynamics in the city of The Hague
- Urban capacity plan for the Green Border
- 1:500 Site model

INVESTIGATION (individual)

- Choice for individual site of intervention
- Investigation of high-rise regulations
- Formulation of ambitions for individual design

RESEARCH

LITERATURE REVIEW

- Literature review on creativity and divergent and convergent creative thinking process
- Literature review on hybrid learning spaces

CASE STUDY ANALYSIS

- Selection of case studies and photo analysis based on creative spatial parameters

Fieldwork Data — **Urban Design Proposal** — **Design Principles for Hybrid Learning Spaces**

P1

CONCEPT DESIGN

RESEARCH BY DESIGN

- Collages and montages
- Performative conceptual model
- Sustainability diagram
- Volume and circulation studies
- Reuse strategies for the existing context
- Formulation of programme and design brief
- Floor plans and models 1:500/1:200

PRELIMINARY DESIGN

DESIGN

- Facade studies and design
- Ground floor plan & exterior spaces
- Integration of existing structures
- Refinement of programme

BUILDING TECHNOLOGY

- Case study analysis on timber and hybrid structures
- Circular design strategies
- Hybrid structure design
- Foundations

FINAL DESIGN

DESIGN

- Relevant floor plans
- Convergent and divergent hybrid learning spaces
- Models 1:500 and Interior Model

BUILDING TECHNOLOGY

- Technical installations and climate concept
- Crucial joints and materials
- Carbon footprint calculation
- Section and Floor Plan 1:50
- Details 1:10
- Structural Model 1:250

Design Concept — **Preliminary Design Proposal** — **Final Design Proposal**

P2 **P3** **P4**

Graduation Plan

Personal information
Name: Elena Englmann
Student number: 5853095

Studio
Name/Theme: Public Building Graduation Studio “Vertical Campus”
Main mentor: Henk Bultstra (Architecture)
Second mentor: Ger Warries (Building Technology)
Third mentor: Sien van Dam (Theory & Delineation)

Graduation project
Title: A creative journey through the open campus
Location: The Hague, The Netherlands

ARGUMENTATION OF CHOICE OF THE STUDIO

Throughout my Bachelor studies in Munich, my interest in educational buildings grew as I engaged in various projects, including designing a new university building and transforming an existing campus site. Last summer, I had the chance to deepen my understanding of this subject through the MSc2 elective course “Campus Utopias.” The course primarily examined campus projects characterised by horizontal expansion, sparking my curiosity about the concept of a “Vertical Campus” as a response to the growing urbanization and densification of our cities.

GOAL OF THE GRADUATION PROJECT

While there has been a great shift in pedagogical and technological approaches towards more hybrid learning concepts during recent years, it is also time to adept architectural spaces to a changing and more and more diverse set of values and needs of today’s learners. Not only the requirements and wishes of the increasingly heterogeneous and multicultural student body have changed, such as 24/7 accessibility of digital and analogue learning spaces or the flexible arrangement of learning hours and courses, but also the challenges of an unknown future, which requires skills such as communication, collaboration, critical thinking and creativity. Therefore, this project and the conducted research aim to investigate the potential of hybrid learning spaces to enhance the creative thinking process of life-long learners. Furthermore, the project explores which design strategies on the urban and the building scale can ensure the accessibility of the vertical campus building for different users and stakeholders of the public realm.

For this reason, one part of the project’s research questions revolves around identifying the spatial characteristics that either activate or challenge the user’s creativity and how they can serve as a design tool for architects. Building on the conducted research, the project proposes a set of design principles for divergent and convergent hybrid learning spaces that refer to the layout and size of spaces, the fixed or flexible integration of furniture as well as analogue and digital learning tools, the influence of social interaction and the exposure to exterior stimulation.

Moreover, the project aims to explore how different educational and public functions can be distributed throughout the vertical section of the campus building. By designing a “Vertical Campus” for The Hague’s Central Innovation District, the graduation project not only addresses the challenges of ongoing urbanization and densification but also investigates how different sorts of movement through a vertical building complex and a set of different learning spaces can form part of the users‘ creative journey. Since this journey starts on ground floor level in the existing urban context, the thesis project also addresses the topic of how the closed-off power institutions in the Central Innovation District can become an integral part of the publicly accessible space and how already existing structures on site can be reused for the new campus complex.

Consequently, based on the conviction that the spread of knowledge is a crucial mechanism responsible for the reduction of inequality in our society,
the project ultimately strives for the design of an open campus, which can be accessed by learners from all socio-economic and cultural backgrounds and offers spaces and programs for different generations and stakeholders in the city of The Hague.

METHOD DESCRIPTION

The project utilizes several qualitative and speculative research and design methods to develop an adequate design proposal. The literature review investigating the research areas of creativity and hybrid learning spaces is based on two theoretical frameworks. The first one addresses the concept of “convergent” and “divergent” creative thinking patterns, while the second framework relates to hybrid learning spaces and suggests that an interdisciplinary approach combining pedagogy, technology and space is needed (PST framework) for the coherent design of hybrid learning spaces (Gil et al. 2022, p.3). Based on the findings of this literature review the project identifies several spatial qualities which enhance or challenge the creative thinking process of users and uses these parameters to analyse fifteen case studies consisting of contemporary campus buildings in the UK, U.S., Australia, and Europe. Based on these case studies the project develops a set of design principles for convergent and divergent hybrid learning spaces and speculates on how the spatial qualities of these spaces can be further enhanced in the future.

Furthermore, the studio uses a specific method known as Research-by-Design. Research-by-Design focuses on design work as a special form of research. It considers theory and praxis, analysis, and imagination as inseparable and as a medium to help conceive and develop architectural ideation. Research is not only about preparation, description, and explanation but also more importantly about projection and speculation. Research is therefore a form of design and design is a form of research. Various Research-by-Design techniques such as diagrams, mapping, collages, montages, conceptual sketches and models are used to further develop the design project and explore specifically the question of how to open the existing power institutions to the public realm.

REFLECTION

The Public Building studio investigates the future of public buildings and their role in the built environment, by developing new spatial formulas, programmatic articulations, and building components. The Graduation Studio aims to produce future-proof designs that are sustainable and investigates the possibilities of design thinking in a world where the definition of what an architect is and does, ceaselessly shifts. Public architecture should respond to and accommodate today’s needs while anticipating the future. The concept of a public campus offers a useful approach to the venues of higher education in the future. By combining various functions such as learning spaces, office spaces, medical facilities, sports facilities, and commercial and public functions within one campus complex, the project addresses the themes of hybridity and multiplicity within the Public Building Studio. Through the design proposal for future hybrid learning spaces, the project also delves into the concept of life-long learning and examines how these diverse functions can be integrated into a

sustainable spatial and structural design. Finally, the project develops a strong concept to ensure the vertical accessibility of the campus building and open up existing governmental institutions to the general public. The design project therefore follows the Public Buildings Studio's belief that a true public building is accessible to everyone and empowers the public to move freely throughout the city.

Within the Architecture master track, the project deals with the technical, spatial, and social challenges inherent in designing educational and public built environments. The graduation project aligns with the MSc Architecture, Urbanism, and Building Sciences program by synthesizing knowledge and skills from design practice (designing public and educational spaces within a densely populated urban fabric), the social sciences (the creative thinking process and the future of teaching and learning), and technology and engineering (sustainable and resource-saving high-rise building design).
The project holds relevance within a broader professional and scientific

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framework, exploring a research topic that intersects various knowledge domains and requires collaboration across different research areas such as pedagogy, technology, and architecture. The design of hybrid learning spaces has made significant progress in integrating new pedagogical approaches, technical equipment, and digital learning spaces. In this context, the design project proposes solutions to align the tangible, built environment with recent developments in teaching and learning, facilitating the generation and sharing of knowledge among all participants in public life. In the Central Innovation District in The Hague, there exists a significant amount of knowledge, for instance in the municipal and governmental buildings or the large amount of educational institutions present on site. Unfortunately, this knowledge is not accessible to the general public. For this reason, I see hybrid learning spaces as an opportunity not only to enhance the creative journey of life-long learners but also to share knowledge and make it accessible to different stakeholders and users.

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Teaching and Learning Building, University of Nottingham, Make Architects, Nottingham, UK, 2018
Library and Learning Centre, University of Economics Vienna, Zaha Hadid Architects, Vienna, Austria, 2013
Learning & Teaching Building, Monash University, John Wardle Architects, Clayton, Australia, 2018
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Sesc 24 de Maio, MMBB Arquitetos + Paulo Mendes da Rocha, São Paulo, Brasil, 2017
Shanghai Tower, Gensler Architekten, Shanghai, China, 2015

Design Brief

NEW CAMPUS BUILDING (23.000 M2)

CANTINE & FOOD FACILITIES (1.500 M2)
Public canteen for students and staff of the university as well as residents of The Hagu with access to outdoor roof terrace.

EXHIBITION SPACE (700 M2)
Exhibition space with commercial-type kitchen for use at events and close to small lecture halls for public lectures and gatherings.

TEACHING & LEARNING (2.000 M2)
Mix of divergent and convergent learning spaces for groups of students or individual workers as well as classrooms with acoustic and visual privacy. Flexible space and furiture arrangement, enabling access to physical and electronic resources.

THEATRES (1.500 M2)
Two large theatres, seating 200+ people, two medium theatres, each seating 100+ people, and four small theatres, each seating 50+ people. Including foyer/breakout spaces large enough for the same number of people to gather and wait for lecture/event, which can have dual function as an exhibition or casual seating place. Small and medium lecture halls are also close to outdoor terrace.

STUDIO SPACES (2.000 M2)
Mix of divergent and convergent working spaces for peer-to-peer learningfor approximately 20 groups of 16-20 students per group.

PLAY & LEARN (2.400 M2)
Supervised/ safe play areas for the youngest, combined with day care center and (elementary) learning functions for approximately 200 students and 15 staff.

LIBRARY & SILENT STUDIOS (1.800 M2)
A range of spaces for individual and group study, enabling access to physical and electronic resources, as well as facilities for photocopying and printing, storage and display of books, art, and digital collections.

MEDICAL CENTRE (4.200 M2)
Various medical facilities such as ophthalmologist, general practitioner, physiotherapist, psychotherapist, dentist with treatment rooms, reception, waiting areas and laboratories.

FITNESS CENTRE (1.000 M2)
One fitness centre with changing rooms, lockers, shower facilities. Multifunctional spaces for spinning, yoga, dance, etc.

MECHANICAL UTILITES, CIRCULATION (5.000 M2)
One fitness centre with changing rooms, lockers, shower facilities. Multifunctional spaces for spinning, yoga, dance, etc.

REUSED STRUCTURES (7.500 M2)

ENTRANCE (600 M2)
Reception and information, elevator lobby, security center, cloakroom, amenities, lounge.

CAFÉ & LOUNGE (500 M2)
Informal lounge areas for people to eat and drink, socialize, study alone or in groups, or just relax.

COMMERCIAL (2.500 M2)
Divided in units of at least 100 m2 with their own amenities.

WORKSHOP (400 M2)
Workshops containing tools and equipment suitable for producing small- to medium-scale timber and metal work, e.g.: models, furniture, or construction prototypes

RESEARCH SPACES (1.500 M2)
A secure working environment, located in the basement and separated from the general teaching facilities, allowing a combination of quiet, solitary research work as well as collaborative group or team projects.

STORAGE, MECHANICAL UTILITIES (2.000 M2)
Main mechanical and technical installations for ventilation, heating, water supply and storage and archive rooms located in the basement.

BIKE STORAGE (DE HOFTOREN) (1.000 M2)
A part of the former underground car park of De Hoftoren is transformed into a bike storage for approx. 800 bicycles.

DE HOFTOREN (15.000 M2)

RETAIL, CAFÉ & LOUNGE (1.500 M2)
Former Ground floor space of de hoftoren transformed into two retail shops, one entrance lounge and one café with access to the interior courtyard. accessible from the rijnstraat.

SHARED OFFICE SPACES (12.500 M2)

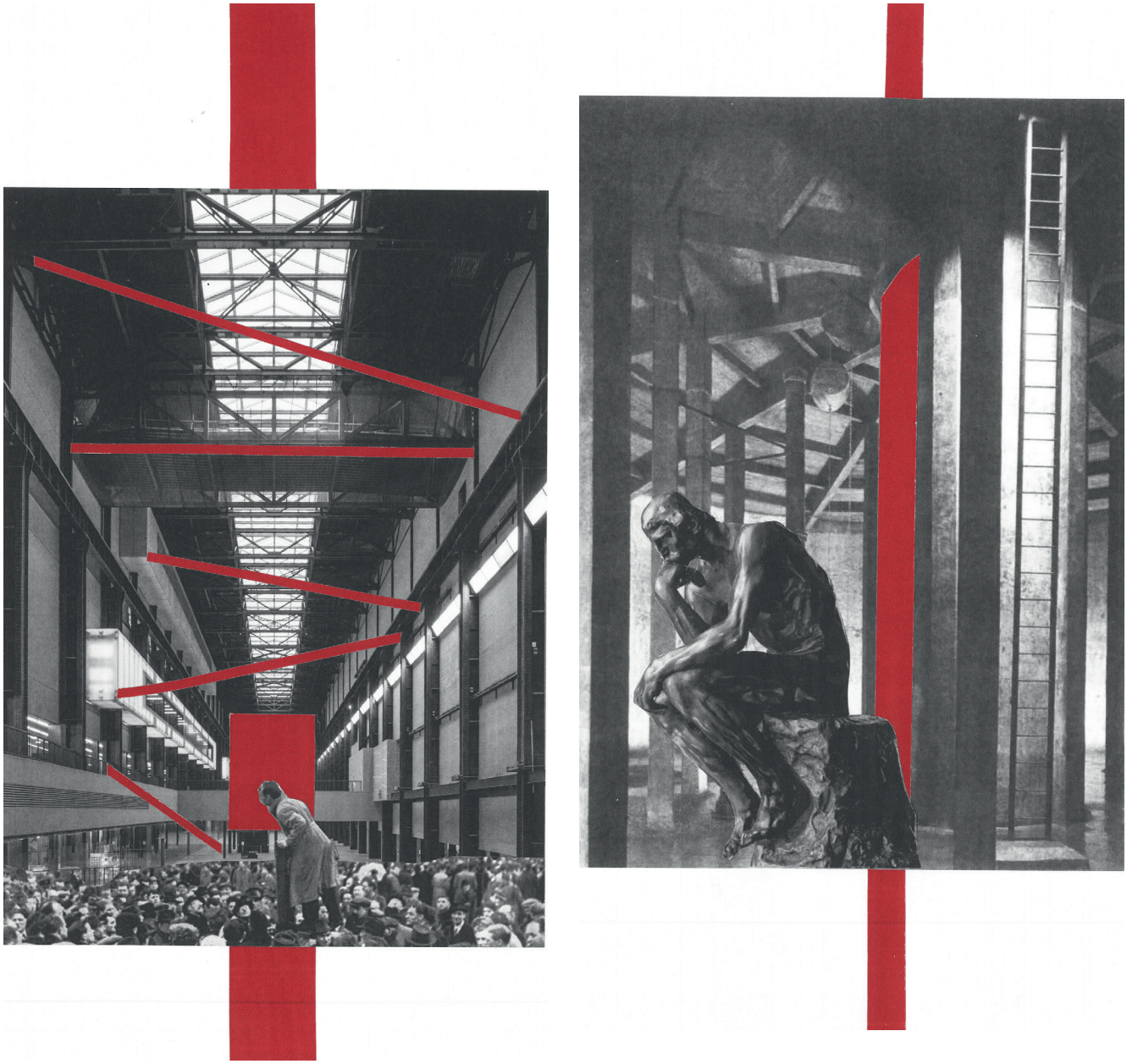
Shared workspace for approximately 600 operational and support staff, and associated facilities such as file storage, meeting rooms, and reception in „De Hoftoren“ of the Ministry of Education, Culture and Science.

OUTDOOR SPACES (5.600 M2)

ELEVATED OUTDOOR TERRACES (1.600 M2)

CAMPUS COURTYARD (2.000 M2)
former car parking transformed into courtyard

COURTYARD (DE HOFTOREN) (2.000 M2)
Courtyard consisting of the re-opened courtyard of the Ministry of Education

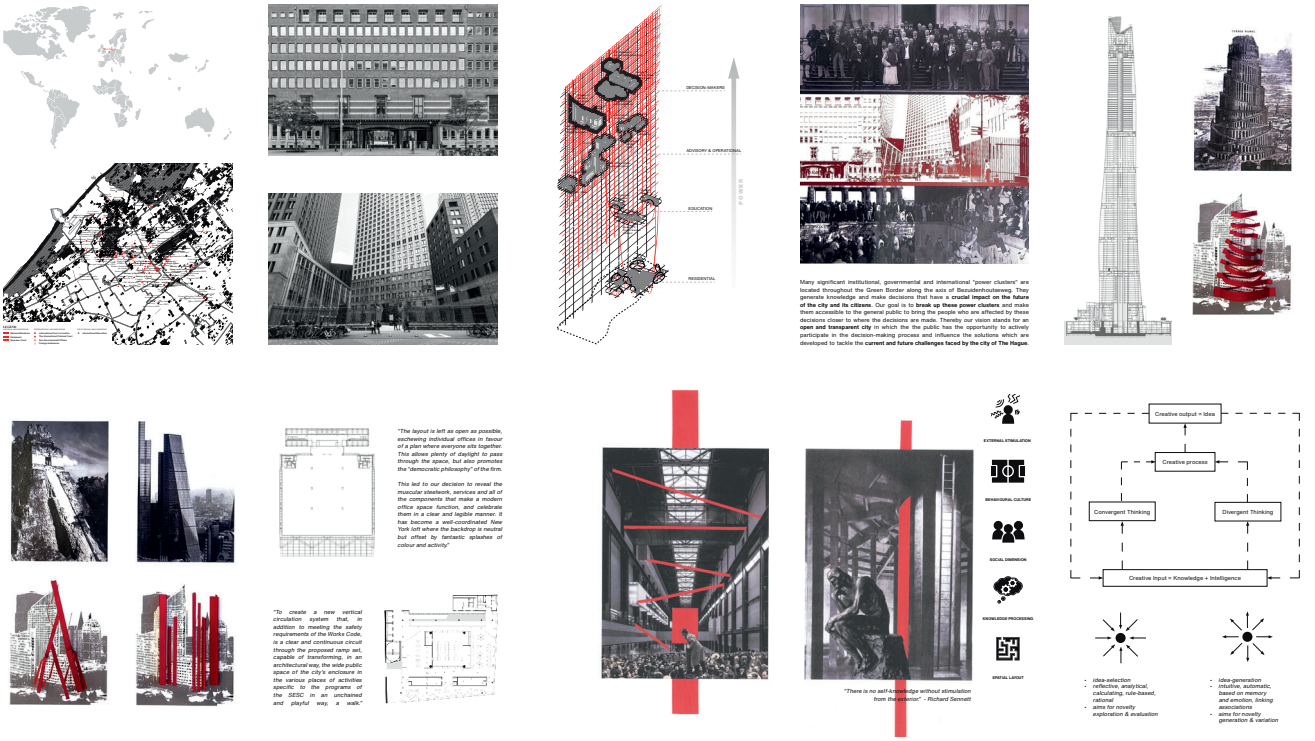


Divergent and convergent learning spaces
Two collages showing the idea of connecting divergent and convergent hybrid learning spaces through the implementation of different accessibility axes

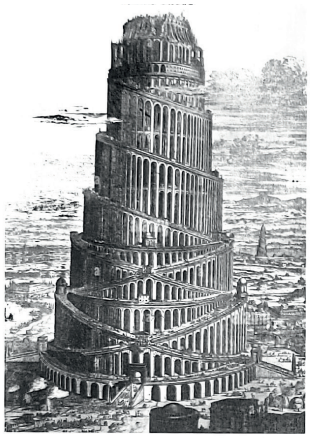
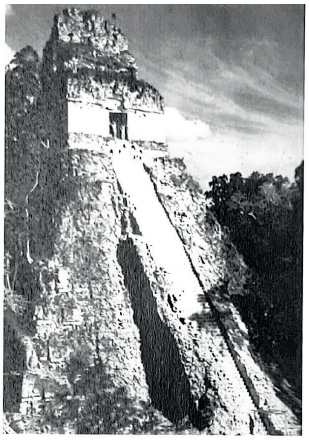
Scales of the project

These four montages show the creative journey through the accessible campus on different scales of the project. On the level of the city, the project investigates how exsiting power clusters can be opened up and made accessible to the general public. The digital photomontage shows an old picture of the first peace conference in The Hague in the 19th century and pictures from the Fall of the Berlin Wall in 1989. These two pictures are seperated by the identified power clusters within the Green Border. On the building scale, the analogue collages look at three case studies - one fictional, one historical and one contemporary - and explore their different ways of making a high-rise building vertically accessible. The last montages finally explore the creative journey of the user. The „divergent“ collage shows the interior of the Tate Modern with the famous Speaker‘s corner in Hyde Park placed inside. The „convergent“ collage shows the famous sculpture „The Thinker“ within an old, reused silo tank. Both are connected through the red elements indicating a common circulation layer that holds them together.

Fizane
A creative and accesible vertical campus

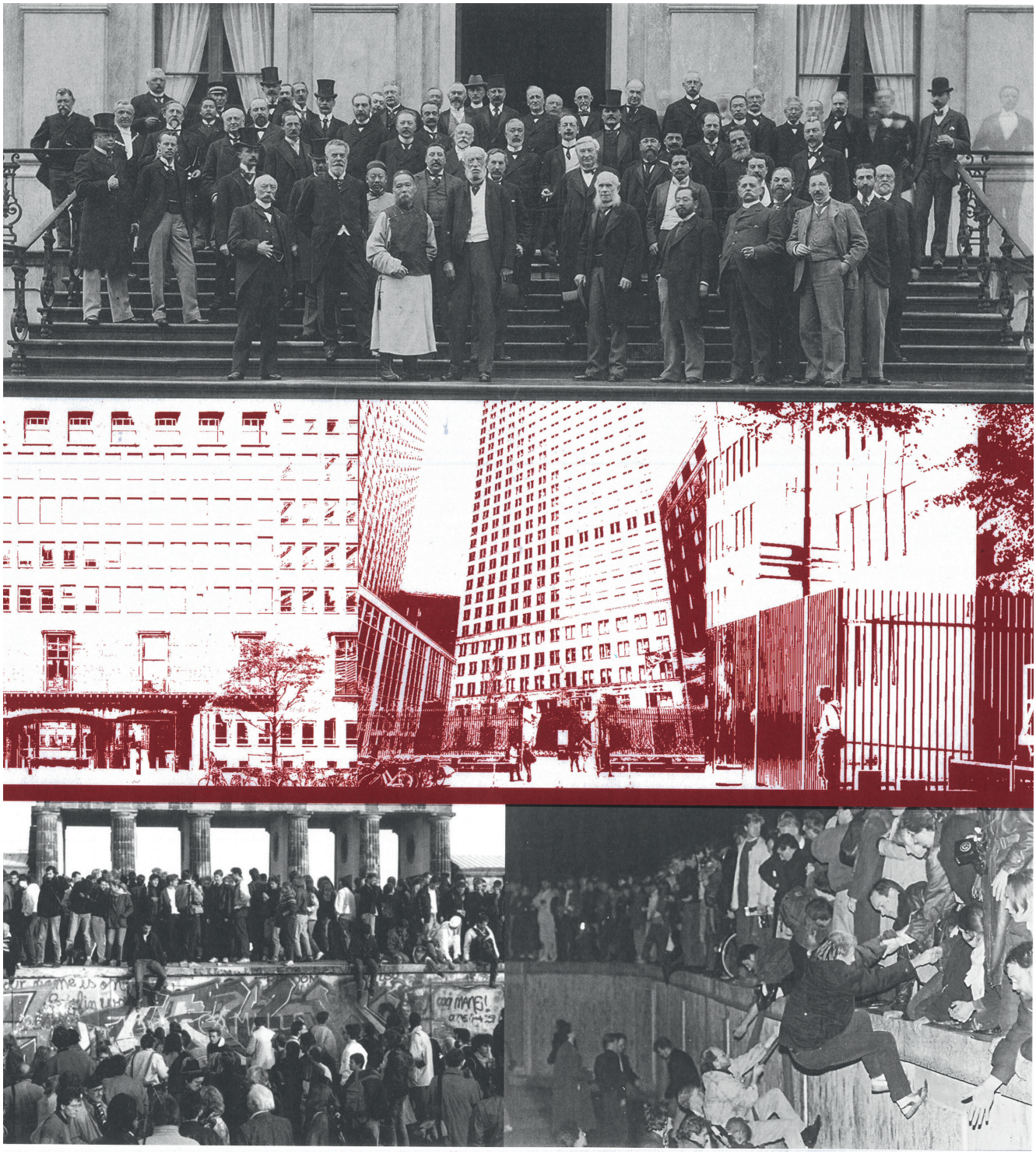


Accessibility
Experimenting with different ways of vertical routing through the examination of fictional, historical and contemporary case studies







Breaking up the power clusters
The Hague as international city of peace and justice where the gates and walls of the power clusters are broken down to expand the public space

Circular design principles

Circular design principles aim to minimize waste and maximize resource efficiency by following a set of strategies that prioritize the continuous use and regeneration of materials. Among these principles are the 9 R-strategies, which serve as guidelines for designing products and systems that operate within a closed-loop cycle, thus reducing environmental impact.

REFUSE | Refusing unnecessary materials or processes is crucial to reducing waste. Designers aim to eliminate non-essential components and practices that contribute to resource depletion or pollution. The project uses this strategy by refusing to build additional offices spaces, which was intially proposed in the Studio‘s Design Brief. There are already a great number of vacant office spaces in the city, which is why the design proposal uses the left-over space for the implementation of medical functions which are highly needed in the city.

RETHINK | The first step in circular design is to reconsider traditional linear approaches. Designers rethink the entire lifecycle of a product, from sourcing materials to disposal, to identify areas for improvement and innovation. By proposing shared office spaces for the gouvernmental and educational institutions on the chosen location, the project rethinks the seperation of public institutions and public spaces and challenges the users to find ways to optimize the use of space and avoid vacant spaces.

REDUCE | By minimizing material usage and energy consumption, designers strive to reduce the overall environmental footprint of products. This involves streamlining designs and optimizing efficiency without compromising functionality. By developing a hybrid steel-timber structural system, the project proposes an envrionmentally-friendly way of constructing a high-rise with a reduced carbon footprint.

REUSE | Emphasizing reuse entails designing products and packaging with durability and modularity in mind. Designers seek to extend the lifespan of products by enabling repair, refurbishment, and repurposing, thus reducing the need for new resources. The project challenges current the current approach of rather demolishing old structures instead of reuseing them by finding creative way of how to integrate the existing structures into the new design proposal for the Vertical Campus.

REMANUFACTURE | Remanufacturing involves restoring used products to like-new condition through disassembly, refurbishment, and reassembly. Designers design products with this process in mind, ensuring compatibility and ease of remanufacturing. The project uses old facade elements of the existing structures for new purposes within the new design proposal.

RECYCLE | Designing for recyclability is essential for circularity. Materials are selected and combined in a way that facilitates separation and recycling at the end of a product‘s life, enabling them to be reintroduced into the production cycle. By respecting the different Shearing Layers of the building and designing a structure that can easily be adapted and partly disassembled the project is open for future adaptions and changes in use.

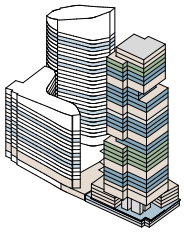
RECOVER | Recovering valuable materials from waste streams is a key strategy in circular design. Designers explore innovative techniques such as waste-to-energy conversion and resource recovery to extract maximum value from discarded materials. The concrete parts of the exisiting structure, which are not integrated into the new design proposal, will be demolished and processed in a way that allows for a future reuse for other purposes, such as street construction.

By integrating these 9 R-strategies into the design process, the design proposal was aiming for not only a reduced carbon footprint but for a resilient, durable building that will endure changing needs and values of different stakeholders. We cannot tell how things will be different in the future, but we can be sure that they will be different.

R0 | Refuse

Programme

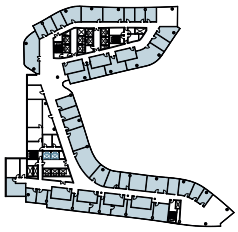
no more office spaces instead medical centre and sports functions



R1 | Rethink

Shared Space

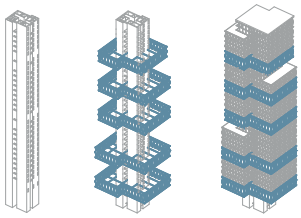
optimization of use of space through shared office spaces with De Hoftoren



R2 | Reduce

CO_2-Footprint

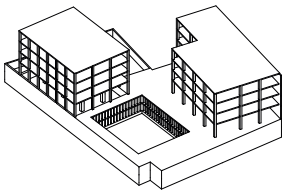
use of structural timber elements like GLT columns and beams and LIGNATUR ceiling elements



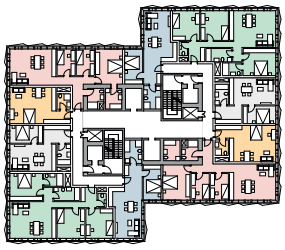
R3 | Reuse

Existing Structures

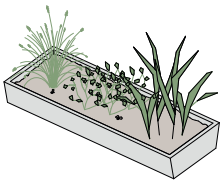
reuse of existing structures instead of complete demolition



R4 | Repair



R5 | Refurbish



R6 | Remanufacture

Design for Disassembly

timber structure with joint construction that allows for easy future adaption of space and floor plans

R7 | Repurpose

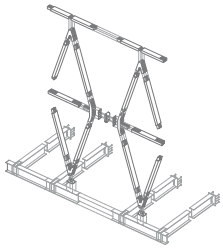
Exising Facade

pre-fab concrete elements of old facade are repurposed as plant pots for terraces of new building

R8 | Recycle

Hybrid Structure

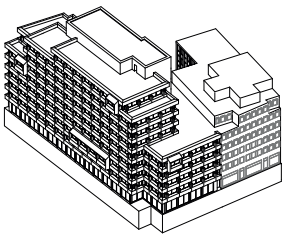
timber structure can easily be dismanteld and used for other projects



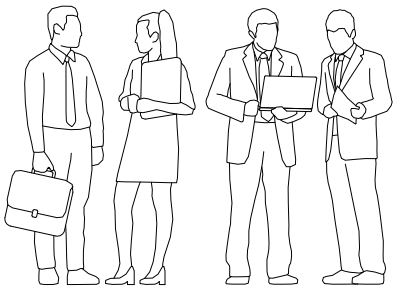
R9 | Recover

Concrete

demolished concrete structure of existing buildings will be recycled and recovered for use in other projects



Ambitions for the design project



Employees Data

Name:	Gerard, Ayhan, James, Peder, Brian
Age:	32-59
Occupation:	Park Host, Risk Advisor, Engineer, Consultant, Logistics Analytics at NATO, ICT at Landal Greenparks
Nationality:	Surinamese- Dutch, Dutch, Turkish, British, Hungarian, Dutch
Location:	The Hague



EMPLOYEES - PAIN POINTS

Finding accommodation close to the central station area is challenging due to high rents and the limited amount of apartments. Not having enough time for anything is a problem. Extended work hours, combined with commuting and family responsibilities, leave employees with limited time to enjoy their hobbies as before. Consequently, employees become unfamiliar with the neighborhood they work in, missing out on the chance to explore and enjoy their surroundings. Moreover, the neighborhood is unequipped to facilitate extended hours for employees and their families, such as housing and daycare. This leads to a feeling of being trapped within the corporate bubble. Employees often isolate themselves within the business environment and frequently have indoor lunches. The excessive exposure to corporate-associated environmental elements, such as harsh white lighting and sterile, shiny surfaces, leaves employees longing for a touch of green space. Consequently, long working hours intensify the feeling of being entrapped, as employees invest most of their days within the office.

EMPLOYEES - GAIN POINTS

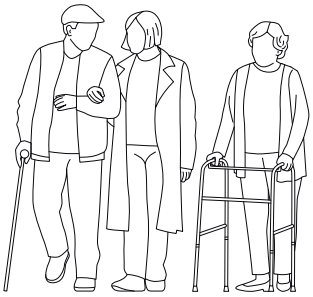
Proximity to everything within walking distance is a significant gain for employees. Accessibility to numerous facilities like cinemas, museums, and bars within walking distance enhances the overall experience. This accessibility not only provides convenience but also fosters a sense of connection to the surrounding community. Moreover, having a myriad of activities nearby enables the creation of meaningful bonding experiences with both colleagues and loved ones. Employees can engage in social interactions and create lasting memories without the hassle of long commutes or extensive planning. Additionally, being surrounded by everything allows for mental retreats in the city after exhausting workdays, offering opportunities for relaxation and rejuvenation. Bonding with colleagues is another valuable gain for employees. Work-related and extracurricular interactions promote the development of personal soft skills through the exchange of life experiences among colleagues. This constant collaboration fosters strong social bonds, meeting the innate human need for social connections. Having workplace confidants for problem-sharing is essential, as it creates a supportive environment where employees can thrive both personally and professionally. Nature escape is yet another benefit for employees. The presence of greenery, fresh air, and abundant natural light contributes to both physical and cognitive well-being. Parks provide optimal settings for activities such as running and walking, catering to the active lifestyles of white-collar professionals who endure prolonged periods of sitting during the day. This access to nature offers a welcome respite from the hustle and bustle of city life, allowing employees to recharge and maintain a healthy work-life balance.

SENIOR CITIZENS - PAIN POINTS

Isolation is a prominent issue among senior citizens, who often find themselves spending considerable time at home with limited activities to engage in. There is a noticeable lack of gathering spaces where seniors can socialize and interact with others. Additionally, the individuals they do encounter tend to be of a similar age, limiting opportunities for diverse social connections. Moreover, many seniors find that their families live too far away to maintain regular contact, further exacerbating feelings of isolation and loneliness. Another challenge faced by senior citizens is the abundance of free time following retirement. With children having moved out and pursuing their own lives, the home can feel empty and devoid of activity. This surplus of free time can lead to boredom and a sense of purposelessness for many seniors. Lack of mobility is another significant barrier to social engagement for seniors. Their ability to participate in activities outside the home is often dependent on the quality and accessibility of public transportation. Many seniors find themselves stuck in the same location where they have lived for years, limiting their opportunities for exploration and social interaction. While they may desire to go outside for a walk, the lack of enjoyable outdoor spaces in their vicinity, with the area around Haagse Bos being an exception, further restricts their mobility and outdoor activities.

SENIOR CITIZENS - GAIN POINTS

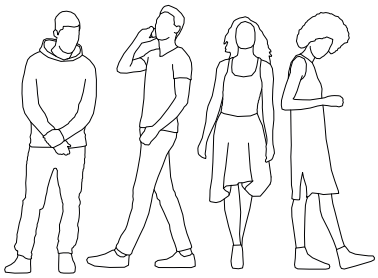
Creating a local gathering place is essential to addressing the isolation experienced by seniors in old age. Providing a space away from home where they can gather and mingle with others is crucial for fostering social connections and combating loneliness. This gathering place would not only allow seniors to interact with each other but also offer the opportunity to meet and engage with other residents of Den Haag, thus broadening their social networks and understanding of the community. Having somewhere to practice a hobby is equally important for seniors‘ well-being and fulfillment. A dedicated space where they can pursue their interests, regardless of the specific hobby, is invaluable. What matters most is that seniors have the opportunity to spend their time on activities that are meaningful to them and bring them joy. Moreover, this shared space for practicing hobbies facilitates the sharing of interests and skills among seniors, fostering a sense of camaraderie and connection within the community. Furthermore, establishing connections to both the city and nature is vital for seniors‘ overall well-being and sense of belonging. Encouraging a greater sense of identification with the city helps seniors feel more rooted in their surroundings and engaged with urban life. Additionally, fostering connections with younger generations promotes intergenerational understanding and appreciation.



Senior Citizens Data

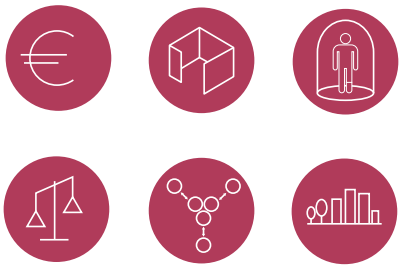
Name:	Sarah, Bianca, Margherita, Irene, Joren
Age:	23-25
Occupation:	Student
	Psychology, Diplomacy & International Relations, Bio-Pharmaceutical Sciences
Nationality:	American, French, Dutch, South-African, Italian
Location:	The Hague





Students Data

Name:	Sarah, Bianca, Margherita, Irene, Joren
Age:	23-25
Occupation:	Student
	Psychology, Diplomacy & International Relations, Bio-Pharmaceutical Sciences
Nationality:	American, French, Dutch, South-African, Italian
Location:	The Hague



STUDENTS - PAIN POINTS

Financial situation and housing pose significant challenges for students. Finding accommodation close to the central station area and the campus is difficult due to high rents and limited availability of apartments. Additionally, daily living costs, including expenses for lunch, are prohibitively high, adding to the financial strain. The amount and variety of studying spaces also present issues for students. There are insufficient studying spaces for the number of students, leading to overcrowding and difficulty finding a suitable place to work. Furthermore, there is a lack of silent working spaces that support focusing, concentration, and relaxation. Additionally, there is a shortage of green spaces and outdoor study areas, limiting opportunities for students to study in natural environments. Collaborative spaces for spontaneous meetings and gatherings are also lacking, hindering opportunities for academic and social interaction. Moreover, the absence of „free," undefined spaces where students can share life skills, connect on non-academic topics, and take breaks from their studies contributes to a sense of limitation. Isolation and lack of stimulation further compound the challenges faced by students. Disciplinary isolation arises due to a limited number of social activities and get-togethers for students from different academic backgrounds. Personal isolation is exacerbated by reduced interaction, interdisciplinarity, and exchange among students. This lack of interaction diminishes stimulation, inspiration, and creativity, hindering academic and personal development. Overall, addressing these issues is essential to enhancing the student experience and promoting academic success and well-being.

STUDENTS - GAIN POINTS

Flexible daily routines and achieving a balanced work-life schedule are crucial for students. Autonomy in managing study and free time allows for self-dependent organization, promoting a sense of control over one's schedule. The 24/7 accessibility of campus facilities ensures students can access resources and study spaces whenever needed. Moreover, flexible working hours and collaboration opportunities accommodate students' diverse schedules and preferences. The integration of extracurricular activities and recreation areas within the campus building fosters the recreation of mind and body, emphasizing the importance of physical health and mental well-being. The balance between retreat and collaboration spaces is essential for student success. Furthermore, curricular and extracurricular interactions enable students to develop personal soft skills while sharing and learning life skills from their peers, enhancing their overall learning experience. Establishing connections to both the city and nature is vital for students' holistic development. Access to green spaces, fresh air, and natural light on campus promotes relaxation and well-being. Moreover, students benefit from relaxation time in the city and the utilization of local resources and activities, fostering a greater sense of identification and community within both the campus and the city. This integration of urban and natural environments enriches students' educational experiences and enhances their sense of belonging and engagement with their surroundings.

AMBITIONS FOR THE VERTICAL CAMPUS



Relation to the city

CONNECTION TO CITY & NATURE
opening-up & connection to existing power clusters and surrounding nature in the city

(VERTICAL) ACCESSIBILITY
24/7 public accessibility to all age, gender, socio-economic, and religious groups



Learning environment

FLEXIBILITY
enhance soft skills like communication, creativity, critical thinking, and colaboration for constantly changing working environment

INTERDISCIPLINARITY
allow for individual and interdisciplinary studying and working approaches to generate and share knowlege



Programme

HEALTHY WORK-LIFE-BALANCE
physical & mental health supporting environment by implementing spaces for relaxation, retreat spaces, psychological counselors, etc. and combining learning spaces and free-time activities

PAIN POINTS

Students **Senior citizens** **Employees**



Financial situation





Isolation

GAIN POINTS

Students **Senior citizens** **Employees**



Retreat versus collaboration





Connection to City & Nature

Urban Scale

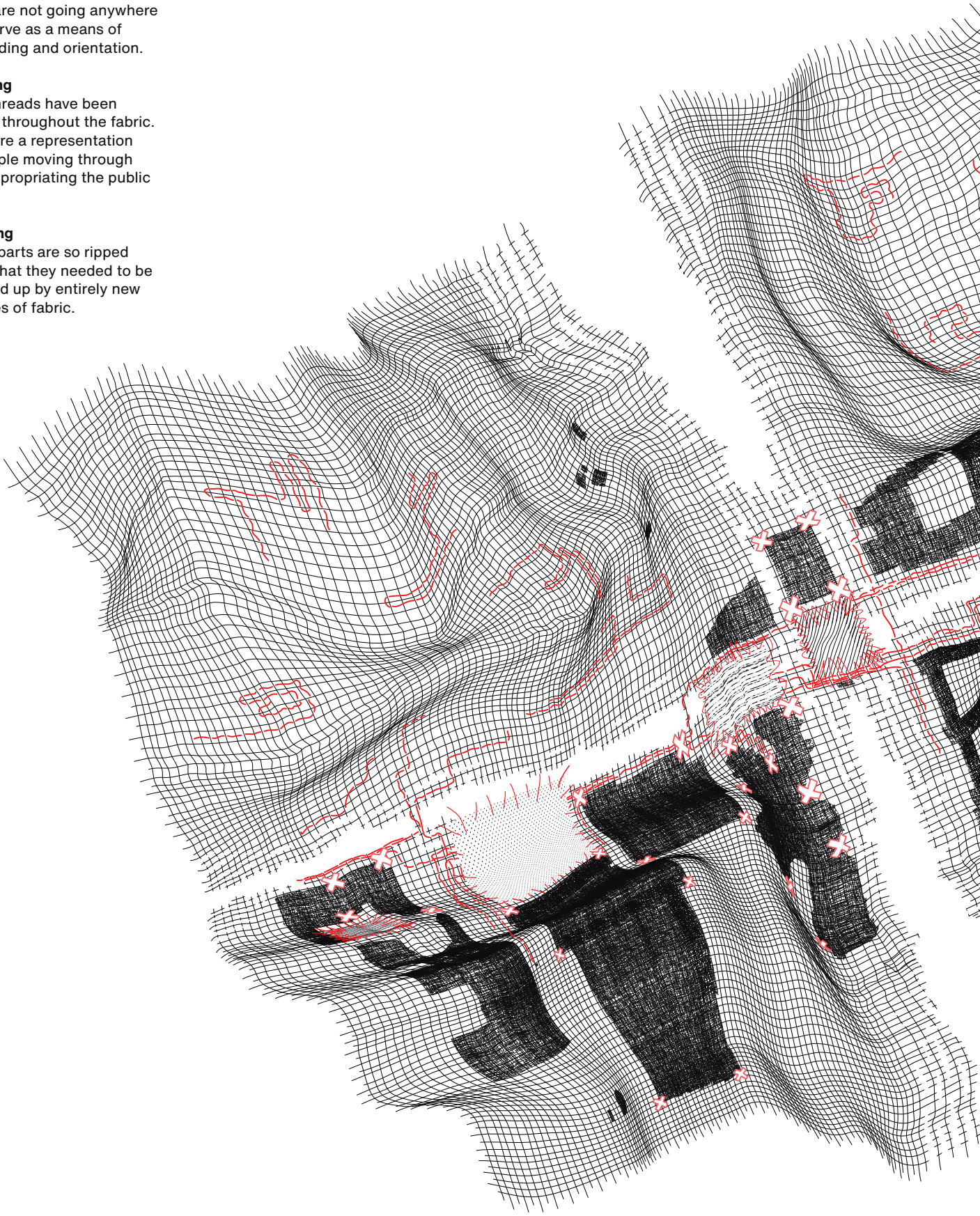
Sharing knowledge in The Hague

Tearing
Certain parts of the fabric are torn apart. These represent the intensity of physical and visual borders.

Pinning
In some places the fabric has been pinned down. These parts are not going anywhere and serve as a means of wayfinding and orientation.

Weaving
New threads have been woven throughout the fabric. They are a representation of people moving through and appropriating the public space.

Patching
Some parts are so ripped apart that they needed to be covered up by entirely new patches of fabric.



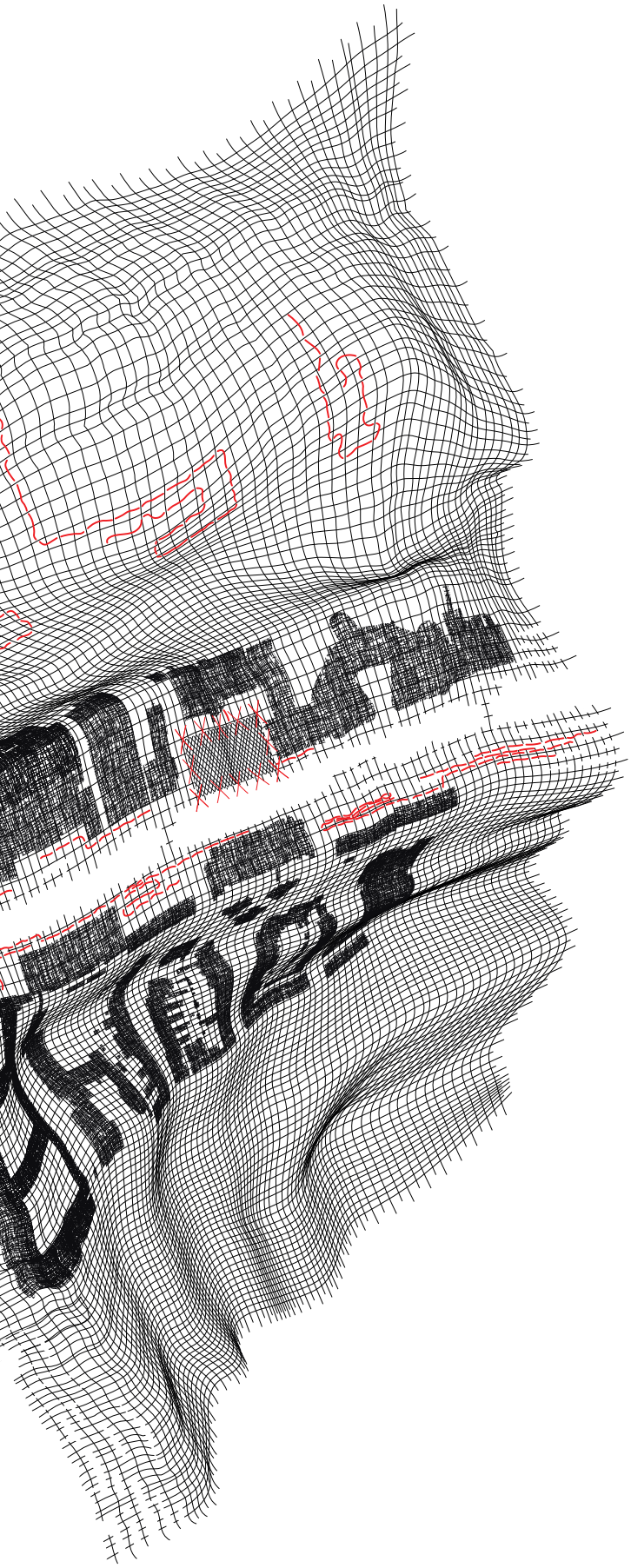
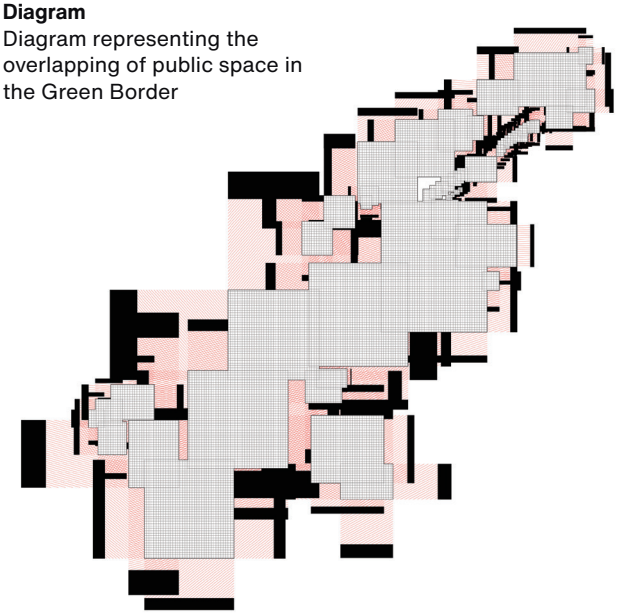


Diagram
Diagram representing the overlapping of public space in the Green Border



Psychogeographical Map

Through different methods such as the Psychogeographical Map and the use of diagrams to explore the relationship of surfaces, we approached our site in The Hague step by step, focusing on the Green Border site. Our Psychogeographical Map expresses our subjective perception of the Green Border. Tears and holes in the urban fabric show us boundaries that are difficult to cross, while pins hold in place the buildings and landmarks that serve as spatial affordances as we move through the area. Red threads reflect the behaviour and movement of people in the Green Border. In the quiet, expansive areas of the fabric, such as the Haagse Bos, the threads can easily fit in between the wide meshes of the urban fabric.

The narrower meshes in dense areas of the urban fabric, such as the dense development on the sides of the Bezuidenhoutseweg, only allow for a linear, rigid integration of the different appropriations of spaces. Patches cover the areas in the Green Border that are not accessible or offer so little quality of stay that they are neglected and abandoned. They represent the first starting points for a possible intervention. All in all, this analysis has shown that in the Green Border only the park and the Haagse Bos are places to linger and rest. The tears, holes and narrow meshes around the Bezuidenhoutseweg do not allow for a free appropriation of the space, people move through the Gren Border but do not stay in it.

Members of the ICJ
Countries recognising the international law institutions based in The Hague

Power Dynamics in The Hague









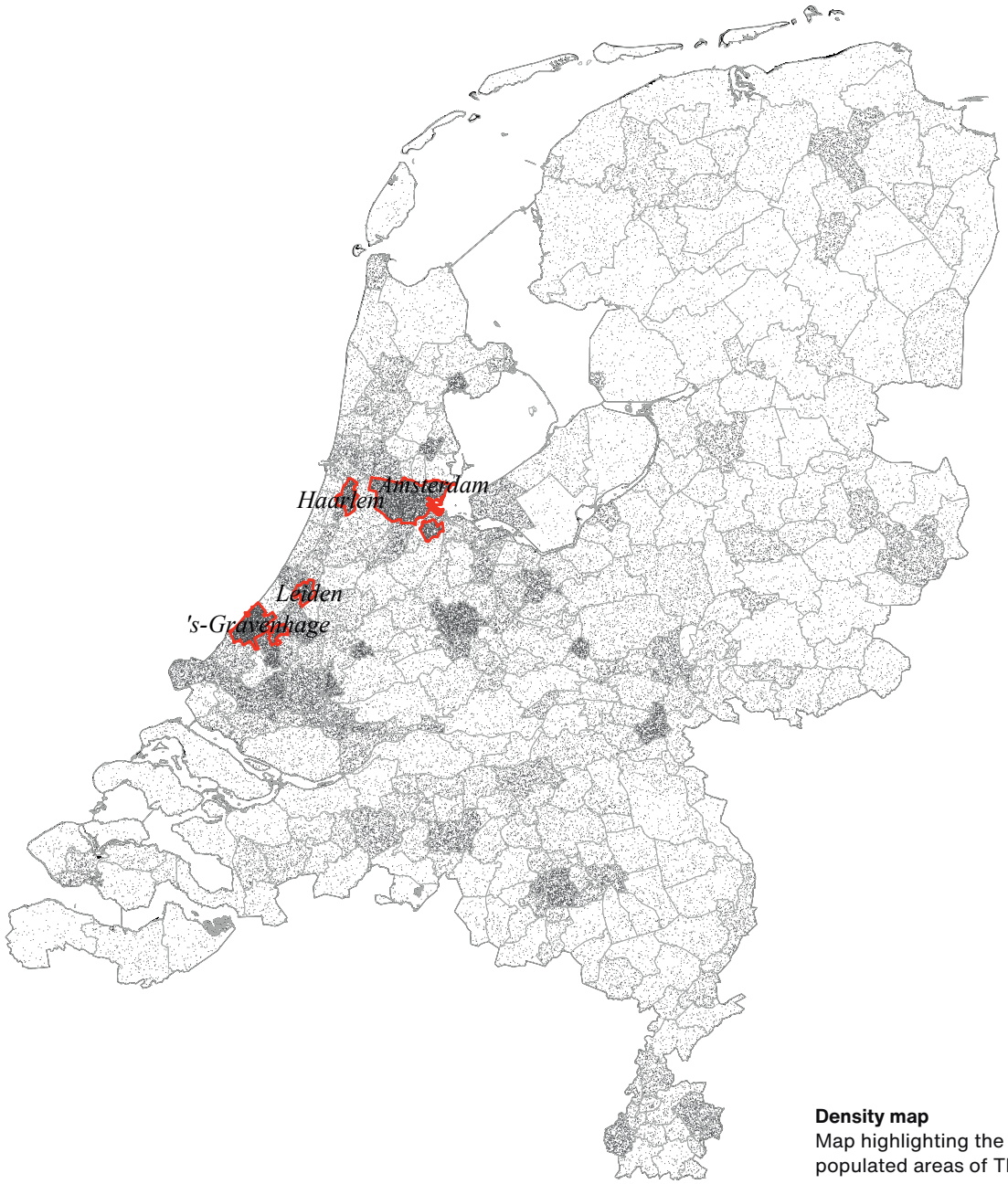
Power clusters in the Green Border
Public demonstrations and closed-off public buildings

INTERNATIONAL CITY OF PEACE AND JUSTICE

To better understand the public layers in the city of The Hague, we had a closer look at the power structures and dynamics present in The Hague and on our site. On an international level, The Hague is seen by a large part of the international community as “city of peace and justice“. The city is home to many different international judicial bodies, such as the International Court of Justice (ICJ), the International Criminal Court (ICC), and the International Residual Mechanism for Criminal tribunals (IRMCT). The International Court of Justice (ICJ), which is recognised by 123 countries, representing 30% of the world‘s population. Seated in the Peace Palace in The Hage, the ICJ is the only principal UN organ not located in New York City. The Hague also houses Scheveningen Prison, the ICC‘s detention centre for those suspected of war crimes and other violations of international law. The city is the fourth major centre for the United Nations, after New York, Geneva and Vienna.

POLITICAL CENTRE OF THE NETHERLANDS

On a national level, The Hague is the capital of the province of South Holland. It is the country‘s administrative centre and its seat of government, and while the official capital of The Netherlands is Amsterdam, The Hague has been described as the country‘s de facto capital. With a population of over half a million, The Hague is the third-largest city in The Netherlands, after Amsterdam and Rotterdam. The Rotterdam-The Hague metropolitan area, with a population of approximately 2.6 million, is one of the largest metropolitan areas in Europe and the most densly populated in the country (see map on the right). Consequently, a large number of international and national governmental educational and non-governmental organisations are located in the city and in the Central Innovation District. This makes The Hague not only the most important political center in the country but also a national symbol for transparency and democracy.



Density map
Map highlighting the most densly populated areas of The Netherlands

CLOSED-OFF POWER CLUSTERS

However, a closer look at the land ownership and external appearance of these institutions has shown us that they contribute to a fragmentation of publicly accessible space. Even though all of the public institutions based in The Hague are working for the public and funded by tax payer‘s money, their buildings are completely cut-off from the public realm. Although an immense amount of knowledge and education is present in the central station area of the city, this knowledge is not accessible to the general public and reserved for only a small part of the citizens. Most public institutions are closed-off through gates and not open to the general public. This prevents an active exchange between the city and these closed-off power clusters. From the analysis of power relations, I therefore conclude that a Vertical Campus in the Green Border should not only accumulate knowledge but make it accessible to as many levels of the population as possible.

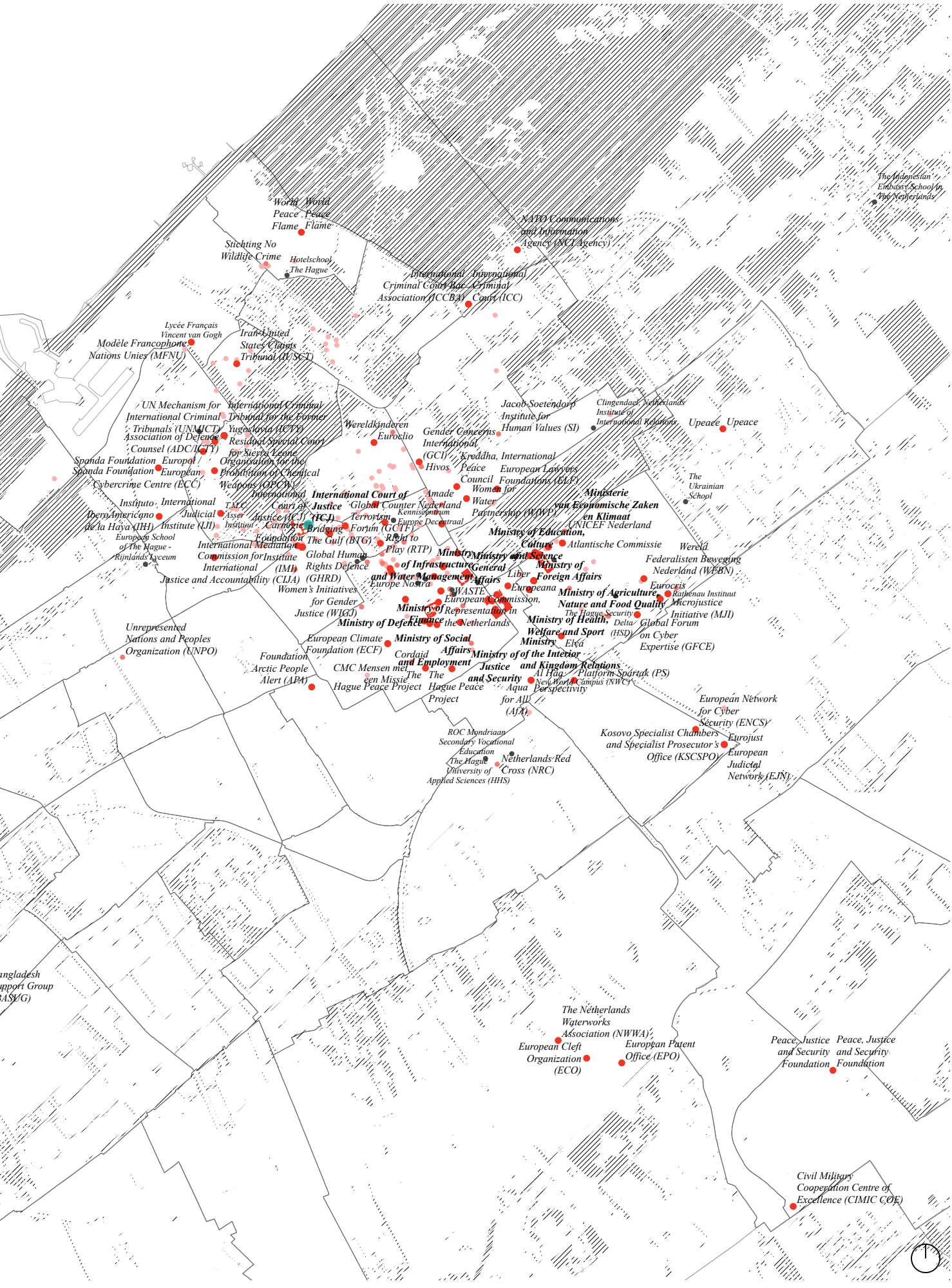


Institutions in The Hague

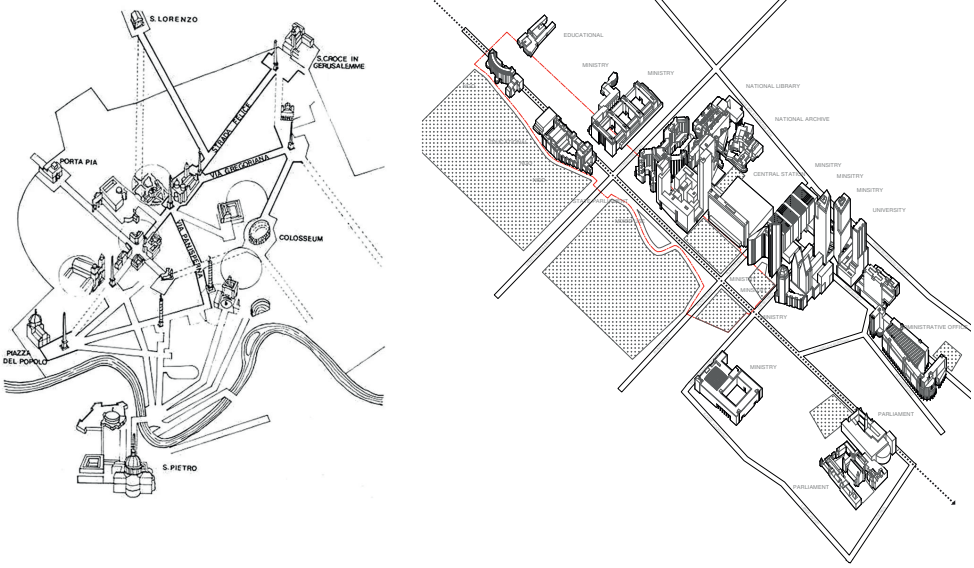
National organisations
- National Ministeries
- Parliament
- Surpreme Court

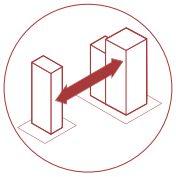
International organisations
- ICJ
- ICC
- NGO
- Foreign Ambassies

Educational organisations
- International Education

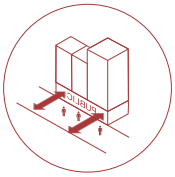

The Indonesian Embassy School in The Netherlands
World Peace Flame
World Peace Flame
NATO Communications and Information Agency (NCI Agency)
Stichting No Wildlife Crime
Hotelschool The Hague
International Criminal Court Bar Association (ICCBA)
International Criminal Court (ICC)
Lycée Français Vincent van Gogh
Modèle Francophone Nations Unies (MFNU)
Iran-United States Claims Tribunal (IUSCT)
UN Mechanism for International Criminal Tribunals (UNMICT)
International Criminal Tribunal for the Former Yugoslavia (ICTY)
Association of Defence Counsel (ADC/ICTY)
Residual Special Court for Sierra Leone
Organisation for the Prohibition of Chemical Weapons (OPCW)
Wereldkinderen
Eurolio
Gender Concerns International (GCI)
Hivos
Kreddha, International Peace Council
Jacob Soetendorp Institute for Human Values (SI)
Clingendael Netherlands Institute of International Relations
Upeace
Upeace
Sponda Foundation
Europol
Sponda Foundation
European Cybercrime Centre (ECC)
European Lawyers Foundations (ELF)
Women for Water Partnership (WWP)
The Ukrainian School
Instituto Ibero Americano de la Haya (IIH)
International Judicial Institute (IJI)
International Court of Justice (ICJ)
International Court of Justice (ICJ)
Amade
Global Counter Terrorism Forum (GCTF)
Kennniscentrum Europe Decentraal
Ministerie van Economische Zaken en Klimaat
UNICEF Nederland
European School of The Hague - Rijnlands Lyceum
TMC Asser Instituut
Carnegie Foundation
Bridging The Gulf (BTG)
Right to Play (RTP)
Ministry of Education, Culture
Atlantische Commissie
Wereld Federalisten Beweging Nederland (WFBN)
International Mediation Institute (IMI)
Global Human Rights Defence (GHRD)
Ministry of Infrastructure and Water Management
Ministry and Science
Ministry of Foreign Affairs
Liber Europeana
Eurocris
Rathenau Instituut
Microjustice Initiative (MJI)
Commission for International Justice and Accountability (CIJA)
Women's Initiatives for Gender Justice (WIGJ)
Europe Nostra
WASTE
European Commission, Representation in the Netherlands
Ministry of Agriculture Nature and Food Quality
The Hague Security Delta (HSD)
Global Forum on Cyber Expertise (GFCE)
Ministry of Defence
Ministry of Finance
Ministry of Health, Welfare and Sport
Ministry
Elva
Unrepresented Nations and Peoples Organization (UNPO)
European Climate Foundation (ECF)
Ministry of Social Affairs and Employment
Ministry of the Interior and Kingdom Relations
Ministry of Justice and Security
Al Haq
Platform Sportak (PS)
New World Campus (NWC)
Perspectivity
Foundation Arctic People Alert (APA)
CMC Mensen met een Missie
Cordaid
The Hague Peace Project
The Hague Peace Project
Aqua for All (AfA)
European Network for Cyber Security (ENCS)
ROC Mondriaan Secondary Vocational Education
The Hague University of Applied Sciences (HHS)
Netherlands Red Cross (NRC)
Kosovo Specialist Chambers and Specialist Prosecutor's Office (KSCSPO)
Eurojust
European Judicial Network (EJN)
The Netherlands Waterworks Association (NWWA)
European Cleft Organization (ECO)
European Patent Office (EPO)
Peace, Justice and Security Foundation
Peace, Justice and Security Foundation
Civil Military Cooperation Centre of Excellence (CIMIC COE)

Roma Di Sisto V. VS. Green Border today
Comparaison of Rome, a city shaped by religion in the 16th century, to the Hague, a city shaped by public institutions in the 21st century





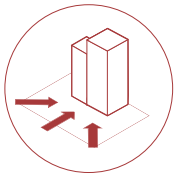
Opening up and connecting existing power clusters



Activating the ground floor for the public



Opening up existing and creating new courtyards



Enhancing accessibility and establishing of new pedestrian axes



Improving in-between spaces

Strategies for Capayity Plan
Five strategies to open up the closed-off power clusters within the Green Border

FINDINGS FROM SITE ANALYSIS

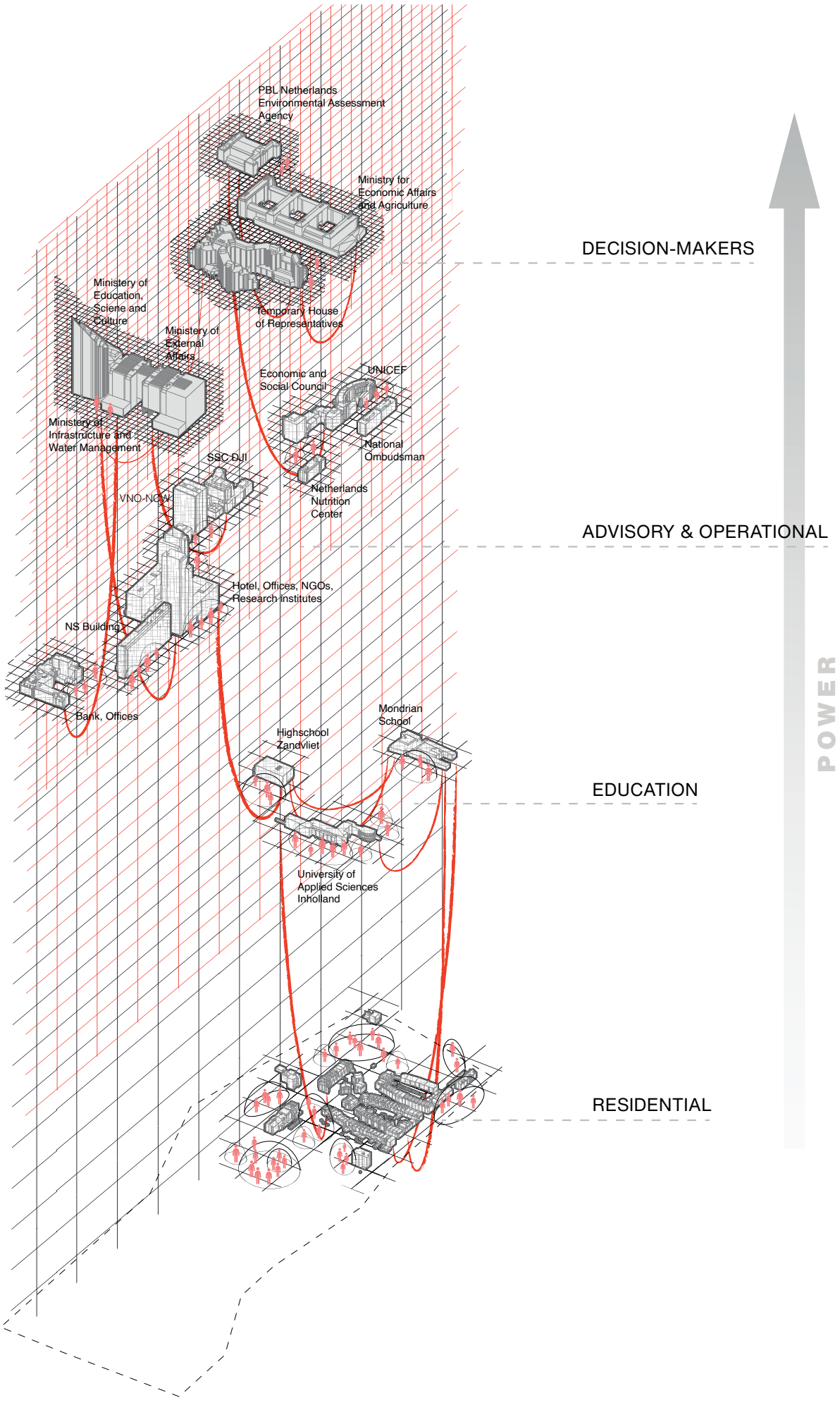
Based on our findings from the previous site analysis, our group developed an urban capacity plan for the Green Border. The goal of this capacity plan was to densify the area with 80.000 to 160.000 m2 and create a vision for the future of the Green Border and its rolte within the Central Innovation District for The Hague. Our previous site analysis, which included the stakeholder analysis, the power mapping and the psychogeographical map, had shown us that the axis of Bezuidenhoutseweg is characterized by a number of closed-off, isolated, and self-absorbed “power clusters“ in the form of educational, governmental, municipal and international institutions. While these power clusters produce and generate knowledge and policies, which are important for the future of the city of The Hague, they are not open to the general public. Therefore, Bezuidenhoutseweg is rather an impersonal transit axis instead of a place to stay and participate.

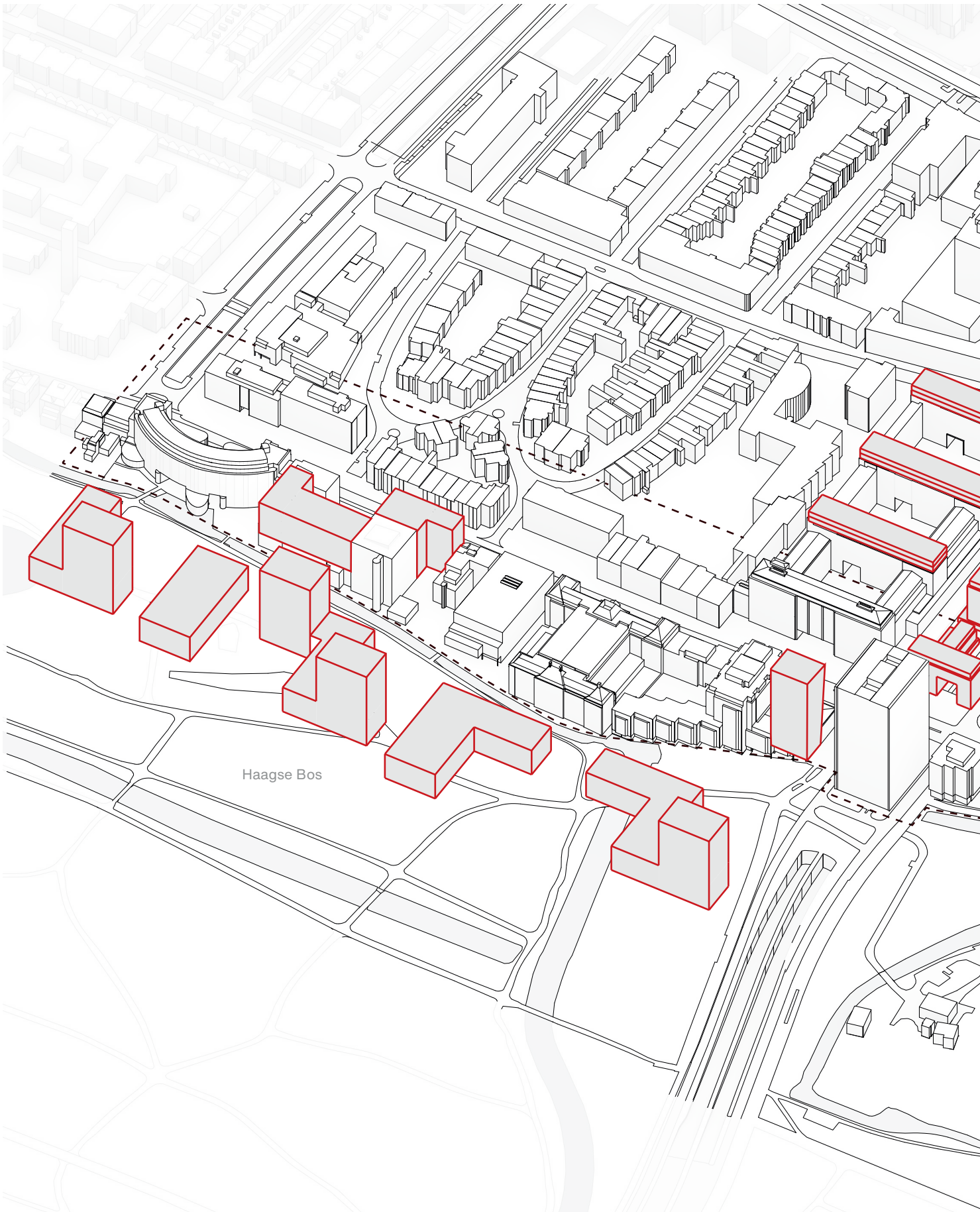
VISION

Many significant institutional, governmental and international “power clusters“ are located throughout the Green Border along the axis of Bezuidenhoutseweg. They generate knowledge and make decisions that have a crucial impact on the future of the city and its citizens. Our goal is to break up these power clusters and make them accessible to the general public to bring the people who are affected by these decisions closer to where the decisions are made. Thereby our vision stands for an open and transparent city in which the the public has the opportunity to actively participate in the decision-making process and influence the solutions which are developed to tackle the current and future challenges faced by the city of The Hague.

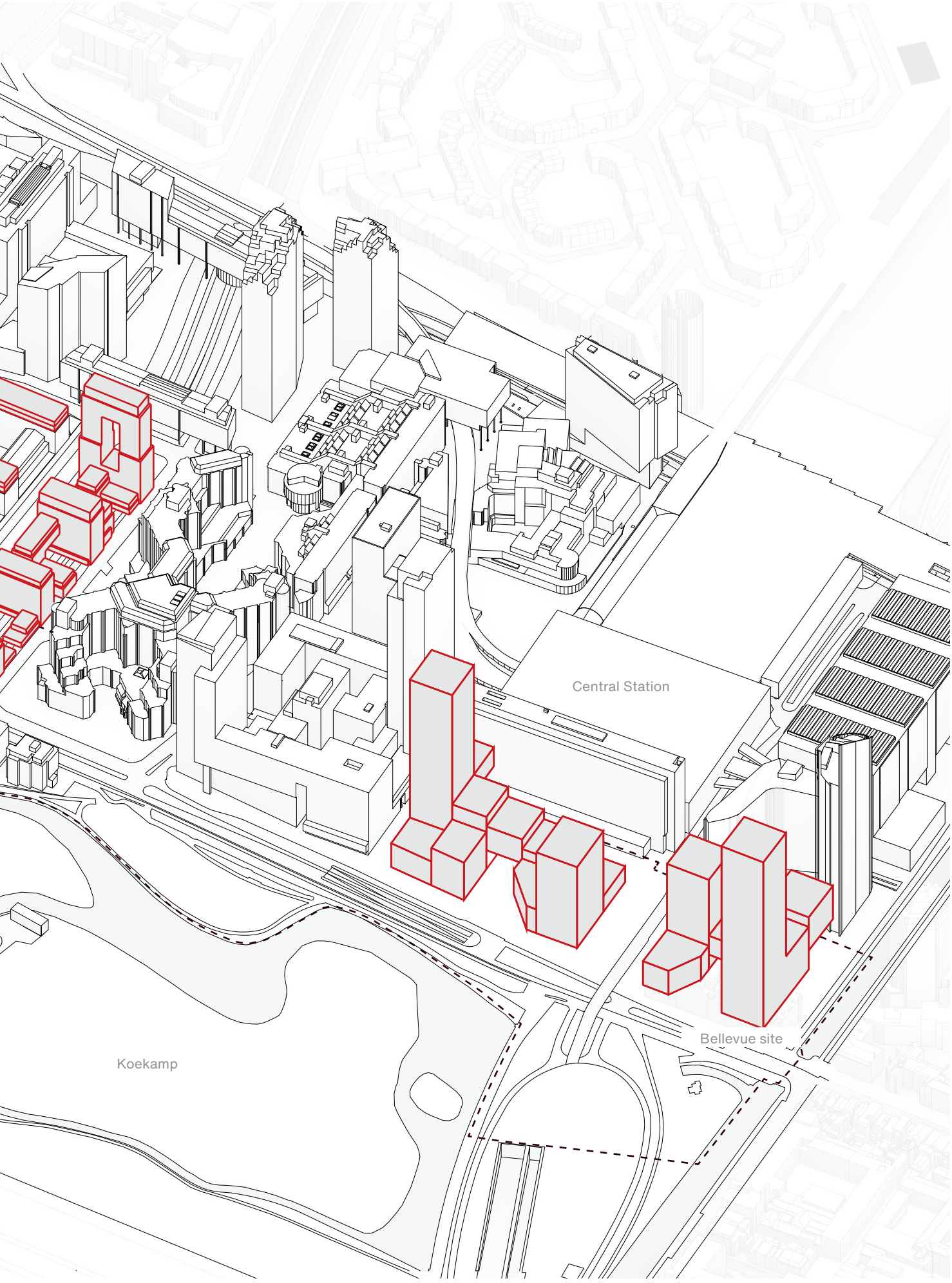
CAPACITY PLAN

After having identified the most closed-off and unaccessible power clusters, we developed five strategies to implement our vision of the open city for the Green Border. By applying these five stratgies, we want to open up the city and make the decision-making processes more transparent to the public. We chose the areas where most power clusters are accumulated as points of intervention (Bezuidenhoutseweg, Temporary House of Representatives, Utrechtseebaan, Julianaplein, Bellevue site) and proposed a possible densification and integration of new building volumes with residential, office and public functions.


PBL Netherlands Environmental Assessment Agency
Ministry for Economic Affairs and Agriculture
DECISION-MAKERS
Ministery of Education, Sciene and Culture
Temporary House of Representatives
Ministery of External Affairs
Economic and Social Council
UNICEF
Ministery of Infrastructure and Water Management
National Ombudsman
SSC DJI
Netherlands Nutrition Center
VNO-NCW
ADVISORY & OPERATIONAL
Hotel, Offices, NGOs, Research institutes
NS Building
Bank, Offices
Mondrian School
Highschool Zandvliet
EDUCATION
University of Applied Sciences Inholland
RESIDENTIAL
POWER



Capacity Plan
Proposal for future densification of the Green Border next to the Central Station; total amount of additional square-meters: 220.000 m²


Central Station
Bellevue site
Koekamp

Site of Intervention

REGULATIONS FOR THE SITE

After our P1 presentations, we started working individually. The first step towards our individual design proposals consisted of chosing a site (50m x 50m) within our assigned site. For the following reasons, I picked the Bellevue location in the Green Border as site of intervention: My individual research has shown that the Bellevue location lies in the area which the city of The Hague has assigned as the new policy area for educational, municipal and research institutions. Furthermore, the Bellevue site is located in the area that according to municipal building regulations allows for a high-rise structure taller than 100m. The chosen site is also interesting because it lies closely to Bezuidenhoutseweg which leads directly to the city centre of The Hague. The site is surrounded by a variety of already existing high-rises in the Central Station area which allows for a seamless integration of a vertical campus into the skyline of the Central Innovation District. As mentioned before, the Bellevue site is one of the closed-off, isolated power clusters identified during our site research and development of the capacity plan.

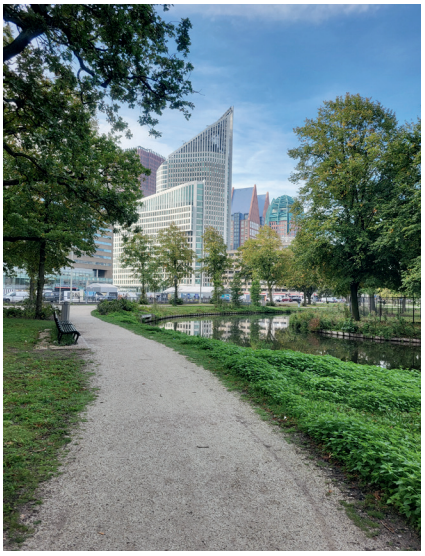
EXISTING STRUCTURES

The courtyard is used as car parking, high fences and gates prevent people from entering our passing through. Since the courtyard is situated right next to the Ministry of Education, Science and Culture, the Bellevue site possesses a great opportunity for establishing a connection with this closed-off gouvernmental institution. The site includes one existing structure - the Steadion building - which may hold interesting opportunities for the reuse of its existing structures. Currently, the city of The Hague is planning to demolish this buildings and replace it with a completely new structure. As out stakeholder analysis has shown, different stakeholder groups - students, local senior citizens, employees - are striving for a deeper and stronger connection with the city and the surrounding nature. Spending time in green spaces has a positive impact on the physical and mental health of citizens. The fact that the Bellevue site offers physical and visual proximity to the Koekamp is an opportunity I would like to use for my individual design proposal.



Central Station Area
Satellite picture showing the Central Station Area as well as the Green Border of The Hague

Bellevue current situation
Pictures from the chosen site shwoing the car park, and the view from the Koekamp towards the site









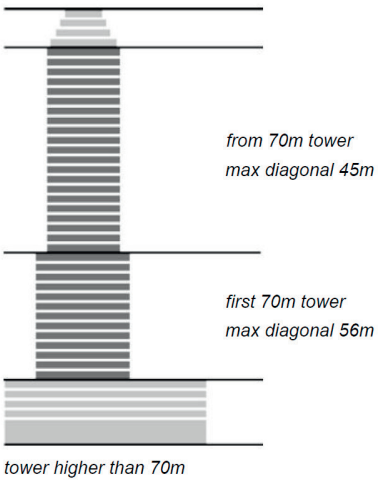
High-rise regulations of the municipality of The Hague

High-rises
Buildings higher than 50 metres are considered high-rise buildings. There is no maximum building height although the height of the individual tower must fit within the height development of its cluster. Typical high-rises in the city form part of a composite building bock, consisting of an urban layer with the tower on top.

Urban layer
The urban layer ensures that high-rise fits in well with the scale of the surrounding city and it consists of public and commercial functions. The urban layer contributes to the interaction between the inside and outside of the high-rise. The municipality is suggesting a composition of a 9 - 25m urban layer with a 50-70m tower on top.

Tower
High-rises in The Hague are characterized by elegant and slender towers. Max. 50% of the total footprint of the urban layer may be used for the footprint of the tower. For towers below 70m the maximum diagonal of the tower footprint is 45m. For towers higher than 70m, at the first 70m of height, the footprint of the tower has a maximum diagonal of 56m; from a height of 70m, the footprint of the tower has a maximum diagonal of 45m.

Crown
The end of each tower has its own characteristics and is intended for special functions. It is supposed to be accessible by the public and has a consistent day and night image through lighting.







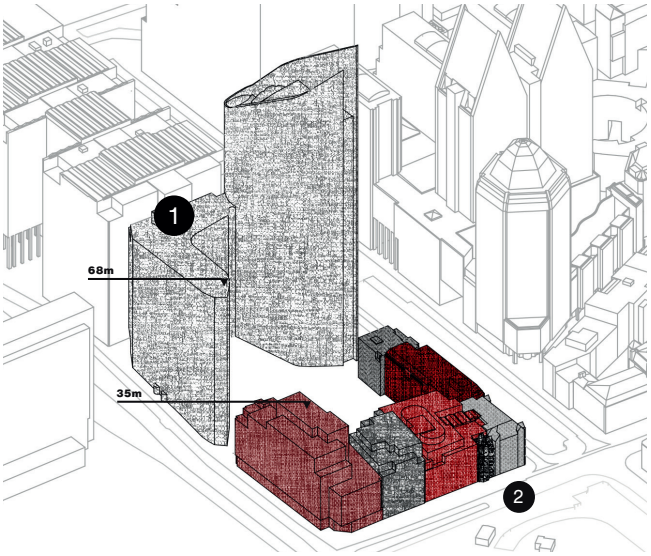
De Hoftoren & De Staedion
Photograph of the tower of De Hoftoren and De Staedion headquarters

DE HOFTOREN

The nickname of this 29-storey, 142m-high office building is “De Vulpen“ (the pen). It is the third tallest building in The Hague and was designed by Kohn Pedersen Fox Associates (KPF) (New York City) and built by Heijmans Bouw BV, completed in 2003. The building is currently home to the Ministry of Education, Culture and Science and the Ministry of Health, Welfare and Sport, which makes the Bellevue Site the perfect location to get in touch with this closed-off power cluster.

BELLEVUE SITE

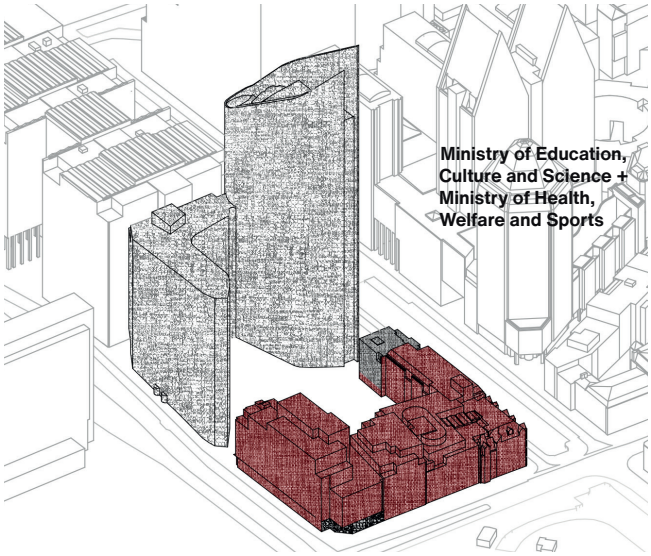
The most significant building currently serves as headquarter to the Staedion housing organisation. From 1797, a hotel called “Bellevue“ was standing on this plot. When the hotel closed in the 1930s, the building was transformed into offices. In 1974, the old hotel building was demolished and replaced by today‘s brutalistic design by Hornstra, Verschoor and Kayden Architects. The owner of the site is currently looking into demolishing the building and constructing two new high-rise towers with a height of 180m. The other buildings on the Bellevue site are mainly corporate offices (ABN AMRO, Rabobank, Law firm, etc.), only one building contains apartments. The only building that cannot be demolished is Bezuidenhoutseweg 3, which due to its natural stone facade in the Neo-Renaissance style is listed as protected monument of The Hague.



Masses & Height

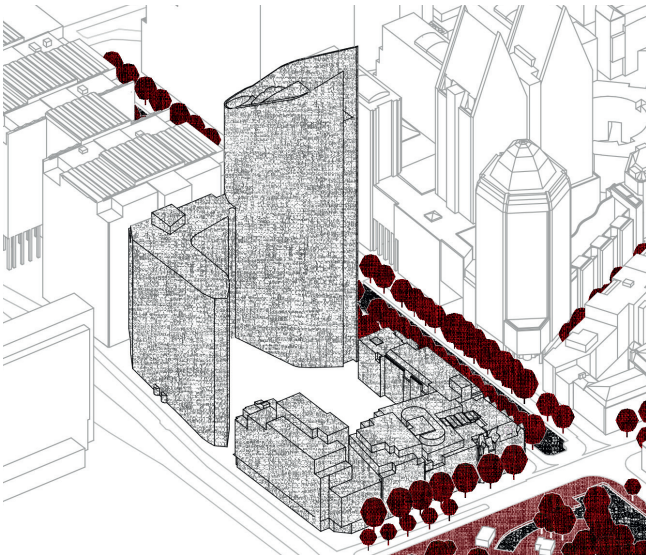
1 floor space ratio: 11,3
site occupancy ratio: 0,6

2 floor space ratio: 4,4
site occupancy ratio: 0,6



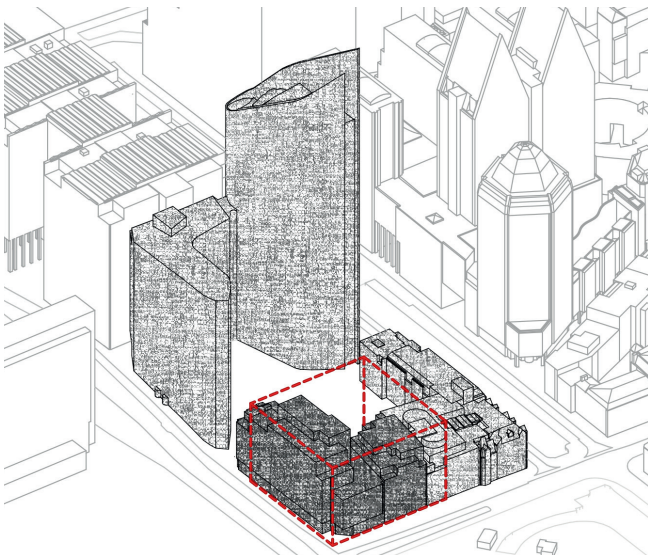
Programme

Office/Corporate · Gouvernment · Residential · Public



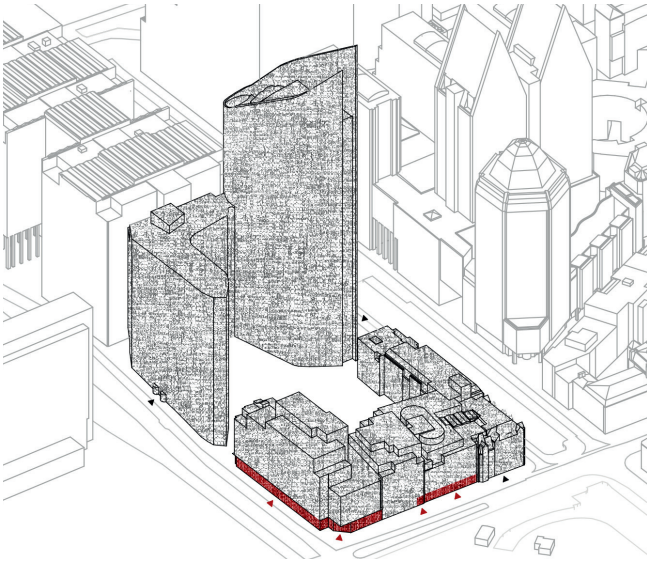
Green spaces & vegetation

Koekamp (park) · Trees · Water · Urban block around plot



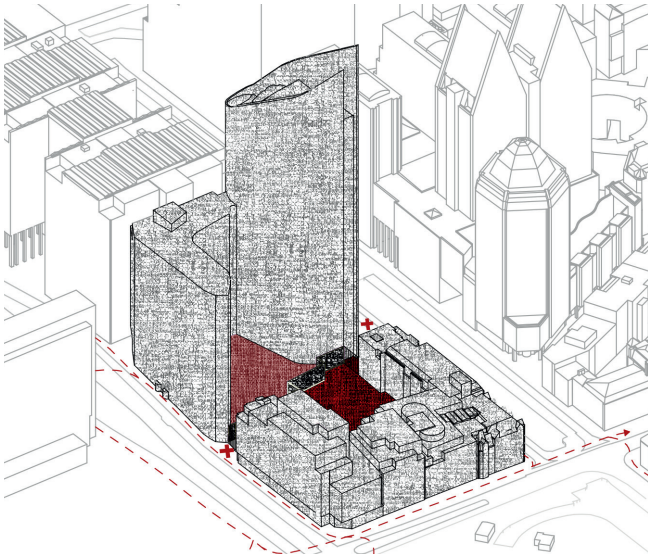
50 x 50 Plot

Urban block · Buildings on plot · 50 x 50 x 35



Accessibility

Accessible · Restricted access (limited to group of people)



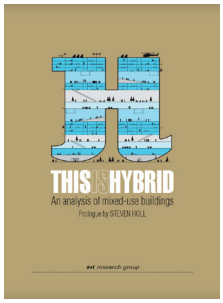
Exterior spaces

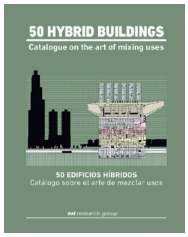
Ministry Courtyard · Car parking · No access · Pedestrian routes

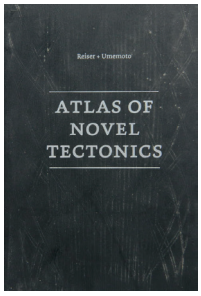
Building Scale

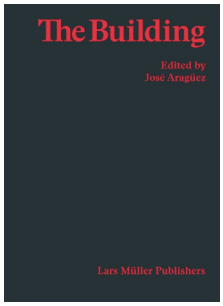
Accessing knowledge in the vertical campus

Hybrid buildings in the 20th & 21st century









Summer readings
Research about hybrid buildings and public buidlings

THE METROPOLITAN HYBRID

The history of the hybrid begins at the end of the 19th century in North American metropolis where the increasing densification of cities required the overlapping of different functions. One well-known example is the Rockefeller Center in New York City, which is a multifunctional city complex made up of nineteen buildings with offices, businesses, auditoriums, areas for leisure and recreation connected by pedestrian walkways and a subway station. The building of the Downtown Athletic Club was also one of the first projects grouping different internal dunctions in different building volumes. These different volumes contained sport areas, offices, a bowling alley, a gym, a pool and even a green house.

HOOD'S PREMONITION

In the 1930s, Raymond Hood developed the idea of combining offices, apartments, businesses, hotels and theatres in a massive volume which he called „a city under a single roof". He designed The Unit Building in 1931 and added a horizontal building volume to make up for the lost horizontal pedestrian space.

THIS IS HYBRID

Typical characteristics of hybrid buildings today are: complexity and diversity of programmes which allow for unpredicted and unexpected relationships and interactions through the combination of public and private spheres. Usually these spaces should be accessible for 24h. In vertical hybrids the different functions are usually joined by superposition. Hybrid are carefully integrated into the urban grid: the entertain a dialogue with other urban landmarks and interrelationships with surrounding public spaces.

HYBRID VERSUS SOCIAL CONDENSER

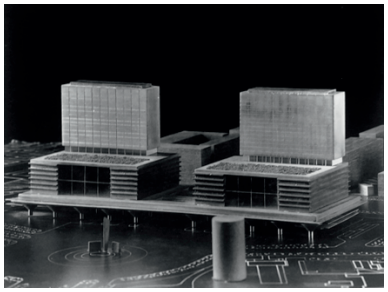
While analysing and designing hybrid buildings it is important to distinguish between hybrids and social condensers. While social condensers originated from a gouvernmental background and are based on ideology and tradition, hybrids are the offspring of the capitalist system. While the hybrid opens up to the city and encourages contact among strangers, social condensers are self-sufficient buildings that can isolate themselves from the city. They focus on residential functions with a service programme that can exclusively used by the residents (e.g. Unité d'habitation, Le Corbusier).



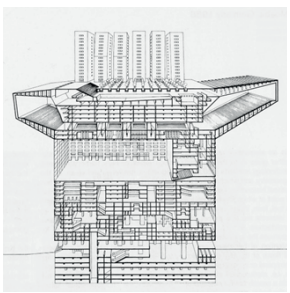
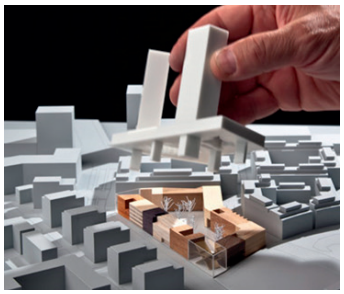










Catalogue of Hybrid Buildings

John Hancock Center, SOM, 1969, Chicago
Linked Hybrid, Steven Holl, 2009, Beijing
Museum Plaza, REX, 2010, Louisville, Not built.
The Hague City Hall, OMA, 1986, The Hague, Not built.

Pontsteiger, Arons en Gelauff, 2018, Amsterdam
Elbphilharmonie, Herzog & de Meuron, 2016, Hamburg
De Rotterdam, OMA, 2013, Rotterdam
Scala Tower, BIG, 2007, Copenhagen, Not built.

Plaza de Castilla Towers, Ábalos & Herreros, 1986, Madrid, Not built.
Sliced Porosity Block, Steven Holl, 2012, Chengdu
Dubai Renaissance, OMA, 2006-, Dubai

Amore Pacific, David Chipperfield, 2017, Seoul
Atlanpole, Hans Kohlhoff, 1988, Nantes, Not built.
Tour Signal, Jean Nouvel, 2012, La Défense
Mixed-Use Low2No, Rex, 2009, Helsinki

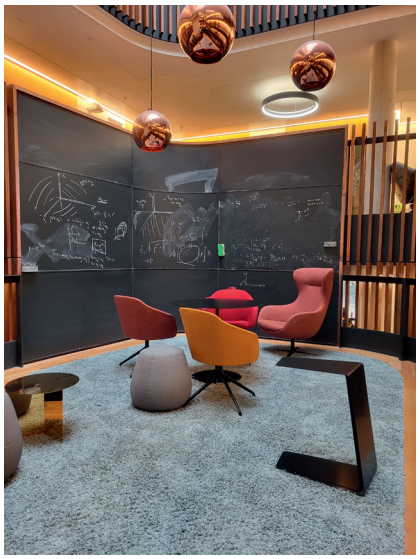
London Excursion: College VS. Campus

THE COLLEGE TOWN

The typical college town is a form of residential housing with shared facilities developed from the 13th century onwards. The housing units are facing inward to the collective, introverted courtyard, which is then connected to the city or other courtyard buildings via gateways, colonnades and courts. The residents are part of a community seperated from the surroundings and the degree of public accessibility is limited. The streets between the colleges are bordered by backsides of the inward-facing courtyard buildings, underlining the isolation and lack of connection with the surrounding environment. The adcantage of the campus building is the strong sense of community it enabls between its users.





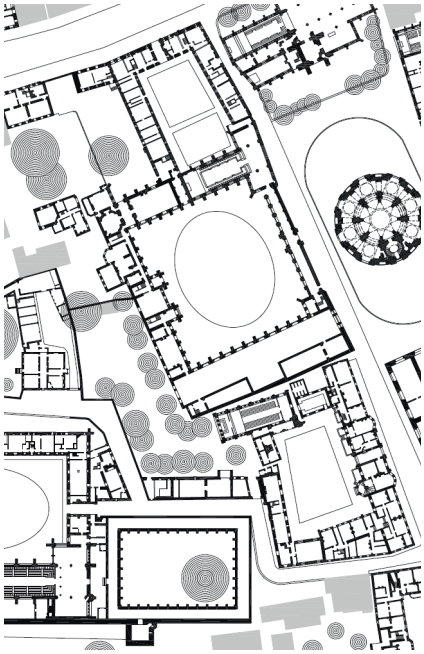


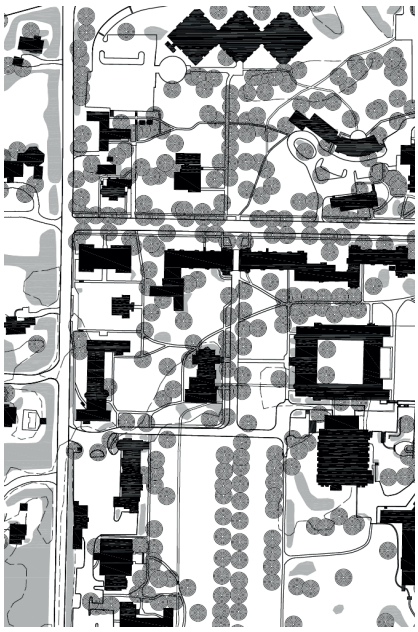
Case studies from the London Excursion
Royal National Theatre
Marshall Building LSE
Beecroft Building, Oxford Campus

CAMPUS

The campus typology is characterised by a series of free-standing academic and residential buildings and forms an “academic village“. Unlike the college the campus has no backside and is orientated and open towards the surrounding envrionment. A grid of streets that can endlessly be extended allows for an easy public access. Therefore, the campus forms part of the continous space of the countryside or city. The campus allows for public accessibility. The visit of several historical, modernist and contemporary hybrid campus projects in the cities of London and Oxford was an inspiring experience, which introduced my to the following architectural themes and spatial organizations that I consider important for the development of the Vertical Campus.

Blackplan College VS. Campus





PUBLIC PLAZA ON GROUND FLOOR

One important concept was the use of the ground floor level as open public plaza like we could see it in the Marshall building, the Victoria and Albert Museum or in the Royal National Theatre. A high degree of accessibility, different public functions as well as the adequate positioning of entrances to connect main pedestrian flows need to be taken into consideration in order to make this public plaza a lively and vibrant expansion of the urban space.

MONUMENTAL AND DOMESTIC SCALE

Furthermore, the balance between different scales is a crucial element. The interplay of heigh and low ceilings, visual connections and disruptions as well as the use of split-levels like we have seen them in the Exeter College, the Royal National Theater and the Barbican Centre attract people and give them different possibilities to use and appropriate the space according to their needs.

VERTICAL ACCESSIBILITY

While the need and desire for privacy was very clear in the hardly accessible Oxford colleges or the LSE Campus Centre Building, we need to find a way to guarantee privacy without locking out the general public from the upper floor levels like the Marshall Building or the Blavatnik School of Gouvernment by Herzog & de Meuron.

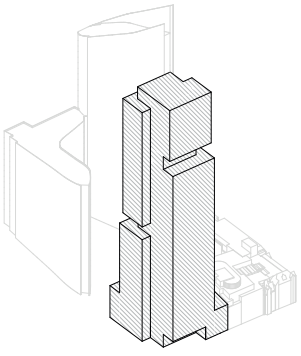
Reuse of existing structures

REUSE VS. DEMOLISH

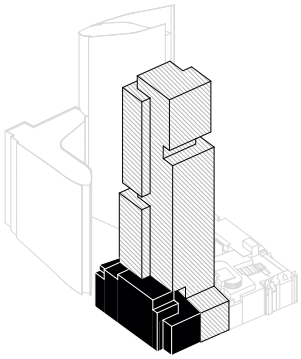
An essential aspect of the design proposal focused on harmoniously blending the existing structures on-site with the new construction of the Vertical Campus. Through thorough investigation and analysis of various case studies worldwide that dealt with integrating high-rise structures into dense urban environments, I identified different strategies to address this challenge. Eventually, the design proposal adopts a hybrid approach, combining elements of „Separation“ and „Integration“. The two existing structures on-site are partially demolished to accommodate the core of the tower, which descends in the center and supports all vertical loads of the new high-rise. The remaining parts of the existing structures are enveloped with new, transparent facades and integrated into a 15-meter-high public plinth. This plinth utilizes the shapes of the existing volumes to create a publicly accessible and diverse array of spatial experiences at ground level. Opting to integrate the existing structures rather than demolishing them presented certain challenges, but it also enriched the richness and creativity of the design process and its final outcome.

RECYCLING POCESS

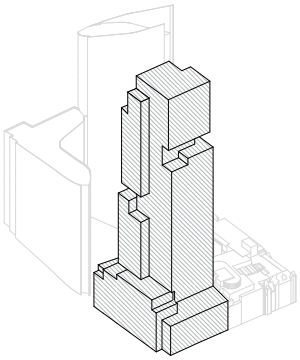
The demolished parts of the buildings, primarily comprising structural and facade concrete elements, will undergo processing to facilitate an environmentally friendly sorting and recycling process. This approach aims to maximize the reuse of concrete for other projects, reducing waste and minimizing environmental impact.



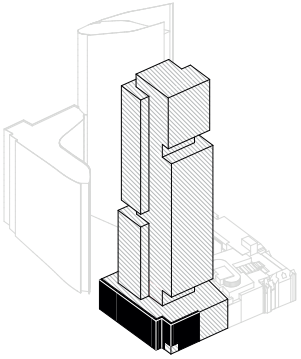
Demolish



Separate



Merge



Integrate



Empire State Building, NY



New Babylon, Den Haag



De Bunkertoren, Eindhoven



Hearst Tower, NY



Collect
rubble/debris waste (concrete, masonry, tils, roof tiles, stones, gravel)



Process
waste if broken up in crushing plant into various fractions + iron is de-ironed through magnets

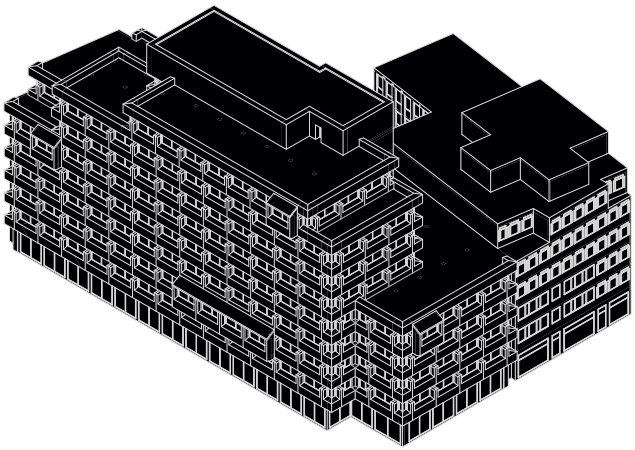


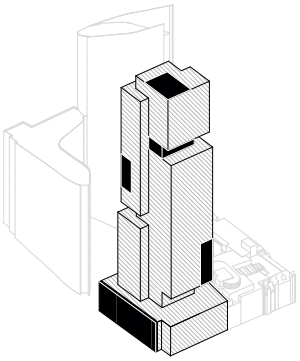
Sort
granules are sorted into different grain sizes through sieves



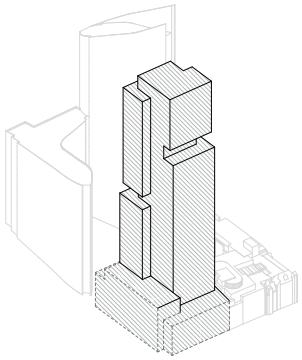
Recycle
rubble granules are reused for e.g. foundation material, construction of roads, granulate for new concrete

Exisiting buildings on site
Axonometry of the two exisiting buildings





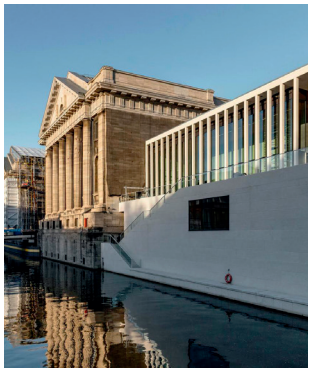
Plug-in



Remember



Sala Beckett, Barcelona



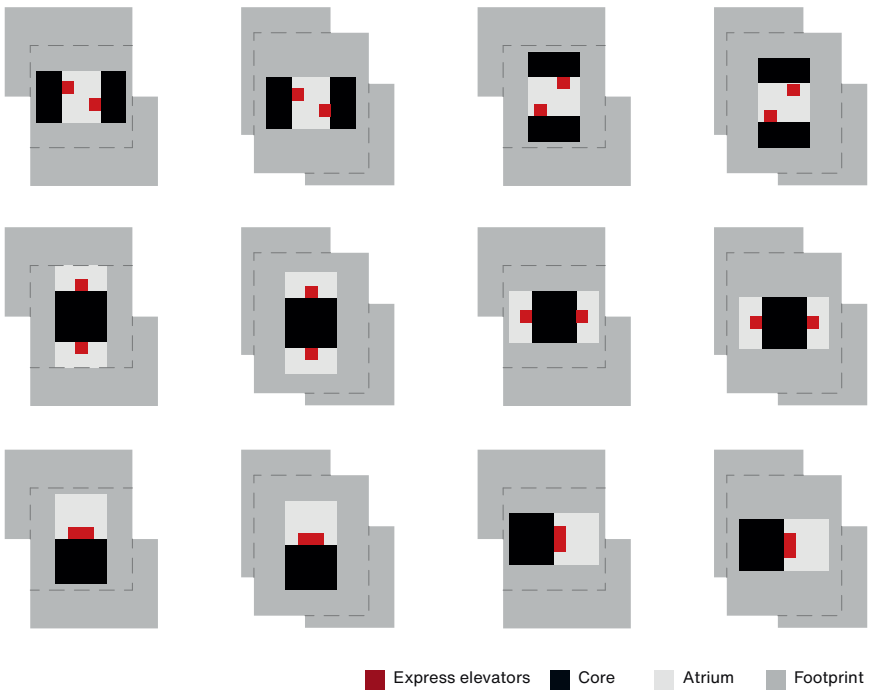
James Simon Gallery, Berlin

Reuse strategies
Analysis of different reuse strategies based on existing case studies



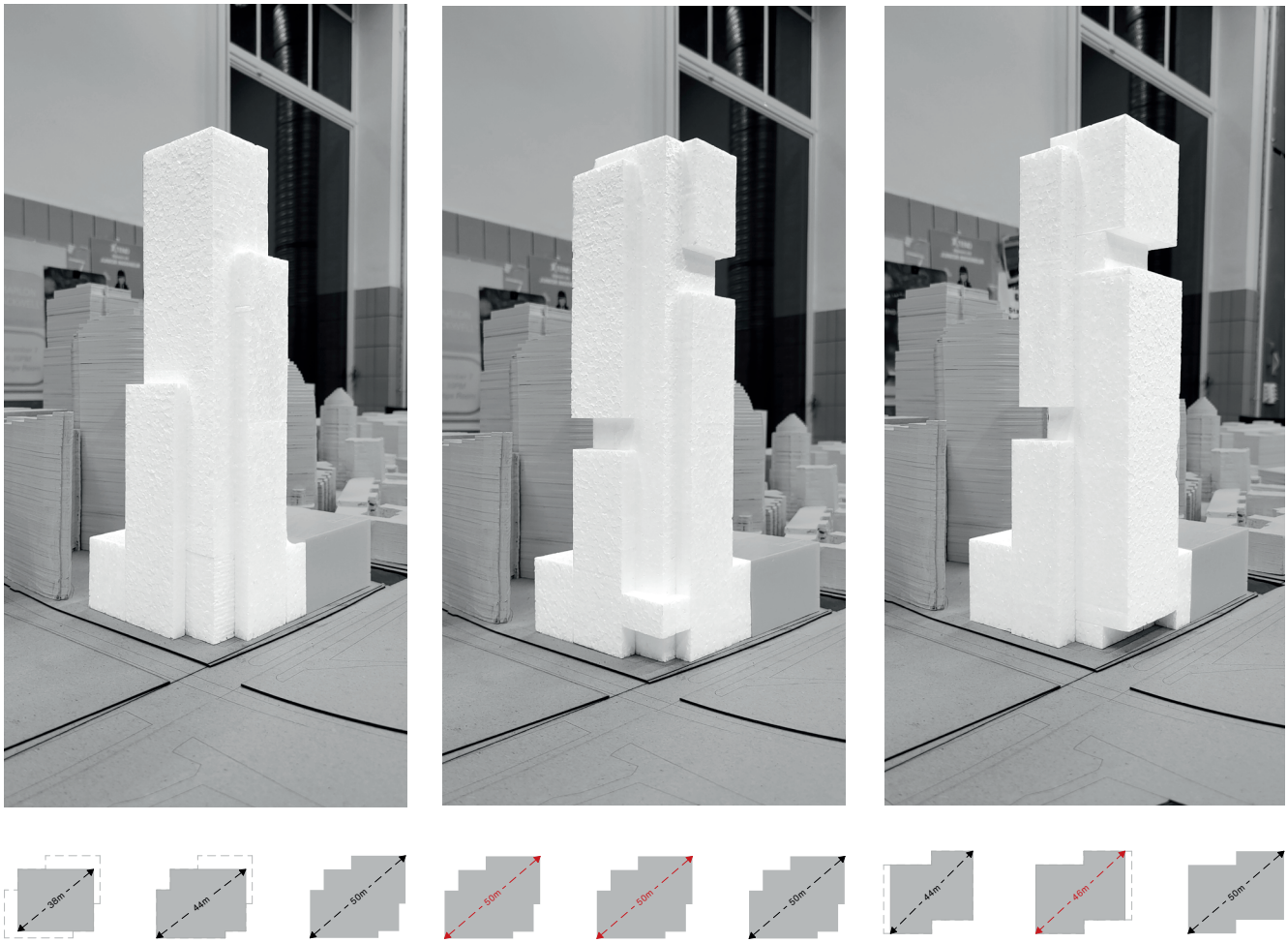
Volume & Accessibility Studies

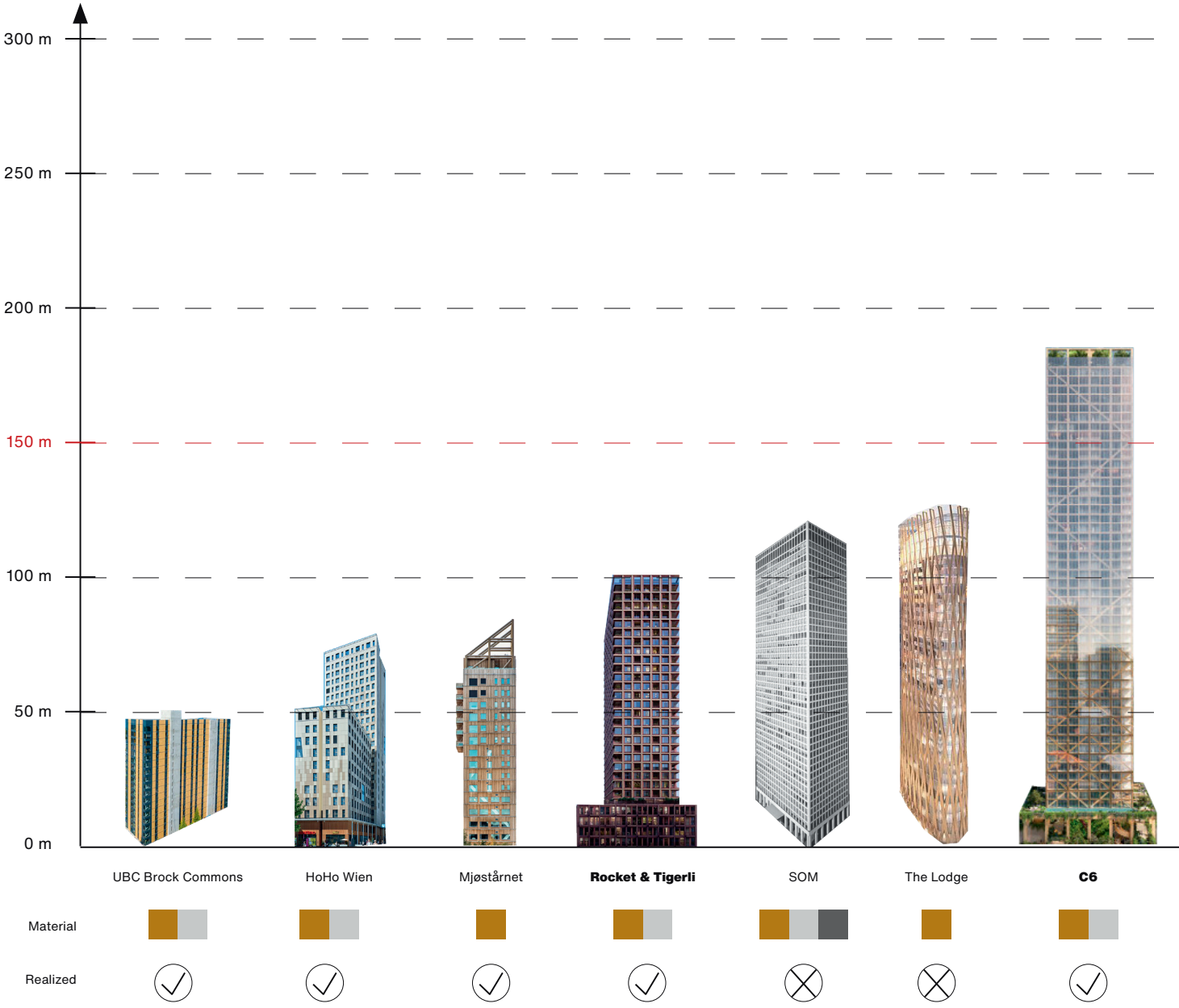
After developing initial volume studies, I delved into the interior, experimenting with various cores and access axes. The building's section reveals multiple "sky lobbies" accessible through the first layer of circulation. These express elevators traverse open atriums, allowing people to experience and observe all floors of the tower while ascending. Upon reaching the sky lobby level, users can transition to a second layer of circulation, utilizing local elevators (escalators, stairs) to proceed to their desired floor. Education and health constitute the primary focuses of the tower's vertical program. Between two sky lobbies, there are always various educational spaces, such as studios or lecture theaters, and a set of health and welfare-related facilities, including sports facilities or a medical center. The seamless integration of these spaces enhances the overall experience and functionality of the tower.



Core studies
Analysis of core position for high-rise buildings based on case studies

Volumes studies
First volume studies in accordance with high-rise regulations of the municipality



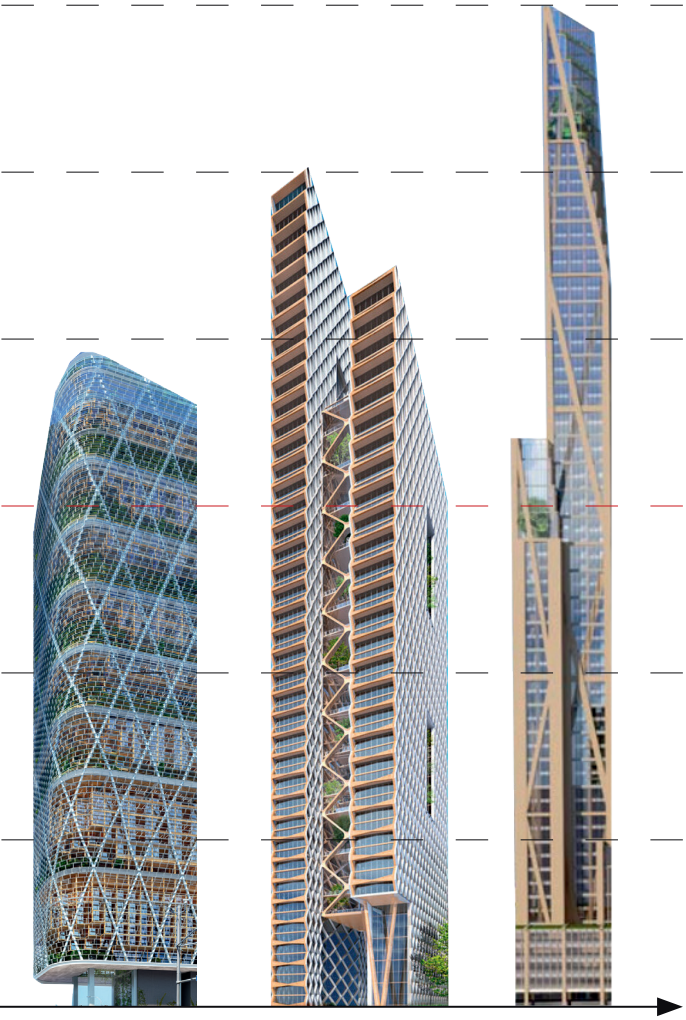


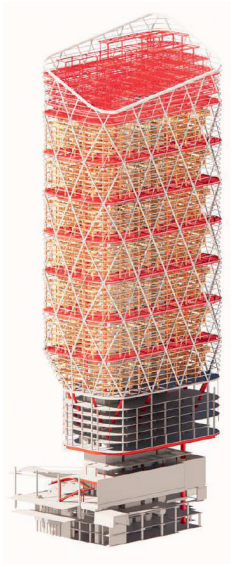
Hybrid structures

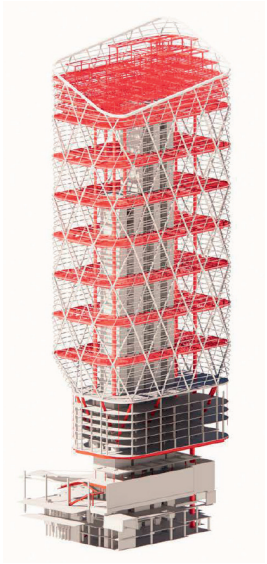
This diagram shows the initial strategies of the sustainability concept for my vertical campus. The diagram addresses the four spheres of sustainability (optimization, durability, sustainability and conservation) and describes the measures through which the project endeavours to develop the smallest possible ecological footprint possible.

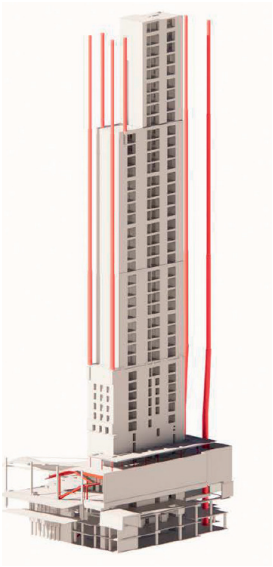
In line with the concept of different sky lobbies and the stacking of different functions, the vertical section of the building can also be divided into different sections from a sustainability perspective. These large sections form the long-term structure and can be constructed from a resilient material such as steel or concrete. A readaptive structure made of wood is used within the individual sections, which allows for flexibility and adaptive reuses. This hybrid gives the building a longer lifespan.

The building‘s energy consumption can be optimised through the use of intelligent façades that allow natural ventilation and the integration of photovoltaic systems. Resources can also be saved through shared office spaces in the ministry building and the integration of parts of the existing buildings.









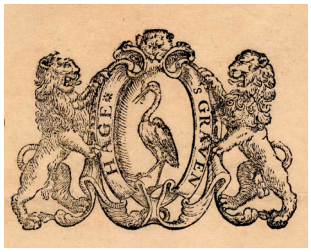
Atlassian Headquarters, Sydney, Australia
Hybrid structure (steel & timber) integrating the existing structure







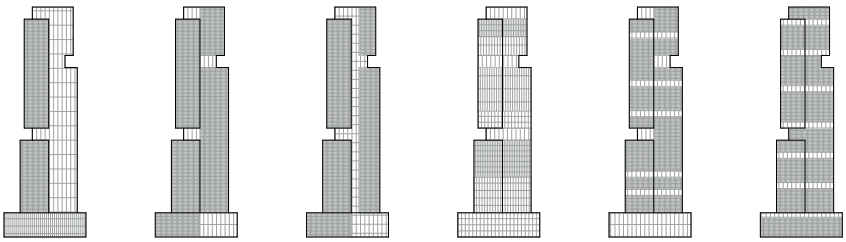


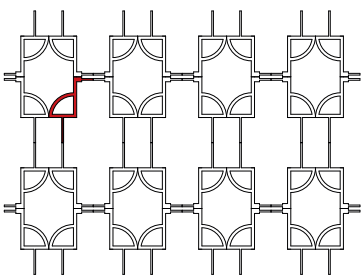


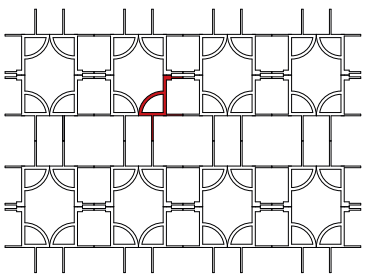
Coat of arms of The Hague
Historical inspiration for facade design

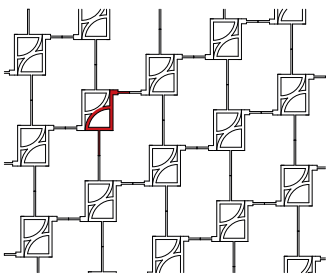
Facade design

The design of the facade consists of two ideas. The public spaces and terraces are framed by a golden pattern, the shape of which is inspired by the coat of arms of The Hague. It refers to the stork depicted there, which in the Middle Ages was a symbol of luck. The use of this institutional symbol for the publicly accessible spaces of the design proposal is related to the aim of breaking up the isolated power clusters of government and municipal buildings and making them accessible to the public. The tower itself is clad in a playful diamond-shaped glass facade. The individual elements of the facade are adapted to the solar radiation and the view of the respective cardinal direction. Thus, the tower appears in a uniform, sculptural dress that is nevertheless individually designed for the different facades. Solar panels are also integrated into the facade. The quantity of solar panels in various facade sections was determined with the help of a solar study.

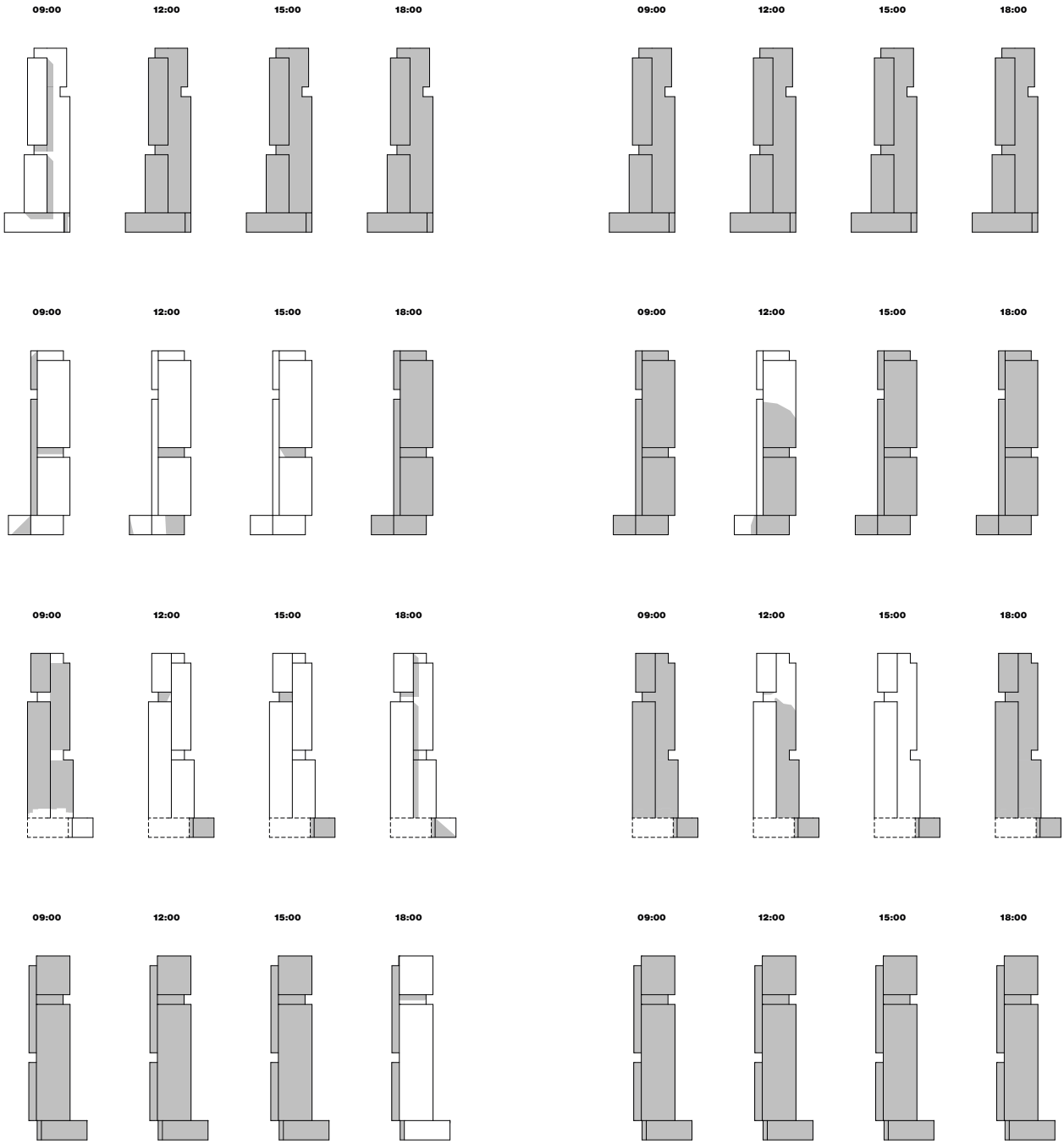


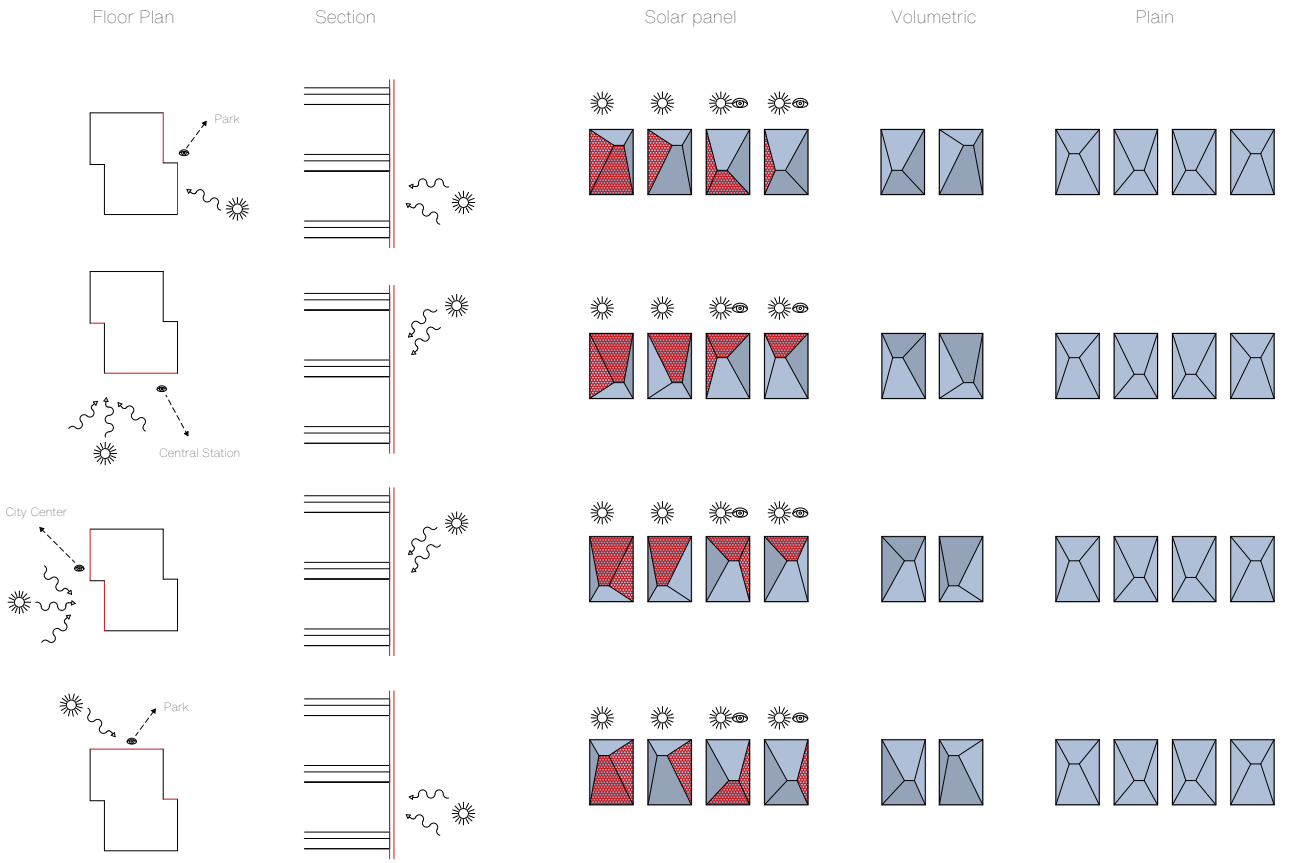


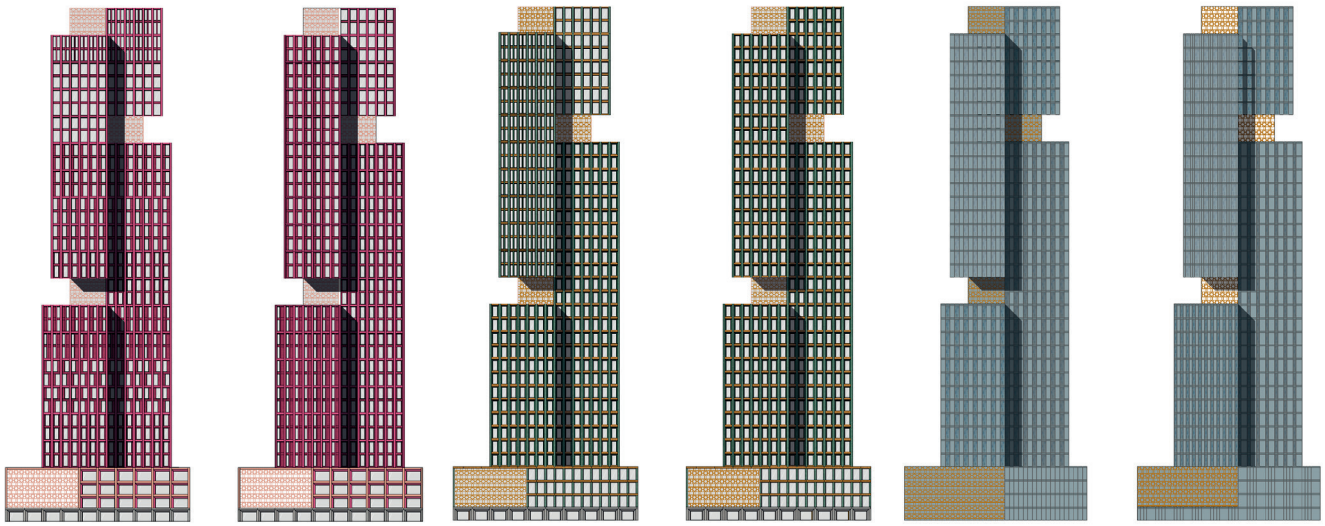




Sun study
Analysis of solar gains for
different facades of the tower







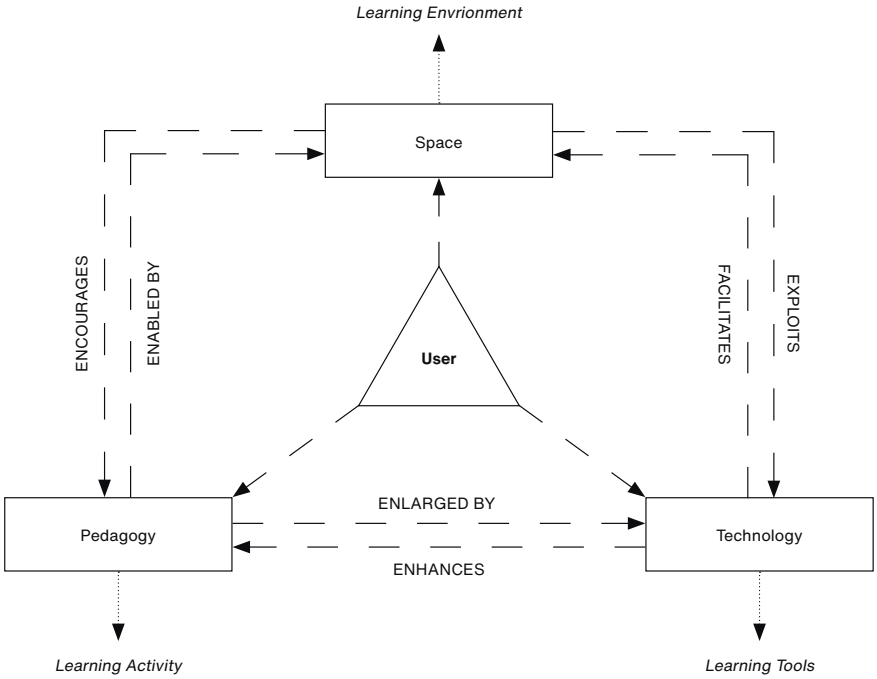
Facade studies
Exploration of different rythms and colours for the facade design

User Scale

Generating & evaluating knowledge in hybrid learning spaces

PST FRAMEWORK FOR HYBRID LEARNING SPACES

The PST framework, also known as the Pedagogy, Space, Technology framework, is a model used in educational settings to consider the interplay between teaching and learning methods, physical learning environments, and technological tools.



Pedagogy refers to the approach or method of teaching and learning. It encompasses the strategies, techniques, and philosophies employed by educators to facilitate student learning. Pedagogical considerations include instructional design, curriculum development, assessment methods, and the promotion of critical thinking, creativity, and problem-solving skills. Space refers to the physical learning environment where teaching and learning activities take place. This includes classrooms, libraries, laboratories, outdoor areas, and virtual learning spaces. The design and layout of these spaces can have a significant impact on teaching and learning outcomes. Factors such as lighting, furniture arrangement, acoustics, and access to resources all influence the learning experience. Technology encompasses the digital tools and resources used to support teaching and learning. This includes hardware such as computers, tablets, interactive whiteboards, and software applications for content creation, communication, collaboration, and information access. Technology can enhance educational experiences by providing opportunities for personalized learning, multimedia-rich content delivery, virtual simulations, and global connectivity.

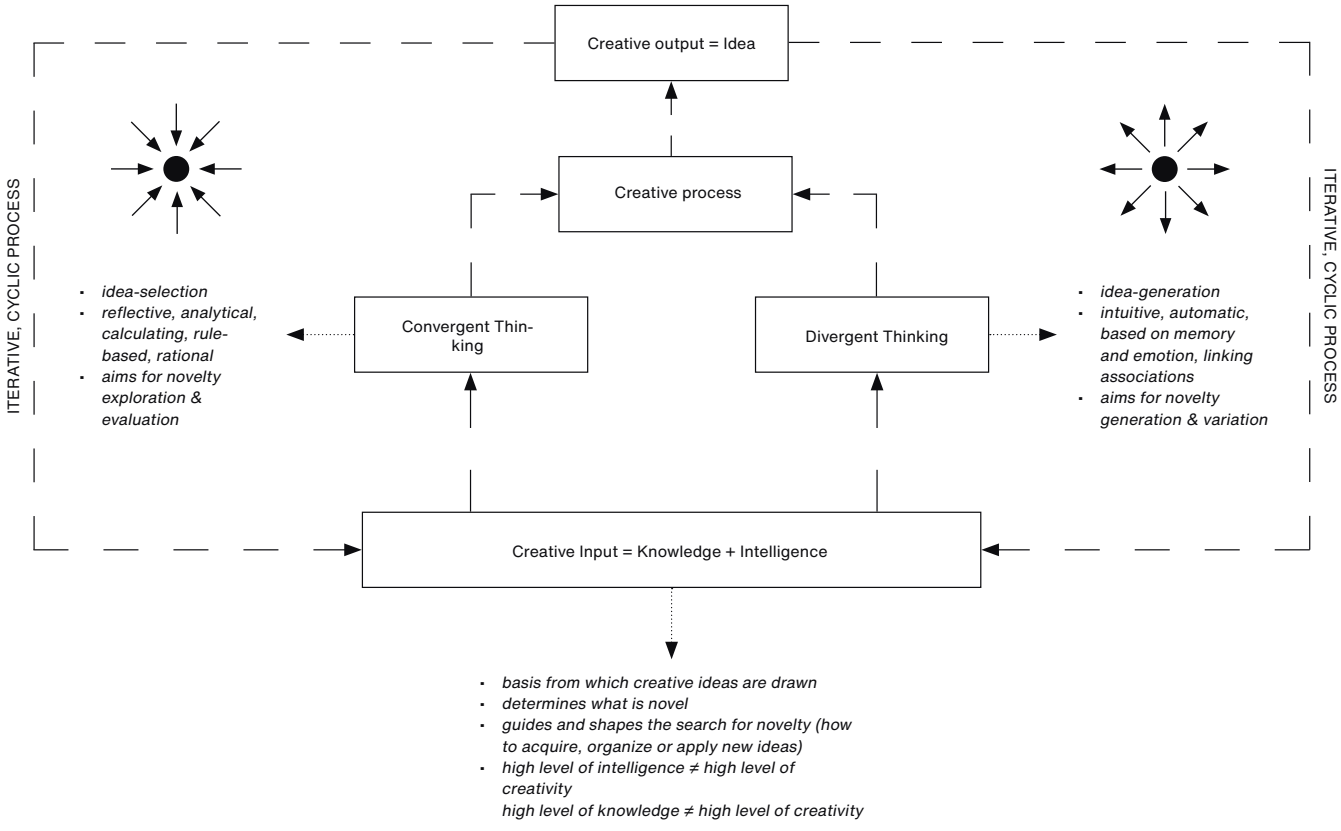
The PST framework emphasizes the interconnectedness of pedagogy, space, and technology in shaping effective teaching and learning experiences. It encourages educators and educational designers

to consider how these three elements can complement and reinforce each other to create engaging, interactive, and student-centered learning environments. By integrating pedagogy, space, and technology thoughtfully, educators can optimize learning outcomes and prepare students for success in an increasingly complex and digital world. While there have been achieved great shifts in the fields of pedagogy and technology during the last couple of years, and especially since the COVID pandemic, research on spatial configurations for hybrid learning spaces has only begun.

CREATIVE THINKING

The theory of convergent and divergent creative thinking is a framework used to describe different modes of thinking involved in the creative process. Convergent thinking involves narrowing down options to find the single, best solution to a problem. It is characterized by logical, linear, and systematic reasoning, where individuals use existing knowledge and rules to arrive at a specific answer. Convergent thinking is often associated with tasks that have a clear goal or correct solution, such as solving a math problem or completing a crossword puzzle. Divergent thinking, on the other hand, involves generating multiple, varied solutions to a problem. It is characterized by non-linear, spontaneous, and imaginative thinking, where individuals explore a wide range of possibilities and perspectives. Divergent thinking encourages the exploration of unconventional ideas and approaches, often leading to innovative solutions and creative breakthroughs. Activities such as brainstorming, free association, and lateral thinking promote divergent thinking skills.

Both convergent and divergent thinking are essential components of the creative process. Convergent thinking helps to refine and evaluate ideas, while divergent thinking fuels the generation of new and original concepts. Effective creativity often involves a balance between these two modes of thinking, knowing when to focus on refining ideas and when to explore new possibilities. Overall, the theory of convergent and divergent creative thinking provides a framework for understanding the different cognitive processes involved in creativity and problem-solving, highlighting the importance of both focused analysis and imaginative exploration in the creative process.



Case Study Analysis



EXTERNAL STIMULATION

The external environment plays a crucial role in stimulating our senses and influencing our creative thinking processes. Spatial characteristics, such as the views surrounding us, the aroma in the air, the sounds we hear, and even the textures we feel, all contribute to this sensory experience. When we immerse ourselves in different spaces, we are exposed to a variety of sensory inputs that can evoke emotions, memories, and ideas. For instance, a bustling city street with its cacophony of sounds and sights might inspire a different train of thought compared to a serene, natural landscape with its tranquil ambiance. By being attuned to the sensory stimulation provided by different spatial settings, we can enhance our creative thinking and generate innovative ideas.



BEHAVIOURAL CULTURE

The culture of a space encompasses a myriad of factors that dictate behavior, both explicit and implicit. From written rules to unspoken norms, spatial characteristics shape our actions and interactions within a given environment. These cues can include spatial affordances that guide us towards certain behaviors, rituals that dictate our actions, as well as labels, signs, and symbols that communicate expectations. Consider, for example, the layout of a library. The quiet atmosphere, the presence of signage indicating designated study areas, and the unspoken expectation for silence all contribute to a behavioral culture that encourages focused, individual work. In contrast, a bustling marketplace may have a completely different set of norms, with spatial cues encouraging social interaction and bargaining. By understanding and adapting to the behavioral culture of a space, individuals can navigate it more effectively and engage in creative thinking within the bounds of its established norms. Moreover, recognizing how spatial characteristics influence behavior can also prompt innovation by challenging existing conventions and prompting individuals to think outside the established norms of a space.



SOCIAL DIMENSION

The social dimension of space encompasses its role as a repository and facilitator of information, as well as its provision of tools and infrastructure that can either support or impede the creative process. Space serves as a facilitator for the processing of knowledge through various forms of social interaction, meetings, and personal exchanges. It provides the physical environment where individuals come together to share ideas, exchange information, and collaborate on projects. Whether it‘s a formal meeting room or a casual gathering area, the spatial layout and design influence the dynamics of knowledge processing. In spaces designed for social interaction, such as conference rooms or common areas, individuals can engage in face-to-face discussions, brainstorming sessions, and knowledge-sharing activities. These interactions enable the synthesis of different perspectives, the exchange of expertise, and the generation of new ideas through dialogue and debate. Meetings held within a designated space provide a structured platform for discussing and disseminating knowledge, whether it‘s through presentations, workshops, or collaborative work sessions. The physical environment can impact the effectiveness of these meetings, with

factors such as seating arrangements, acoustics, and technology infrastructure influencing communication and engagement. Personal exchanges, occurring in more informal settings like break rooms or coffee corners, foster interpersonal connections and spontaneous interactions that contribute to knowledge sharing and relationship building. These casual encounters often lead to serendipitous discoveries, insights, and collaborations that enrich the collective knowledge base of a community or organizationOverall, space plays a vital role in facilitating knowledge processing by providing the infrastructure and environment for social interaction, meetings, and personal exchanges. By designing spaces that support these activities and encourage collaboration and communication, organizations can enhance their capacity for learning, innovation, and collective problem-solving.

KNOWLEDGE PROCESSING



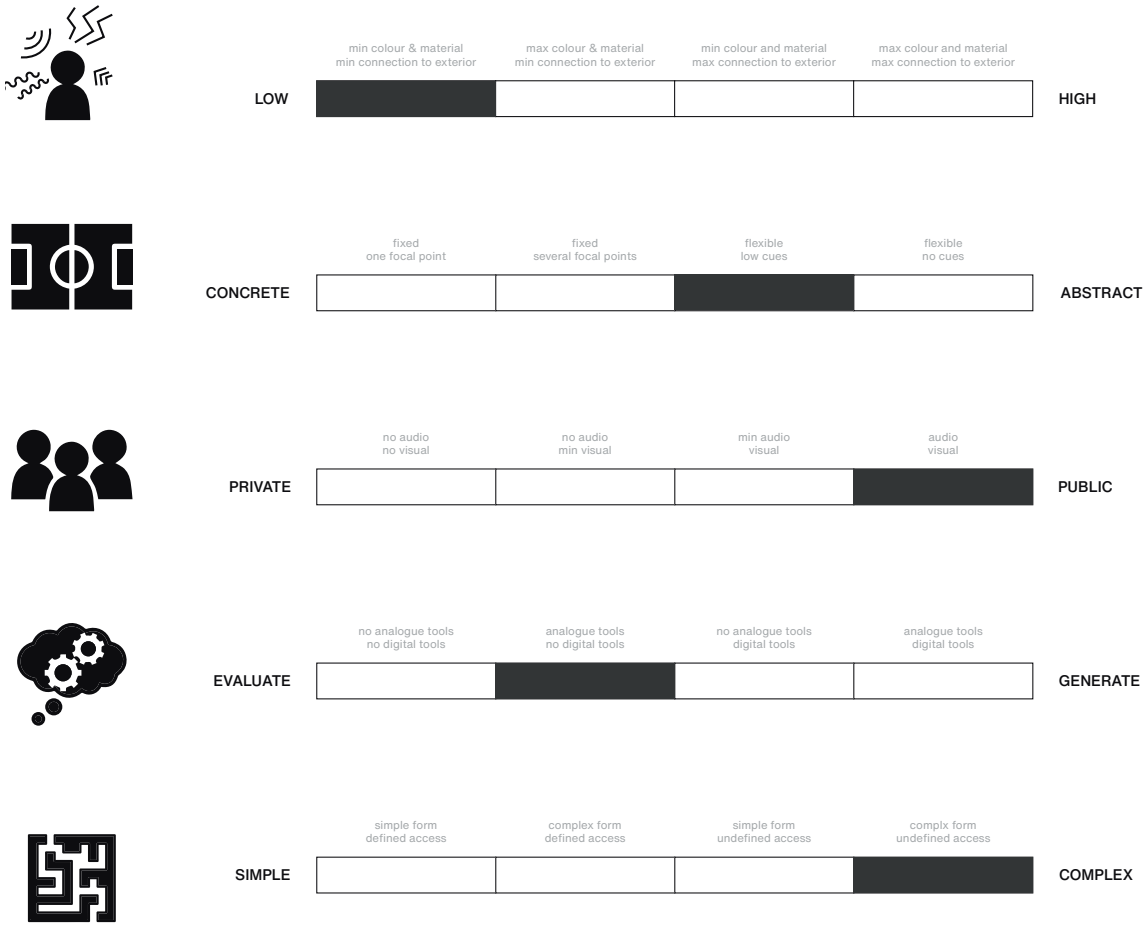
Spaces have the capacity to store and display information, whether through physical means such as books, artwork, or interactive exhibits, or through digital platforms and networks. These informational resources can serve as inspiration or reference points for creative endeavors, enriching the creative process with diverse perspectives and knowledge. Furthermore, spaces can provide spatial and technical tools that aid in creative expression and problem-solving. For instance, a collaborative workspace might offer whiteboards, brainstorming areas, and multimedia equipment to support group collaboration and ideation. On the other hand, constraints such as limited resources or outdated technology can hinder creative exploration and innovation.

The infrastructure of a space also plays a significant role in shaping the creative process. Access to amenities such as high-speed internet, workshops, and specialized equipment can facilitate experimentation and prototyping, while barriers such as inadequate lighting or noise pollution can disrupt concentration and hinder creative flow. Whether through the provision of informational resources, supportive tools, or conducive infrastructure, intentional design can empower individuals to unleash their creative potential and tackle complex challenges.

SPATIAL LAYOUT



The spatial layout of an environment holds a significant influence over the creative process, as it embodies a unique complexity and organization that can either bolster or impede creative endeavors. A thoughtfully designed spatial layout can enhance creativity by fostering an environment that encourages exploration, collaboration, and divergent thinking. For instance, open floor plans with flexible workspaces promote interaction and exchange of ideas among individuals, while designated creative zones equipped with tools and resources provide a dedicated space for experimentation and innovation. Additionally, spatial layouts that incorporate natural elements, such as ample sunlight and greenery, can inspire and rejuvenate creative thinking by connecting individuals with the surrounding environment.Conversely, a poorly designed spatial layout can hinder the creative process by imposing constraints or barriers that limit freedom of expression and exploration. Cluttered or overcrowded spaces may lead to feelings of overwhelm and distraction, inhibiting concentration and focus. Similarly, rigid and hierarchical layouts can stifle collaboration and discourage individuals from sharing ideas or challenging the status quo. Ultimately, the spatial layout of an environment plays a pivotal role in shaping the creative process by influencing the way individuals interact with their surroundings and each other.



ANALYSIS PROCEDURE

After I had identified the key parameters for the analysis of hybrid learning spaces, the next step was to find suitable case studies for a more in-depth analysis of existing learning environments. I selected a total of fifteen case studies located in various countries, built after 2010, and designed by architecture firms with extensive experience in the design of learning spaces. Some of these case studies, such as the Marshall Building in London or the Learning Centre of the University of Economics in Vienna, I had visited myself. For each of these case studies, I chose two photos showing different learning spaces and analyzed them using the five spatial parameters (see example above). For this purpose, I subdivided each parameter into four subgroups, depending on their respective convergent or divergent potential. For example, the subgroups of the Social Dimension parameter consist of components such as audio connection and visual connection to other rooms. Or, in the analysis of the spatial layout of a learning space, I took a close look at the geometry of the space (simple and easily comprehensible at a glance or complex with multiple spatial areas or separations and only comprehensible by moving through the entire space) as well as the openness and accessibility of a space (defined entrance or undefined entrance). After analyzing the total of 30 photos in this way (see next page), I categorized the case studies into convergent, mixed, and divergent spaces and identified their respective similarities and recurring spatial expressions and configurations. Based on these results, I was able to subsequently develop design principles for divergent and convergent hybrid learning spaces and supplement them in areas where I saw potential for future intensification.

Case studies
15 case studies which have been selected to analyse hybrid learning spaces


Student Learning Centre Ryerson University, 2015


New Aarch Aarhus Campus, 2017


The New School University Center, 2014


Roy and Diana Vangelos Education Center, 2016


LSE Centre, 2019


Kingston University London Town House, 2022


Marshall Building, LSE 2021


Visual Arts Buildings, University of Iowa, 2016


Learning Building, University of Nottingham, 2018


The Milstein Center, Barnard College 2018


Maersk Tower, 2016


Ed Kaplan Family Institute, 2018


Library and Learning Centre, University of Economics Vienna, 2013


The Square, University of St. Gallen, 2023


Learning & Teaching Building, Monash University, 2018

Student Learning Centre
Ryerson University

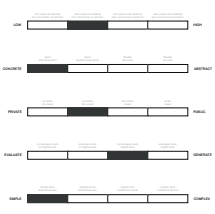
Snøhetta

Toronto, Canada

2015







New Aarch
Aarhus Campus

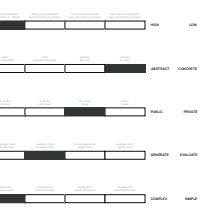
ADEPT

Aarhus, Denmark

2017







The New School
University Center

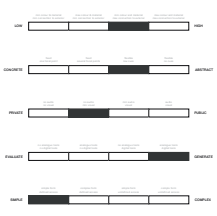
SOM

New York, USA

2014







The Square
University of St. Gallen

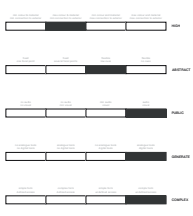
Sou Fujimoto

St. Gallen, Switzerland

2023







Library and Learning Centre,
University of Economics Vienna

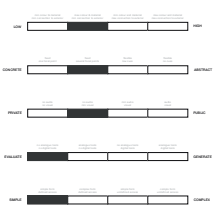
Zaha Hadid Architects

Vienna, Austria

2013







Learning & Teaching Building
Monash University

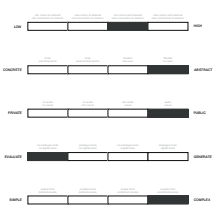
John Wardle Architects

Clayton, Australia

2018







LSE Centre

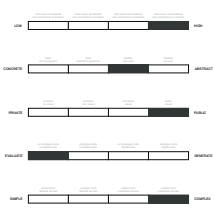
Rogers Stirk
Harbour + Partners

London, UK

2019







Kingston University
London Town House

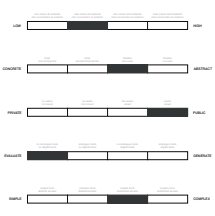
Grafton Architects

London, UK

2022







Visual Arts Buildings
University of Iowa

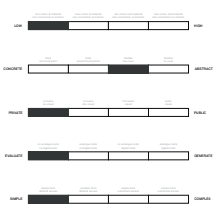
Steven Holl Architects

Iowa City, USA

2016







eaching and Learning Building
University of Nottingham

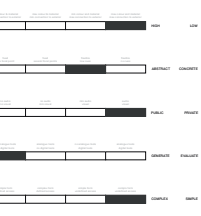
MAKE Architects

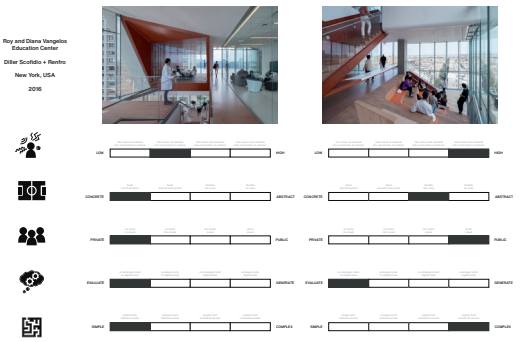
Nottingham, UK

2018









*"Creativity is a process embedded in a **network of realtionships and interactions.**"*

(Donnelly & Montuori, 2013, p. 7)

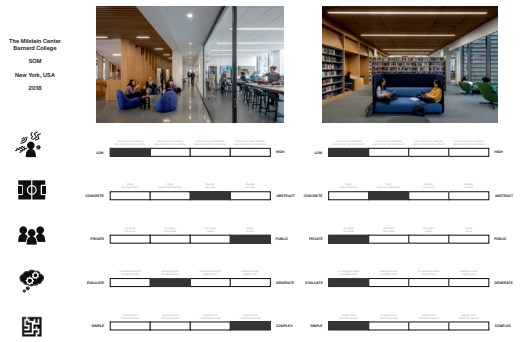
*"The a**bility to entertain what on the surface appear to be opposing thoughts or concepts** seems central to creative thinking [...] Two conditions that appear initially to be mutually exclusive or antithetical can be held in tension, often leading to a major breakthrough in insight."*

(Donnelly & Montuori, 2013, p. 9)



*"Creativity is a synthetic process, seeking to r**earrange our experience into new forms, patterns and relationships** - not the normal, "correct" relationships which intelligence teaches us to deduce from what we already know, but a **multiplicity of novel, often startling relationships** which we begin to discover when we allow our thinking to move off in several different, exploratory directions."*

(Robinson, 1970, p. 4)



*"Creativity is the ability to come up with ideas or artifacts that are **new, surprising** and **valuable**."*

(Boden, 2004, p. 4)

*"A distinction can be made between two major definitions and conceptions of creativity: **creativity as a trait and creativity as an achievement.**"*

(Wierenga & Gerrit, 1998, p. 84)



*"Creativity is the **production of novel and appropriate ideas** by individuals or small groups of individuals working closely together."*

(Amabile & Gryskiewicz, 1989. p. 3)

*"Creativity is products, ideas, or procedures that satisfy two conditions: (1) they are **novel or original** and (2) they are potentially **relevant** for, or useful to, an organization."*

(Oldham & Cummings, 1996, p. 608)



Definition of creativity
Different definitions of the creative thinking process based on the conducted literature review

Design principles for creative hybrid learning spaces

CONVERGENT LEARNING SPACES

In convergent learning spaces, the design elements aim to facilitate focused and directed learning experiences. The external stimulations within these spaces typically adhere to a white or subtle color theme, with dominant use of one color if applied. These spaces often lack direct connections to the exterior environment, either by being closed-off or having translucent windows that reduce external stimuli.

Behavioral culture in convergent learning spaces is characterized by a singular focal point, catering to either group work with a circular orientation or individual work with a unidirectional layout. Fixed furniture arrangements are common, providing clear cues for expected behaviors. However, future designs should incorporate more elements of autonomy through movable wall partitions, curtains, and flexible furniture, allowing for adaptable learning environments.

Social dimensions in convergent learning spaces prioritize minimal visual and auditory connections, creating a quiet and focused atmosphere. While this setup encourages concentration, it may limit opportunities for social interaction and collaborative learning. There's a growing recognition of the need for increased flexibility in social dimensions to accommodate diverse learning styles and preferences.

Knowledge processing in convergent learning spaces often relies on traditional teaching methods, with minimal integration of digital or analog tools. However, there's a growing acknowledgment of the importance of providing a variety of tools to support different learning modalities and enhance knowledge processing capabilities. Future convergent learning spaces should supply a wide set of knowledge processing tools.

Spatial layout in convergent learning spaces tends to be simple and efficient, favoring rectangular



External Stimulation
white or subtle colour theme
when colour is applied, one colour dominates
no connection to exterior (e.g. closed-off space or translucent windows) or reduced connection to exterior (usually only one side of the room offers windows)



Behavioural culture
one focal point (either circular orientation for group work or orientation in one direction for individual work)
fixed furniture
high cues

AUTONOMY



Social dimensions
no or low visual connection
no audio connection or extremly silent atmosphere
audio/visual connection cannot be controlled by user

FLEXIBILITY

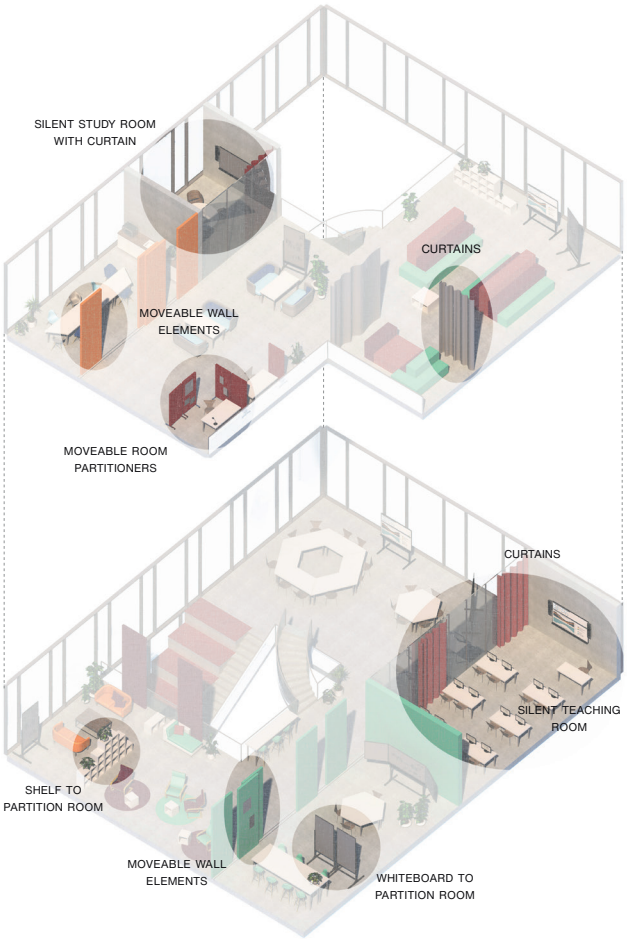


Knowledge processing
neither digital nor analogue tools in almost all case studies

(DIGITAL) TOOLS



Spatial layout
simple, usually rectangular form
clear routing
defined exit/entry



forms with clear routing pathways. This layout promotes straightforward navigation and minimizes distractions, contributing to a conducive environment for focused learning activities.

In summary, convergent learning spaces are designed to promote directed learning experiences through minimal external stimulation, clear behavioral cues, controlled social dimensions, traditional knowledge processing methods, and efficient spatial layouts. However, there's an emerging trend towards incorporating elements of flexibility and adaptability to accommodate evolving educational needs and preferences.

DIVERGENT LEARNING SPACES

Divergent hybrid learning spaces are characterized by their vibrant and dynamic environments, designed to stimulate creativity, collaboration, and exploration. External stimulations in these spaces often encompass a rich variety of colors and materials, creating visually stimulating atmospheres that inspire innovation. Typically, one wall is connected to the exterior, providing users with a sense of connection to the outside world, although there is often a need for increased connectivity to the exterior environment to further enhance the learning experience.

Behavioral culture within divergent hybrid learning spaces encourages flexibility and adaptability, with a diverse array of furniture options available to accommodate different learning activities and preferences. From tables and chairs to sofas, „boxes," and room partitioners, users have the freedom to configure the space to suit their needs. Low cues and minimal restrictions on furniture arrangement promote experimentation and creativity, fostering an environment where users feel empowered to explore and collaborate in unique ways.

Social dimensions in divergent hybrid learning spaces prioritize high visual and audio connections, facilitating interaction and communication among users and between different learning spaces. These spaces are often highly frequented and lively working environments, encouraging lively discussions and collaboration. The layout of the space promotes a sense of community and shared learning experiences, fostering an atmosphere of engagement and inclusivity.

Knowledge processing in divergent hybrid learning spaces often relies on a combination of analogue



External stimulations
variety of colours and materials
usually one wall connected to exterior
more connection to exterior is necessary

CONNECTION TO EXTERIOR



Behavioural culture
flexible furniture
different sets of furniture (tables, chairs, sofas, blocks, room partitioners, etc.)
low cues (furniture can be used and arranged in multiple ways)



Social dimensions
high visual connection to other users/learning spaces
high audio connection, usually highly frequented and lively working environments



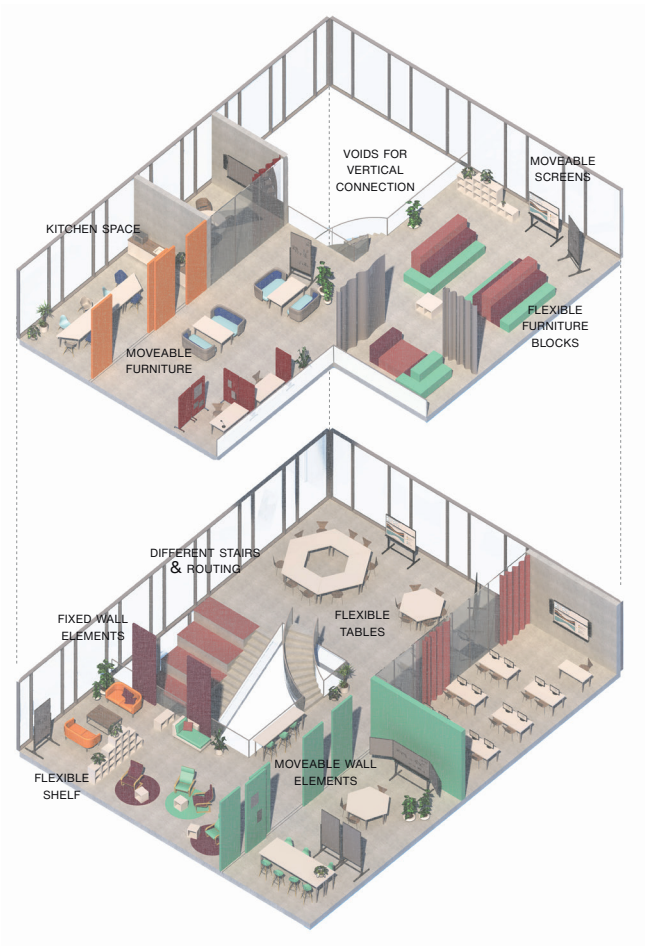
Knowledge processing
mostly neither analogue nor digital tools
a few case studies offer analogue tools like writing boards

(DIGITAL) TOOLS



Spatial layout
wide range of spatial complexity: from simple rectangular spaces with defined access and circulation routes to complex spatial structures with undefined routing

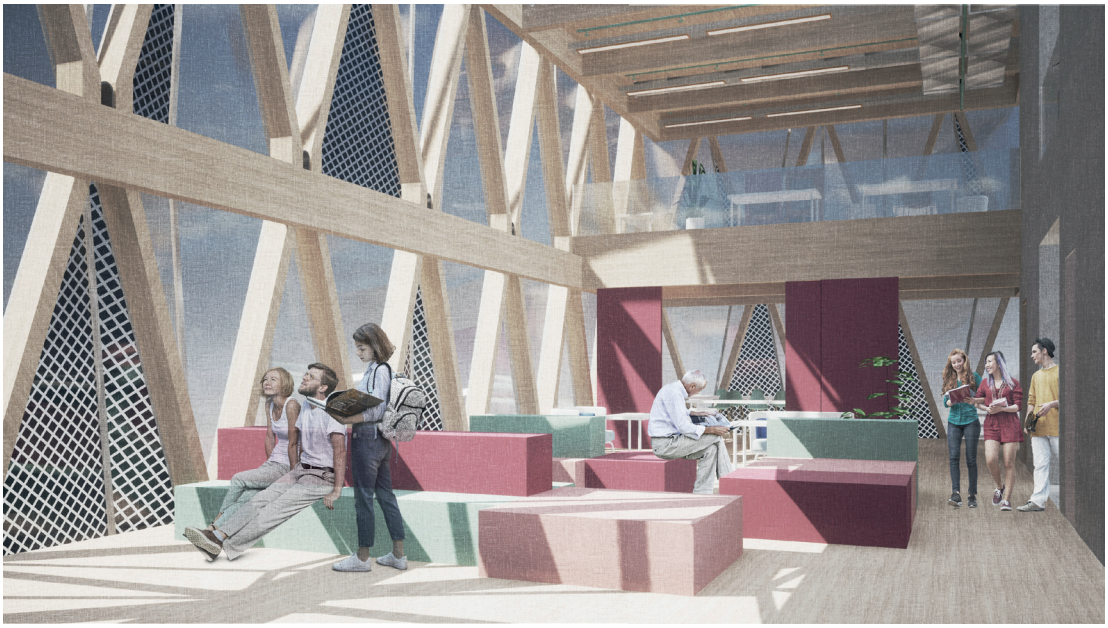
COMPLEXITY

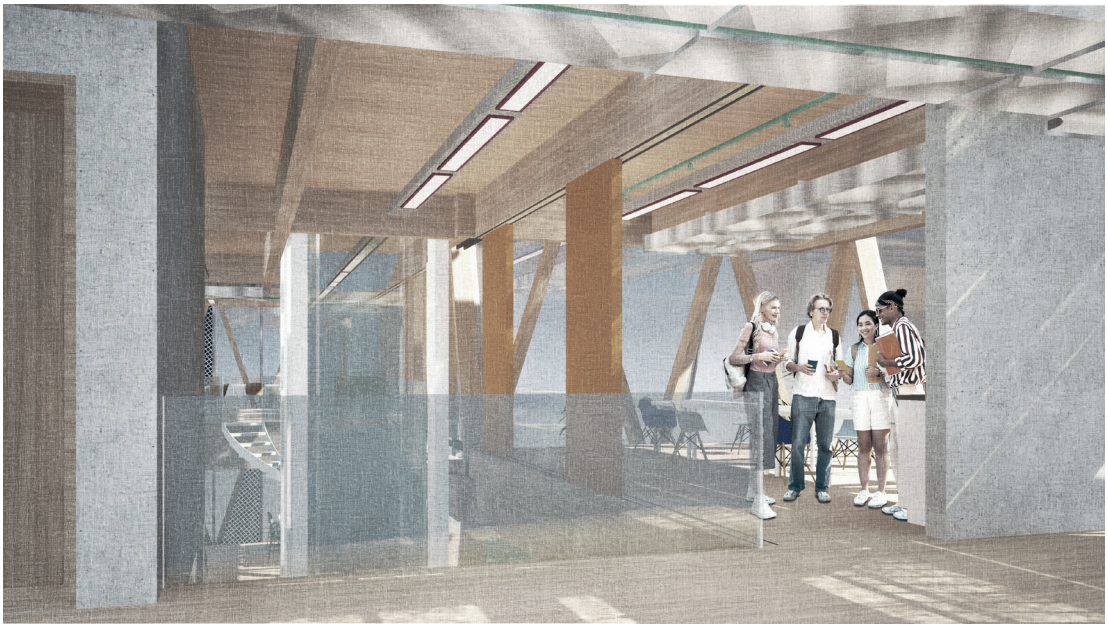


and digital tools, although the majority of case studies predominantly lack such resources. While some spaces may offer analogue tools like writing boards, there is a growing recognition of the importance of integrating both analogue and digital tools to support diverse learning modalities and enhance knowledge processing capabilities.
Spatial layout in divergent hybrid learning spaces varies widely in complexity, ranging from simple rectangular spaces with defined access and circulation routes to more complex spatial structures with undefined routing. This diversity in spatial design encourages exploration and discovery, allowing users to engage with the space in dynamic and multifaceted ways. Overall, divergent hybrid learning spaces are designed to promote creativity, collaboration, and exploration through their vibrant environments, flexible behavioral cultures, strong social dimensions, innovative knowledge processing methods, and dynamic spatial layouts.

Finally, it should be noted that the transition between convergent and divergent hybrid learning spaces is naturally a fluid one, and many learning environments possess both divergent and convergent spatial qualities. The design principles identified here are intended merely as a guideline for the design of learning spaces in higher education, which can support the creative learning process of today‘s autonomous learners in diverse ways. The aim of this research was to shift the focus of the design process towards the creative thinking process and to offer a new perspective on the design of learning environments, while also speculating about possible future developments for the spatial design of learning spaces.

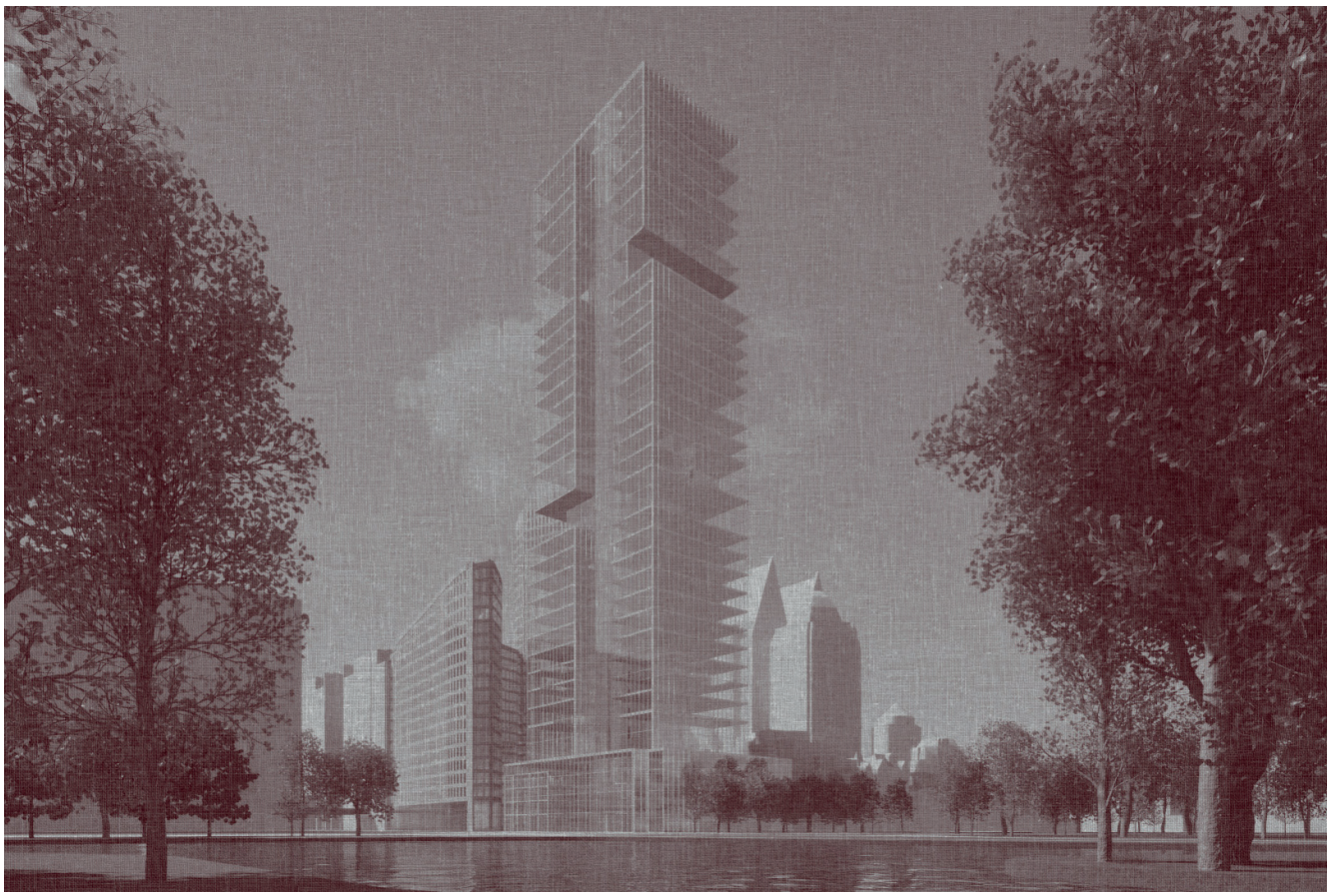




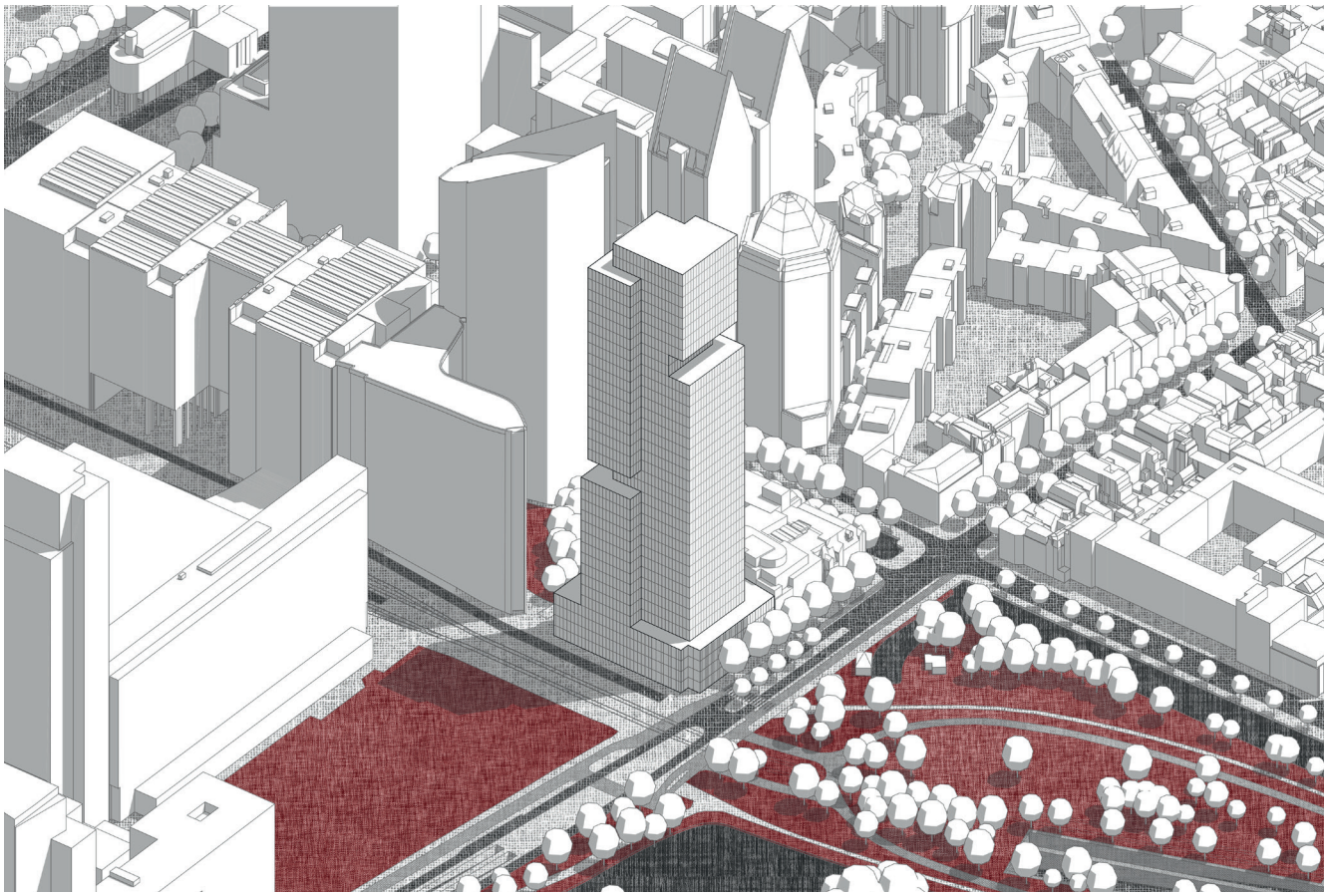


Conceptual Design Proposal

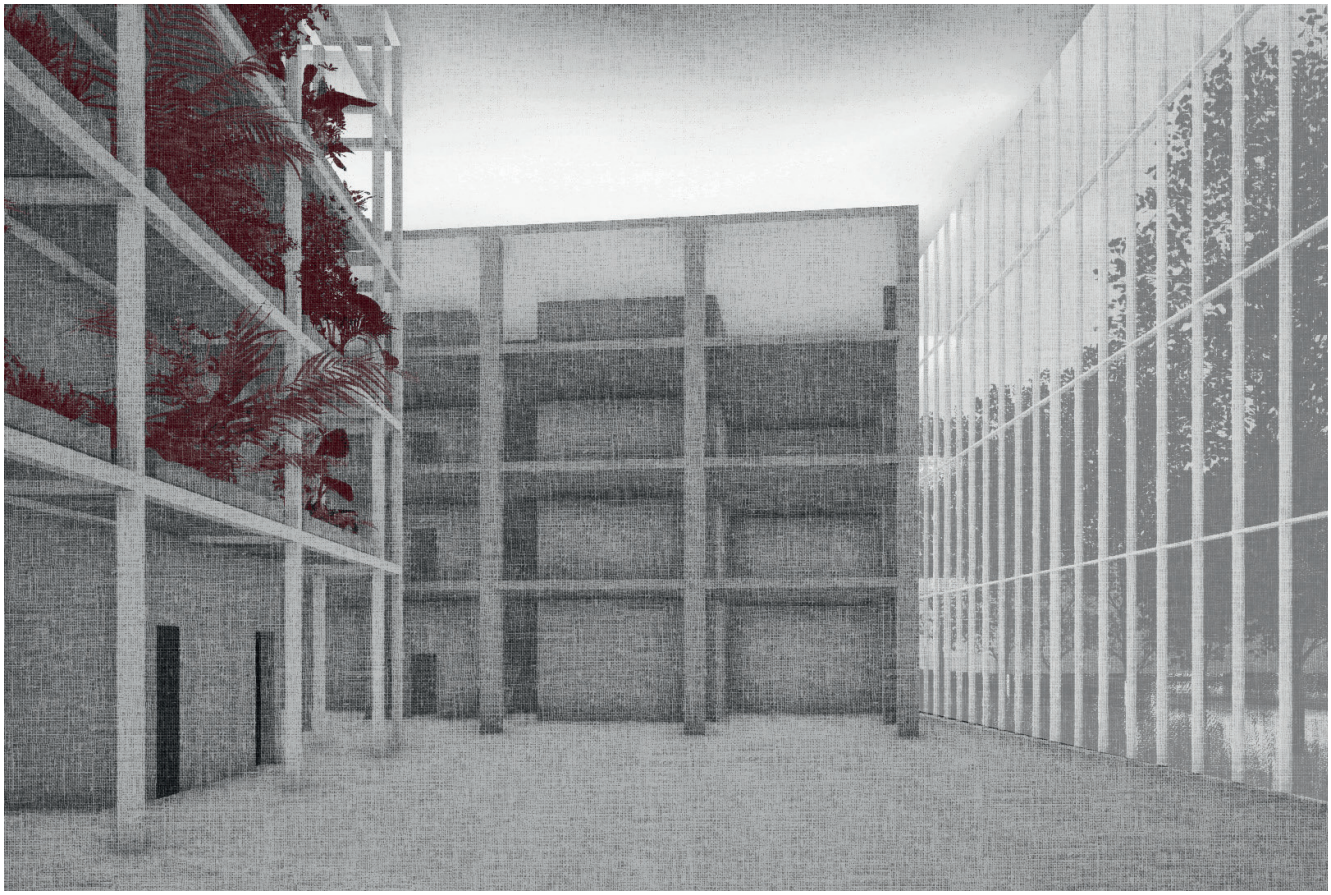
P2



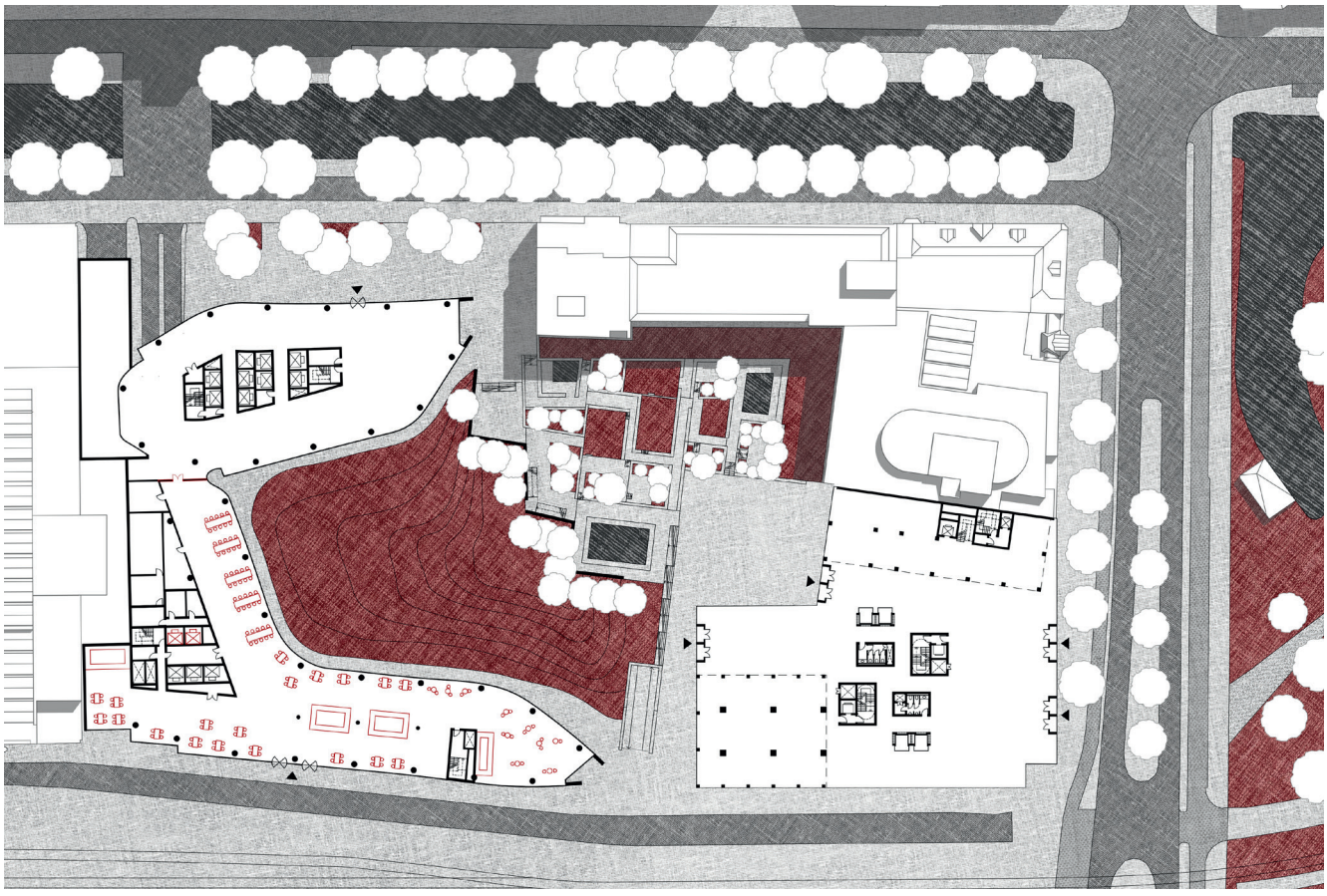
Exterior perspective



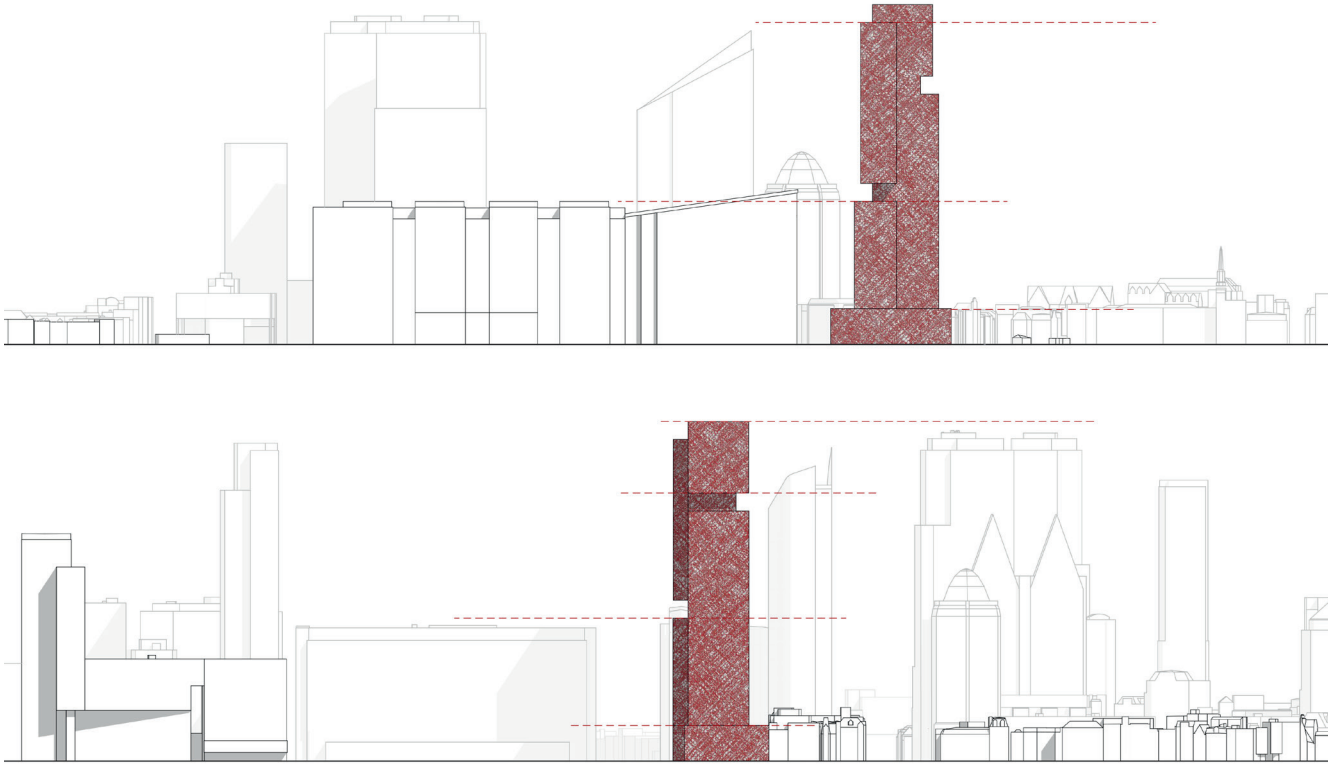
Integration into exsiting context



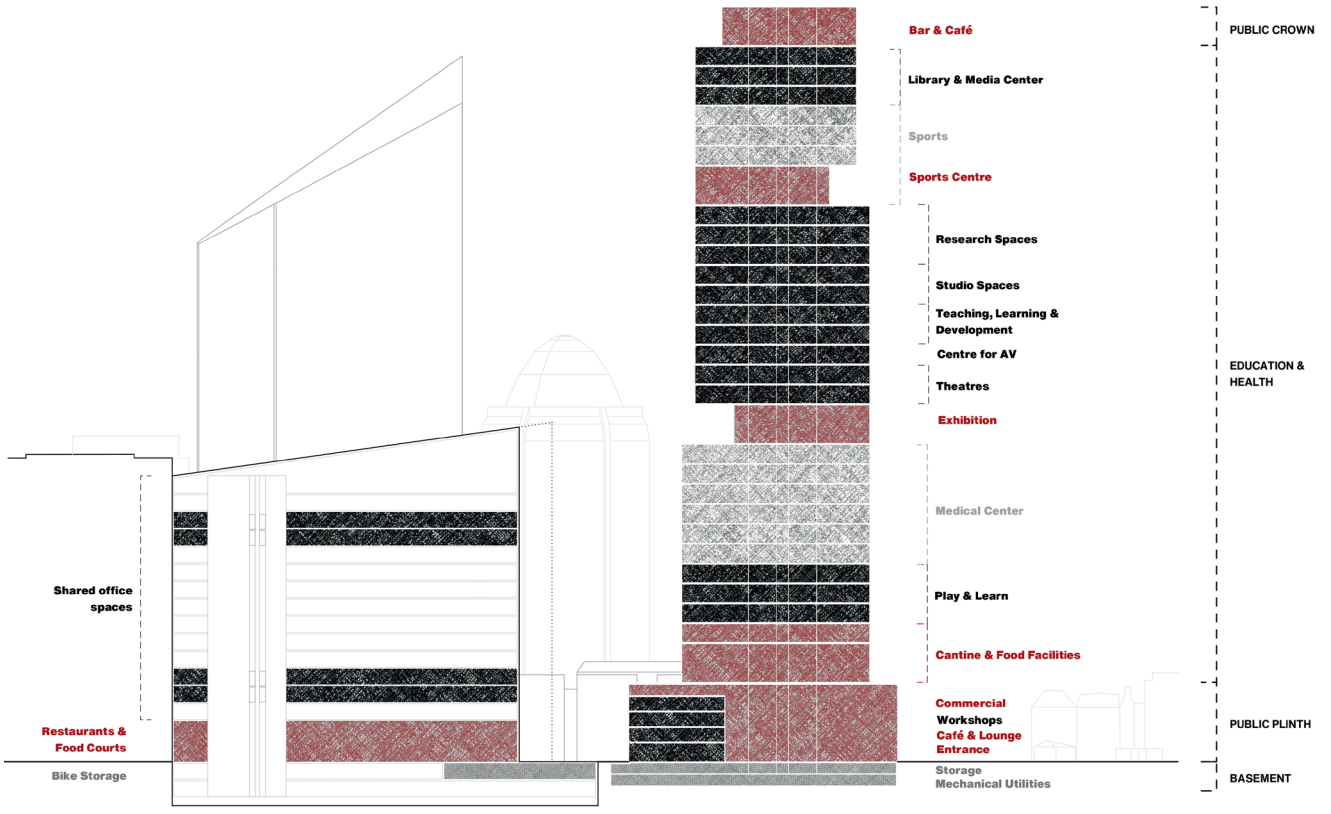
Interior perspective



Ground Floor Plan



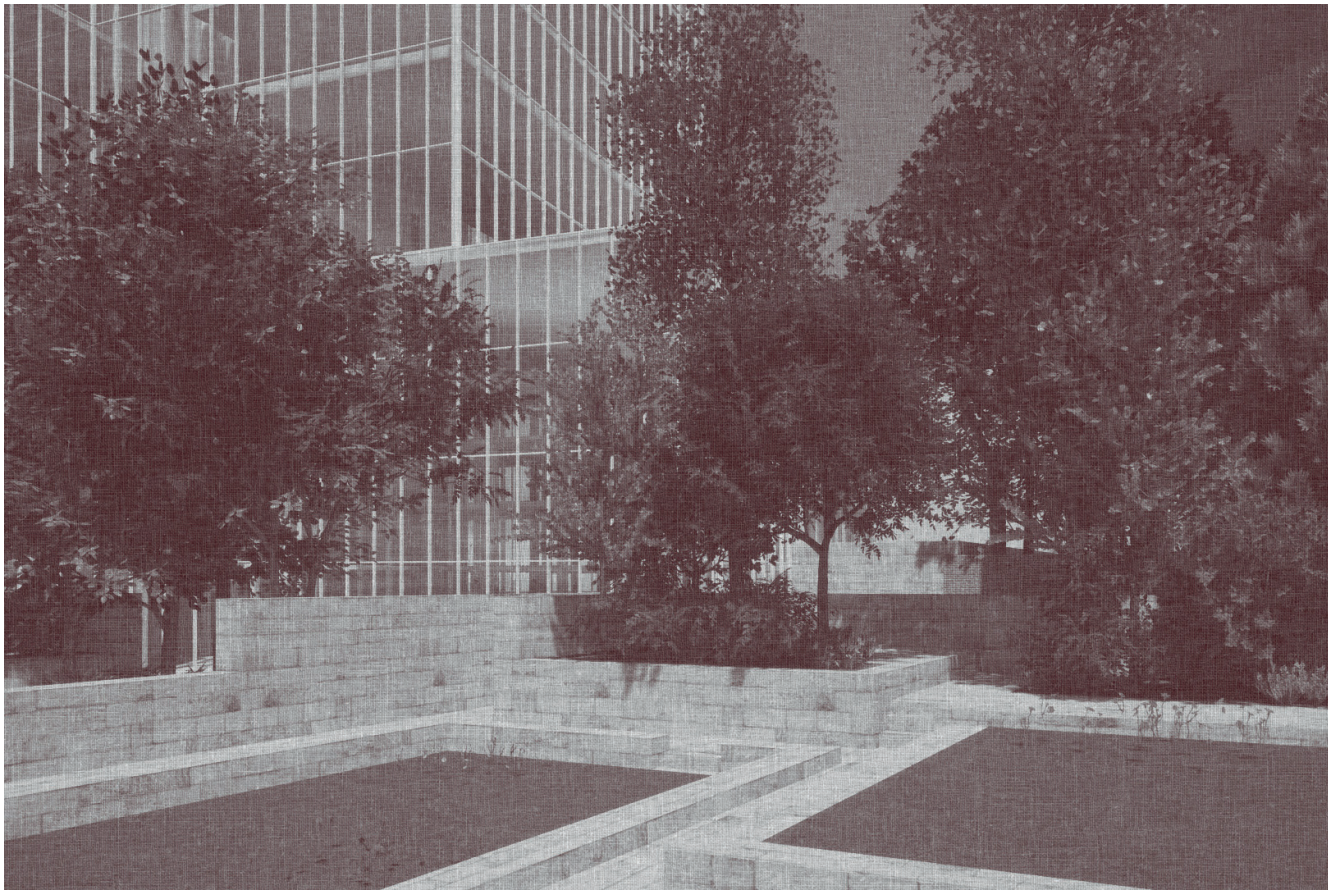
Urban Elevations



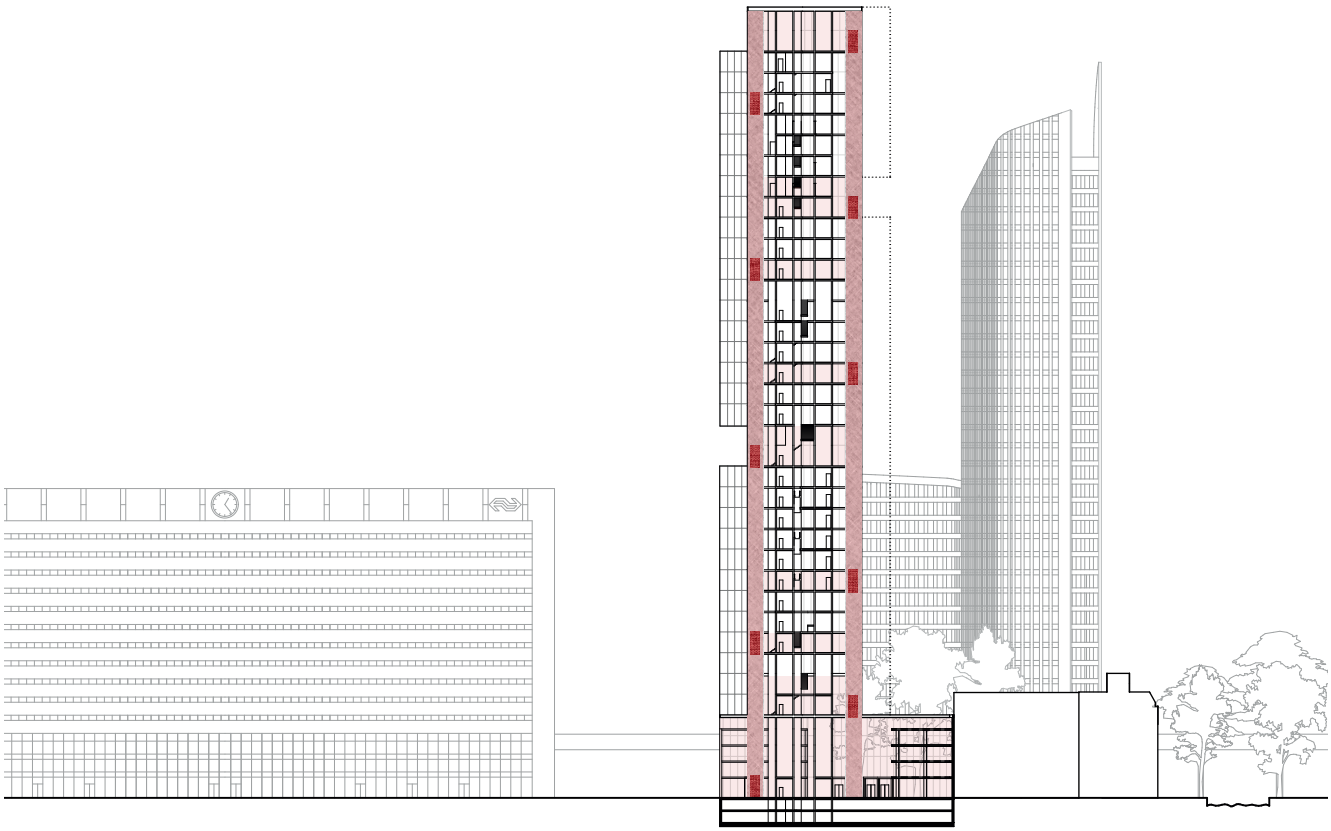
Programmatic section



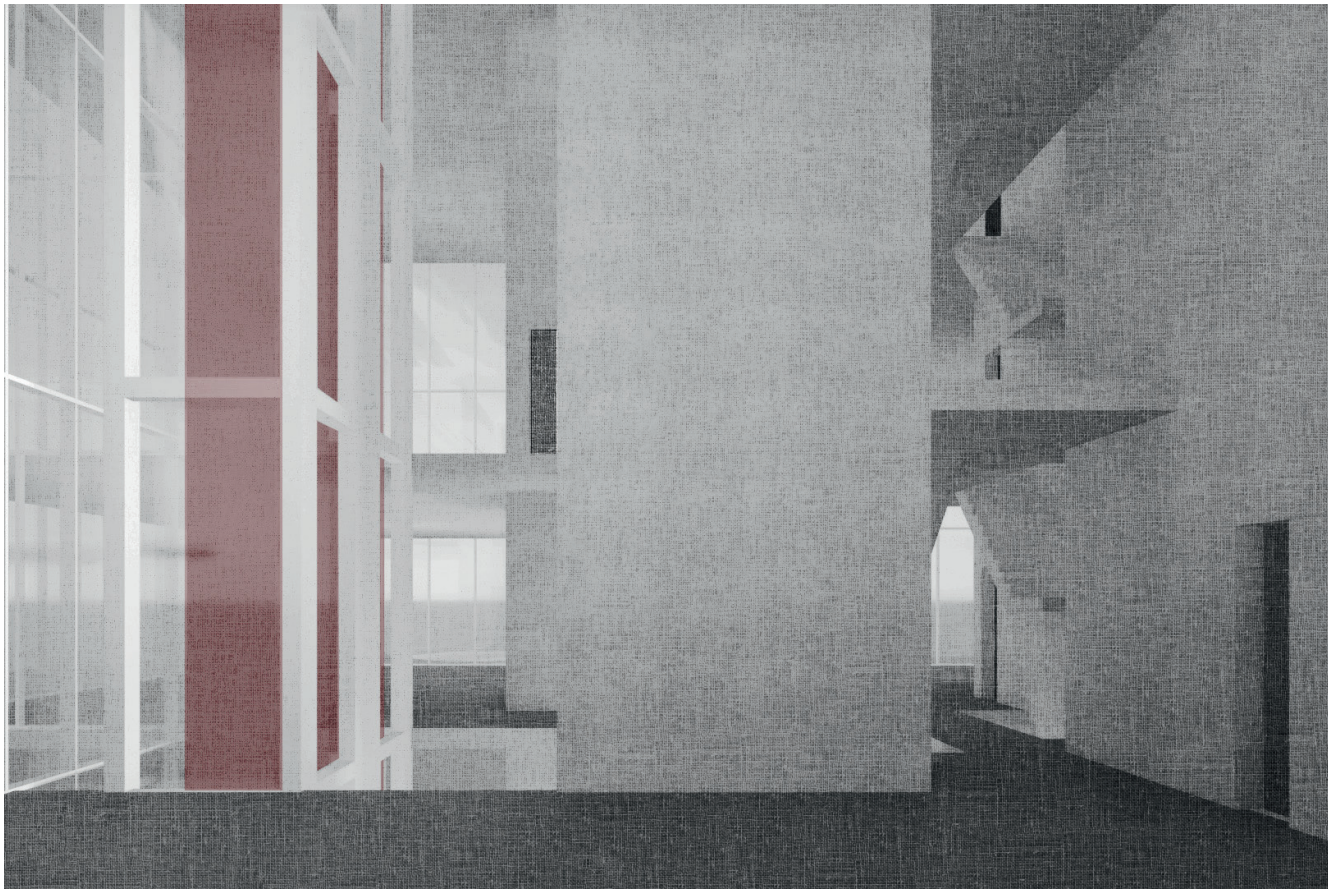
Courtyard perspective



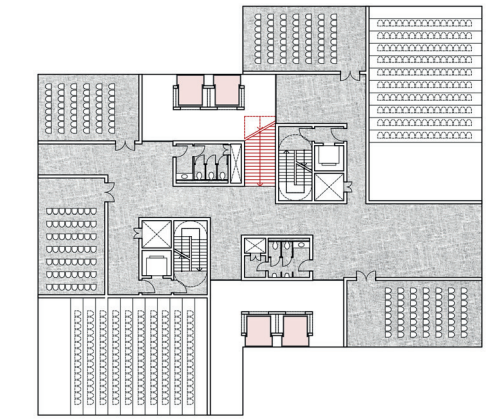
Courtyard perspective

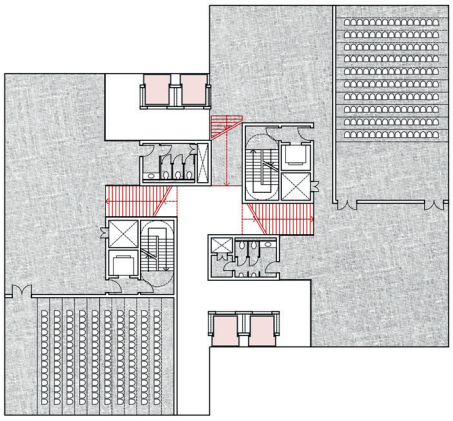


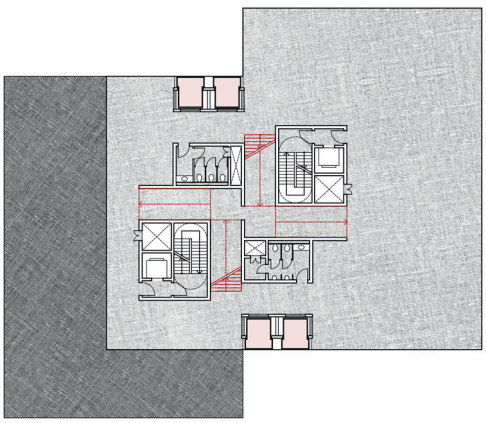
Cross-section

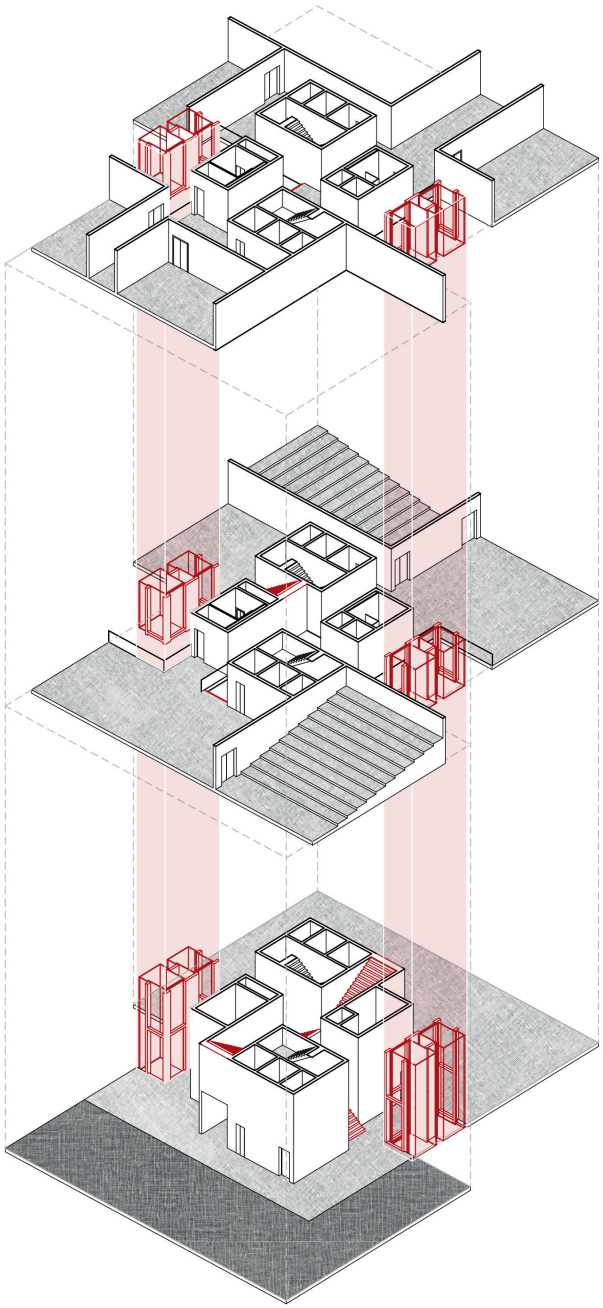


Interior perspective









Circulation concept explosion drawing and floor plans

Final Design Proposal

P4

Urban scale

At the urban level, the project aims for seamless integration within The Hague‘s Central Innovation District. Recognizing various closed-off power clusters comprising municipal, governmental, and educational institutions in the area, my endeavor is to unlock these domains to the public, unveiling the wealth of knowledge housed within.

By revitalizing the interior courtyard of the Ministry of Education, Science, and Culture and blending existing structures into the new complex, the accessible public space is expanded. A vibrant mix of restaurants, lounges, cafes, and retail outlets animates the urban base of the new tower and the Ministry‘s ground floor, enriching the public realm. Balancing the preservation of existing structures with the creation of new pedestrian pathways, the project establishes a green oasis in place of a gray parking lot, fostering a connection between Koekamp Park and the interior courtyard.

Nestled on a block corner intersecting three distinct urban zones—the towering offices, the central station area, and the historical city center—the design‘s varied sections, cut-outs, and setbacks respond harmoniously to these diverse scales of context. The new complex, alongside repurposed structures, hosts a diverse array of programs, encompassing educational spaces, health facilities, and recreational amenities. As a bustling public hub, the development beckons stakeholders and users of all ages, fostering community engagement within the heart of the city.

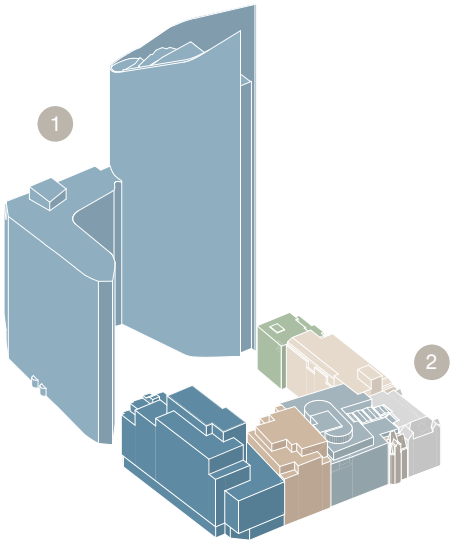


Exterior perspective
View towards the tower from the Koekamp park

Volume & Height

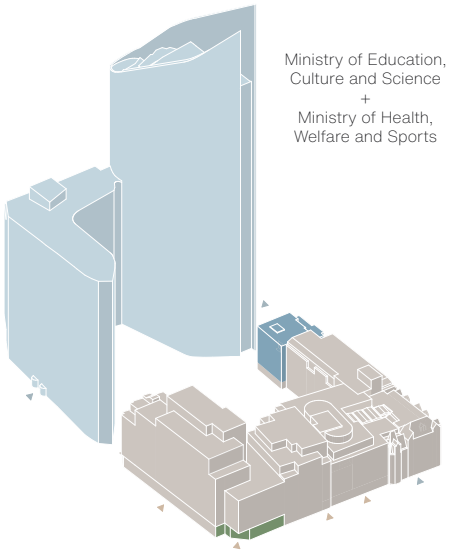
1 floor space ratio: 11,3
site occupancy ratio: 0,6

2 floor space ratio: 4,4
site occupancy ratio: 0,6



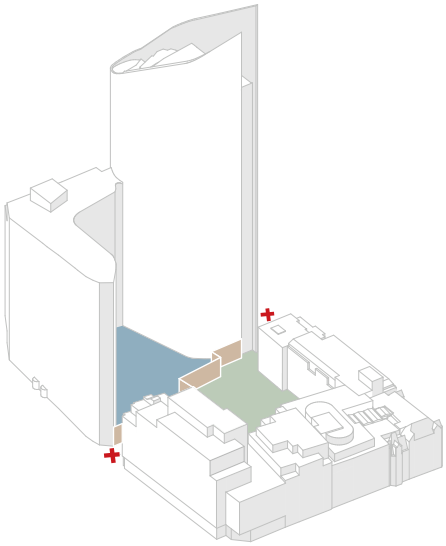
Programme

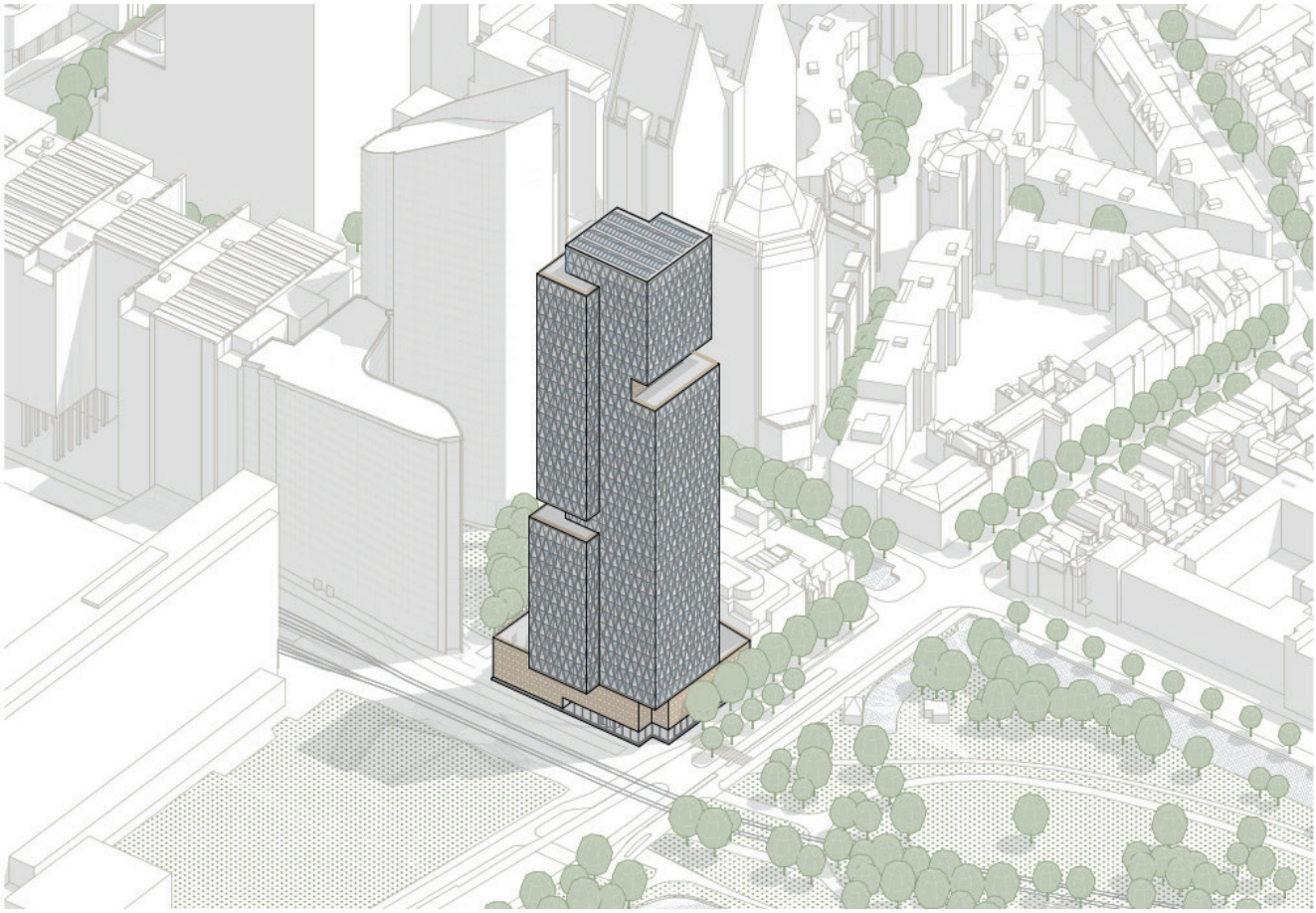
- Office/Corporate
- Residential
- Gouvernment
- Public
- Private entrance
- Public entrance



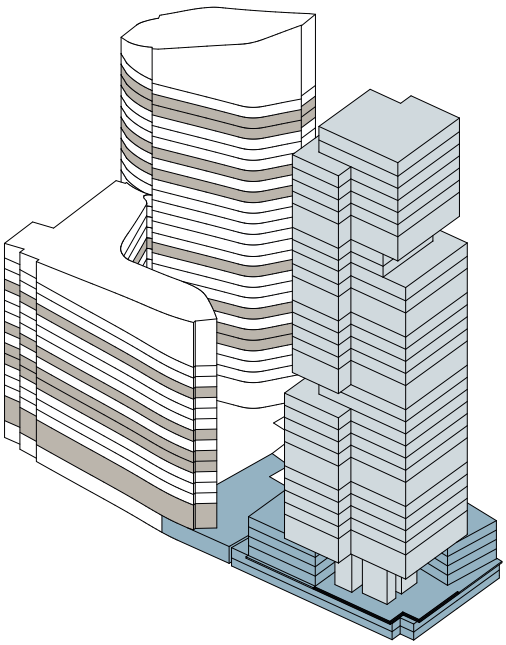
Accessibility

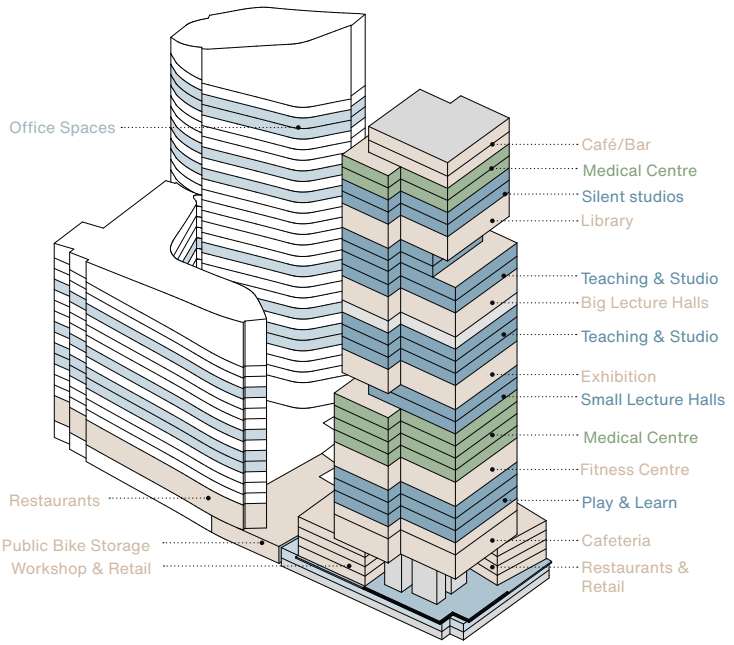
- Ministry courtyard
- Car parking
- Wall
- No access





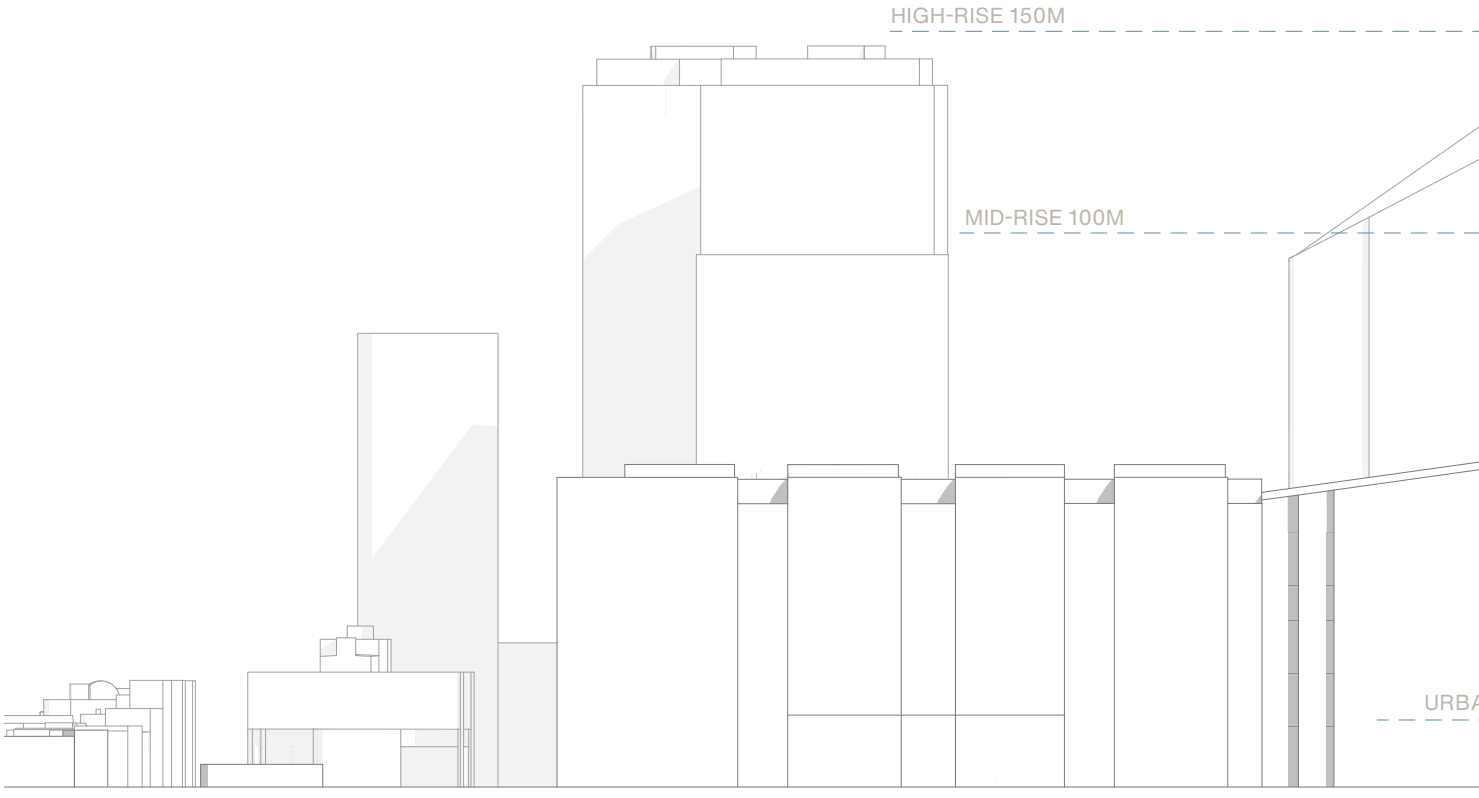
Axonometric view
Adaption of the volume to three different scales of the urban context

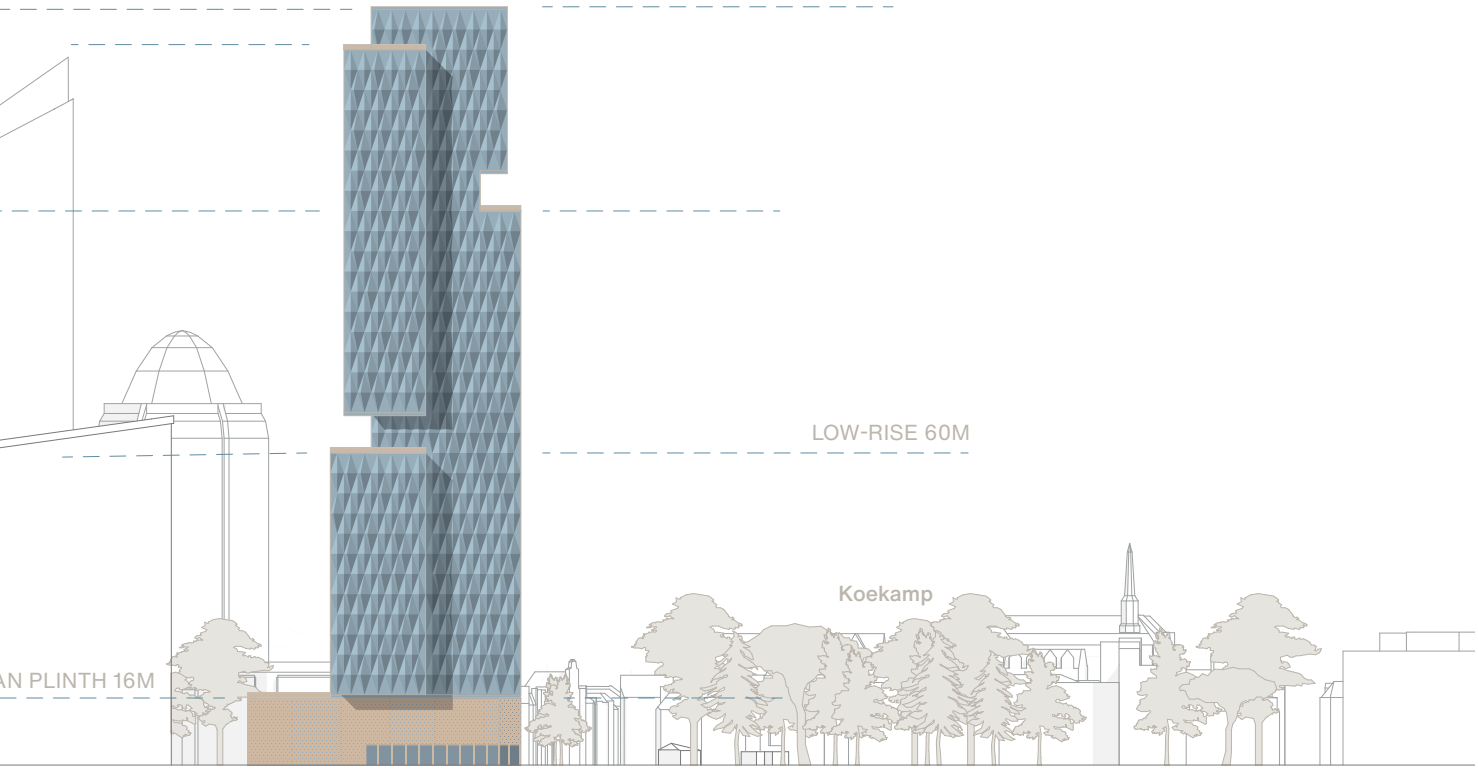




NEW BUILT 24.200 m2
REUSED 10.600 m2
SHARED 14.500 m2

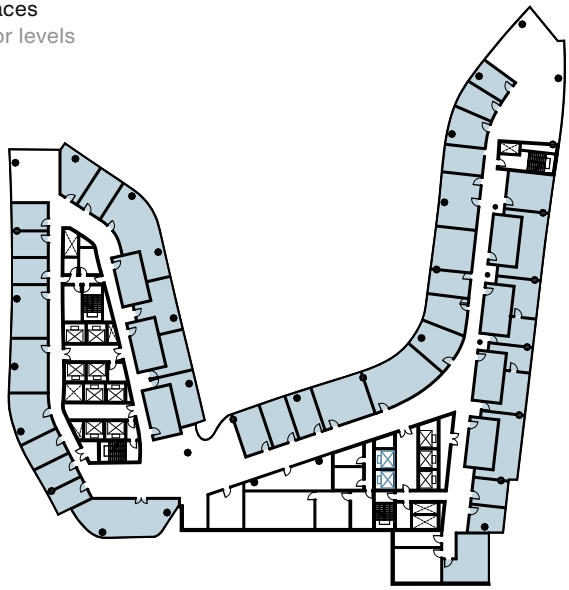
PUBLIC HEALTH EDUCATION OFFICE SERVICES


HIGH-RISE 150M
MID-RISE 100M
URBA



North-East Elevation 1:1500

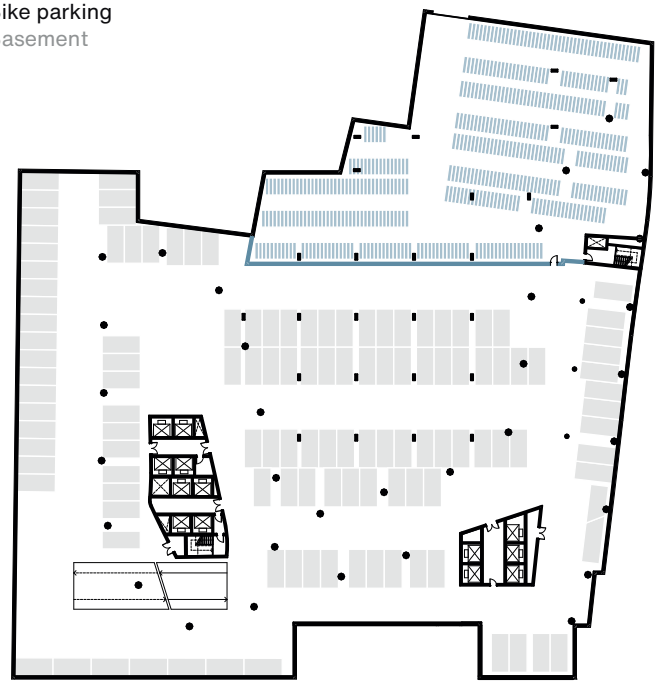
Office spaces
Upper floor levels



Retail & Restaurants
Ground Floor



Bike parking
Basement



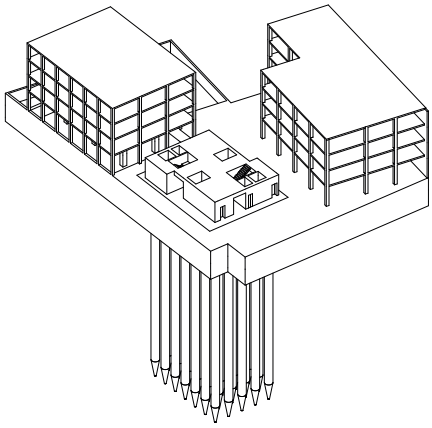
Ground Floor Plan
Ground Floor Plan showing the new campus, De Hoftoren and the interior courtyard



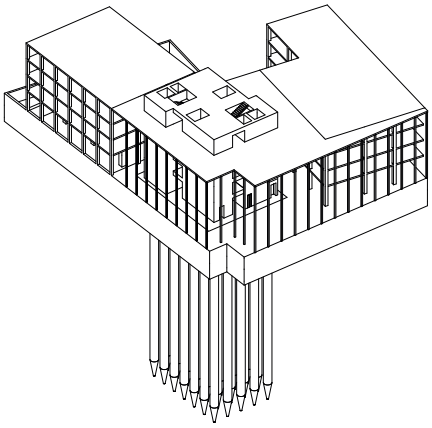

Hoftoren Café



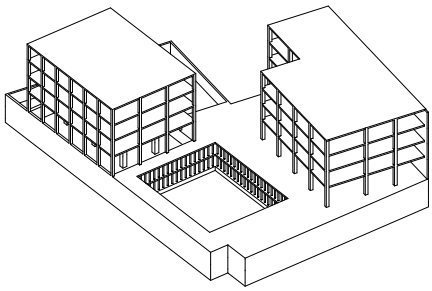
Exterior perspectives
Approaching the campus
from the central station and
the interior courtyard



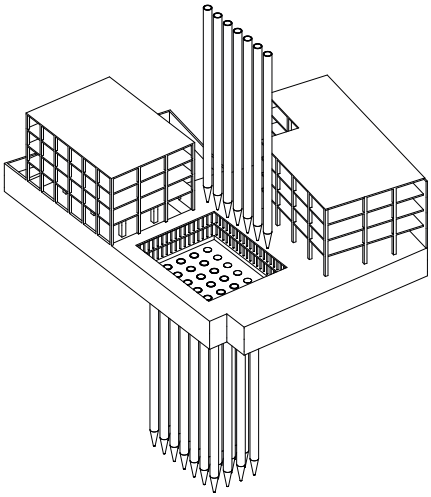
5) Core



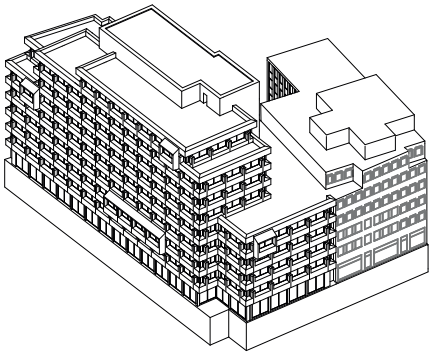
6) Roof



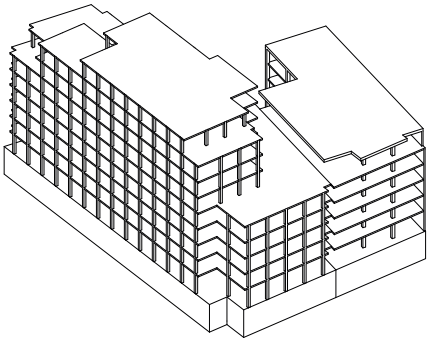
3) Demolition



4) Pillars & Raft



1) Existing buildings



2) Existing structure

Reuse of existing structures
Demolition process and
integration of new cores into
the existing structure on site

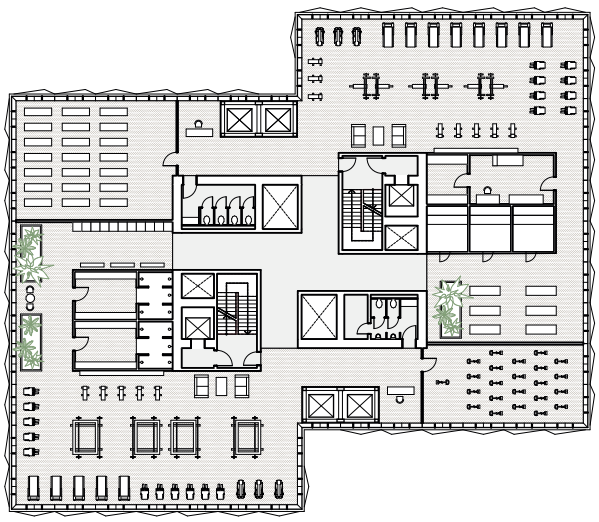
Building scale

At the building scale, my project introduces a unique circulation concept to ensure seamless vertical access to the campus‘s public amenities. Spanning the building‘s vertical axis, multiple double-height floors house public facilities such as fitness centers, exhibition spaces, rooftop bars, and public cafeterias. These floors are easily accessible via the first layer of circulation, facilitated by four high-speed transparent elevators.

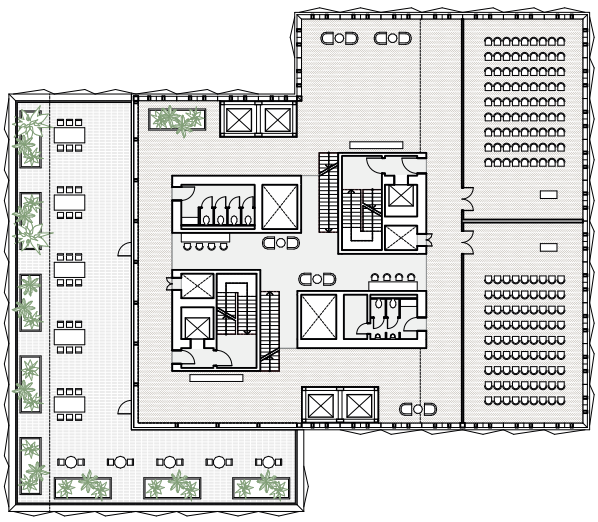
As people ascend, they are treated to glimpses of the tower‘s diverse programs and floors, offering a tantalizing preview of the experiences awaiting above. Upon reaching an express level, they transition to the second layer of circulation, comprising stairs nestled between the building‘s four split cores. In stark contrast to the open and visually stimulating express layers, these stairs provide a serene retreat, offering a moment of quiet introspection while ascending to the next floor.

The concept of activating specific floors for circulation and public use extends to the structural system. Here, every fourth to sixth floor features a load-bearing steel structure supporting multiple timber floors. This innovative design not only minimizes the building‘s carbon footprint but also underscores its adaptability for future needs, ensuring sustainability and longevity. Additionally, the integration of sustainable materials and energy-efficient technologies throughout the structure aligns with modern environmental standards, further enhancing the building‘s ecological credentials.

By prioritizing accessibility, sustainability, and user experience, my project aims to redefine the notion of vertical circulation, creating a dynamic and inclusive environment that enriches the lives of all who interact with it.



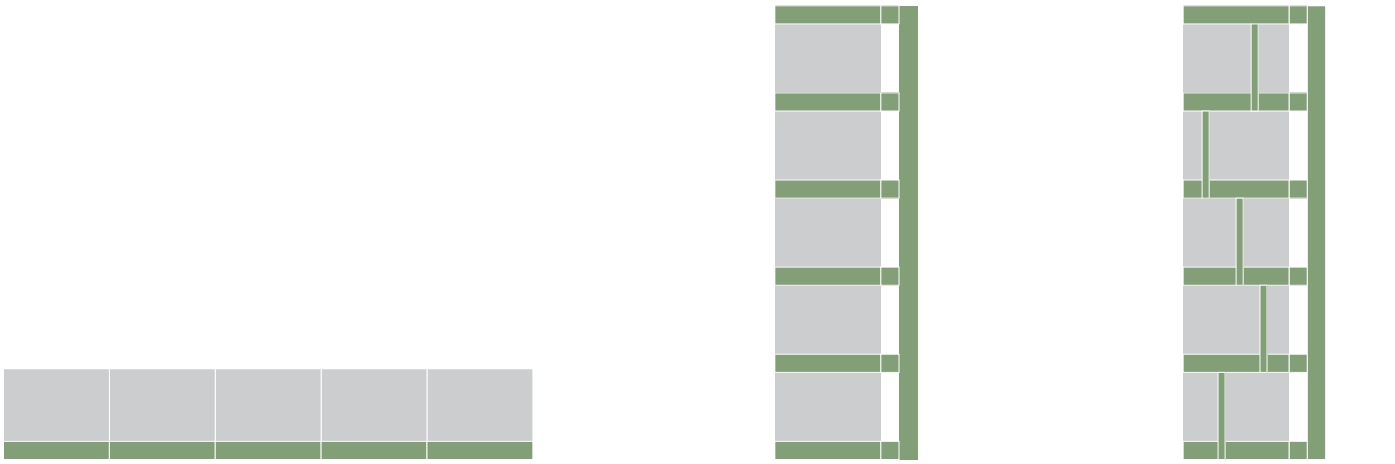
Fitness Centre
10th Floor

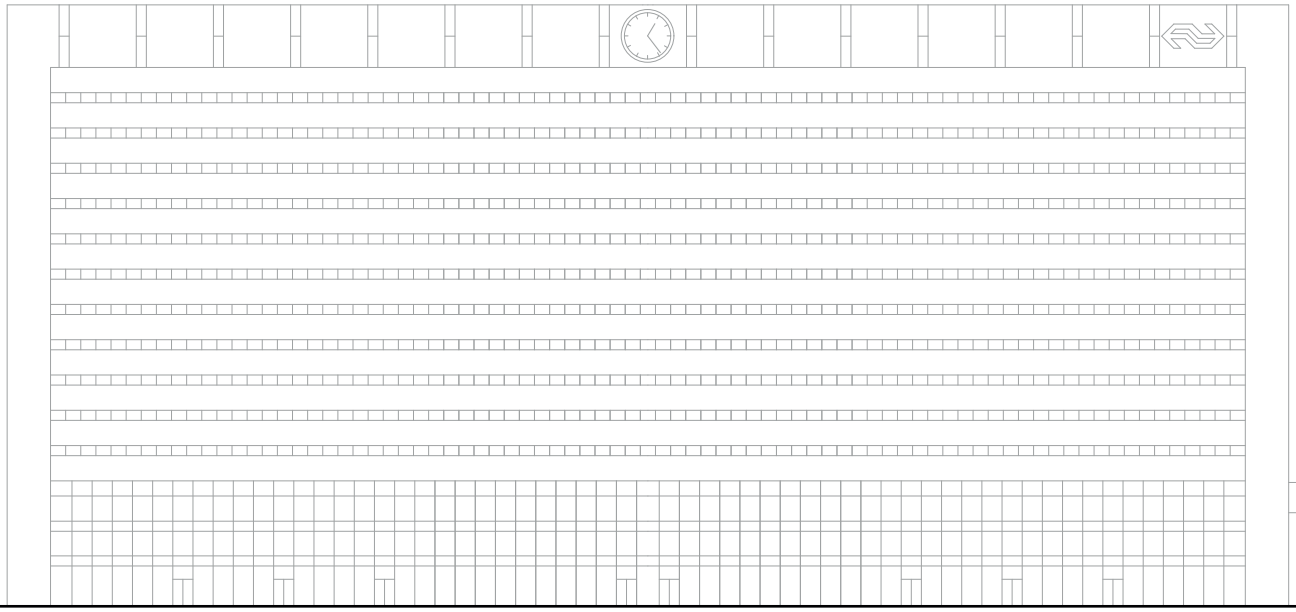


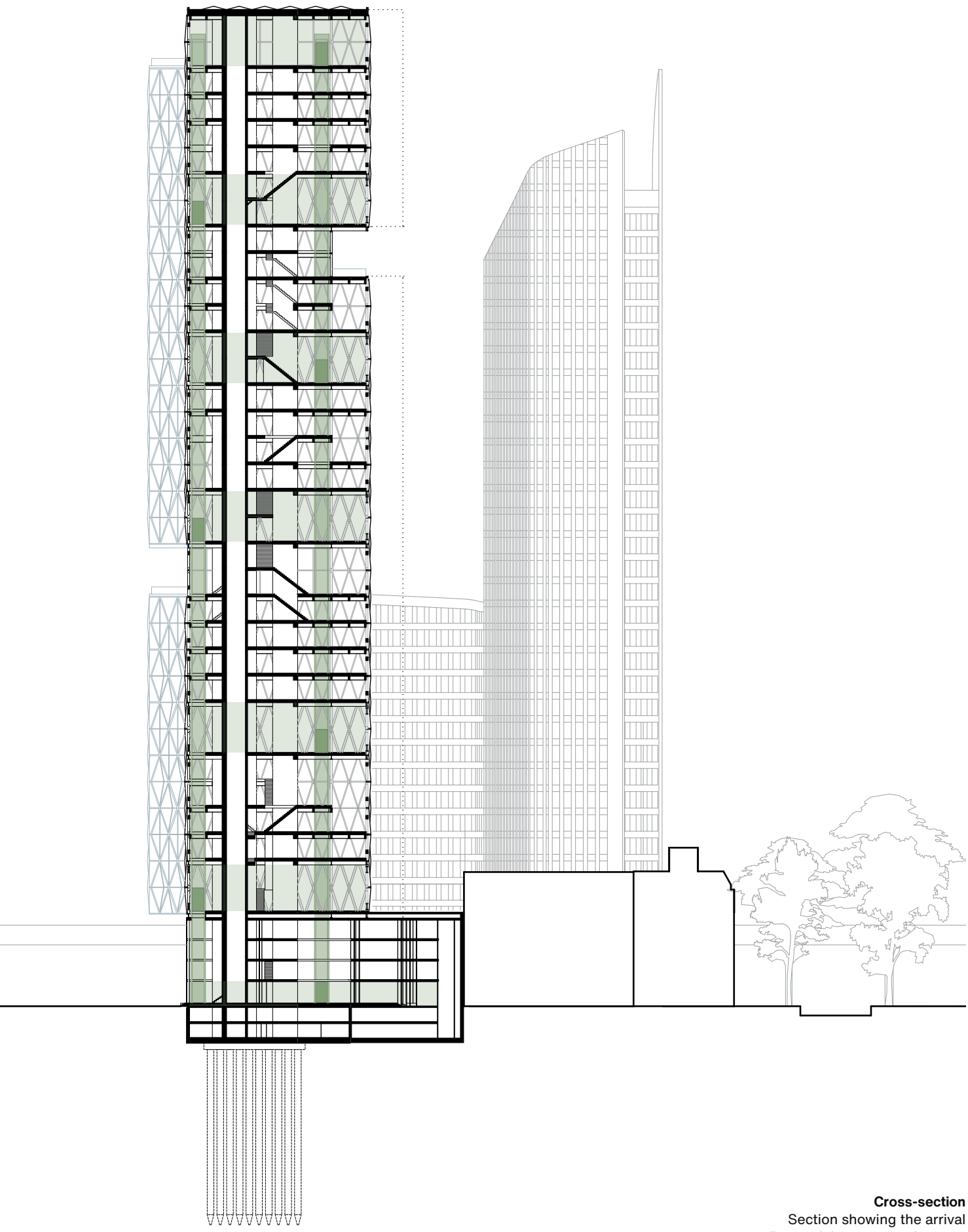
Small Lecture Halls & Terrace
15th Floor



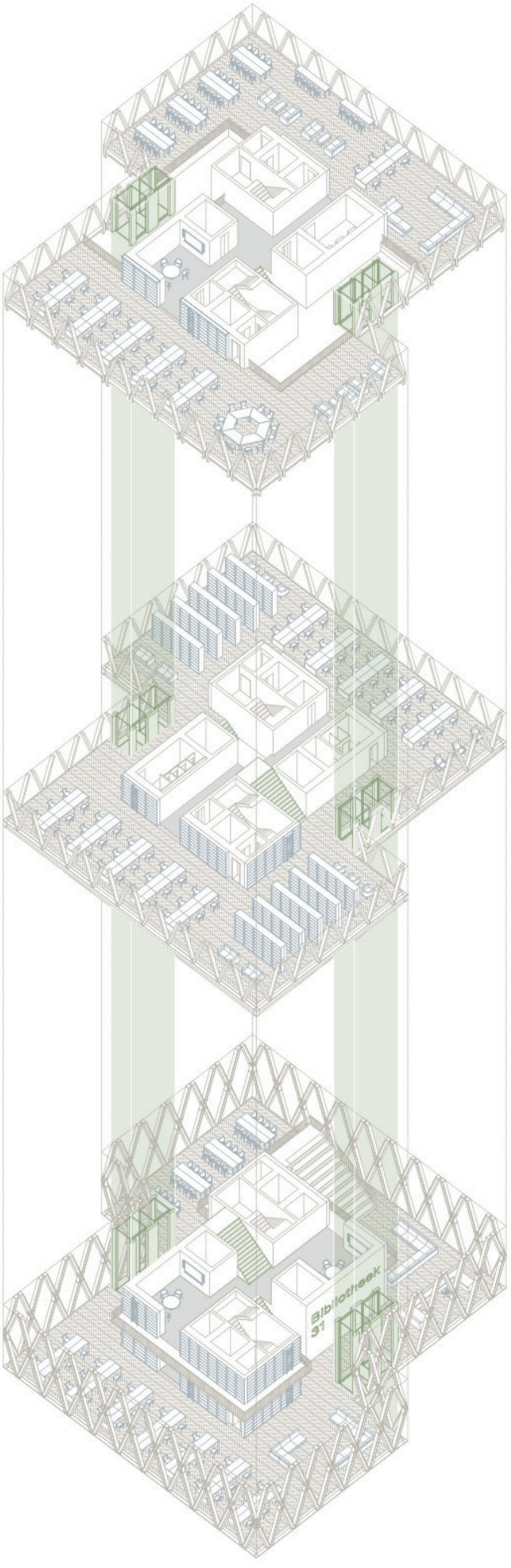
Circulation Concept
Two layers of circulation to ensure vertical accessibility of the campus buidling

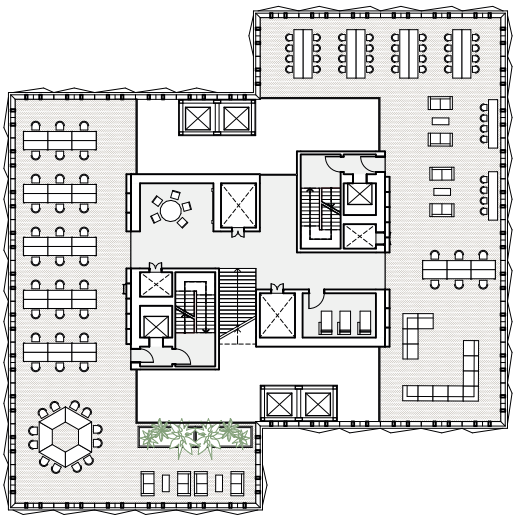


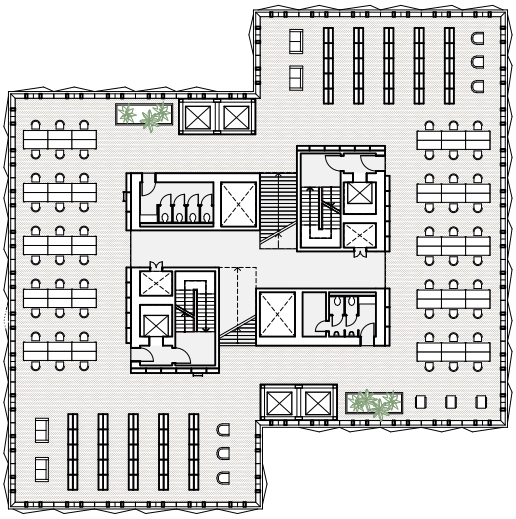


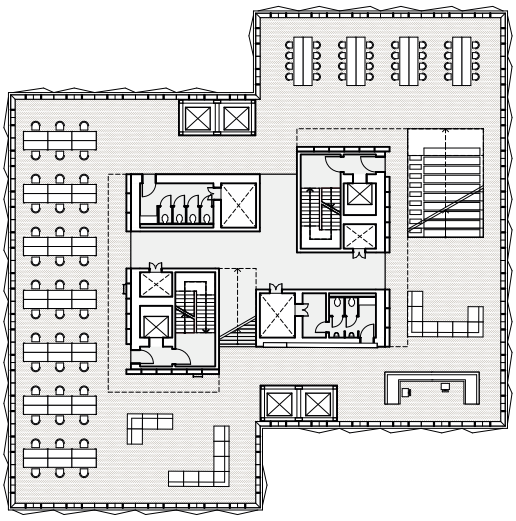


Cross-section
Section showing the arrival floors of the express elevators





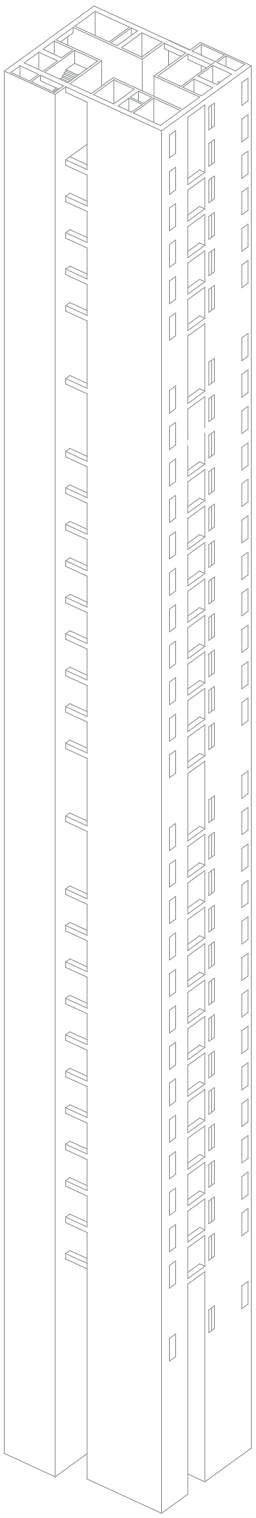




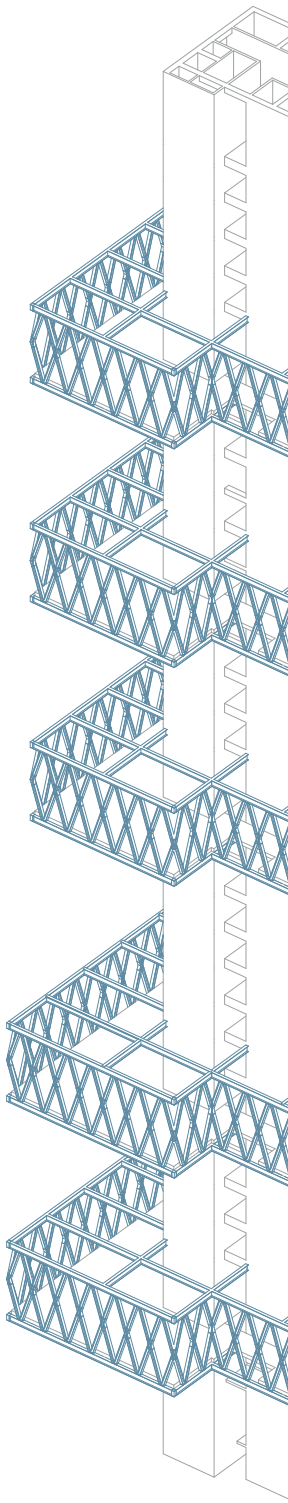
Explosion and Interior Perspectives
Explosion and floor plans showing the different layers of circulation working together



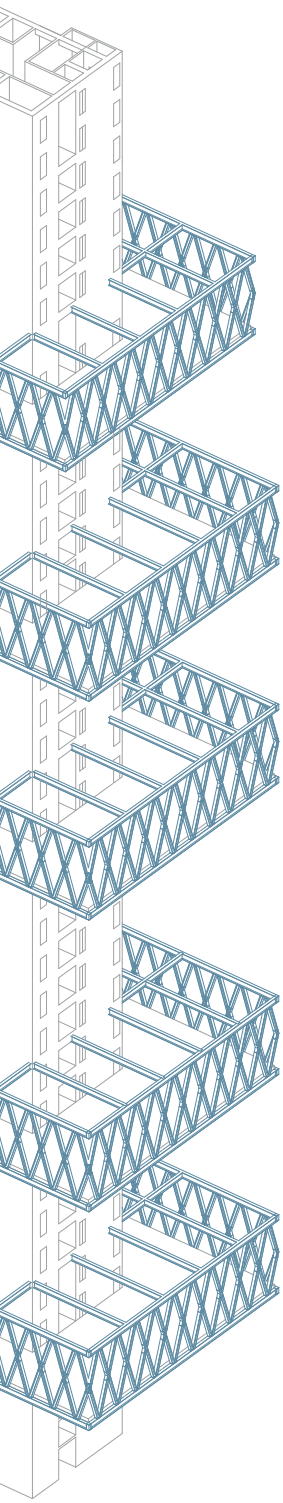

Eternity
Whatever



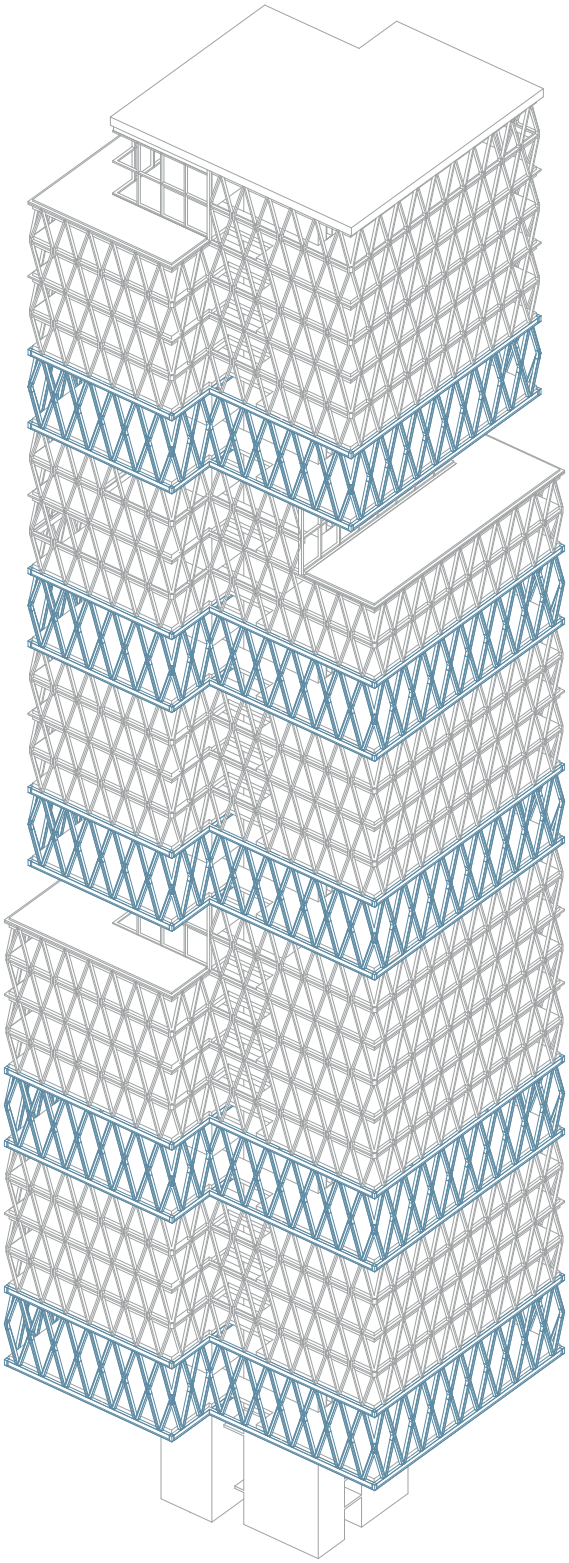
Resilient concrete cores



Load-bearing s



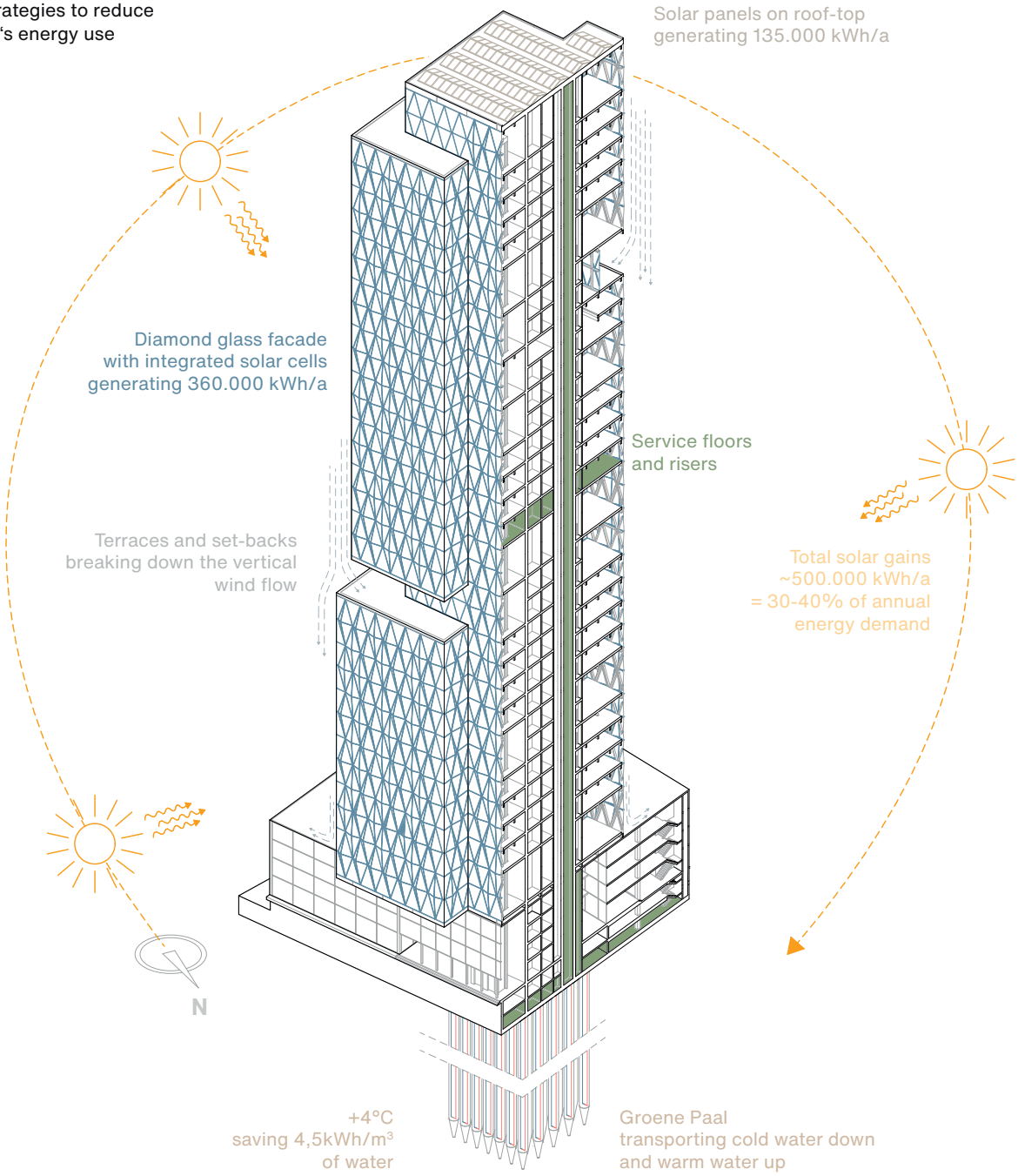
steel structure

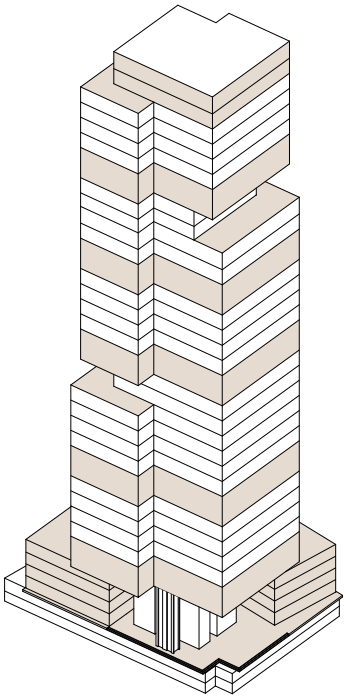


Flexible timber structure

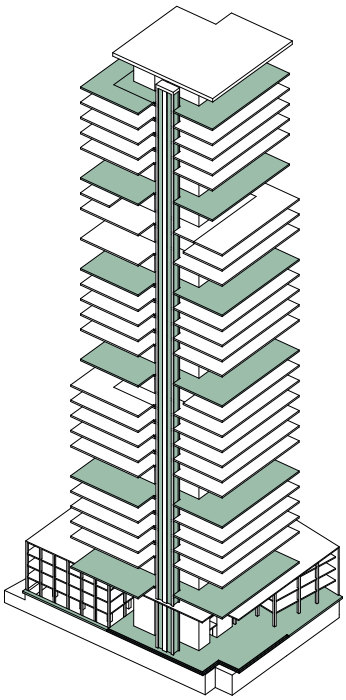
Axonometry of structure
Hybrid steel-timber structure
hanging on concrete core

Climate concept
Different strategies to reduce
the building's energy use

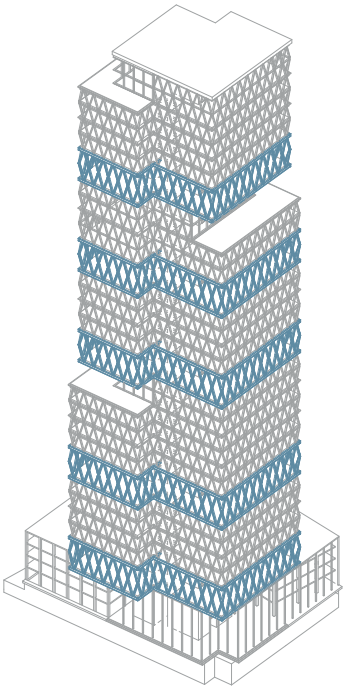




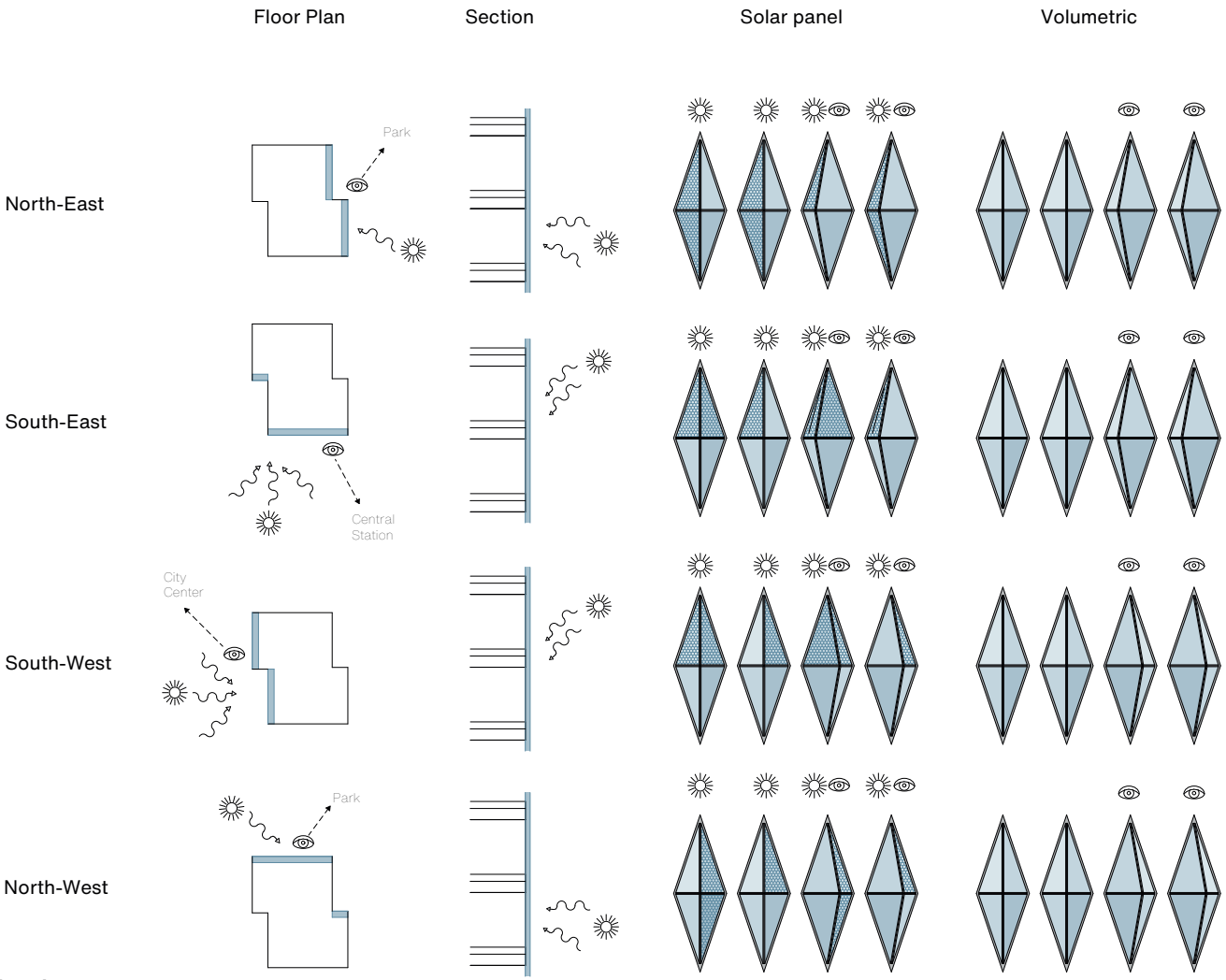
Public Programme integrated on double-height floors.



Express circulation arriving on public levels.

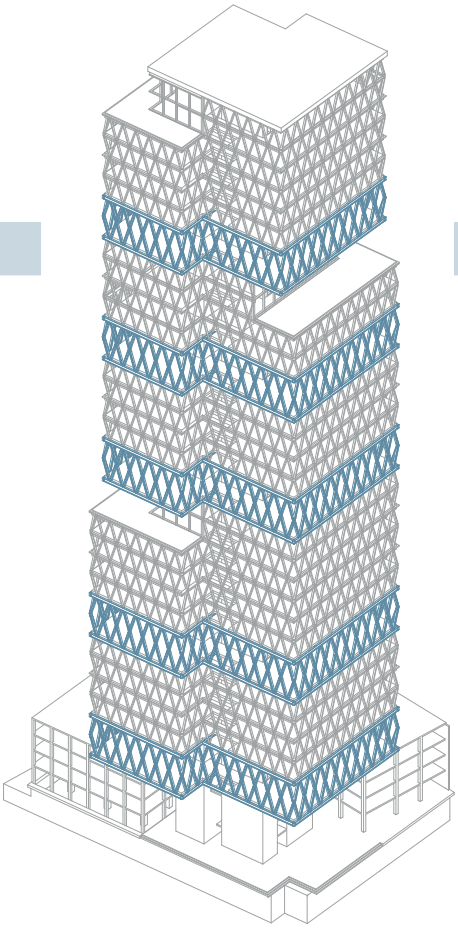


Load-bearing steel structure supporting public levels.



Facade concept
View and sun angle define the shape and position of the modular facade elements

Future adaptability
Possible transformations of the campus buidling in the distant future

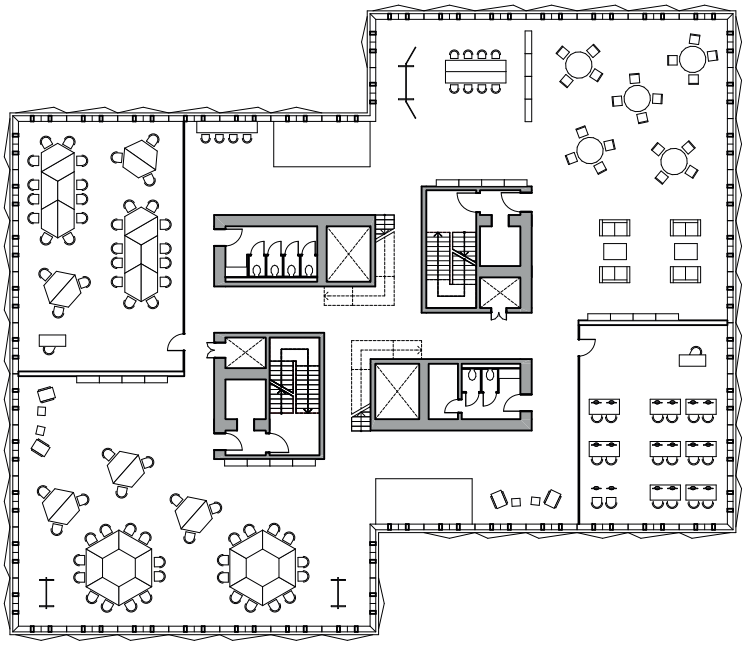


2024

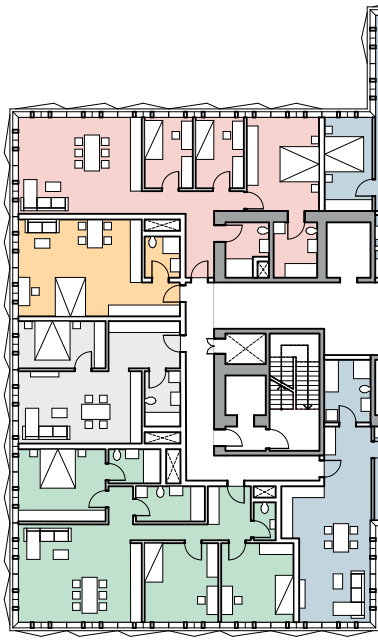
With an ever-increasing number of national and international students, TU Delft, in cooperation with Leiden University, decides to build a new Vertical Campus in the Central Innovation District of The Hague.

2054

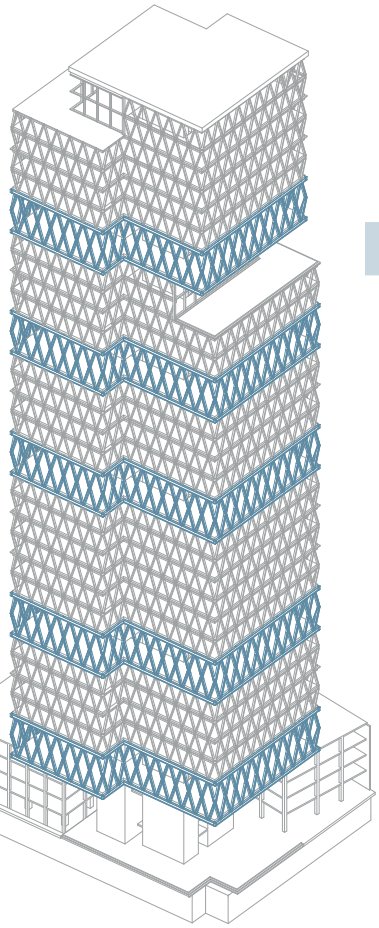
The increased population of 650,000 in the urban agglomeration of The Hague requires the transformation of various buildings into residential buildings.

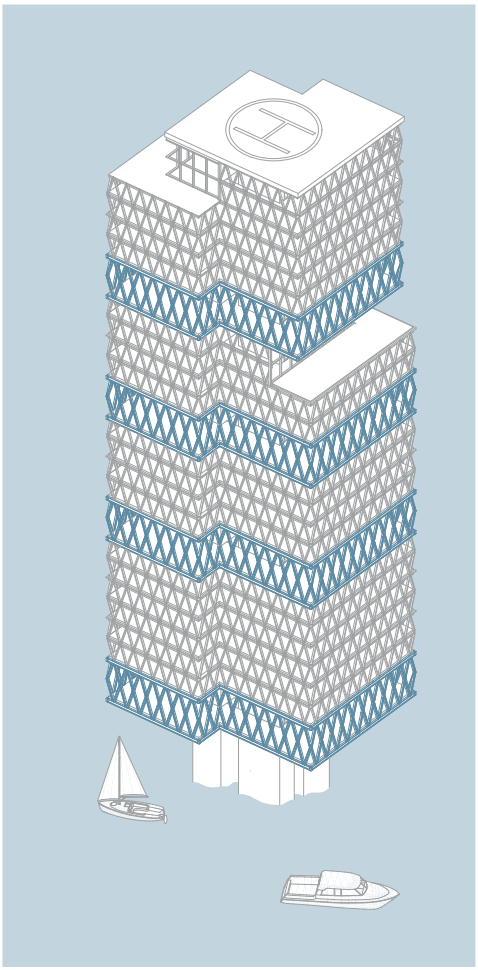


Learning & Teaching Spaces.



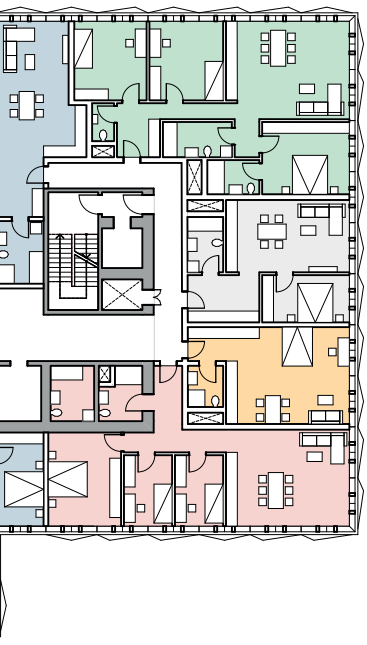
Different types of re





2074

The rise in sea levels caused by climate change requires numerous emergency rooms and aid facilities to provide medical care for the large number of refugees.

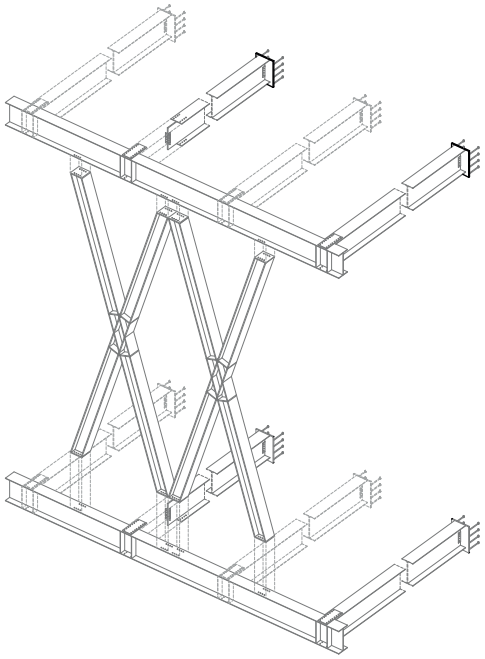


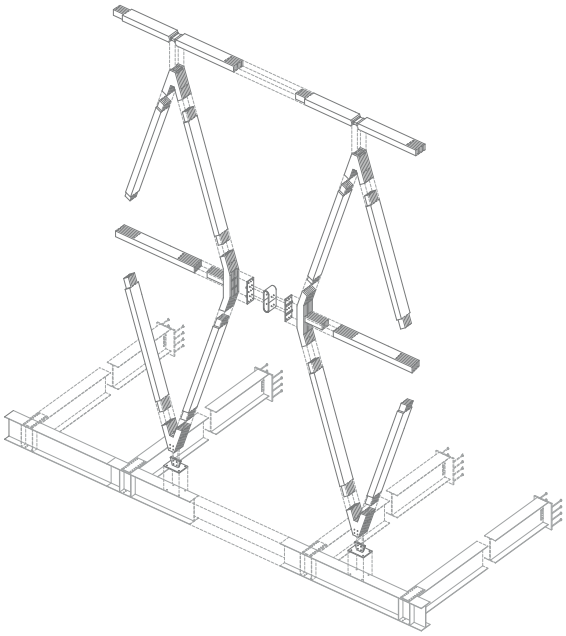
sidential apartments

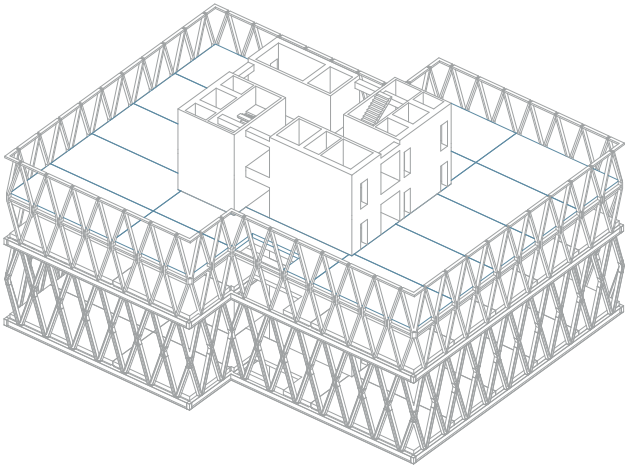


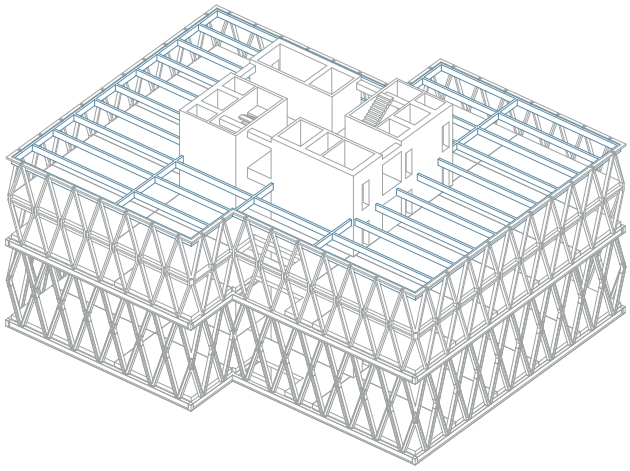
Medical centre/hospital

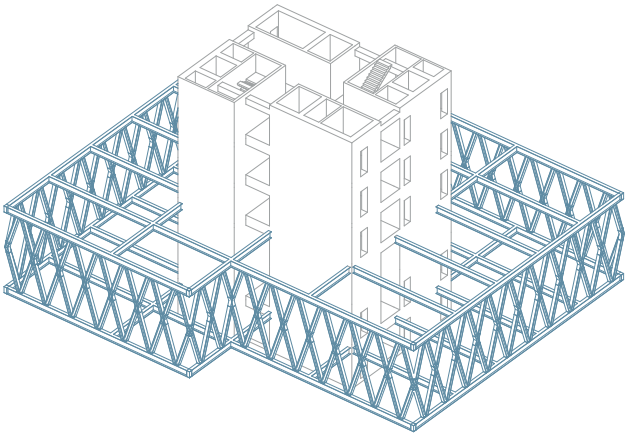
Joints & Assembly
Overview of the assembly process of one section of the building and the most important steel and timber joints

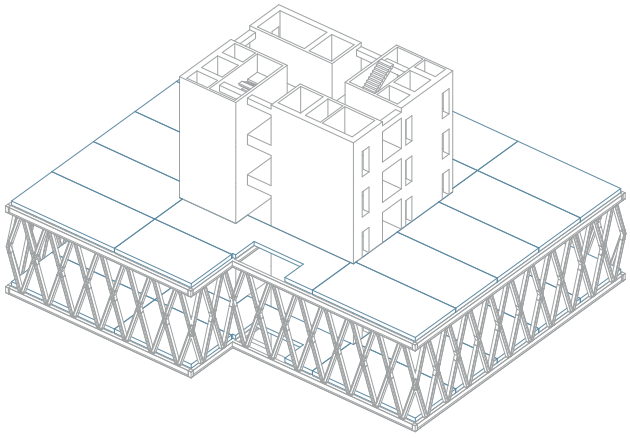


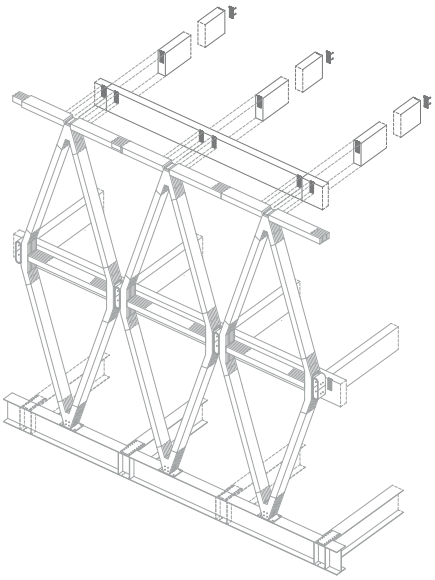


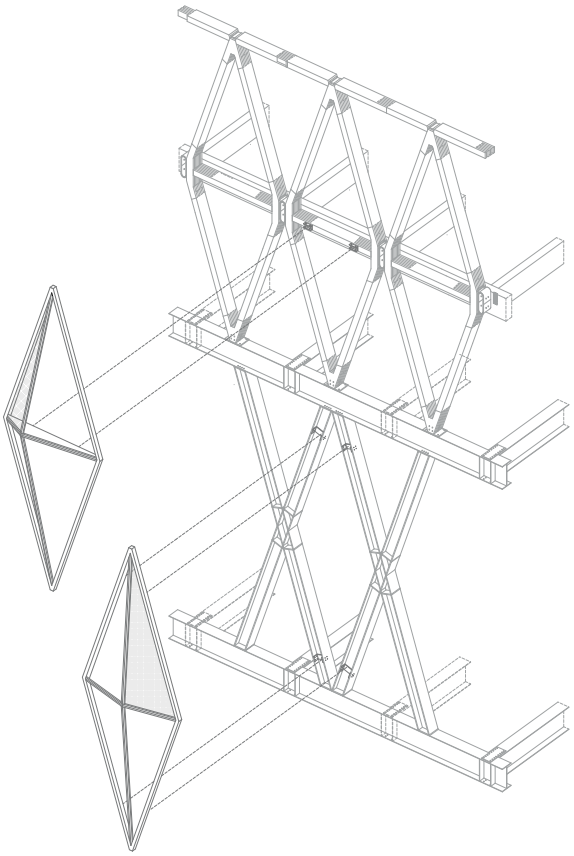


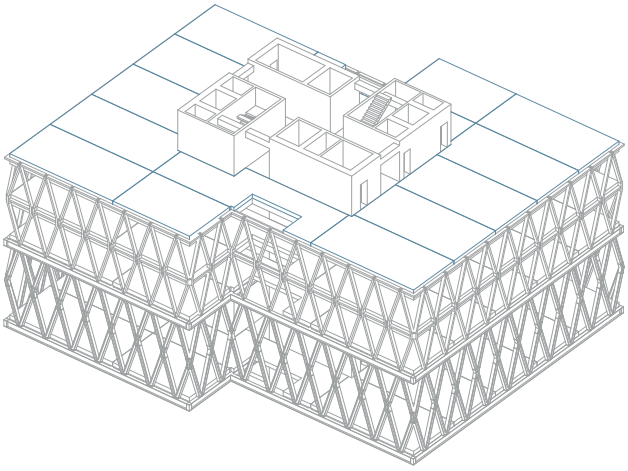


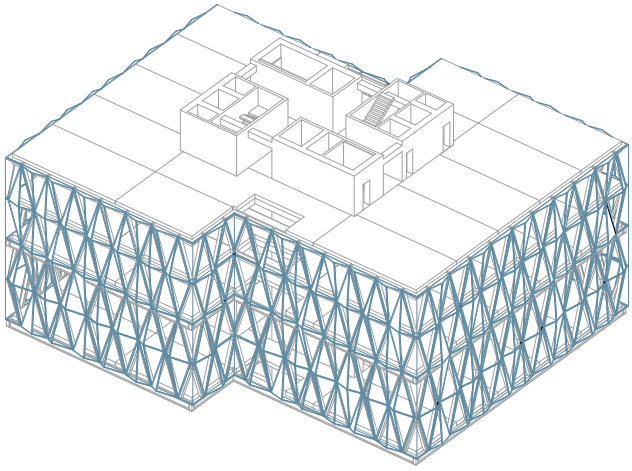


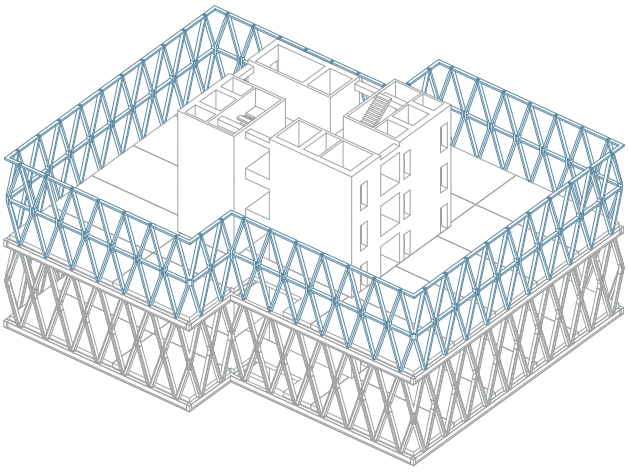


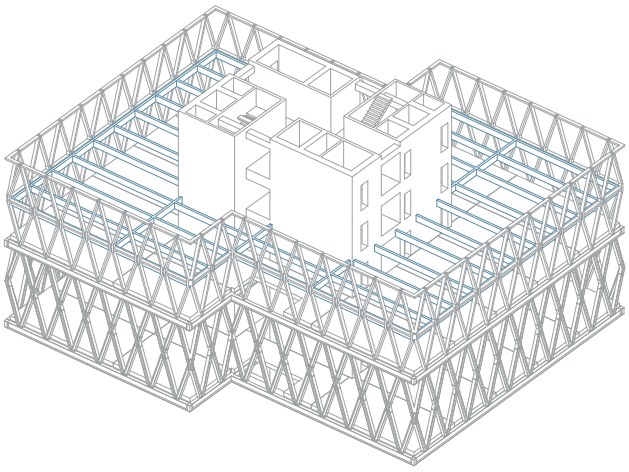


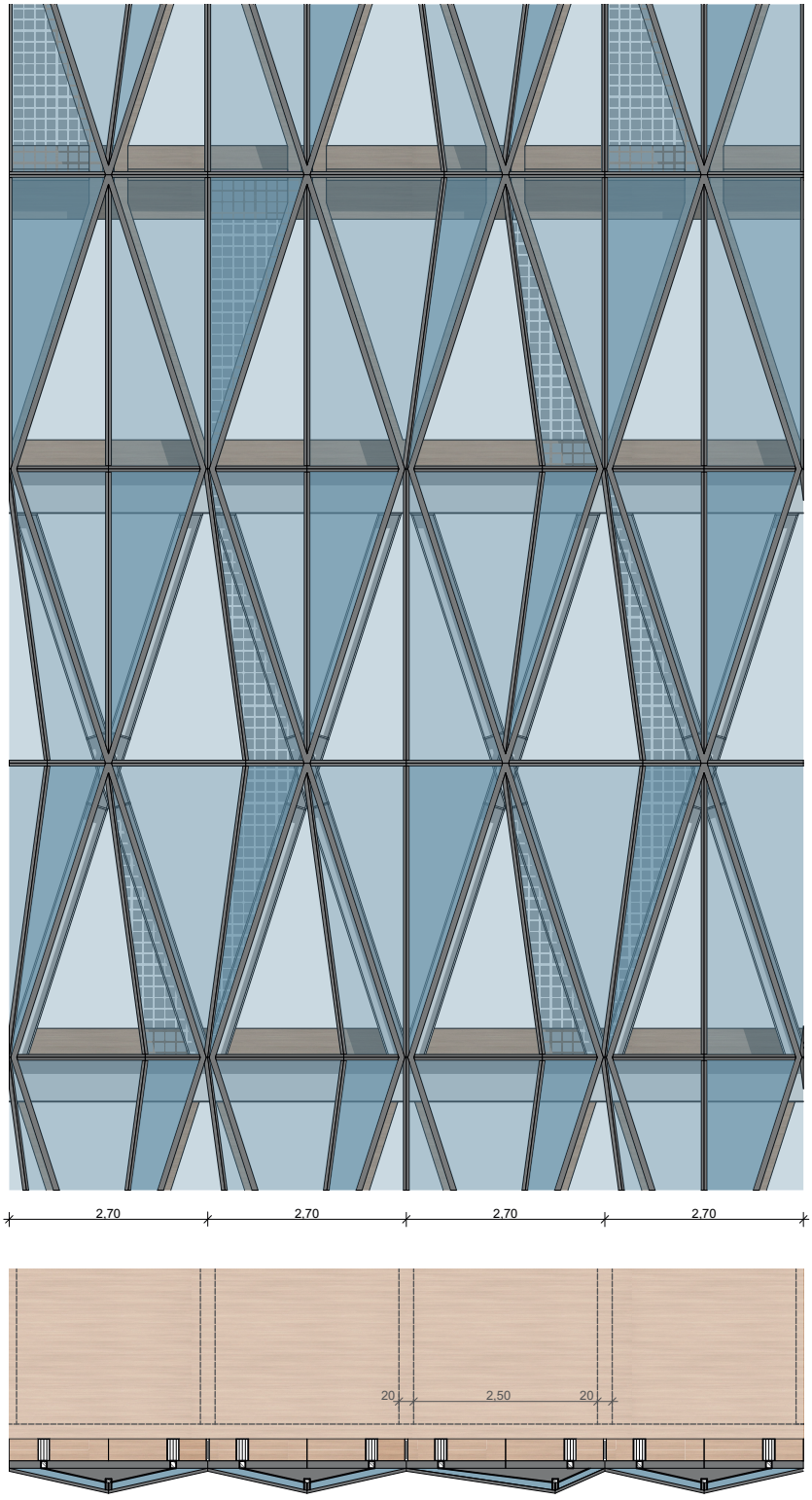











2,70
2,70
2,70
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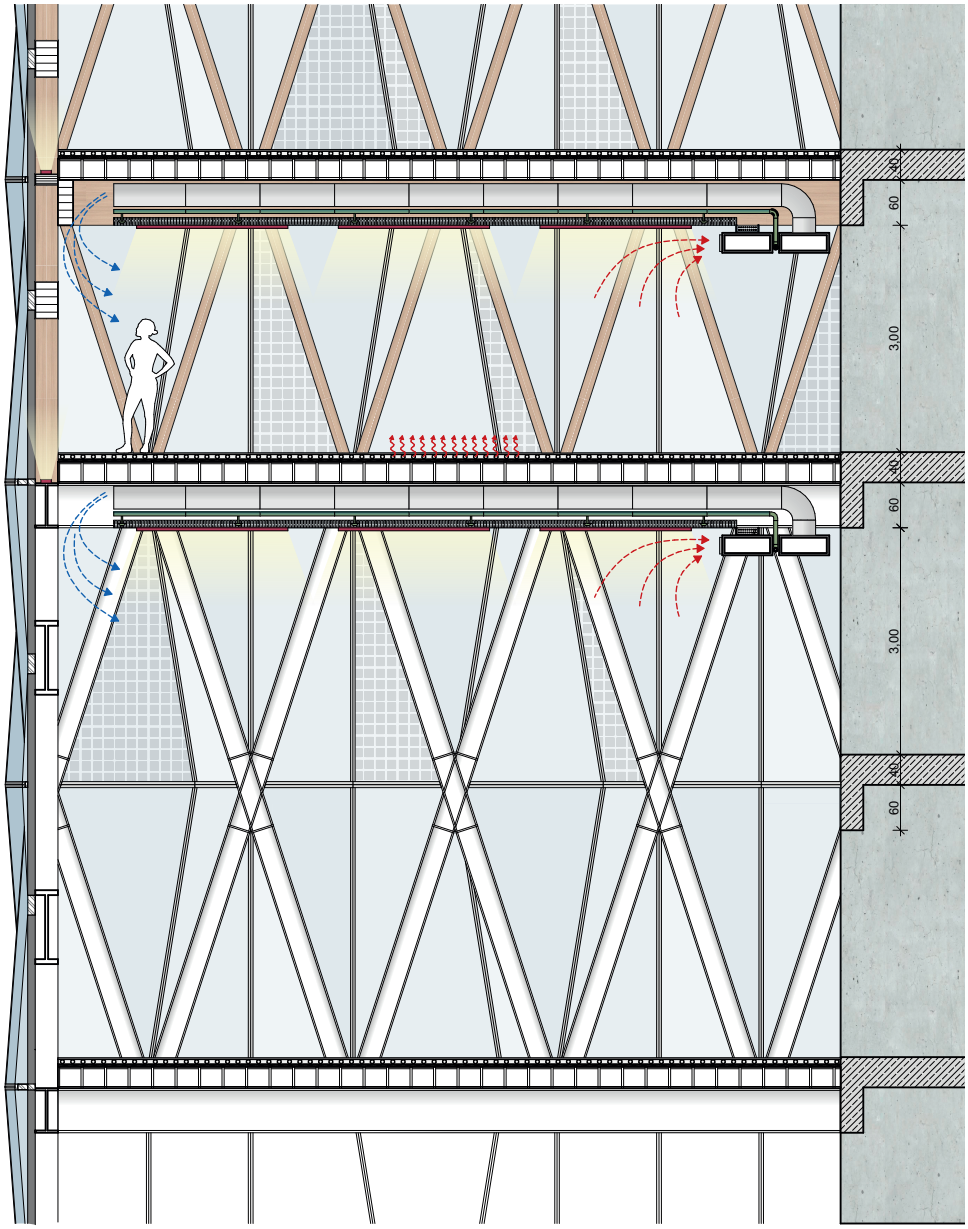
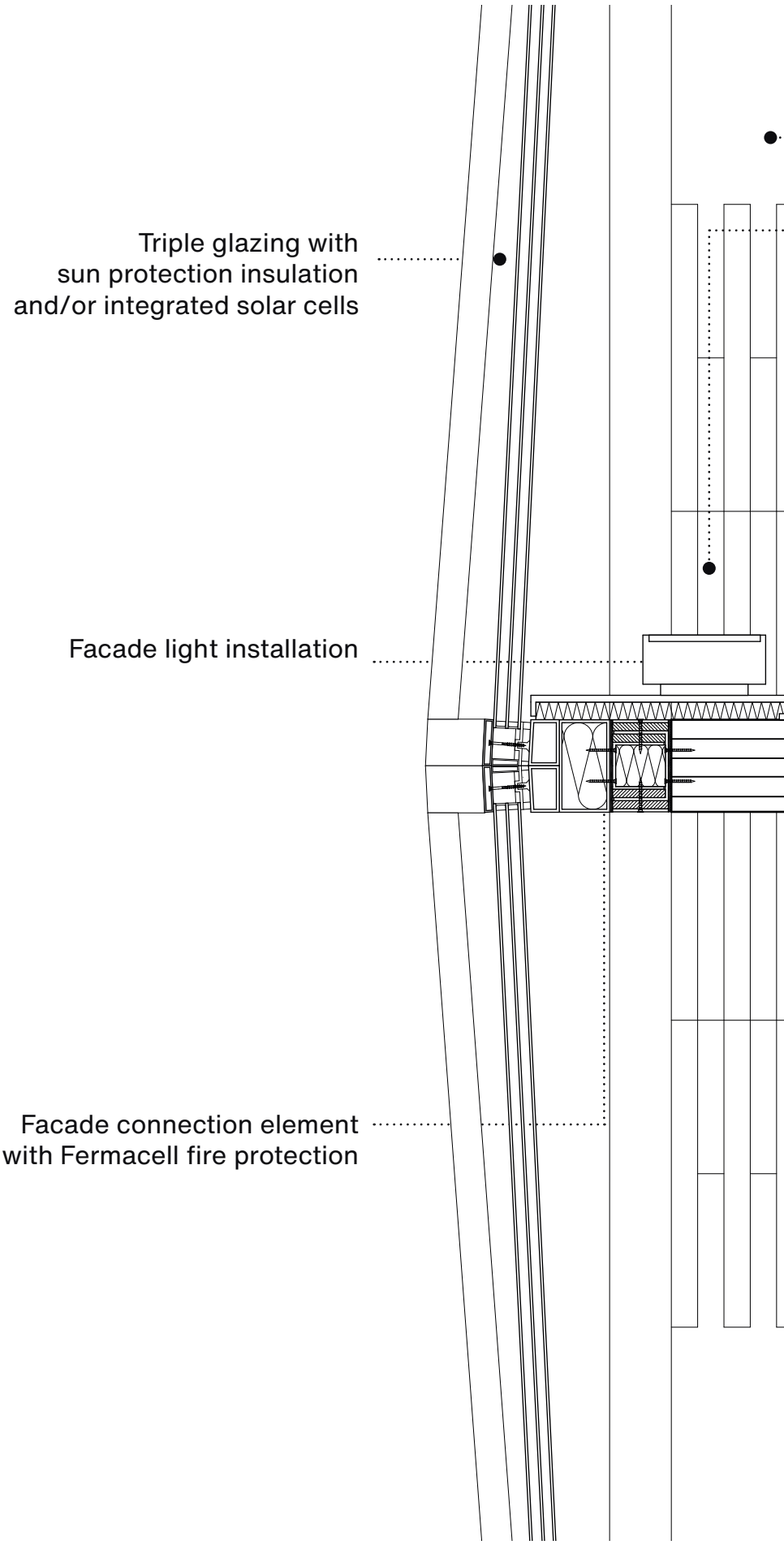
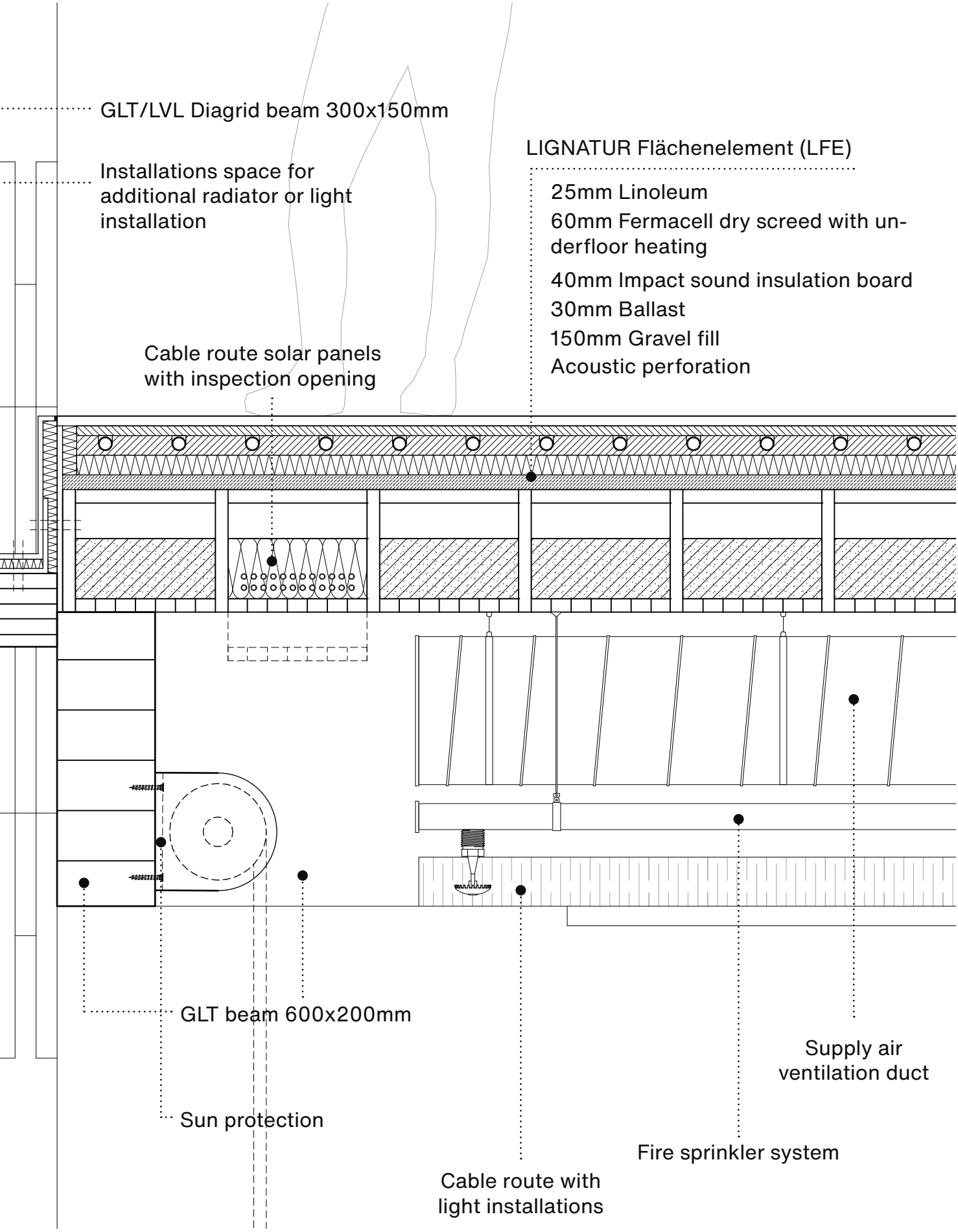
20
2,50
20

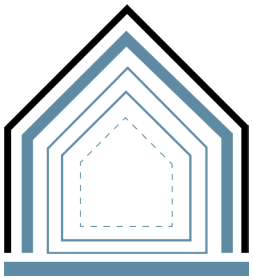
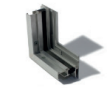
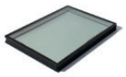
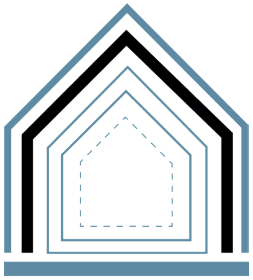


Three-panel-projection
1:50 Section, elevation and floor plan



Details
1:10 Facade detail


GLT/LVL Diagrid beam 300x150mm
Installations space for additional radiator or light installation
LIGNATUR Flächenelement (LFE)
25mm Linoleum
60mm Fermacell dry screed with underfloor heating
40mm Impact sound insulation board
30mm Ballast
150mm Gravel fill
Acoustic perforation
Cable route solar panels with inspection opening
GLT beam 600x200mm
Sun protection
Cable route with light installations
Fire sprinkler system
Supply air ventilation duct

Shearing Layer	Material	Impact / m3
 SKIN	 Aluminium frame window  Glass panel, triple-glazed	2282,1 kg CO2eq/m3 4761,7 kg CO2eq/m3
 STRUCTURE	 GLT / CLT  Construction timber  Structural steel  Concrete C20/25	-664,0 kg CO2eq/m3 -680,0 kg CO2eq/m3 5.403,2 kg CO2eq/m3 215,0 kg CO2eq/m3
 FOUNDATION	 Concrete C30/37	282,0 kg CO2eq/m3

Carbon Footprint
Calculation of carbon footprint for skin, structure and foundation based on Byggeriets Materialepyramide (https://www.materialepyramiden.dk)

Volume [m3]	Carbon footprint [kg CO2eq]	
	HYBRID SYSTEM	CONCRETE STRUCTURE
53	120.951,3	120.951,3
144	685.684,8	685.684,8
7.809	-5.185.176,0	/
1.166	-792.880,0	/
108	583.545,6	/
6.201	1.333.215,0	3.031.715,0
2.164	610.248,0	610.248,0
	-2.644.411,3 kg CO2eq	**4.448.599 kg CO2eq**
	= -2.644 t CO2eq	**= 4.449 t kg CO2eq**
	160% CO2 Reduction!	

2,6t of CO2 equal...

... flying 10.047.200 km by plane
... producing 211.520 kg of beef
... heating of 2.644 apartments (45m2)
... the annual carbon footprint of 375 Dutch citizens

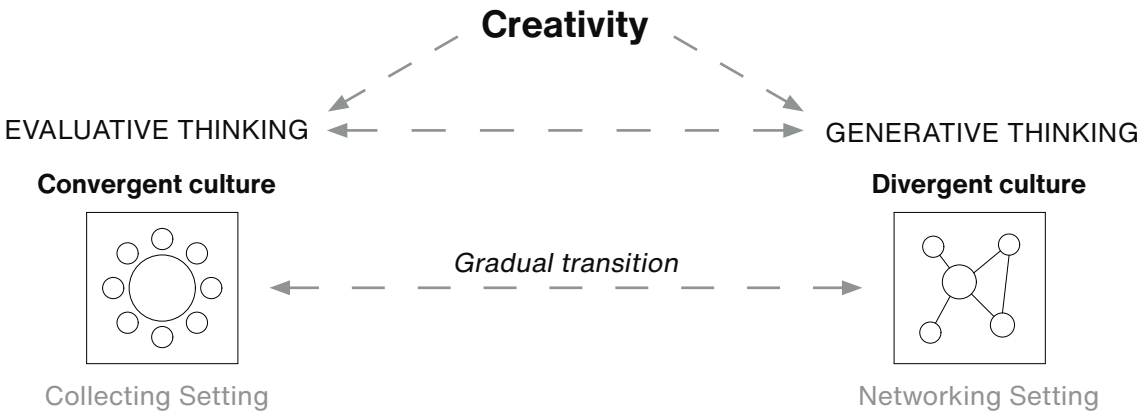
User scale

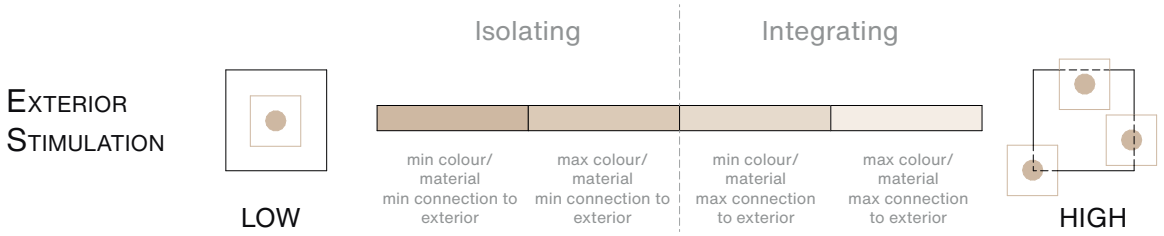
At the user scale, my project delves into the exploration of hybrid learning environments that foster the creative thinking processes of today‘s learners. Through an in-depth examination of various case studies and an analysis of their spatial characteristics, I have identified a range of divergent and convergent design principles tailored to enhance learning spaces. These principles address the social dimension, spatial layout, cultural behavior, level of exterior stimulation, and the availability of knowledge processing tools within learning environments.

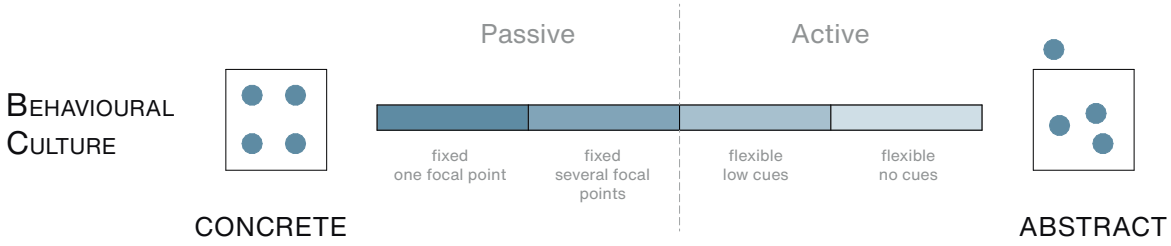
The transition between divergent and convergent spaces is nuanced, with each room offering a unique blend of these spatial qualities. However, all spaces are designed to be highly adaptable, accommodating the evolving trends towards autonomous and independent learning concepts in modern education. By prioritizing flexibility and adaptability, my project aims to create dynamic learning environments that cater to the diverse needs and preferences of today‘s learners while nurturing their creativity and intellectual growth

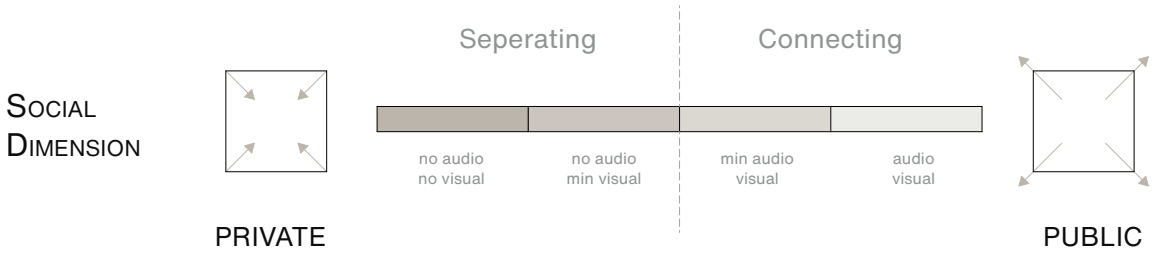


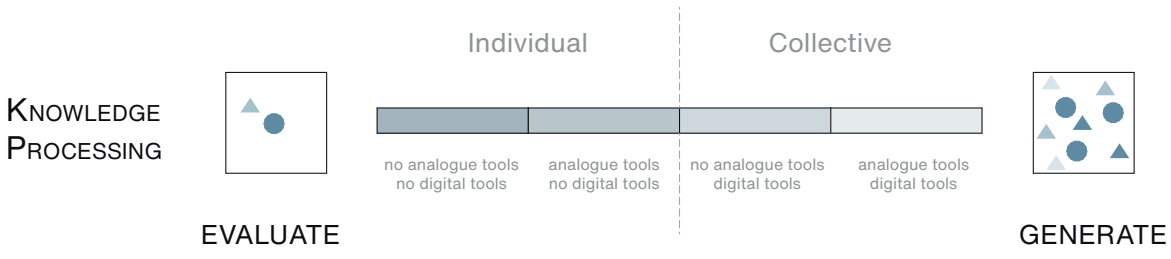


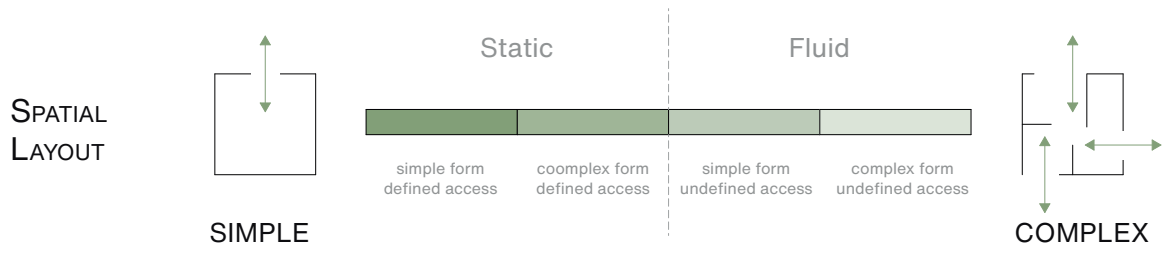

Creativity
EVALUATIVE THINKING
GENERATIVE THINKING
Convergent culture
Divergent culture
Gradual transition
Collecting Setting
Networking Setting


EXTERIOR STIMULATION
Isolating
Integrating
min colour/ material min connection to exterior
max colour/ material min connection to exterior
min colour/ material max connection to exterior
max colour/ material max connection to exterior
LOW
HIGH


BEHAVIOURAL CULTURE
Passive
Active
fixed one focal point
fixed several focal points
flexible low cues
flexible no cues
CONCRETE
ABSTRACT


SOCIAL DIMENSION
Seperating
Connecting
no audio no visual
no audio min visual
min audio visual
audio visual
PRIVATE
PUBLIC


KNOWLEDGE PROCESSING
Individual
Collective
no analogue tools no digital tools
analogue tools no digital tools
no analogue tools digital tools
analogue tools digital tools
EVALUATE
GENERATE


SPATIAL LAYOUT
Static
Fluid
simple form defined access
coomplex form defined access
simple form undefined access
complex form undefined access
SIMPLE
COMPLEX



Final Reflection

IMPLEMENTATION OF INITIAL DESIGN AMBITIONS
During this graduation year, my project, „A Creative Journey through the Open Campus," unfolded amidst a dynamic interplay of diverse research and design methodologies. With a focus on exploring how hybrid learning environments can catalyze creative thinking processes among today's learners, I delved into the challenge of designing an open campus accessible to a wide spectrum of stakeholders and users, facilitating the dissemination and evaluation of knowledge generated within these spaces.

Beginning with an in-depth analysis of the urban context, my first research efforts led me to re-envision the institutional power clusters within The Hague's Central Innovation District. This vision entailed a strategic blend of demolition and repurposing, optimizing the use of vacant spaces, removing barriers, greening outdoor areas, forging new pedestrian pathways, and activating ground-level spaces with public programming. Yet, the endeavor to open the previously isolated Ministry building complex situated on my site to the public posed certain challenges, demanding a delicate balance between accessibility and preservation of existing structures.

Subsequently, I focused on ensuring that the ground-level openness seamlessly transitioned into the vertical dimension of the building. My proposal introduces a dual-layered circulation concept, incorporating both rapid, divergent pathways for immersive exploration and slower, convergent routes for contemplative retreat. These principles are further embedded in the design ethos of divergent and convergent hybrid learning spaces, where spatial configurations and amenities foster lateral thinking processes of contemporary learners. The design principles for hybrid learning spaces stem from an extensive examination of fifteen contemporary campus buildings spanning the globe. To ensure a comprehensive analysis, I established specific spatial parameters including Behavioral Culture, Exterior Stimulation, Social Dimension, Knowledge Processing Tools, and Spatial Layout. Utilizing imagery of these campus projects, I conducted a thorough evaluation. However, the inability to physically visit these buildings introduced a level of speculation and uncertainty, as firsthand experiences were not possible. Despite this limitation, the synthesis of insights gained from the analysis formed a robust foundation for the development of my design principles. Divergent spaces present expansive layouts with varied heights, voids, and interconnected zones, stimulating sensory engagement and fostering adaptability through movable elements. In contrast, convergent spaces offer simplicity and focus, with defined entrances, fixed furniture arrangements, and subdued aesthetics conducive to introspection. However, my research illuminated the fluid nature of these distinctions, revealing a nuanced spectrum of spatial qualities across all learning environments.

Based on my research's outcomes, the next step of the project was the development of a flexible, adaptable structure featuring a robust core and expansive floor plans, seamlessly accommodating diverse spatial requirements. By integrating multiple circulation layers and varying gradients of convergent and divergent elements, the resulting design displays a rich tapestry of spaces, challenging the creative thinking process of its users and ultimately ensuring the vertical accessibility and openness of the design proposal.

In addition to the comprehensive case study analysis of hybrid learning spaces, a variety of Research-by-Design methods enriched the design process. Techniques including diagrams, collages, montages, conceptual sketches, and models were employed to refine the design proposal. Particularly noteworthy was the utilization of collages and montages, which emerged as pivotal tools in articulating my design vision for the vertical campus. These abstract representations lead to a breakthrough in my design process, enabling a deeper exploration of the essence of my design ambitions. Through this creative process, a cohesive narrative emerged, centered around the themes of sharing, accessing, and generating knowledge across urban, building, and user scales within the project.

ETHICAL, ADACEMIC AND SOCIETAL ASPECTS

In terms of both academic significance and societal impact, the research underscores the importance of ensuring universal accessibility to knowledge generation and evaluation across all levels of society. Recognizing knowledge as a fundamental public good, the dissemination and engagement with it serve as crucial mechanisms for fostering convergence and mitigating inequality. Moreover, the emphasis on sustainability is paramount, with the development of a hybrid steel-timber structure exemplifying a commitment to responsible energy and resource utilization. Inspired by another research about hybrid building structures, this innovative structural system not only boasts a negative carbon footprint but is also designed for effortless disassembly, facilitating future adaptive reuses and minimizing environmental impact.

INTEGRATION INTO THE MASTER TRACK

The Public Building studio investigates the future of public buildings and their role in the built environment, by developing new spatial formulas, programmatic articulations, and building components. The Graduation Studio aims to produce future-proof designs that are sustainable and investigates the possibilities of design thinking in a world where the definition of what an architect is and does, ceaselessly shifts. Public architecture should respond to and accommodate today's needs while anticipating the future. The concept of a public campus offers a useful approach to the venues of higher education in the future. By combining various functions such as learning spaces, office spaces, medical facilities, sports facilities, and commercial and public functions within one campus complex, the project addresses the themes of hybridity and multiplicity within the Public Building Studio. Through the design proposal for future hybrid learning spaces, the project also delves into the concept of lifelong learning and examines how these diverse functions can be integrated into a sustainable spatial and structural design.

Finally, the project develops a strong concept to ensure the vertical accessibility of the campus building and open existing governmental institutions to the general public. The design project therefore follows the Public Buildings Studio's belief that a true public building is accessible to everyone and empowers the public to move freely throughout the city.

Within the Architecture master track, the project deals with the technical, spatial, and social challenges inherent in designing educational and public built environments. The graduation project aligns with the MSc Architecture, Urbanism, and Building Sciences program by synthesizing knowledge and skills from design practice (designing public and educational spaces within a densely populated urban fabric), the social sciences (the creative thinking process and the future of teaching and learning), and technology and engineering (sustainable and resource-saving high-rise building design).

The project holds relevance within a broader professional and scientific framework, exploring a research topic that intersects various knowledge domains and requires collaboration across different research areas such as pedagogy, technology, and architecture. The design of hybrid learning spaces has made significant progress in integrating new pedagogical approaches, technical equipment, and digital learning spaces. In this context, the design project proposes solutions to align the tangible, built environment with recent developments in teaching and learning, facilitating the generation and sharing of knowledge among all participants in public life. In the Central Innovation District in The Hague, there exists a significant amount of knowledge, for instance in the municipal and governmental buildings or the large number of educational institutions present on site. Unfortunately, this knowledge is not accessible to the general public. For this reason, I see the design of an accessible, open campus building and hybrid learning spaces as an opportunity not only to enhance the creative journey of life-long learners but also to share knowledge and make it accessible to different stakeholders and a diverse set of users.