Creating a "sense of place" for the new Danish university of architecture

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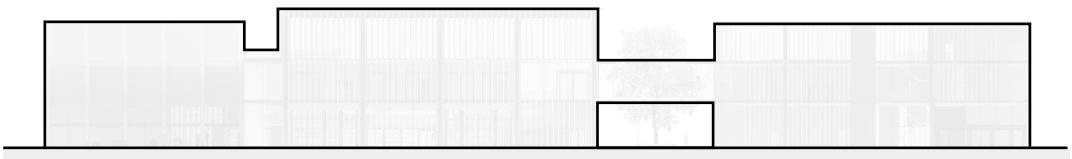

CREATING A **"SENSE OF PLACE"** FOR THE NEW DANISH UNIVERSITY OF ARCHITECTURE (D-UOA)

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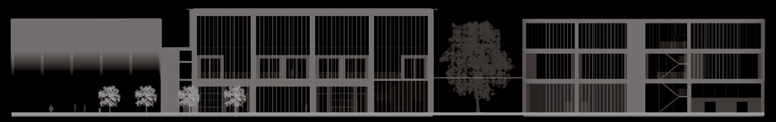

THE NEW (D-UOA) DANISH UNIVERSITY OF ARCHITECTURE

PREFACE

Once I started post-secondary vocational education (MBO). Followed by completing my studies at the University of Applied science (HBO). After a long track and periods of studying, at this stage, I arrived at the final graduation for my master's degree in architecture, building and planning (ABP) at the University of Architecture in Eindhoven.

Personally, I was looking forward to this period where my interest and education are brought together in this thesis. The theme of the graduation studio 2022-2023 is "Timber Future". Timber plays an important role in the built environment from the ancient times till now. During my studies timber as building material got more and more attention, not only because of its sustainability but also as building material. In the built environment in the Netherlands the use of timber was not common to use due to its lacking knowledge in the field of architecture. Nowadays its used more and more.

I enjoyed that the final design is a "University of Architecture", it is where everything started personally for me (at school). Trying to create/find the sense of place and an identity for the new University in Lynetteholm, Denmark. This research and the final design are brought together with the support and guidance of supervisor committee. Therefore, I would like to thank the committee Barbara Kuit, Torsten Schröder and Jacob Voorthuis.

Additionally, I would like to thank the graduation group for the intensive group research into timber which is combined into a nice group booklet.

Finally, I would like to thank my family and friends for supporting me during this whole period, for keeping me motivated. Overall, I found this journey very enjoyable, explorative, and innovative.

Koubaa, R. | June 29th, 2023

ABSTRACT

Building with wood, is not only an important topic in the Netherlands, but all over the world there are different discussions going on. Where soe of the discussions are about sustainability and others are concerned about illegal logging practices. Nevertheless, timber construction is an age-old method of providing us humans with shelter.

In the graduation studio 'Timber Future', we researched a wide range of topics. The students started study-ing the literature on the history of timber construction, the method of construction, architecture and different styles, sustainability of wood and processing, of wood products in construction, among others.

For this research, I started focusing on the new island in Denmark called Lynetteholm. Lynetteholm is an artificial island newly constructed to avoid various urban planning issues. The island is also constructed due to the drastic nature movement in the world such as rising water level and warm climate. Denmark took the decision in Copenhagen to build this island to protect the capital with its inhabitants. The completion is around 2040 and by 2070 it will also be habitable.

My chosen theme is to develop a good architecture school that contributes to a sustainable, healthy, and stimulating learning environment.

My research question is, *"How can we create a sense of place for a new University of Architecture in Lynetteholm incorporating timber materials that contributes to the learning environment and its users?"*

Wood has several advantages both technically but also in terms of health to humans. Several studies have been done in the literature on the link between materialising wood, using wood and applying wood in the environment where people are. A well-known term is what often comes up is Biophilic design. In this re-search, we mainly focused on people and their environment, also known as the Sense of Place in architecture.

The Sense of Place is defined in literature as: an environment that a person can identify with and or become friends with the sense of place can evoke emotions, creativity and inspire.

The result of this research has produced a new sustainable design. The new university of architecture in Lynetteholm contributes to healthy surroundings, inspiring learning environment, and is a place every architecture student, teacher and employee would like to visit. The end result combines, sustainable wood materials, social interaction, modern implementation of features into the program

Fig. 1.1. Artificial Island of Lynetteholm, Denmark

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I. *INTRODUCTION*

1.1 Relevance and Problem statement

Today's ongoing discussion around the world about alarmingly rising sea levels, co2 emissions and shortage of housing is also affecting Denmark. The Danish parliament in Copenhagen has therefore taken precautions to construct a completely new artificial island "Lynetteholm" and has approved its development of the plans in 2018. The Lynetteholm development plans are 'futureproof' in terms of providing housing for 35.000 residents. The plans to protect the Copenhagen harbor against rising sea-levels, windstorms, heavy traffic and add value to a healthy and a more sustainable living environment. It is planned that by 2035 the foundation of this new island will be established and completed by the year 2070 (Zimmermann, 2022)[1].

On the island there will be a lot of facilities needed. Denmark aims for a sustainable development. One of these goals is having good school buildings for educational purposes. Therefore, I looked into a news article about the quality of indoor environment in Danish schools. Here the idea started to develop a new, healthy and good school building for Lynetteholm.

According to news article (2014) in the cphpost's, the results show that out of a total 1,625 public and private school buildings, 567 school buildings inspected by Health and Safety Authority (arbejdstilsynet) were pointed out of having poor indoor working environment. In which a fifth of all inspected buildings do have poor indoor environment. The main reason is due to a building's age, the report claims 70% of the school buildings are more than 40 years old (Cphpost.dk, 2016)[2].

Denmark is aiming to achieve and execute all the 17 (SDG) sustainability goals development. The online statistics of Denmark published 197 Danish sustainability indicators that are set to be achieved by the year 2030. For education, the (SDG) sustainability development goal number 4 "quality education" is applicable. The government aims to improve the education fee tuition, educational accessibility, achieving equality, improving in well-being, scoring rates on essential fields and teaching SDG to the younger generation.

According to the report of the world health organization for Europe, millions of Europeans in our modern society spend approximately 90% of their time indoors alluding to homes, workplaces, schools, and public buildings (WHO, 2014, p.10)[3]. 90% of this the amount is spent indoors where approximately 2/3 of it is spent at home. The report highlights also that the main parameters affecting human health are directly or indirectly related to the quality of the building, due to the building materials used and the equipment installed, or the size or design of each building. (WHO, 2014, p.10)[4].

Saundersarchitect, mentioned that "a design of a school can supports the health and wellbeing of students and teachers" (Ltd, 2021). Therefore, this research will not only consider the indoor air quality, but also combining the aspects of architecture, timber material, and stimulating the well- being in the school environment focused on its users.

1.2 Mission and Research question

The aim of this graduation research is to provide an educational facility on the new artificial Island "Lynetteholm" in the seashore next to the city of Copenhagen, Denmark. The goal is to design a University of Architecture constructed out of timber, aiming for sustainability goals, and creating an identity that represents the sense of place to its users. Furthermore, to create a low carbon footprint school building.

Therefore, the following research question and sub questions are defined:

"How can we create a sense of place for a new University of Architecture in Lynetteholm incorporating timber materials that contributes to the learning environment and its users?"

Sub questions:

1. What is the "sense of place" and how is this used in architecture?

2. What is a University and how does it function?

3. What are the technical benefits of using wood as a building material?

4. How can timber help to stimulate the learning environment?

1.3 Structure of the research

The structure of this research is conducted in the order of the sub questions.

To answer the research question, the following sub questions are defined and related to the main question:

1. Literature research will be conducted on how a "sense of place" is defined in architecture, and how this is used in architecture.

2. A total of five case studies will be conducted to understand how a 'University of Architecture buildings' function, and how the program is organized. The buildings have to relate to the research topics and don't have to be constructed out of timber.

3. Conducting case study into completed building projects where different construction method(s) are analyzed. The condition has to be that timber is used as main material.

4. Literature and case studies are conducted to explore the relationship between (exposed) timber material and how this can stimulate/contribute to the learning environment.

1.4 Methodology

In this research, the methodology used can be divided into qualitative research (theoretical) and through design-based research.

- Literature study on several topics
- Case studies and/or project visit(s)
- Designing by exploring with conceptual form studies, sketches, and architectural models

Research question:

"How can we create a sense of place for a new University of Architecture in Lynetteholm incorporating timber materials that contributes to the learning environment of its users?"

II. *BRIEF HISTORY OF UNIVERSITY BUILDINGS*

The origin of University buildings

In this chapter, we are exploring the history to review the origins of today's established University buildings. Firstly, we start examining the definition of the word 'University'.

The word "university" literally translated means "the whole world". The term "University" is derived from the Latin language word "universus" which means "whole or/and entire" and can be traced back to the year 1200 ad.[6]

The definition interpreted and explained in the vocabulary is that a 'University' can be considered as being a world on its own. Nowadays a university building is known as higher, scientific education institution where one lives on campus(es) and studies their field of discipline(s).

According to Guinness world records the oldest University in the world was founded by a woman with Tunisian/Moroccan heritage called Fatima Al-Fihri. The University of Al-Qarawiyyin is established in the year 859ad, located in Fez, Morocco (fig.2.1). The university is not only the oldest in the world but also still the oldest operating as an educational institution. Al Fihri did not only build, but also managed the university, mosque, and library. She herself also got her degree after she completed her studies at the university. The mentality of Fatima was to "practice what you preach" no matter the age.[7]

In Europe we find a lot of old universities, therefore only the top five oldest universities in Europe will be highlighted.

The first and also the oldest university can be found in Bologna, Italy and was founded in 1088 (fig.2.2). The university has had some extraordinary alumnus for example, 3 popes of Rome, several Italian politicians, and many successful businesspeople. The average enrolment of the university is approximately 87.760 students of which 6400 are international students. Secondly, is the University of Oxford established between 1096 and 1167ad. located in the United Kingdom (fig.2.3). The university had 28 UK ministers, 20 archbishops of Canterbury, 50 Nobel Prize winners including the well-known scientist, Stephen Hawking. The enrollment of this university is around 24,300 students. Thirdly, is the University of Salamanca (fig.2.4) located in Madrid, Spain and is established in the year 1134. It is the oldest university in Spain where the famous Christopher Columbus, obtained royal support to fund his indies expeditions happening in 15th century. The campus has 9 campuses and houses 26.746 students. Fourthly, is the University of Paris (fig.2.5), established between 1160 and 1250 and is located in Paris, the capital of France. The university is known by the name "La Sorbonne", where nowadays it has 13 autonomous universities around France.

The last university of the top five list is the University of Cambridge (fig.2.6) established in the year 1209 and can be found in the United Kingdom. Although the university had many political conflicts the university is now ranked as seventh in the World. Cambridge can house around 23.247 student of which 5.340 from outside the EU.[8]

Fig. 2.1.1. the oldest university Al-Qarawiyyin in Fez, , established in 859ad. by F. Al- Fihri

Fig. 2.1.2. the oldest University in western Europe, Bologna, Italy 1088ad.

Fig. 2.1.3. University of Bologne, Italy 1088ad.

Fig. 2.1.4. University of Salamanca, Spain 1134ad.

Fig. 2.1.5. University of Salamanca, Spain 1250ad.

Fig. 2.1.6. University of Cambridge, UK 1209ad.

Fig. 2.1.7. Plato's Academy ruins, now an archeological park

Origin and defintion of an 'Academy'

This chapter explores the origin of the 'academic architectural education' in history. Otherwise as in the previous chapter where the origin of 'university buildings was explored'.

In the book "the rise of Academic Architectural education" (Griffin, 2020), the origins and implementation of Architecture education in Academic formation is explored.

Firstly, Griffin defines the terminology "Academy" as:

"origin of the word Academy derives from the Greek word Hekademeia (Ἑκαδημεια); it was the name of a region that was located two and a half kilometers to the northwest of Athens."[9]

According to Griffin, the academy is due to Plato, a Greek philosopher, writer, student of Socrates and teacher of Aristoteles. The academy was founded by Plato, with several letters revealed in damaged condition by the archaeologists. Plato is a well-known figure in the history being a Greek philosopher and writer. The academy was founded by Plato, with several letters revealed in damaged condition by the archaeologists. The archaeologist discovered that the first appearance of this terminology is designates due to a yearly festival of olive oil produced in the areas of 'akademeia' where a prize was given to the best olive oil. These areas are surrounded by a variety of temples and gardens. Plato, gathered in one of these gardens some adults and youth to have discussions and to talk about common day subjects. Plato later on built a house and a chapel dedicated to the gods.

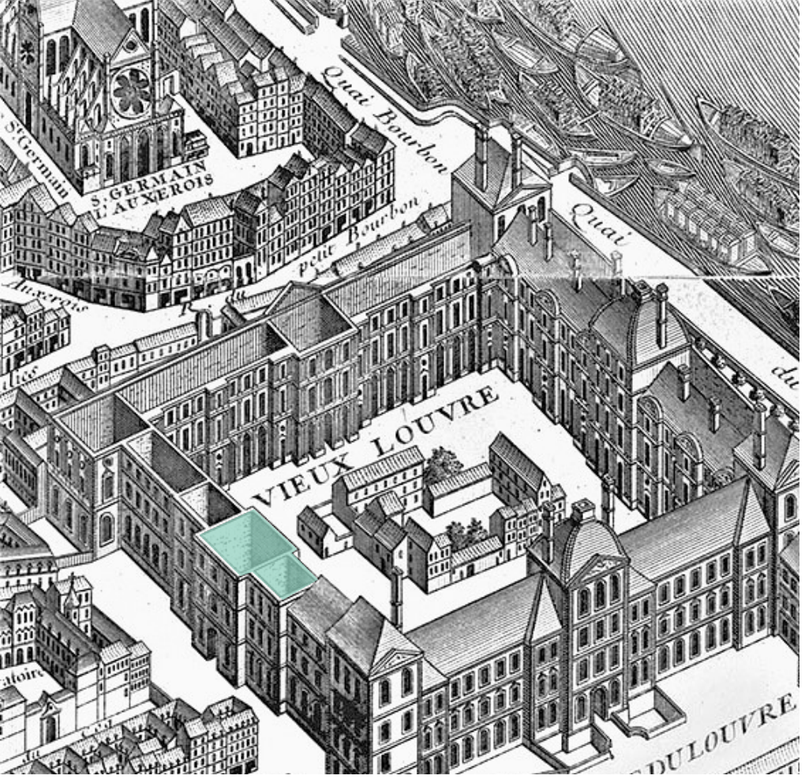


Fig. 2.1.9. The louvre housed the Académie, in blue highlighted

Fig. 2.1.8. frontpage 1675 book by the Académie

First architectural education

Griffon mentioned that the first recognised and well documented application of an institutional architectural education is founded on 31st of December in 1671. The institute is located in Paris and known as the Académie (Royale) d'Architecture.

The academy was founded by Jean-Baptiste Colbert and Nicolas-François Blondel founded and was abolished on 8th of august 1793.[10] Although the Académie d'Architecture later evolved into an internationally recognized organization for practical education, the primary mission was ideological and propagandistic by the regime. The Académie in Paris, was founded by Louis XIV (king of France in 16-17th) in order for architectural masters to study and debate the founding principles of classicism.[11]

The academy went active on 17 August 1793 under the lead of Julian-David Leroy as unnamed. In the 1794, the school got named École Spéciale d'Architecture. Between the period between 1795 and 1968 the academy went through different changes and formations. The academy became known as École des Beaux-Arts in 1968 and in 1969 till present it is known as Unité Pédagogiques d'Architecture, dispersed over 9 locations.[12]

III. LITERATURE RESEARCH

Fig. 3.1.1. Identification, Nordic winter - inhabitants of Greenland.

Fig. 3.1.2. Identification, desert landscape of Khartoum Sudan.

3.1 - The “sense of place” in architecture

In this chapter, the topics and definitions will be explored. These definitions will be used to answer the sub questions in order to give answer to our main research question.

To answer the question of **what a sense of place is and how this is used in architecture?** the definition of “sense of place” needs to be clarified. In the literature a lot of research is done on the term and concept of sense of places, sometimes it is also referred to as the genius loci of places (the spirit of place).

To get a better understanding of the terminology. I used the book of the author Norberg-Schulz, C. (1980). “Genius Loci: Towards a Phenomenology of Architecture.” Christian Norberg-Schulz (1926-2000) was a Norwegian architect, architectural theorist, philosopher, and professor. In addition, exploring the reports

According Norberg-Schultz, a “sense of place” refers to “*the perception and experience of a physical environment (place) or architectural space in relation to its cultural, historical, and social context.*” Norberg-Schultz emphasized the importance of understanding and designing spaces that evoke strong identities and meanings for individuals and communities.[13]

Norberg-Schultz argued that places (environments) have different qualities and characteristics that shape human experience. These qualities include not only physical elements such as buildings, landscapes, and urban features, but also intangible aspects such as the atmosphere, symbolism, and cultural associations of a place.[14] He believed that the meaning of a place derives from the relationship between its physical form and the human activities and interactions that take place within it.

As mentioned by Norberg-Schulz, a successful sense of place requires creating an environment that resonates with people on an emotional and psychological level. It’s about designing spaces that promote belonging, connection, and identity.

A strong sense of place can evoke feelings of safety, security, inspiration, and connection to history and culture.[15]

Furthermore, he emphasizes the importance of considering the context in which human experience and the built environment exist, striving to create places that improve quality of life and contribute to well-being.

Identification and character are two important factors in the sense of place. Norberg- Schultz mentions that “identification” means to become friends with a particular environment.[16] For example, the desert man needs to become friends (familiar) with all the elements of the desert and the nordic men with extreme cold. As for the character, it denotes the general “atmosphere” which is a property of any place.

In the paper titled “The Concept of Place and Sense of Place in Architectural Studies (2011)” written by M. Najafi and M. Kamal B.M. Shariff explores, summarizes, and analyses the existing literature about the concept of sense of place. While aiming for the importance of understanding and enhancing the sense of place in architectural design.

The authors describe the sense of place as:

“Place is where a dimension is formed by people’s relationship with physical settings, individual and group activities, and meanings. ‘Place Attachment’, ‘Place Identity’ and ‘Sense of Place’ are some concepts that could describe the quality of people’s relationships with a place.”[17]

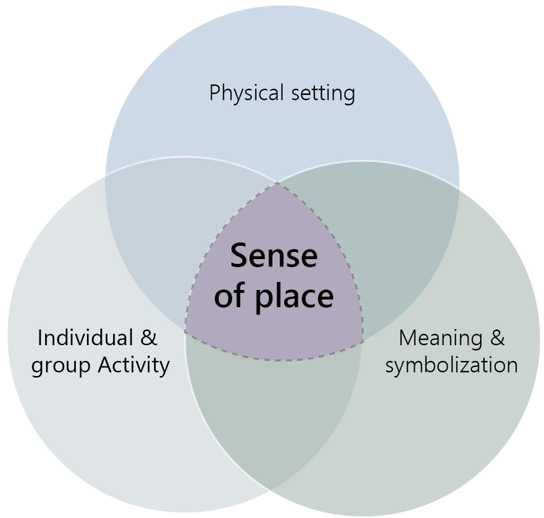


Fig. 3.1.3. diagram of three components of the 'sense of place - own figure - based and derived from literature'

The paper mentions that many definitions have been stated for the term 'place', but in general the term is the opposite of 'space'. Which expresses a strong affective bond between a person and a particular setting (Sime, J. D. 1986). It is a place where human values and principles are mixed, and a particular place holds the meaning and values of its users.[18]

The writers mention that, a 'place' with its own (unique) character is an important element in the social fields of sciences. This is in line when referring back to the theory of Norberg- Schultz where he stated that improving quality of life and contributing to well-being is important aspect. The studies reviewed in this article also mention that location is not only an important factor in the development and maintenance of self and group identity, but also plays an important role in behavior and health. human mental health.[19]

Therefore, integrating user and place is an important aspect for better use, satisfaction, and attachment to places. The paper also reviewed literature about nowadays society, and concluded that due to the overpopulation, changing lifestyle, advancement of technology places become meaningless and don't convey a meaning anymore. Which results in places that suffer from a sense of 'placelessness'.

According to Relph, E. (1976), the 'placelessness' is explained as "that 'placelessness' refers to the settings which do not have any distinctive personality or sense of place and becomes a culturally unidentifiable environment (place)."[20]

The paper also revealed that phenomenologists (philosophical movements) define sense of place as: *an emotional connection with a place through symbolization and meaning*. Explaining place, as part of the environment that is experienced with our senses. These senses are referred to as the five human senses (sight, hearing, smell, taste, and touch), which makes a total (sensual) place experience.[21]

An important note is that in the literature three similar concepts were used to explain the term sense of place. The concept of 'topophilia' which means 'love of place', 'character of place' and 'spirit of place' also known as genius loci of place were used.[22] According to Gussow and Relph (1976), the sense of place can be divided into three stages:

1. Sense of place when people are being familiar with the place

It is the most common stage, in which individuals are unconscious of the place they occupy and without paying attention to its meaning. Furthermore, the relationship in these places are only through activities. There is not a sense of belonging or attachment achieved in the place.

2. Sense of place when people are being ordinary familiar with the place

During this stage, individuals unconsciously perceive the experience of the place. This experience is not personal, but more a collective one. The people are more aware of the symbols at the place, will be active in social activities, and therefore have strong and deep participation with the place.

3. Sense of place when people are being profound familiar with the place (highest level).

At this last stage, the people have 'Existential insideness' which is often associated with a strong sense of identity, rootedness, and a feeling of very deep integrated/connection within the chosen place. For example, "being at home" or being at your "favourite spot".[23]

While on the other hand Shamai, divided the sense of place into seven stages:

1. Not having any sense of place
2. Knowledge of being located in a place.
3. Belonging to a place
4. Attachment to a place
5. Identifying with the place goals
6. Involvement in a place
7. Sacrifice for a place

In the paper of Sense of place: An empirical measurement (Shamai, 1991), the sense of place is thus both an interpretive and an emotional aspect of environmental experience. The environment is created by social and psychological aspects, which establish the connection between people and place (environment). Therefore, the factors that contribute to the sense of place are split into two, 'the cognitive and perceptual factors' and 'the physical characteristics of a physical setting'.[25]

'Cognitive factor' is explained as referring to the ability of people's understanding of the meaning and concept of a place. It is where the attachment between people and place(s) is achieved after cognition.

The 'physical characteristics' that define the sort of setting are mentioned by Fritz steel (1981) as 'elements of a setting'. "*The elements that contribute to the sense of place are the size of setting, scale, proportion, diversity, distance, texture, ornaments, materials, distance, texture, ornaments, color, smell, sound, temperature, and visual variety.*" [26]

Conclusion

Overall, it can be concluded that the sense of place has many different definitions. In theory, the sense of place is an attachment that people have or create to a certain place through a particular setting. The sense of place also encourages social interaction, evokes emotions, and creates bonding to the place.

The sense of place exists of emotional and physical characteristics that create the ‘sense’ of a space, the ‘sense’ can also be called ‘atmosphere’. People or users of a specific place should identify themselves with a place. The ‘identification’ is part of the ‘environment’ (place) meaning that people have to become friends with a particular environment.

By integrating these elements and considering the unique characteristics that shape the space, architects can create architecture that fosters a strong and meaningful sense of place. Contributing to the human experience, existence of the built environment, striving to create places that improve quality of life and contribute to well-being.

Quote:

“The sense of place is about designing spaces that promote belonging, connection, identity and contributes to the well-being of a person.”

- own conclusive quote -

Fig. 3.2.1. stacked tree trunks

3.2 - The benfits of 'timber as construction material'

In this chapter, firstly the definition of the term 'timber' will be provided. Secondly, the use of timers as construction material will be discussed. Additionally, the 'technical' benefits of timber will be explored.

Definition

Throughout history, timber, also known as 'wood,' has been used as building material for constructing buildings, furniture and many more objects.

In the Cambridge dictionary, the word 'wood' is defined as *"a hard substance that forms the branches and trunks of trees and can be used as a building material, for making things, or as a fuel."*[27]

Timber used as construction material

In this part, the question of *How and why is there a need for using timber as construction material?* Will be explored. Firstly, we will be looking at the usage of timber around the world.

In 2022, an article *"Wood as a housing construction material: what are its benefits?"* written by Veronica Adler and Daniel Peciña-López stated that, in fact, that number of timber buildings around the world is enormous as many would think. In mainly three countries Japan, Scotland and the United States, the use of timber is very popular and almost a common (main)product to build with.

The percentage of constructed timber buildings in 'housing project' is in the top three countries around 60% in Japan, in Scotland around 70%, and in the United states as leading figure 85%. With the advanced new technology that evolved in the 21st century the possibilities are enormous. The article mentions that between 2008 and 2020 more than 50 buildings were built reaching 70 meters height having 7 to 24 stories.[28]

The article also discusses the importance of using timber as construction material. Adler and Lopez made a statement that "in the 21st century 'wood' is the best material for constructing houses".

The reason for their statement is mainly because of two large benefits, 'being productive' and 'its impact on the environment'.

As for the first one 'being productive' this can be linked to the reasoning's of the rising demand for housing, increasing population and scarcity of material resources.[29]

According to the United Nations (UN) over the next 30 years, the world's population is expected to increase by 25%. The world's population is expected to grow from 7.7 billion in 2020 to 9.7 billion by 2050.[30] This means there will be a greater need and demand for resources, especially housing.

In contrast with Henning Larsen, a Danish architect based in Copenhagen, Denmark.[31] Larsen states also that *"wood is an amazing product to build with"*. In his book "Plant a seed (2022) Larsen gives eight arguments to why we need to build in wood?.

Before giving these arguments Larsen discusses the important of the national goals of Denmark to reduce the CO^2 emissions to a level of 705 of its current emissions. Furthermore, Larsen mentioned that 72% of the carbon emissions are generated by construction materials for Denmark's concrete buildings. Larsen gives importance to a healthy environment were designing environmentally friendly, low- carbon and recourse-wise solutions are key elements.[32]

As mentioned by Larsen, wood is a great product and has eight benefits:

1. Sustainable
2. Renewable
3. Time efficient
4. Cost effective
5. Safe
6. Healthy
7. Looks good
8. Feels great

For more information mind that each of these elements have been explained in his book "plant a seed" and therefore would not be discussed in depth.[33]

Technical benefits of timber

In this part, the technical benefits of timber as material will be explored. In the built environment each material used to construct is selected according to their properties.

Therefore, the Federation of Wood Industries of Spain-FEIM, which represents the industry of processing timber in Spain states that *"it is necessary to change towards a sustainable development in the building sector, trying to satisfy the actual needs without compromise the next generations' needs."*[34]

The FEIM divides the benefits of timber into technical and environmental qualities. The federation mentions 11 *technical benefits*:

1. Durable material
2. Reusable, recycle and recoverable
3. Thermal insulator
4. Porous structure
5. Acoustic insulator
6. Efficiency energetic
7. Beneficial for Healthy
8. Adaptable material
9. Short & quick assembling
10. Structural stability
11. Better resistance against fire

The *environmental qualities* are mentioned in 6 points:

1. Reduce CO2 emission
2. Less energy
3. Storage of CO2
4. Natural resource (renewable)
5. Sustainable forestall management
6. Kyoto protocol (United Nations Framework Convention on Climate Change to limit - reduce the greenhouse gases)

The reviewed technical benefits for timber as construction material as summarized above is almost complete.[35] The benefits mentioned gives us a nice overview of what timber is and how it technical, and environmentally can help us to improve the world issue of the more and more demand of people turning into a scarcity of resources.

As many literatures refer to these points. I agree with the fact that indeed wood is the most sustainable, renewable, and adaptable product to use as construction material.

Quote:

"it is necessary to change towards a sustainable development in the building sector, trying to satisfy the actual needs without compromise the next generations' needs."

- Federation of Wood Industries of Spain-FEIM -

Fig. 3.3.1. Lindesberg Health Centre, Sweden by White Arkitekter

3.3 - Timber and stimulating the learning environment

Timber and stimulating the learning environment

Building schools in mass timber is an upcoming to development. In fact, in the Netherlands it is still a new development. I found it very hard to find any timber school buildings except for one located in Tilburg that is going to be completely built out of timber.

After investigating the benefits of using timber, this chapter will explore the research done on timber and the effects it has on humans (students, teachers, and staff).

Mithun R+D (Research and Development) is a design firm that is based in Seattle, San Francisco, and Los Angeles, United states. In 2022, the firm conducted extensive research titled 'Mass Timber Schools: Building for Wellness'.

The research team of Mithun R+D emphasizes that using timber as construction material not only has technical benefits but many more. An important note is that there is growing evidence indicating that wood possesses inherent biophilic qualities that have a holistic impact on students, teachers, and staff.[36]

The definition of 'biophilia' originates from the Greek, 'philia' meaning 'love of' and literally means a love of life or living things.[37]

According to organization of Terrapin Bright Green, biophilic in design can be defined as "the relationships between nature, human biology and the design of the built environment so that we may experience the human benefits of biophilia in our design applications."[38]

Therefore, Mithun R+D categorized (fig.3.3.2) Mass timber benefits in schools into 4 themes:

1. The human factors
2. Improved Physical environment
3. Environmental benefits
4. Advantages to school districts

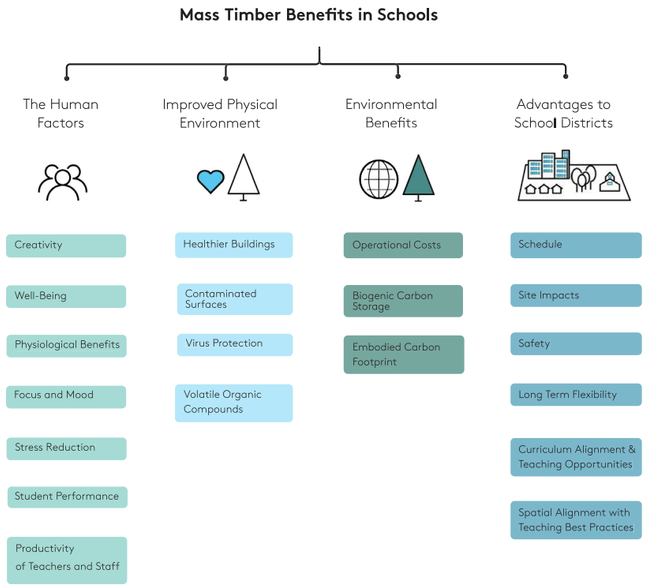


Fig. 3.3.2. Four themes of Mass Timber benefits in schools, by R+D Mithun

For the purpose of my scope of design, the focus will be only on the first theme, the human factors in relationship to timber material.

The report mentions that due to advanced technology in the field of neuroscience, the human brain can be examined and understood in order to create environment motivates us.[39]

Practically, we could get the right knowledge (evidence based) to design potentially good learning environments not only for our future children but also for the student, staff, and teachers.

According to the report, the developed countries spend approximately 90% of their time indoors. This gives us designer/ engineers more reason to design good indoor climates, that had good temperature, air quality, humidity, and a 'sense'/'touch' of materials surrounding us. A study conducted shows that 'timber' and indoor climate has an incredible effect in all aspects. Furthermore, the use of timber reduces stress, heart rate, and even blood pressure, which results in more creativity and productivity in that particular space. In biophilic design, 'wood' is an important material in achieving the 'desire to connect human with natural environment'.[40]

A study conducted in 2020, by in, J., Yuan, J., Arfaei, N., Catalano, P. J., Allen, J. G., and Spengler, J. D. states that: *"Incorporating natural elements into the built environment, where people spend most of their time, contributes to human wellbeing".*[41]

Another Finish study confirms that natural surfaces of materials were preferred and experienced as more pleasant than coated ones. The pleasantness is also applicable for viewing, occupying a natural environment as the results show that it has a positive effect on person's mood.

Furthermore, the report emphasizes that indoor environments exposed with timber evokes positive biophilic senses.[42] Due to its natural association, a wooden environmental interior is experienced as warm, and healthy contributing to men's well-being. An interior environment applied with timber is more enriched, not only visually but also tactility.

The human factors (fig.3.3.2) are divided into seven categories:

1. Creativity
2. Psychological
3. Stress reduction
4. Focus & mood
5. Productivity
6. Well-being
7. Student performance

In order to summarize the result of the conducted study for the seven human factors only the quotations are placed under the right factor.

01. Creativity

"Wood grain as a texture positively influences creativity."

02. Physiological

"Students in the wooden classrooms have significantly lower heart rates and a lower perception of stress."

03. Stress Reduction

"Wood can contribute to stress reduction or recovery from stress."

04. Focus & Mood

"It found that wood produces higher alpha wave activity, indicating higher levels of relaxation."

05. Productivity

"It showed that employees were better able to focus when they were surrounded by wood."

06 Well-being

"In short, natural environments and wood in particular help reduce stress and improve wellbeing."

07. Student Performance

"Such complex environments have been shown to increase performance on intelligence tests."

Fig. 3.3.3. Seven human factors with quotes literally taken[43], own image reproduced and based on reports illustration

Quote:

"Incorporating natural elements into the built environment, where people spend most of their time, contributes to human wellbeing".

- J., Yuan, J., Arfaei, N., Catalano, P. J., Allen, J. G., and Spengler, J. D. -

IV. *CASE STUDIES RESEARCH*

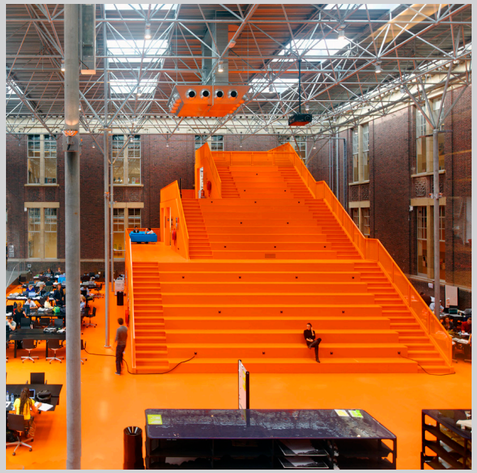
4.1 - Case studies of Architectural University buildings

CASESTUDY 01

FACULTY OF ARCHITECTURE (TU- DELFT)

Delft, Netherlands in 1842

MVRDV, Superuse studio and Fokkema & Partners



CASESTUDY 02

DESSAU BAUHAUS

Weimar, Germany in 1926

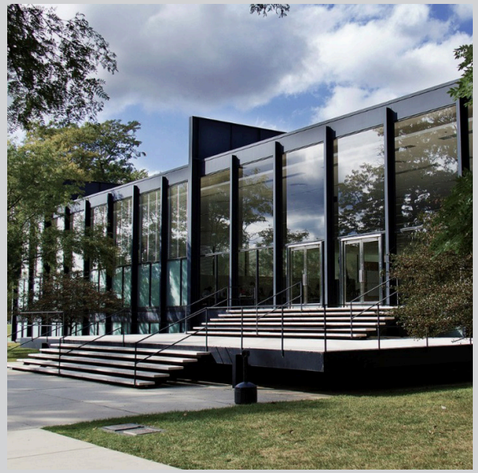
Designed by Walter Gropius

CASESTUDY 03

S. R. CROWN HALL (IIT OF ARCHITECTURE)

Chigaco, US in 1956

Designed by Mies van der Rohe



CASESTUDY 04

COOPER UNION

New York, US in 2009

Designed by Morphosis architects

CASESTUDY 05

BARTLETT SCHOOL OF ARCHITECTURE

London, UK in 2016

Designed by HawkinsBrown architects

Quote:

"Research is creating new knowledge."

- Neil Armstrong -[44]

Research topics

In this chapter, the results of the case studies are presented. In order to understand how university building of architecture functions. The university buildings will be researched on three themes,

1. Education,
2. Routing & entrances
3. Program.

Mainly, the floor plans of the project would be investigated and explored. All drawings made are based on existing floorplans retrieved from the source provided.

Fig. 4.1.1. Faculty of architecture (Tu - delft)

Case study 01 - Technical University of Architecture (TU-Delft)

PROJECT INFORMATION

University of Architecture (TU-Delft)

Built in:
1842

Area:
36.000m²

Location:
Delft, Netherlands

Architect:

MVRDV, Superuse studio and Fokkema & Partners

After the old faculty burned down in 2008, a new location was picked, an abandoned building of the faculty. The TU-Delft, also known as the technical university of delft. The TU- Delft is in the top 20 best universities in Europe, and in the Netherlands in best top 3.[45]

In the Netherlands, TU- Delft is the largest and oldest technical university. Historically, the university of Delft was first operating/functioning as an academy established by King Willem II on the 8th of January 1842.[46] The technical university of Delft has 8 faculties and offers 16 bachelor programs along with 30 different programs for masters. According to the facts sheet of December 2022, the number of personal is 6,648, student population 27,080, and PhD population is 3,144.[47] The number of architecture student at the university for the bachelors program is 1435 and for the master's it is a number of 1632 students for a two-year program.[48]

The part I will focus on is the faculty of architecture, the building is renovated and has many new features. In the following drawings, these features and themes will be explored.

I. Education

The old abandoned technical University of Delft's got renovated in the year 2009. Multiple architects, design a strategy for the interior program. Main goal was to provide collaborations spaces and more interaction. The workshop is placed right in front of the entrance (green), as inviting space. In the same line the social café and canteen is accessible through this space. The large orange stair is used for meetings and collaboration between students and staff. Furthermore, the education on the ground floor is limited and all the lecture rooms are on top.

II. Routing & entrances

The routing system in TU- Delft, is vertically and horizontally aligned. Beginning with the entrance in the centre of the building as the main gate to the university. The university is very accessible with around 17 entrances, even for disabled people the entrances are very convenient. The vertical axis of routing in the middle, goes trough the spaces of workshop ending at the canteen/café, were the horizontally axis spaces go through different functions of the building.

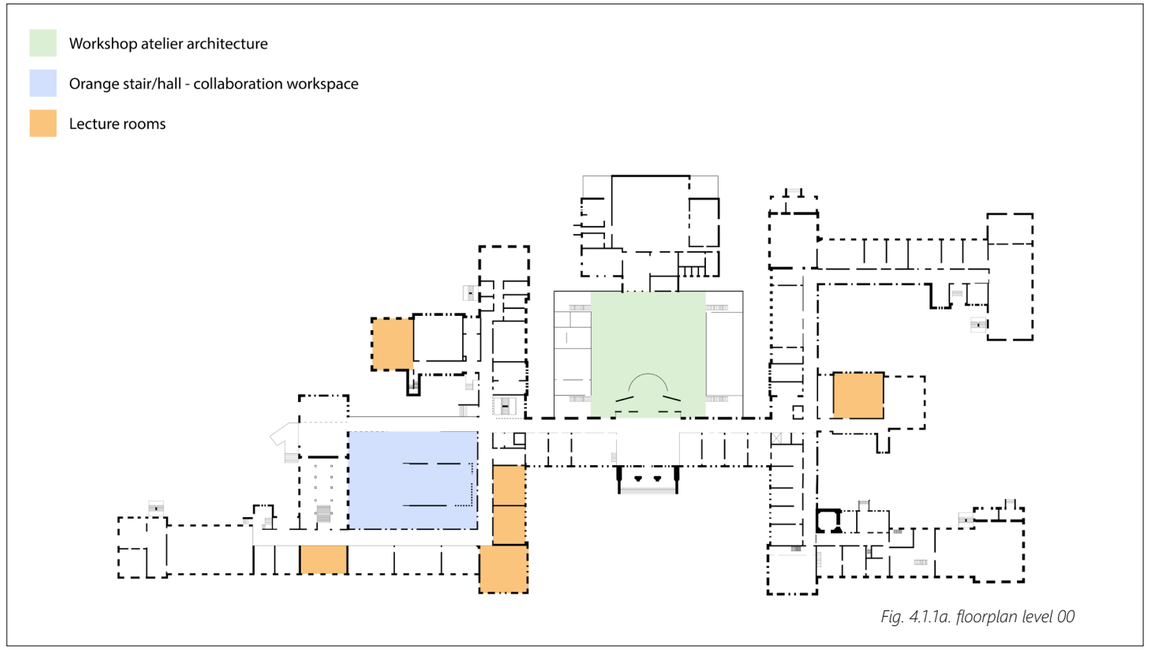


Fig. 4.1.1a. floorplan level 00

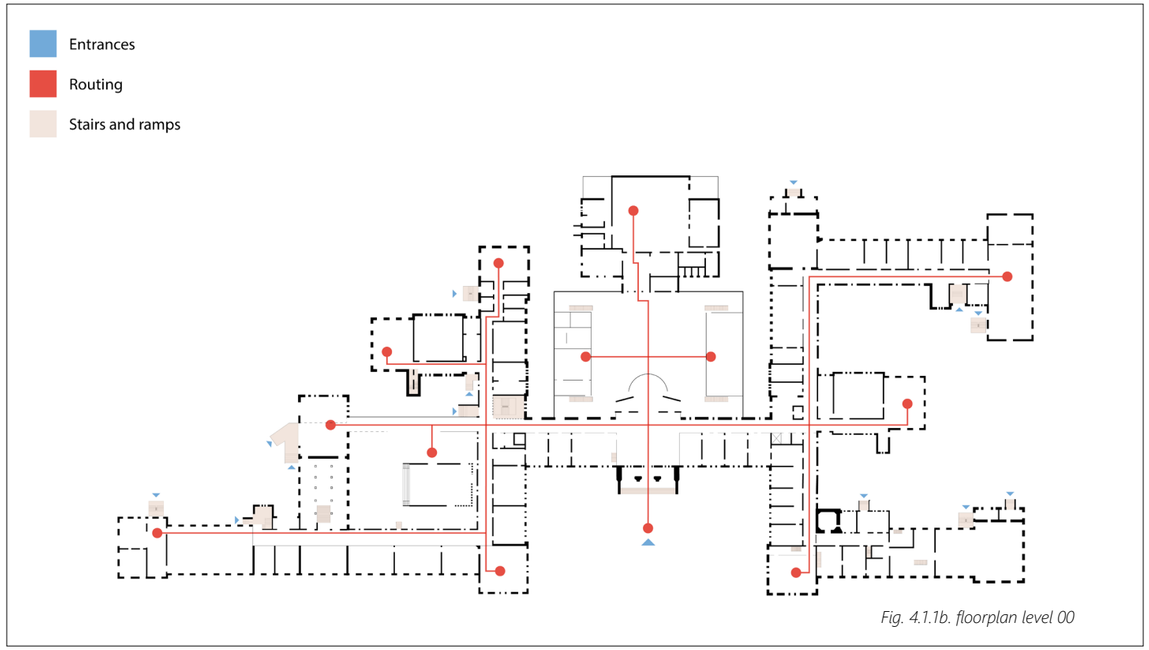


Fig. 4.1.1b. floorplan level 00

III. Program

1. Main Entrance
2. Workshop
3. Canteen/Café
4. Facility Department
5. Hyper Body and Student Club
6. Contemplation Room
7. Msc -Lecture Room
8. Congress Hall
9. Workspace For 48 Ppl
10. Contemplation Room
11. Facilities Department
12. Urbanism Workspace
13. Flex- Space
14. Lab Space
15. Ict - Department
16. Collaboration Hall
17. Shops, Library, And Printing
18. Msc -Lecture Room For 32
19. Msc -Lecture Room For 48
20. Offices
21. Flex- Space For 37

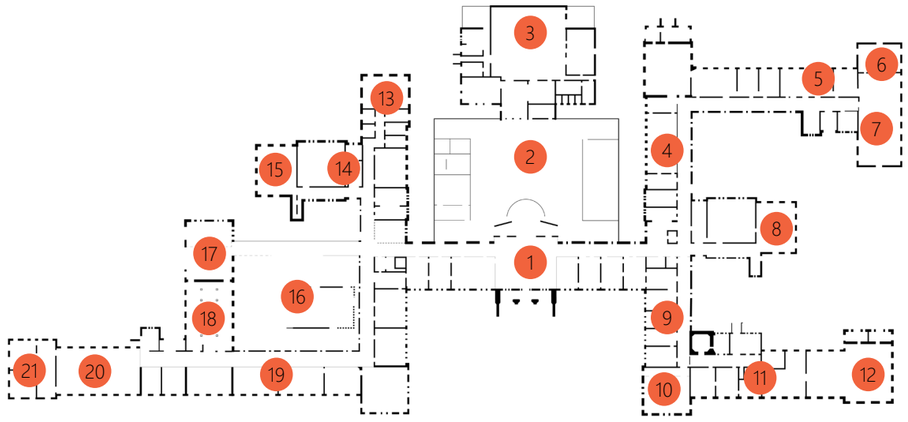


Fig. 4.1.1c. floorplan level 00

Conclusion

The conclusion of the research conducted into the TU- Delft of architecture, combined into one diagram. (fig.4.1.1.d).

The conclusion derived from this university is translated into strong key-points. The key elements are the centred main entrance connected visually and physically to the workshop and canteen as one corridor. This gives, the building an inviting character, where one could identify him/herself with its future (study) career. On the left and the collaboration hall is placed, to create more interaction with the students, staff, and teachers. This space is also used for presentations. On the right side the offices and some lecture rooms are placed between the staff members spaces.

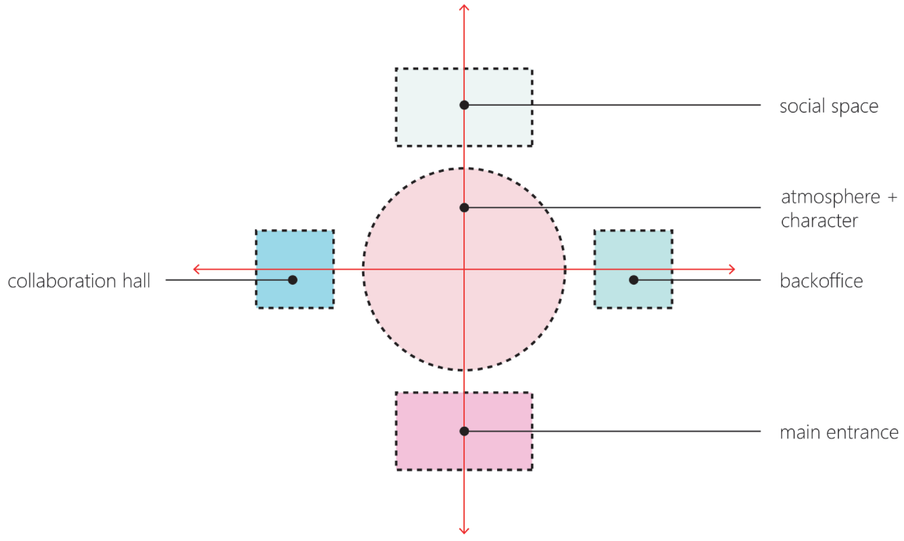


Fig. 4.1.1d. Conclusive diagram - own drawing based on findings

Fig. 4.1.2. Dessau Bauhaus building

Case study 02 - Dessau Bauhaus

PROJECT INFORMATION

Dessau Bauhaus

Built in:
1926

Area:
250.600 m²

Location:
Weimar, germany

Architect:

Walter Gropius

The Dessau Bauhaus was founded by the architect Walter Gropius 1919 in Weimar, Germany. In terms of teaching and spirituality the institute had an enormous influence throughout the world. Gropius designed a building with the focus on achieving good working conditions. On the 4th of December 1926, Gropius become an icon for the modernist movement.[49]

Gropius believed that architects, sculptures, and painters all should return to manual labour. In one of his statements, he wants to get free from divided classes and arrogance between the craftsman and artists. Eventually, he ends his statement with only together we construct the new building of the future. The Dessau Bauhaus eventually was built as an all-inclusive institute where architecture and craftsmanship was combined.[50]

The ambition of Gropius, with the Bauhaus building was to design process of living. The goal was to search for functionality by emerging the art, technology and aesthetics. The Bauhaus became an Academy of Fine Arts and the School of Arts and Crafts. He believed that in order to design and construct for people's current time, we must use new materials and technology.[51]

I. Education

The Bauhaus institute evolved in the time of the modernism. Therefore, the building is of a modern design, built according to the new materials of the time. Gropius emphasized that one should use new materials with new technology in order to create his architectural design. As the new materials such as steel, glass, concrete and complex facades, represented the building. The educational program inside did not only represent architecture, art and craft, but it had to create space for the students to learn, explore and interact with each other during classes.[52]

The education was built on teaching architecture and craftsmanship. Therefore, the basement floor was for technical units, laboratories and changing. On the ground floorplan, classrooms, auditorium, and the different workshop like metal, veneer, paint, wood, metal are key spaces for the institute. The first floorplan is mainly for administration and lecture rooms, the second floorplan exists out of machine working workspaces and a lot of sanitary space to clean.

II. Routing and entrances

The routing in the Bauhaus is in my opinion like exploring a mini campus. Bauhaus has a clear hierarchy in entrances, therefore the main building has one large entrance and as for the other buildings they all have a clear entrance. The routing on the ground floor is not yet related to the other buildings, but as soon the first floor is reached, the possibilities to explore the other volumes are clear. The routing is a linear system where it spreads into the different spaces. The bridge in the middle is the connecting elements between the different volumes.

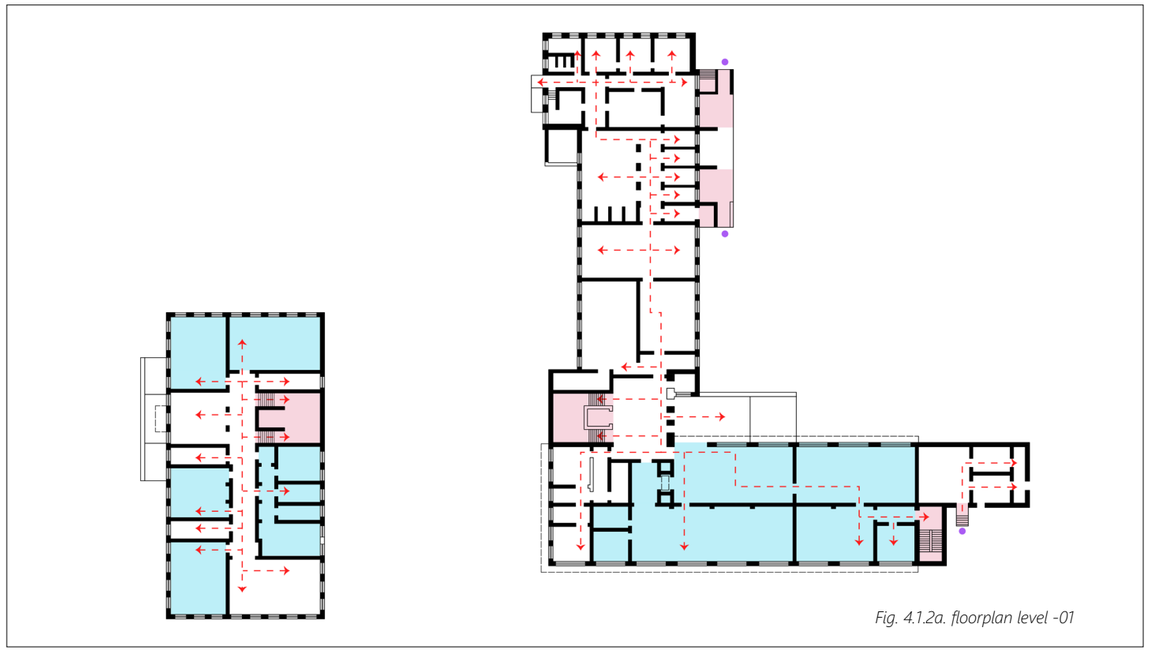


Fig. 4.1.2a. floorplan level -01

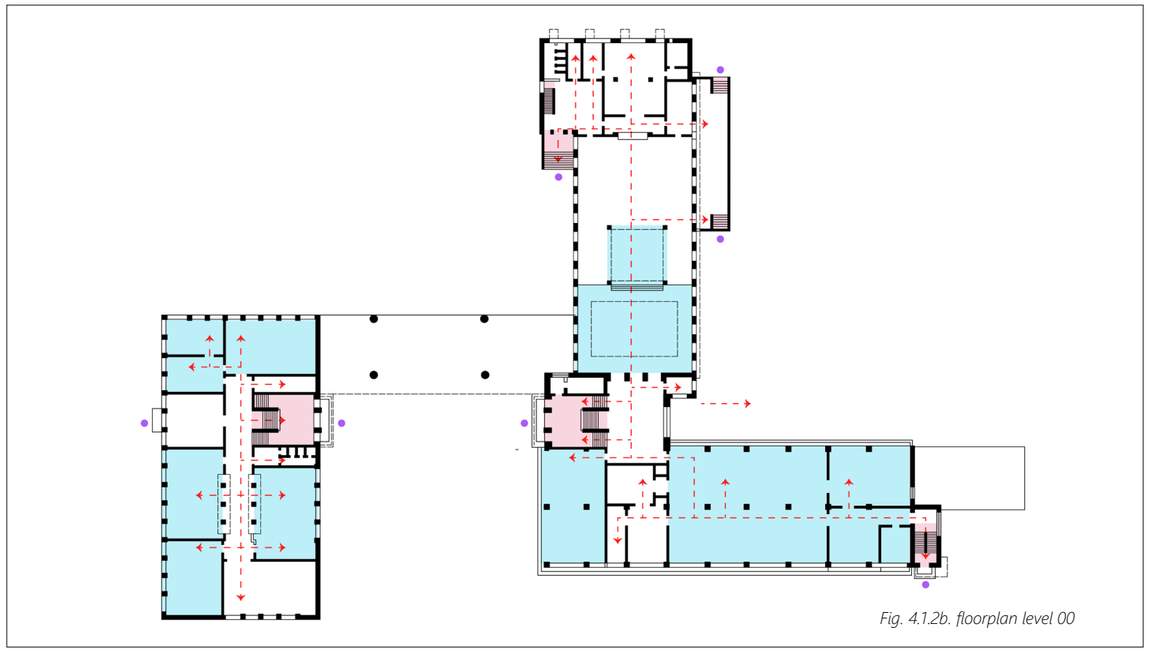


Fig. 4.1.2b. floorplan level 00

I. Space for educational use

II. Routing

II. Entrances

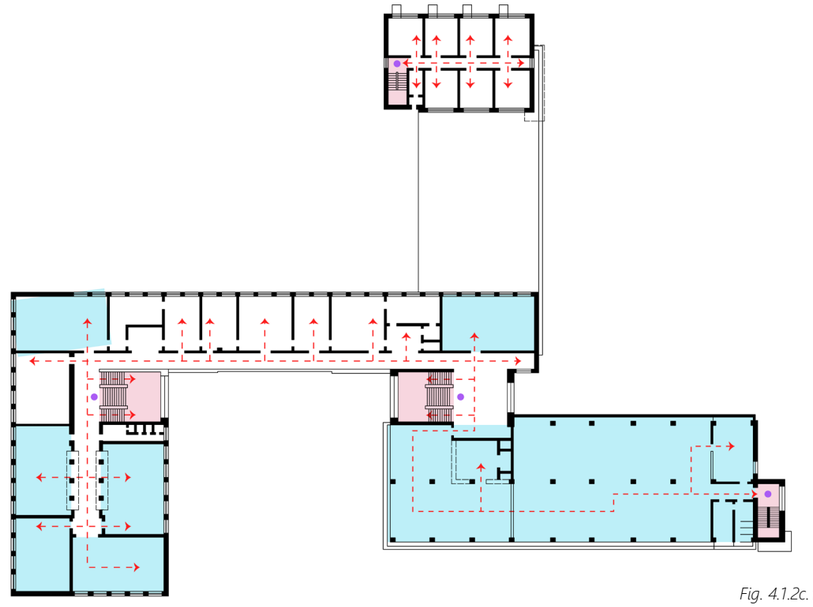


Fig. 4.1.2c. floorplan level 01

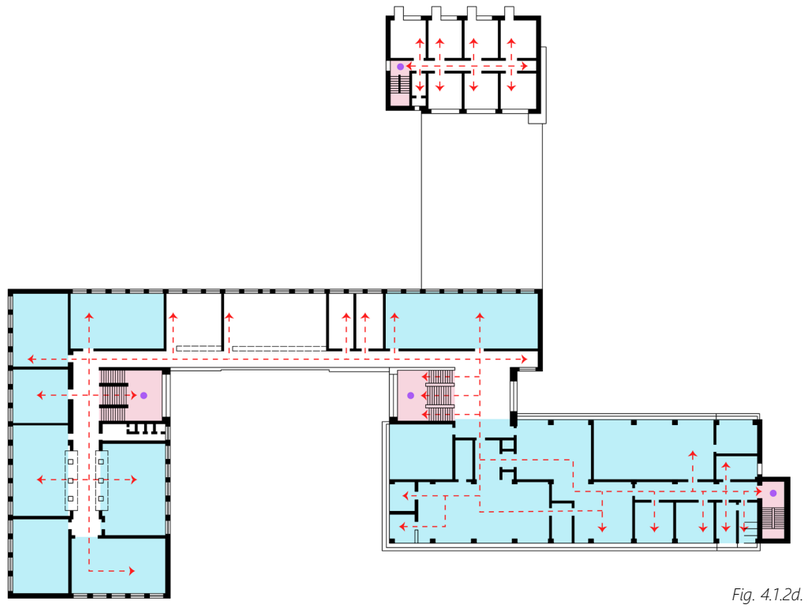


Fig. 4.1.2d. floorplan level 02

I. Space for educational use

II. Routing

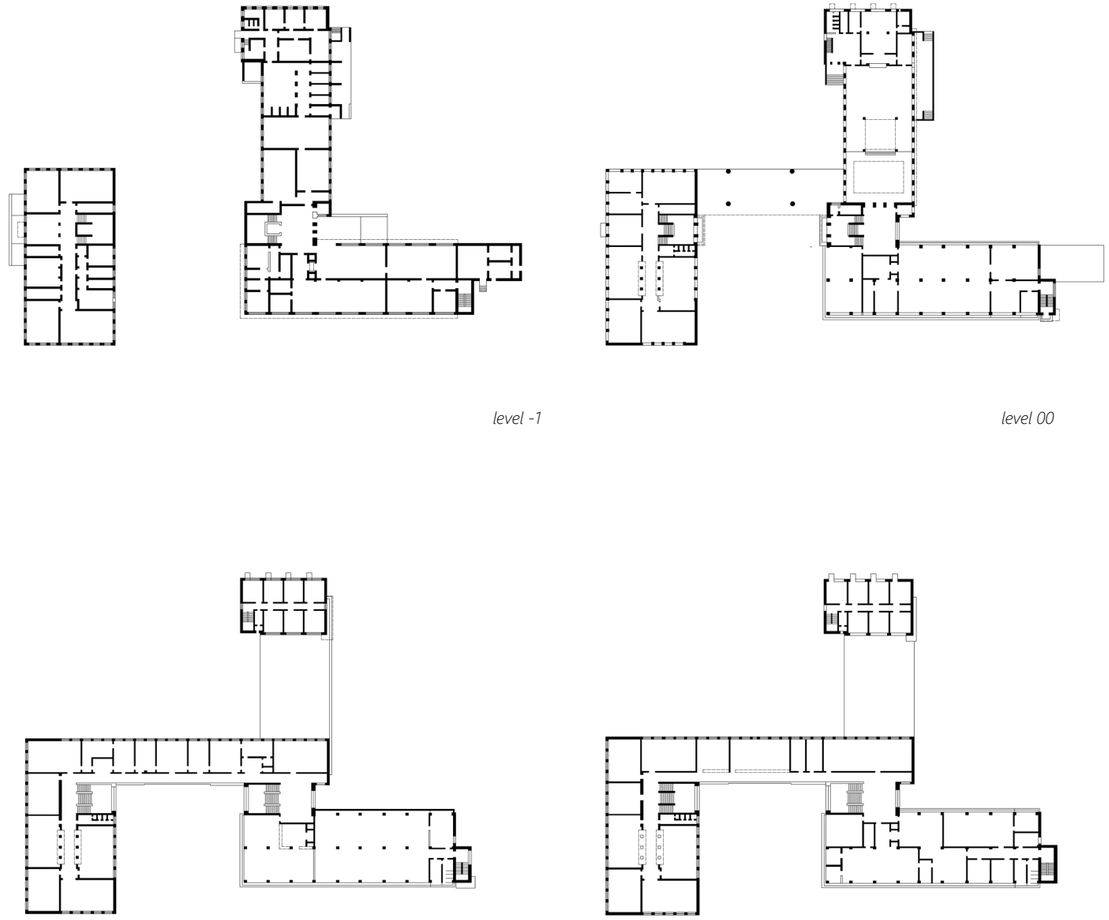
II. Entrances

III. Program

1. Gymnasium
2. Changing Rooms
3. Stage Workshop
4. Sculpture Studios
5. Apartments
6. Boiler Room
7. Classrooms
8. Bath Spaces
9. Laundry Room
10. Administration
11. Staff/teacher Room
12. Studio Spaces for Living

Technical school

13. Laboratory
14. Classroom
15. Physics Room
16. Lockers
17. Darkroom
18. Display Room
19. Materials
20. Master Rooms
21. Cabinet Making
22. Workshop Machine
23. Veneer Workshop
24. Washroom
25. Library
26. Conference Room
27. Architecture Department
28. Offices



level -1

level 00

level 01

level 02

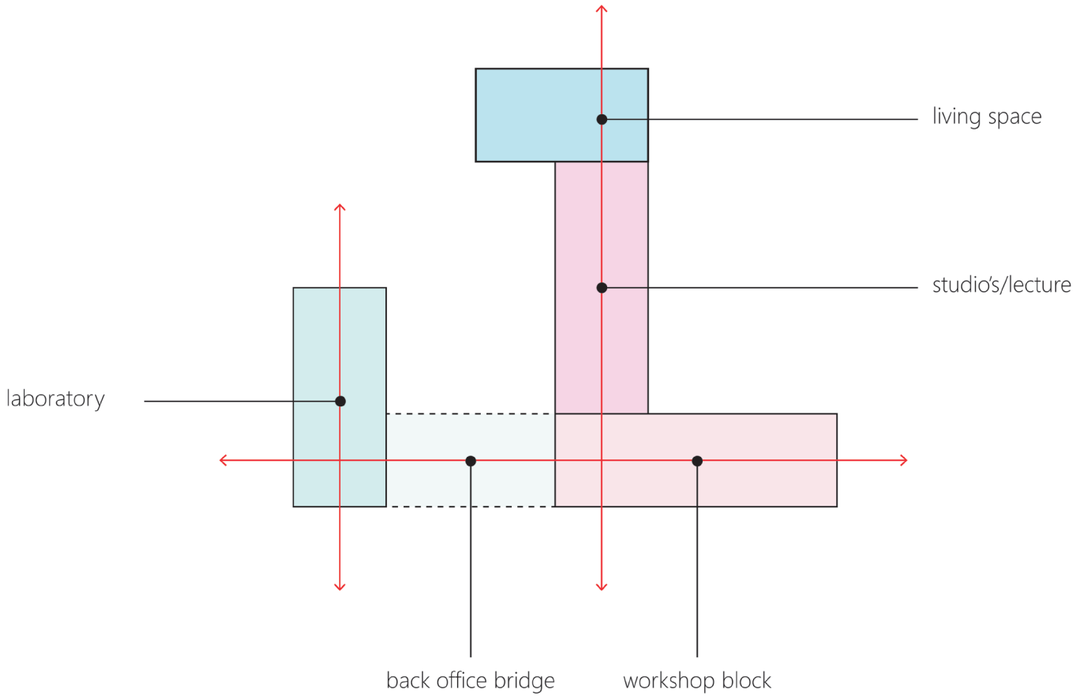


Fig. 4.1.2e. Conclusive diagram - own drawing based on findings

Conclusion

The conclusion of the research conducted in Bauhaus Dessau, is combined into one diagram. (fig.4.2.1.e).

Overall, the building and the architect Walter Gropius had both some great thoughts behind the institution. One hand, a modern building representing modernism and materiality. And on the other hand, the intention to learn and teach architecture with ats and craft using new materials.

The key points for this project are the strong connectivity between different buildings by using one architectural language in expression and consistency in materialization. Bauhaus is designed like a mini campus, where workshops, offices, laboratories, and living spaces (studio's) are combined into one entity. To end the building is suitable for exploring, innovating in architecture using advancement of technology as design tool for teaching.

Fig .4.1.3, S. R. Crown Hall (IIT College of Architecture

Case study 03 - S. R. Crown Hall (IIT College of Architecture)

PROJECT INFORMATION

S.R. Crown Hall (IIT College of Architecture)

Built in:
1956

Area:
2412m²

Location:
Chicago, United Stated

Architect:

Mies van der Rohe

The S. R. Crown Hall, currently the headquarter of the IIT College of Architecture. The S. R. Crown Hall is designed by the icon Mies van der Rohe, in 1956 located in Chicago, US. According to the Time magazine, the modern designed Crown Hall is "one of the world's most influential, inspiring and astonishing structures."[52]

Mies called the S. R. Crown Hall as a "universal space". Meaning that the overall design of the building can change in function, while the architecture of the building stays permanent to its surroundings.[53]

The S. R. Crown Hall is rectangularly shaped in a roof grid with a height of 5.48m and has a floor area of 36 x 67m1. This column free plan is an innovative concept and refers back to creating an "universal space".[54]

I. Education

The spaces are divided into partitions for lectures, classes, and exhibitions. The reasons Mies had behind this design application was to maintain the creativity, social and interaction between the staff, teachers, and students.

In the floorplans, the division is made into a basement layer and the main ground floorplan. The basement layer was to explore, make and use different materials. While the ground floorplan had an open an inviting entrance, where one is experienced by the height and free column plan. The main floor was used for studio's, classes, and exhibitions.

Mies aimed for "creating space" so the building could be adaptable and easily changed to future function. Contemporary, the Crown Hall is functioning as the head quarter for architectural faculty.

II. Routing and entrances

The famous quote of Mies is “less is more”. This is definitely recognizable in his routing system. The main entrance is reachable trough a timeless, modern concrete thin stairs. The ground floorplan, is very organized and exist of grid system, continuing in X-Y axis.

Mies idea behind the routing, is that everything can be seen and experienced, resulting in more interaction between young, old, beginners and masters. The basement floor is reachable with two staircases, ending in large space to provide orientation to the workshop spaces.

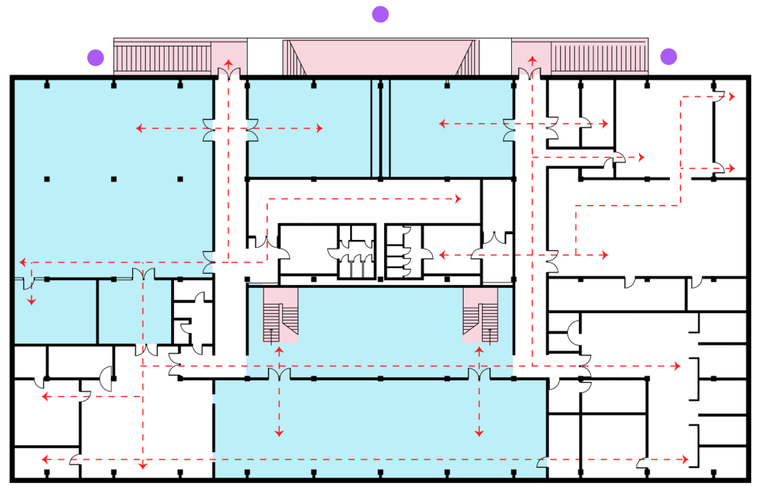


Fig. 4.1.3a. floorplan level -01

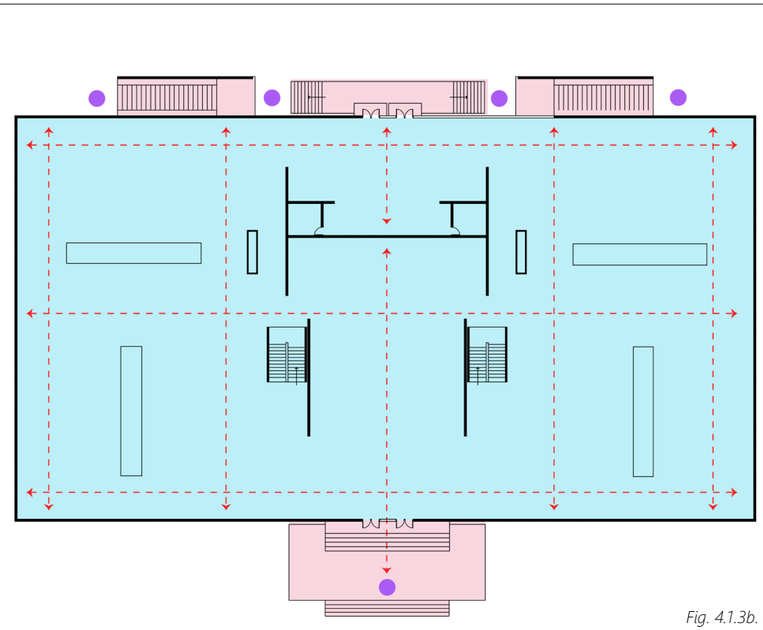


Fig. 4.1.3b. floorplan level 00

I. Space for educational use

II. Routing

II. Entrances

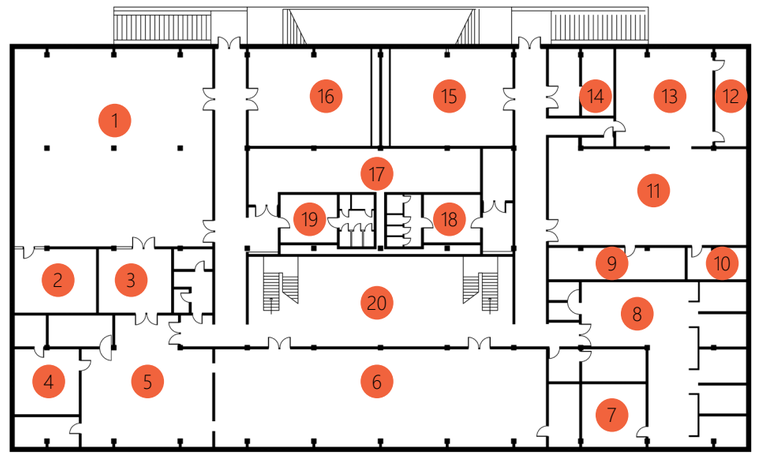
III. Program

Basement

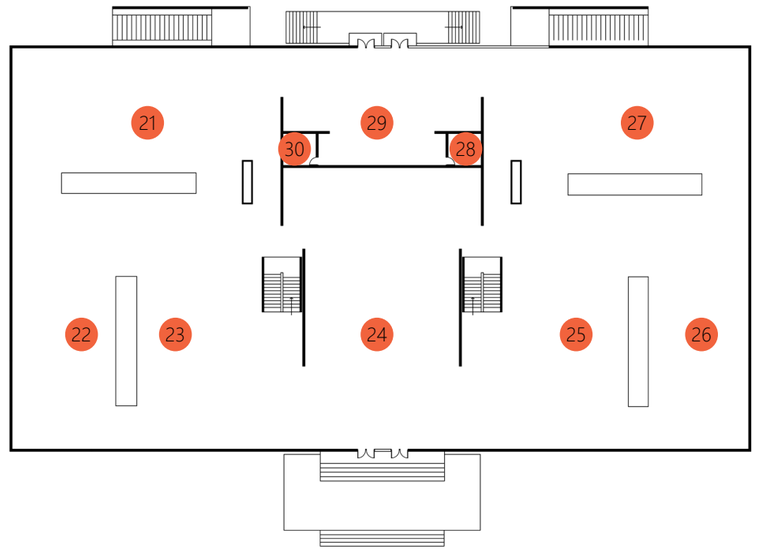
1. Core Studios
2. Lecture Rooms
3. Lecture Rooms
4. Conference Room
5. Reception
6. Reading Room
7. Office
8. Administration
9. Offices
10. Offices
11. Core Studio For 150
12. Offices
13. Advanced Studio For 25
14. Offices
15. Computing
16. Lecture Room
17. Mechanical Room
18. Toilets
19. Toilets
20. Exhibit Area

Ground floorplan

21. Core studio for 80
22. Core studio for 60
23. Core studio for 120
24. Exhibition area
25. Master studio for 80
26. Master studio for 40
27. Advanced studio for 80
28. Janitor
29. North exhibition
30. Storage



level -01



level 00

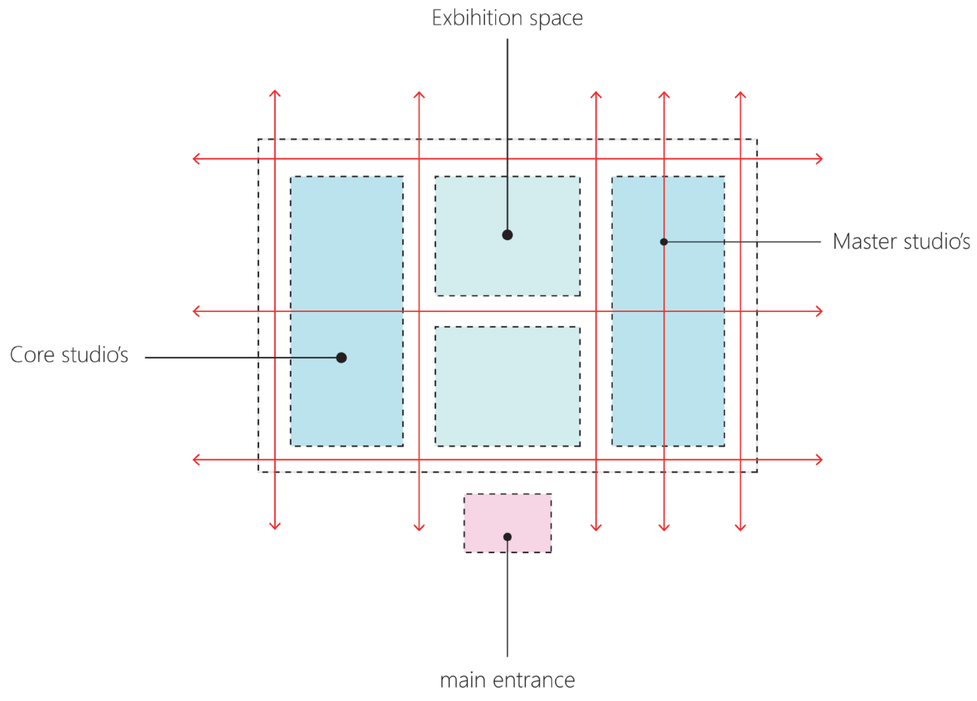


Fig. 4.1.3c. Conclusive diagram - own drawing based on findings

Conclusion

The Crown Hall, designed by Mies van der Rohe is iconic building, with not only because of its simplistic approach but also the interior spaces. Besides the basement program, the main floor has some very nice key points, to take. For example, creating space for learning and interaction. The floor can be used for lectures, model making, presentations, or exhibitions. The division of the partitions of spaces provides a nice work/ learn environment with enough light through the large glass façades.

The character inside is created because of its choice materiality and roof construction with less support.

Fig. 4.1.4. Cooper Union

Case study 04 - The Cooper Union

PROJECT INFORMATION

The Cooper Union

Built in:
2009

Area:
16258 m²

Location:
New York, United States

Architect:

Morphosis Architects

The Cooper Union was established in 1859 by inventor and philanthropist Peter Cooper.[55] The new university building is built in 2006 and designed by Morphosis Architects. The building is located in New York on the Cooper Square. Therefore, the university committee aimed to reflect the institution's goal to have an iconic building. The reflection of the building is to reflect its values and to communicated as a center for advanced and innovative education in Art, Architecture and Engineering.[56]

Cooper Union, aimed for education that is costless, open, and accessible education. The message the building represent to the city is open symbolism. "The visual transparency and accessible public spaces link the organization to the physical, social, and cultural fabric of its urban context."[57] Where the internal organization features is providing social's spaces in the building and urban connectivity. Where the internal organization features is providing social's spaces in the building and urban connectivity.[57]

In terms of sustainability approaches, the Cooper Union is built according to the highest (platinum) Leed-standardization, making it the first academy in New York with this accreditation.[58]

I. Education

The educational program at the Cooper Union is shaped by Tom Mayer , professor and establisher of Morphosis architect. The philosophy behind the design of the program is to create an environment for the students, where innovative thinking is enhanced. The students are being challenged to use architecture, explore new materials and technology as tools, in order to produce design solutions for the future. Therefore, Morphosis architects focused on design technology and sustainability.[59]

The analysis shows that the interior spaces are designed for students, teacher, staff, and even public visitors. The basement, ground floor plan is mainly focused on maintaining connection with its context and environment. The upper levels are mainly used for staff and teacher, where the levels above are mainly for the students. Although the floorplan shows a clear mixture of teacher rooms and educational spaces. Where in between the breakout points are created for social interaction.

II. Routing and entrances

The analysis conducted show that the main elements rise point is the large stair. The stair connects all the floor levels together vertically. This has the advantage of creating a circulation around the staircase and providing a movement around the whole floorplan.

Furthermore, the building is very accessible, for healthy and disabled people through ramps and elevators. The circulation in the building is combined with strategically placed voids. The entrances are placed on the base level and the main level at different sides of the building. The routing is mainly linear with right- and left-turn route.

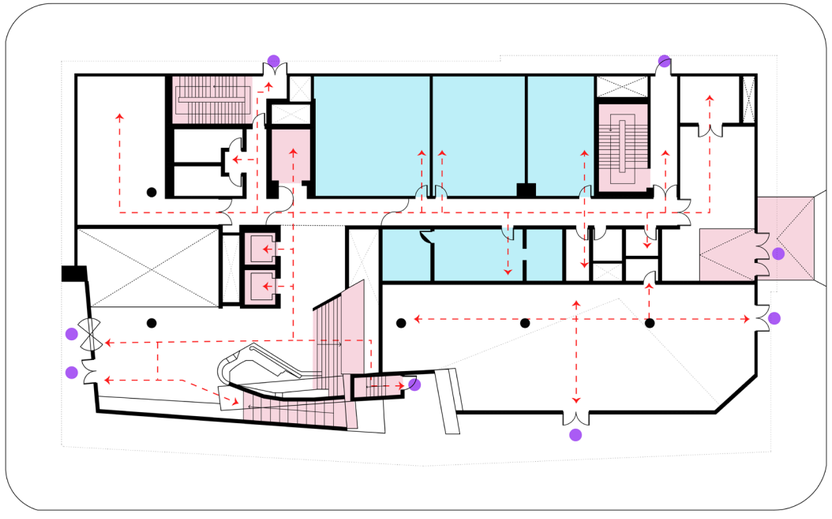


Fig. 4.1.4a. floorplan level -01

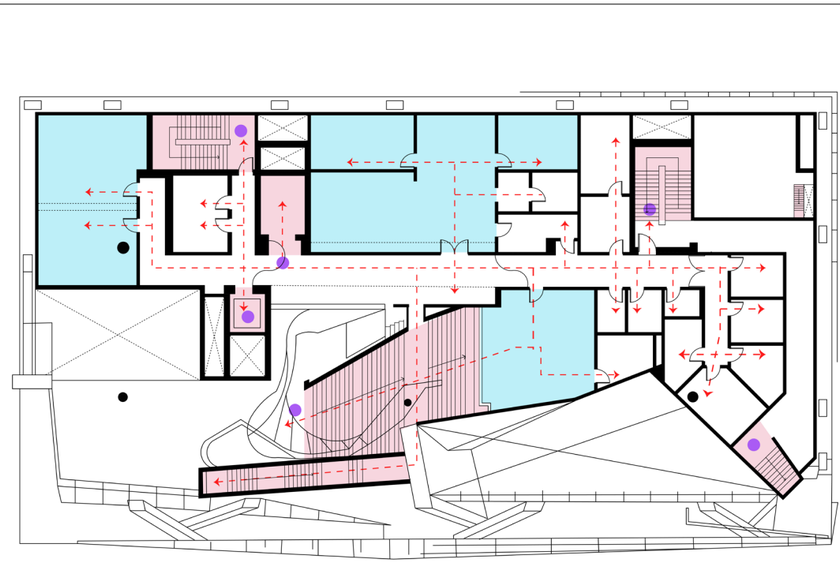


Fig. 4.1.4b. floorplan level 00

I. Space for educational use

II. Routing

II. Entrances

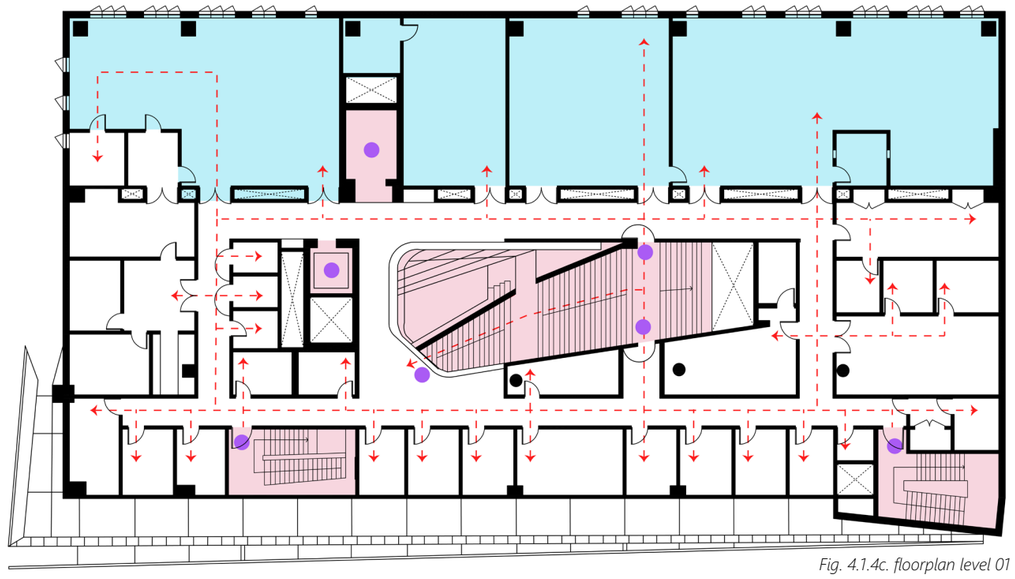


Fig. 4.1.4c. floorplan level 01

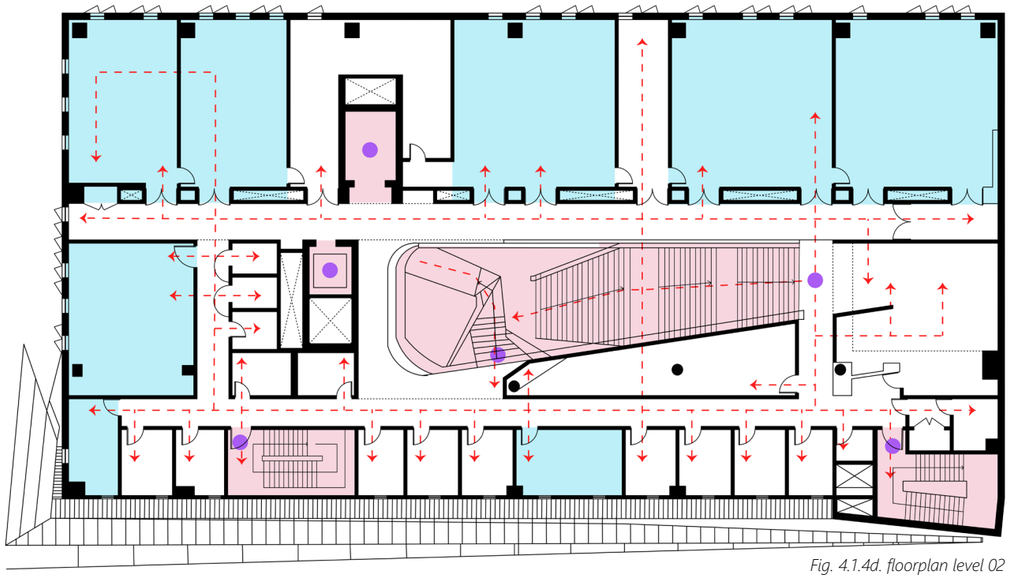


Fig. 4.1.4d. floorplan level 02

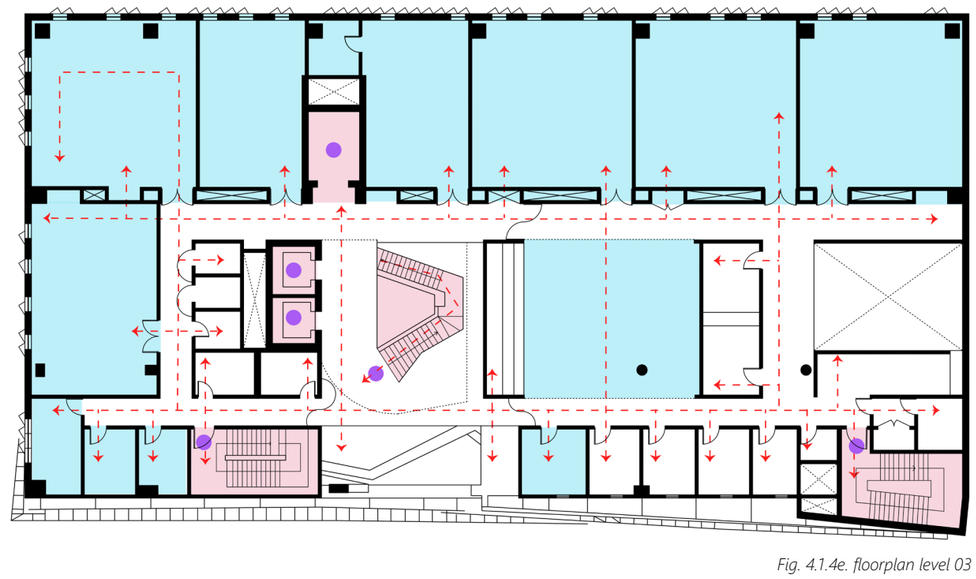


Fig. 4.1.4e. floorplan level 03

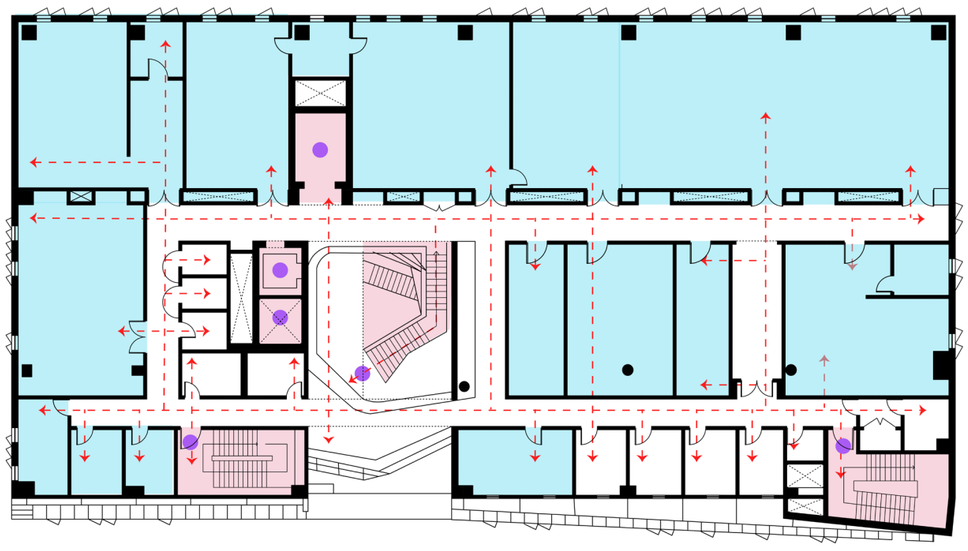


Fig. 4.1.4f. floorplan level 04

I. Space for educational use

II. Routing

II. Entrances

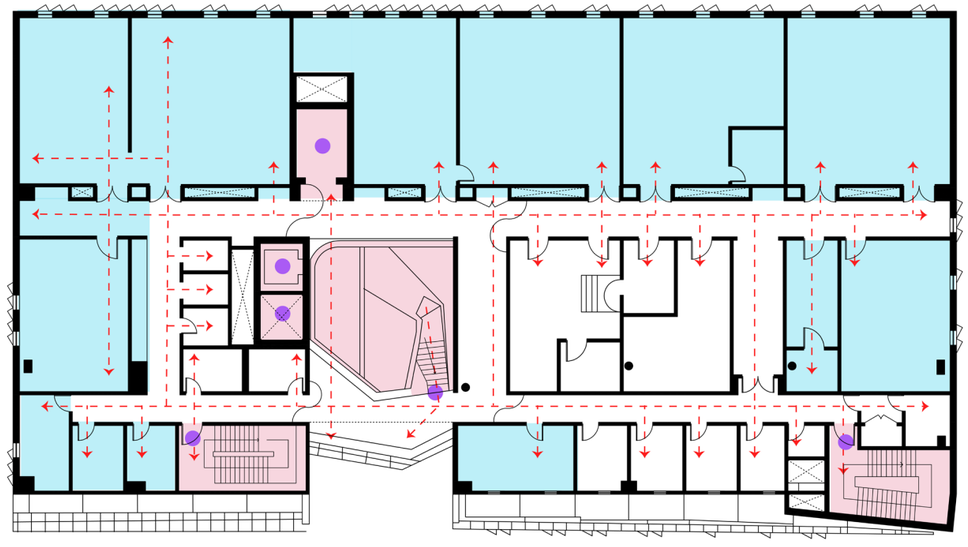


Fig. 4.1.4g. floorplan level 05

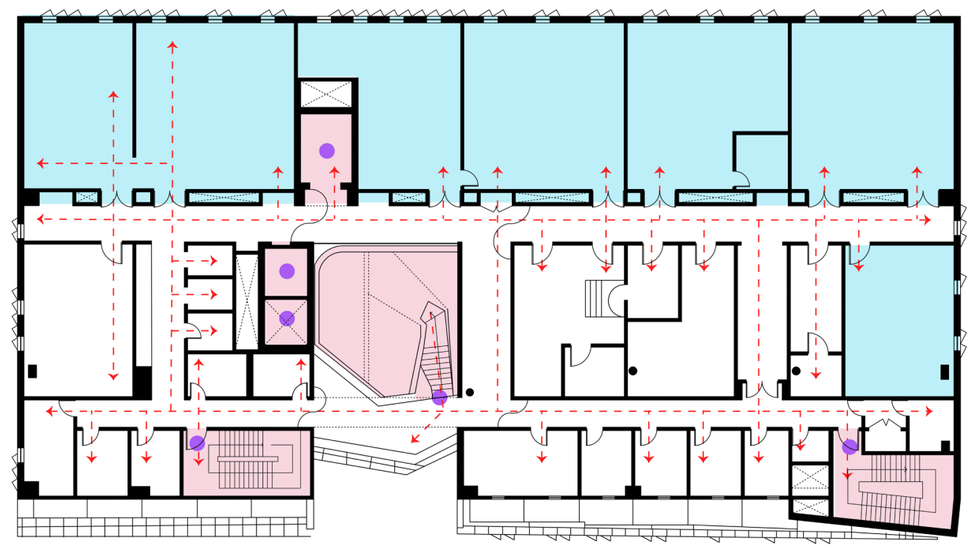


Fig. 4.1.4h. floorplan level 06

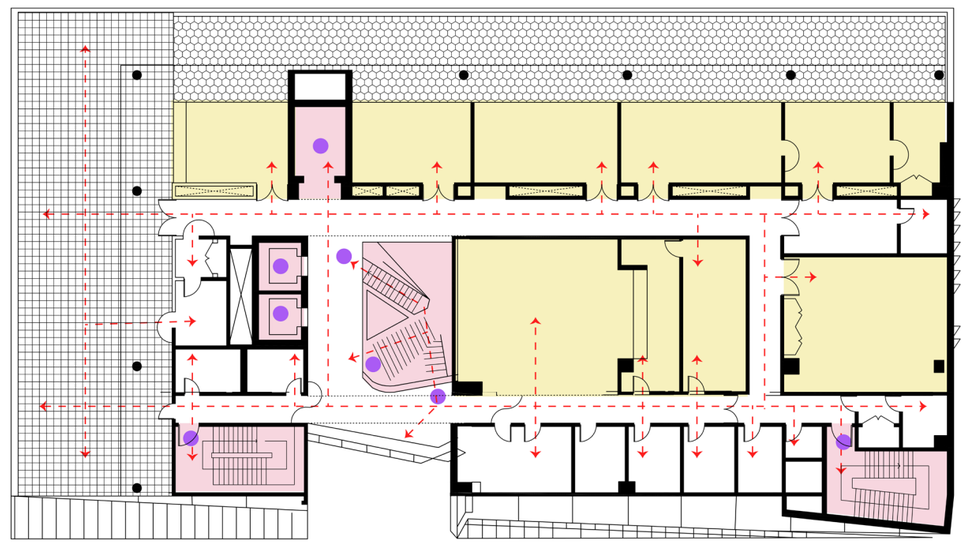


Fig. 4.1.4i. floorplan level 07

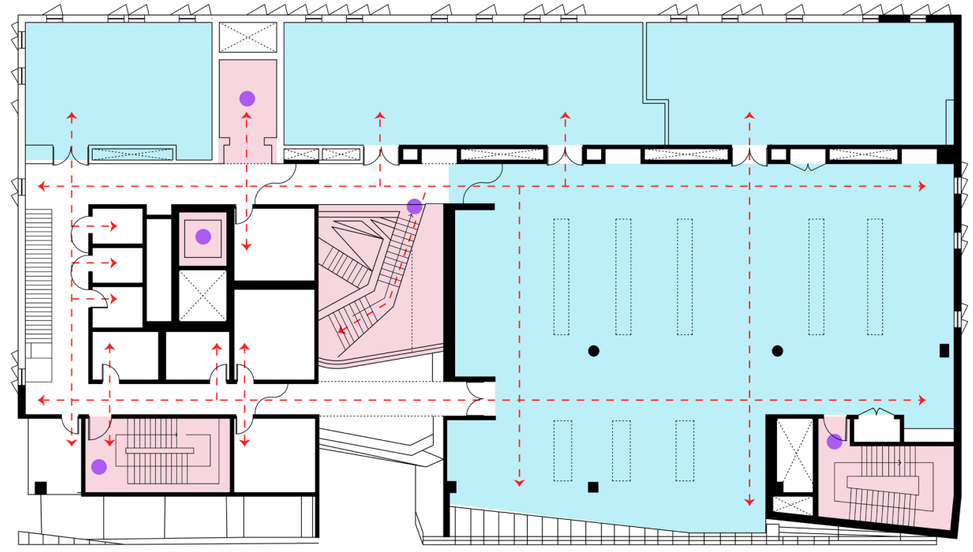


Fig. 4.1.4J. floorplan level 08

I. Space for educational use

II. Routing

II. Entrances

I. Space for educational use

Spaces for social interactio

II. Routing

II. Entrances

III. Program

The floorplans of the architects are only displayed through, nameless floorplan. therefore, the list is not available.

The main program is derived from the Cooper Union's website and the descriptions of the architect Morphosis.

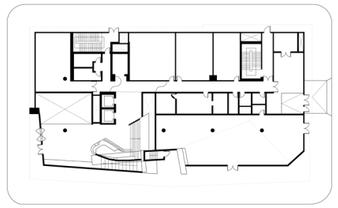
First two floor levels are mainly for the public and administrative purposes. it houses a library, student exhibition spaces, galleries & auditoriums.

The third-floor level contains research labs, offices and two lecture spaces for physics and chemical engineering.

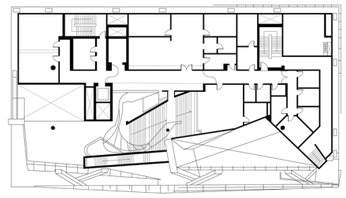
The fourth-floor level is for student activity spaces, with lecture rooms and small offices. It also houses art and architecture sculpture shop

Fifth- sixth and seventh floorplan, exist out of lab zones, conference rooms, lecture rooms and student workspaces.

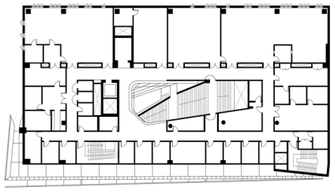
The eight floor plans are a large lobby, where social interaction is created. The nineth floorplan has art studios, print shops, material shop and small canteen.[60+61]



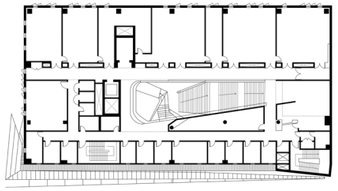
level -02



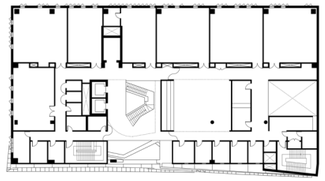
level -01



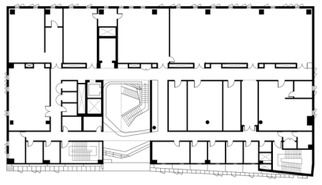
level 00



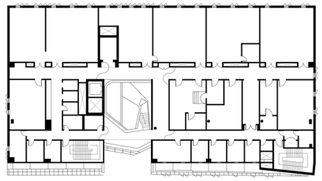
level 01



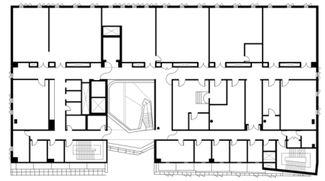
level 02



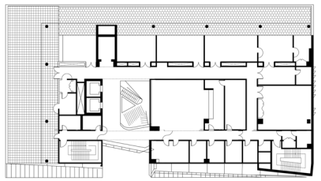
level 03



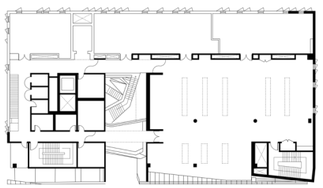
level 04



level 05



level 06



level 07

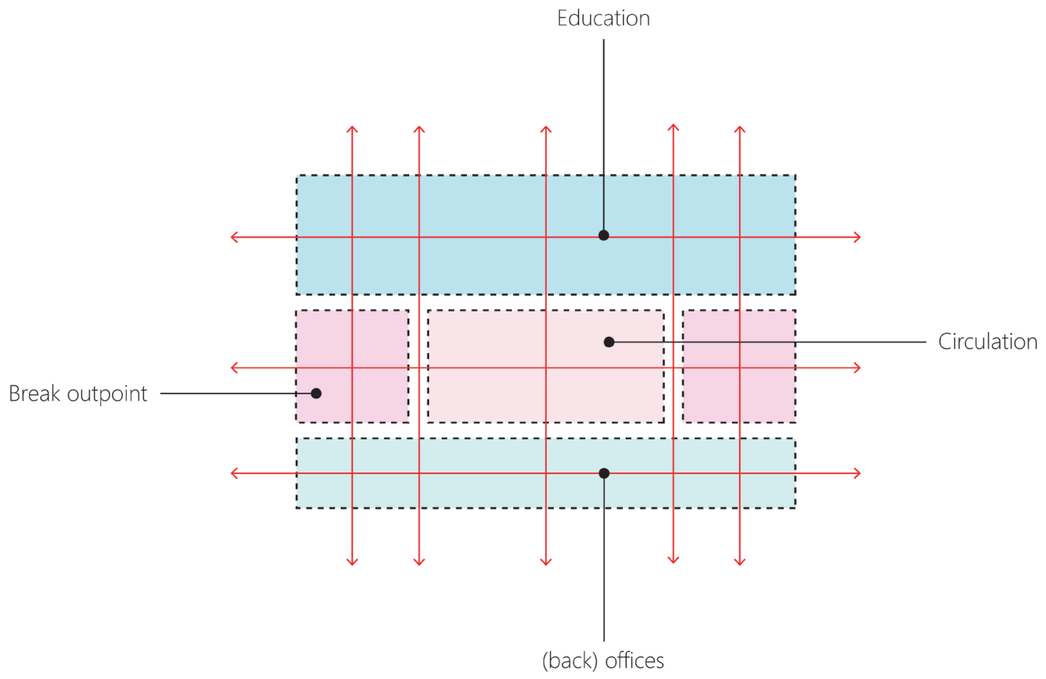


Fig. 4.1.4K. Conclusive diagram - own drawing based on findings

Conclusion

The analysis done show that the Cooper Union anticipated implementing new technology usage in their architecture program. Therefore, the building itself reflects the innovative design choices. For example, the façade, and the interaction with its user.

The key points that could be derived are the very strong staircase cutting through the floors of the in building on multiple levels. Resulting in creating a circulation that takes the person through all the spaces and everything can be overseen (transparently). The division between students/ teacher and the offices spaces is clearly present, where in between spaces (stair) the interaction takes place. The corners of the building are used as break points for meetings and tutoring.

Fig. 4.15. Bartlett School of Architecture

Case study 05 - The Bartlett School of Architecture

PROJECT INFORMATION

The Bartlet school of Architecture

Built in:
2016

Area:
8500 m²

Location:
London, United Kingdom

Architect:

HawkinsBrown Architects

The Bartlett School of Architecture, designed by HawkinsBrown Architects, built in 2016 and located in the United Kingdom (London).[62]

Archello mentions that the first commission was to renovate the current school of architecture and add a 'small' extension. After the designers consulted and planned together, they concluded that the design brief couldn't be fulfilled. HawkinsBrown, then convinced the school committee with a more ambiguous plan to build a new university for architecture.

The design brief was "to create more space" for the students and provide good teaching environments.[63]

The building facilitates new functions, interactive working areas, new studio spaces, workshops, social spaces and cafés. The design team focused therefore on atmosphere of transparency through openness, spontaneous spaces and collaboration sports.[64+65]

I. Education

As the Bartlett university mentioned, their aim is to create environments that evoke, stimulate creativity and innovation. Therefore, the university encourages students to explore different fields to create connections to architecture. The fields as urban planning, social sciences, engineering, and cultural depth.[66]

At Bartlett University, students are placed in a dynamic learning environment that combines theoretical knowledge with real-world design practice. The educational program is therefore various, as for the architecture department the students have access to a brand-new workshop (fabrication hall) equipped with traditional and new technology.

The floor plans analyzed show that the learning environment for education has the overhand, as it is more than approximately 60% of the buildings program. There is a clear distinction between offices and student environment (lecture rooms, studio's, and workspaces. These spaces are divided into breakout spaces to increase the social factor.

II. Routing and entrances

Circulation in the Bartlett university is very well thought out. In the spatial layout, the it is clear that the flow of students and people have to be smooth. The building has good accessibility, from all sides of the streets. It is even accessible with the old university complex (see level -01 and 00). There are three entrances from the outside on the main level and one from the old building. The basement layer has one access point externally to the workshop and one from the old building.

The routing is linear and creates different streets, leading to three stairs and two vertical transportations. There are clearly two horizontal streets in the routing, one for educational spaces and one for the office spaces. In between these spaces, the breakout- point is created, it is a space where staff, teachers and students interact.

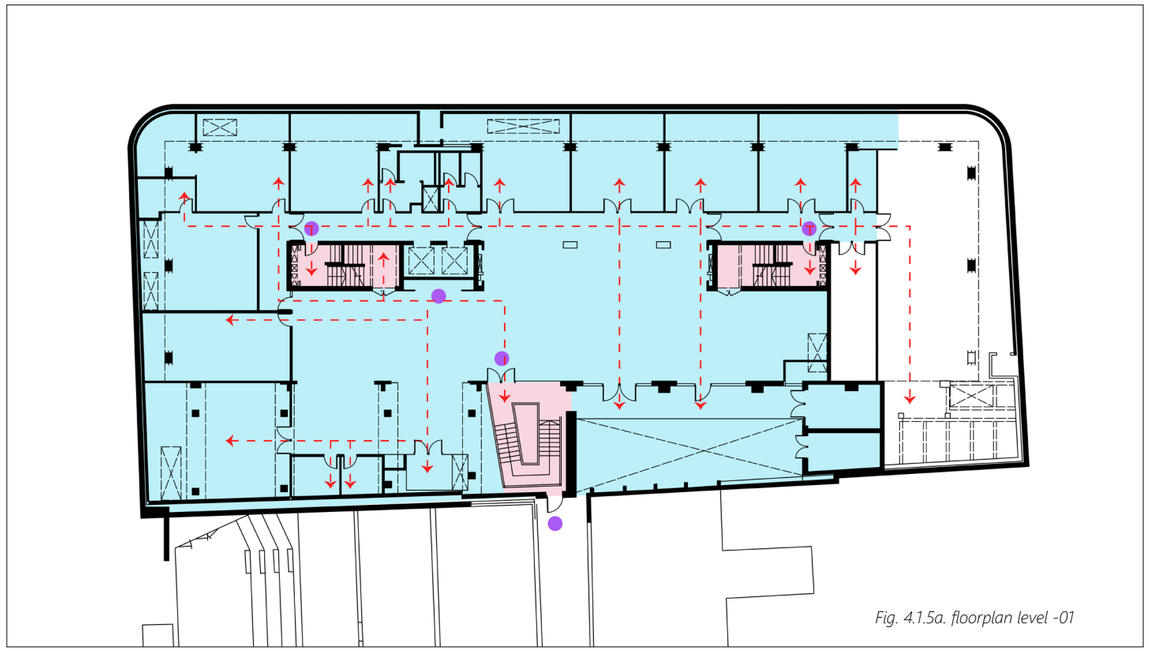


Fig. 4.1.5a. floorplan level -01

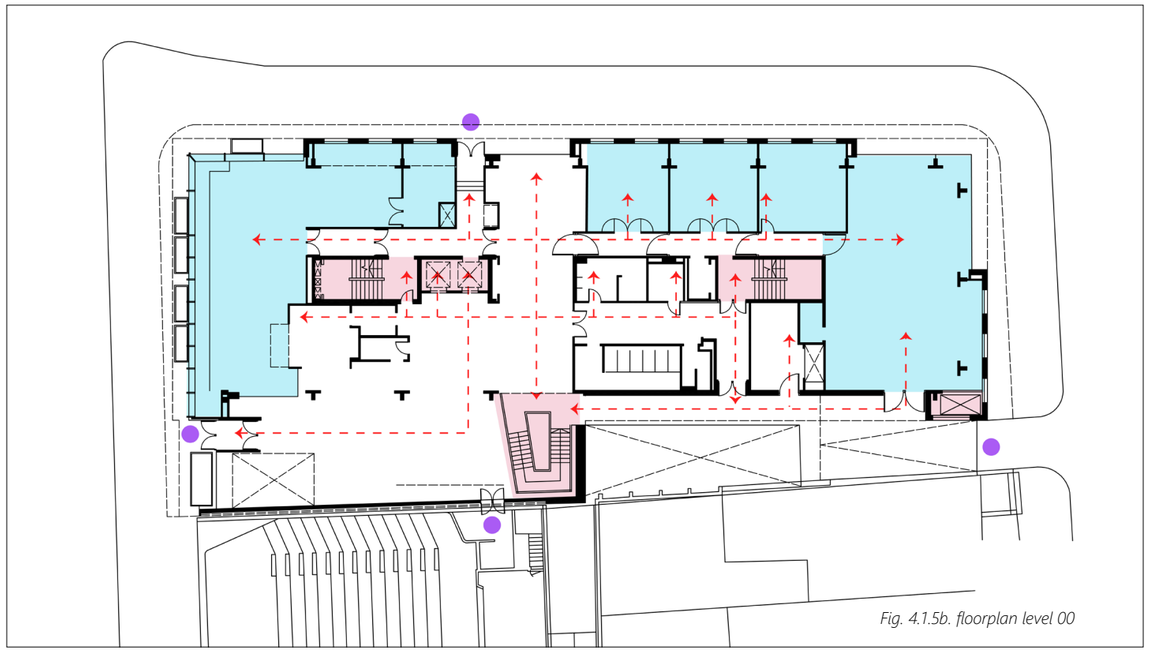


Fig. 4.1.5b. floorplan level 00

I. Space for educational use

II. Routing

II. Entrances

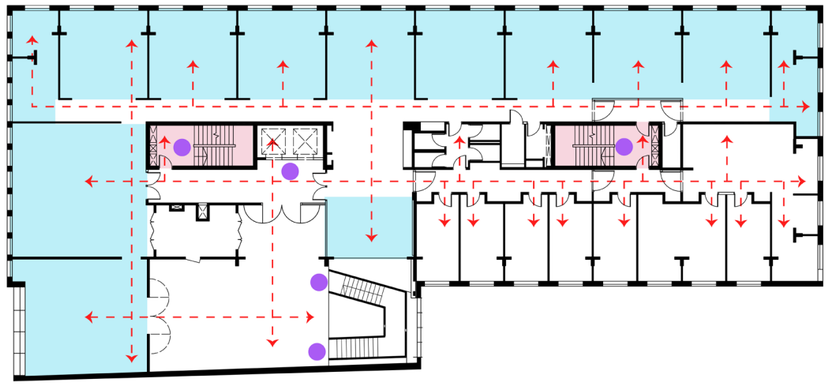


Fig. 4.1.5c. floorplan level 01

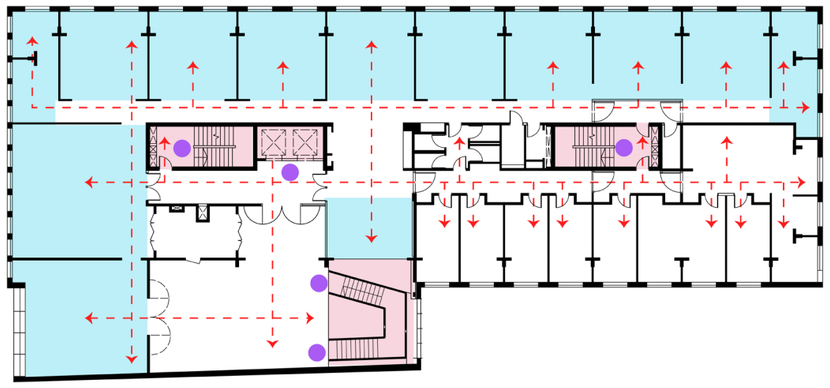


Fig. 4.1.5d. floorplan level 02

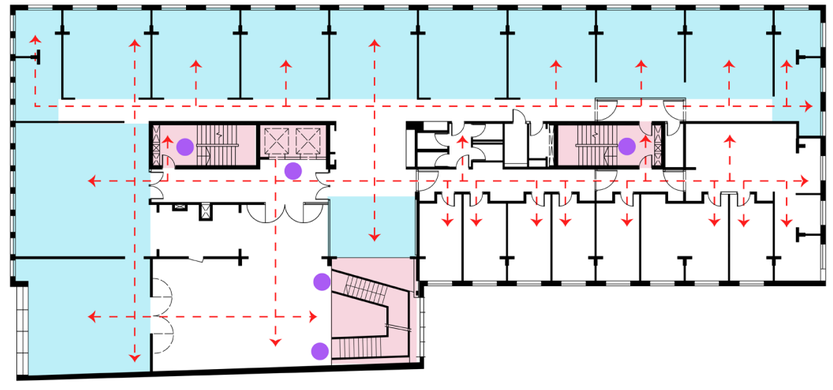


Fig. 4.1.5e. floorplan level 03

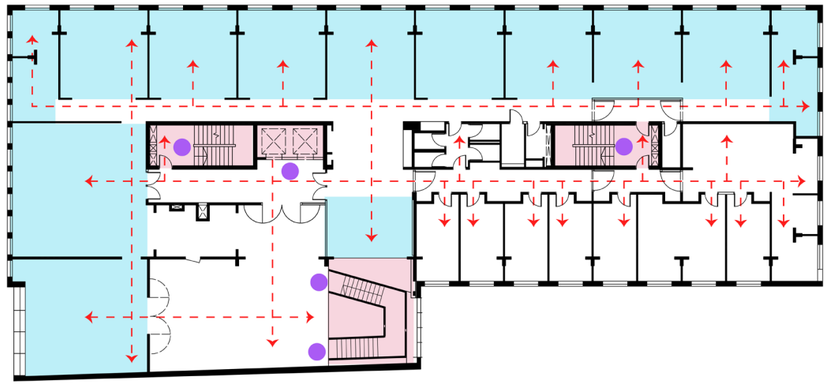


Fig. 4.1.5f. floorplan level 04

I. Space for educational use

II. Routing

II. Entrances

I. Space for educational use

II. Routing

II. Entrances

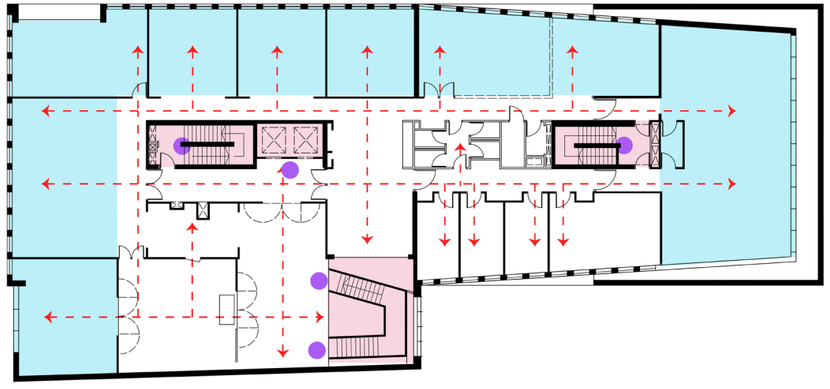


Fig. 4.1.5bg. floorplan level 05

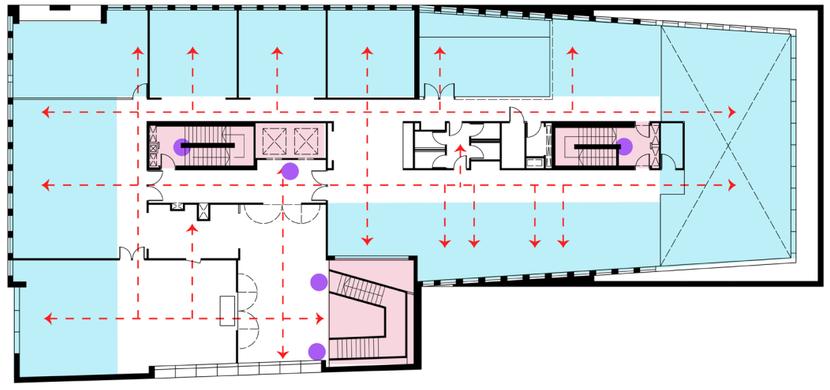


Fig. 4.1.5h. floorplan level 06

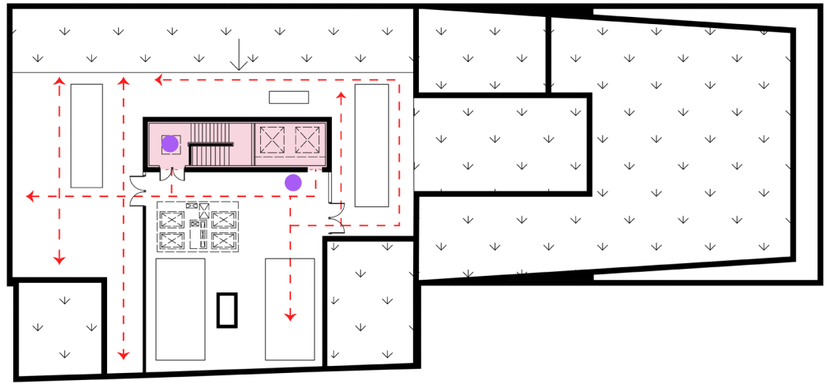


Fig. 4.1.5i. Roofplan level 07

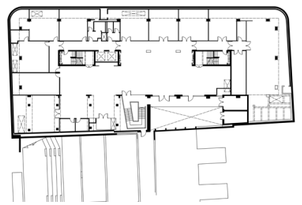
I. Space for educational use

II. Routing

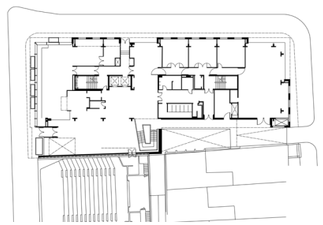
II. Entrances

III. Program

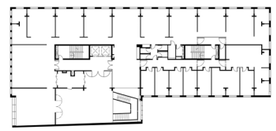
1. Fabrication Hall
2. Static Machinery
3. Milling
4. Spray Booth
5. Small Robotics
6. Madeoffice
7. Computer Cluster
8. Tutorial
9. DMC
10. Toilets Showers and Dwc
11. Specialist Workshop Lab
12. Laser Cutters
13. Plant Room
14. Switch Room
15. Workshop Courtyard
16. Café
17. Security
18. Bar
19. Exhibition
20. Seminar/Lecture
21. A Large Lecture
22. Deliveries Ramp
23. Breakout Space
24. Reception
25. Office
26. IT/Av shop
27. Studio
28. Studio Help/Tutorial
29. Office Hub



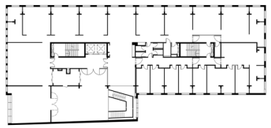
level -01



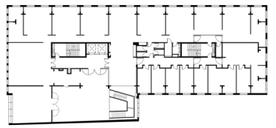
level 00



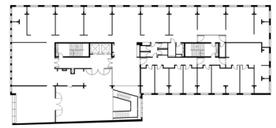
level 01



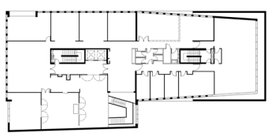
level 02



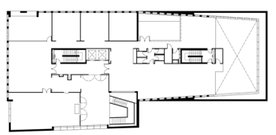
level 03



level 04



level 05



level 06

level 07

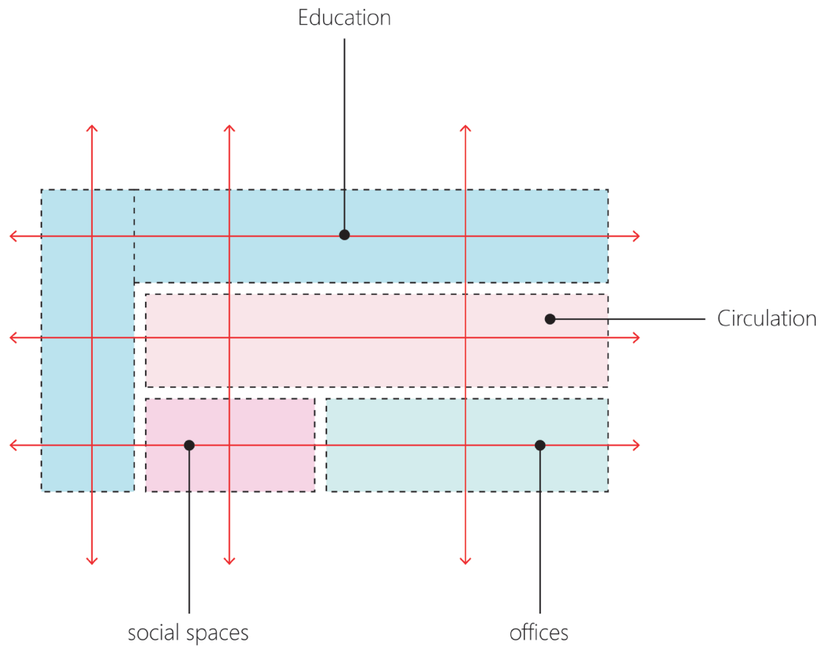


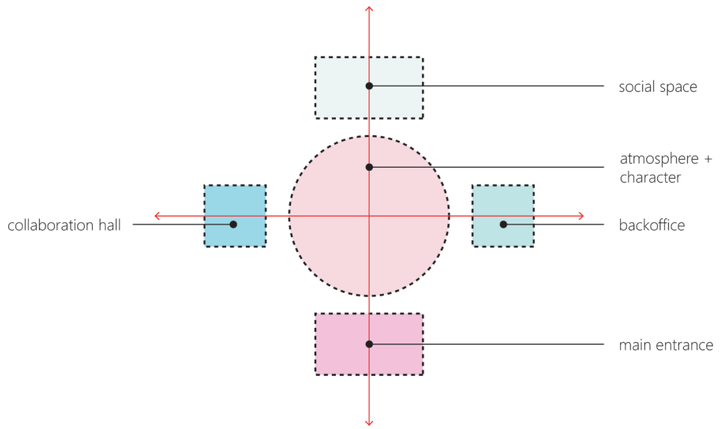
Fig. 4.1.5.J. Conclusive diagram - own drawing based on findings

Conclusion

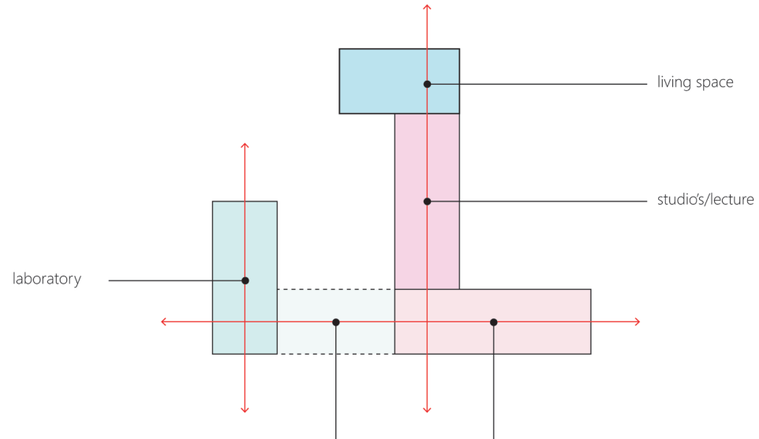
The conclusion of the research conducted into the TU- Delft of architecture, combined into one diagram. (fig.4.1.1.d).

The conclusion derived from this university is translated into strong key-points. The key elements are the centred main entrance connected visually and physically to the workshop and canteen as one corridor. This gives, the building an inviting character, where one could identify him/herself with its future (presentations. On the right side the offices and some lecture rooms are placed between the staff members spaces.

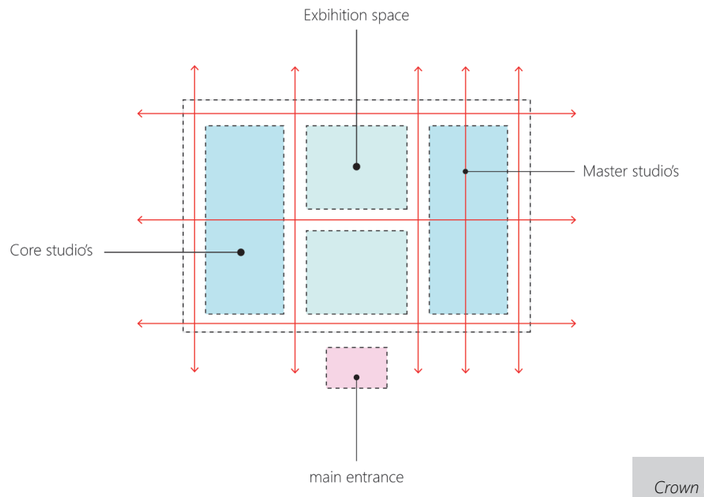
Overview conclusive diagrams



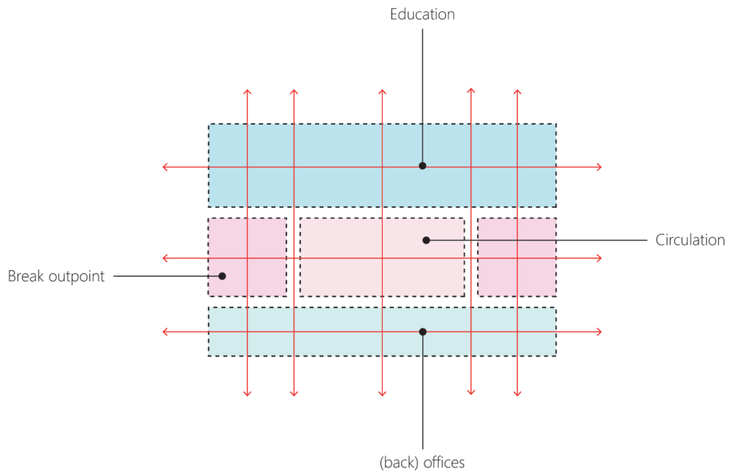
TU- Delft



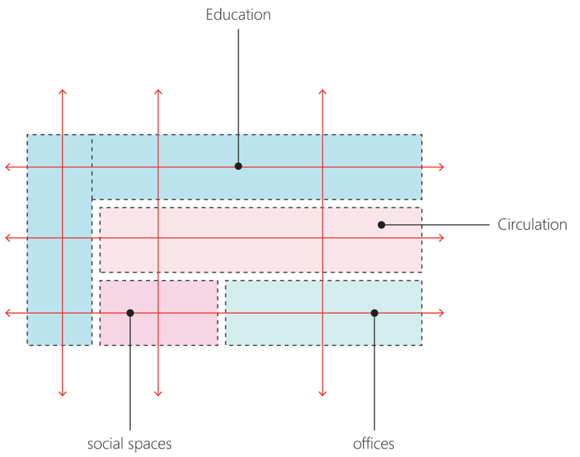
Buahaus



Crown Hall



Cooper Union



Bartlett

Quote:

"As the Bartlett university mentioned, their aim is to create environments that evoke, stimulate creativity and innovation"

- Bartlett University -

V. *ANALYSIS MASTERPLAN - URBAN AREA*

5.1 - Key challenges - for a sustainable urban design

The reduction of traffic congestion in central Co-penhagen

The reduction of traffic emissions

The availability of greenery in close proximity

Supplying a sufficient amount of affordable housing

Creating lively environments

The supply of a sufficient amount of public trans-port for all

Creating a safe environment for cyclists and pedestrians

Creating an accesable waterfront

Fig. 5.1.1. Key challenges derived from the groupresearch booklet of our graduation studio - own image

Masterplan development

This masterplan is developed by the students at the graduation studio. The reason for this masterplan proposal design, is as mentioned due to the development of the artificial Island of Lynetteholm in Denmark. The island is still being developed as we speak.

As part of the graduation studio, we visited the island in November 2022, although it was still a small piece of land we got a glimpse of the island in progress.

The research done on the city of Copenhagen; Denmark can be found in the group booklet of Timber future. Therefore, this chapter including, the key challenges, figures and designed masterplan are taken from graduation group booklet.

The city of Copenhagen has a lot of challenges to face. After analysing Copenhagen on multiple aspects, the conclusion is drawn that there are eight key challenges that should be taken into account while designing a sustainable urban masterplan for Lynetteholm:

1. Traffic congestion
The traffic congestion in the centre of Copenhagen is a big problem. The new masterplan design for Lynetteholm should provide a solution for this.

2. Traffic emissions
A well-designed masterplan should result in less traffic emissions. This ensures a healthier environment to live and work in.

3. Greenery
The new design for the masterplan should ensure that every inhabitant of Lynetteholm has accessibility to greenery within close proximity.

4. Affordable housing
There should be a large supply of affordable housing so that people in varying income classes can afford to live on the island of Lynetteholm.

5. Lively environments
On the island of Lynetteholm, a lively environment should be facilitated that creates a dynamic atmosphere. This will ensure that it becomes an attractive place to visit for people from other parts of the city and those who live on the island itself.

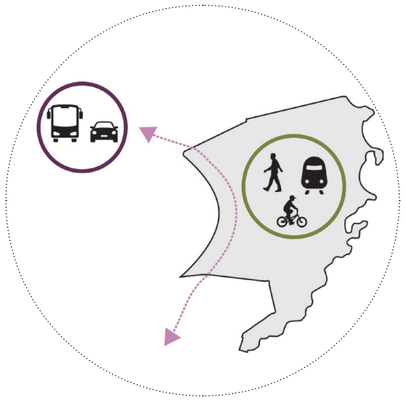
6. Public transport
Within the design for the masterplan, Lynetteholm should be easily accessible by public transport from the rest of the city of Copenhagen. Also, the residents of the island should be able to move easily.

7. Safety for slow traffic
The masterplan should ensure a safe environment for cyclists and pedestrians. This way, the residents of Copenhagen are encouraged to move on foot or by bicycle, instead of by car.

8. Accessible waterfront
Because the island of Lynetteholm is almost completely surrounded by water, it creates a great opportunity to provide accessible and attractive waterfronts that the inhabitants of Copenhagen and Lynettehom can enjoy.

The next chapter explains design aspects that are created to tackle these key challenges.

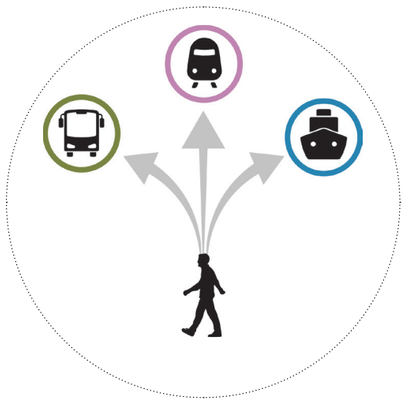
5.2 - Design Solutions - for a sustainable urban design



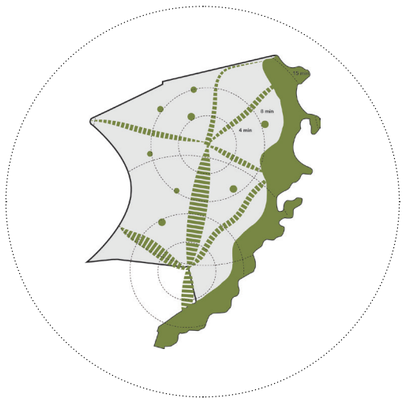
Solving congestion: Creating an underground ring-road that runs through Lynetteholm redirects the traffic that uses the city centre to reach their destination. Also, car traffic is reduced and replaced by slow traffic and public transport.

Banning the cars: By banning the motorised traffic from large parts of the island of Lynetteholm and replacing it with slow traffic and public transport, the emission caused by traffic is reduced. This results in a healthier environment to work and live in.

Lively environment: Movement is encouraged by connecting the two centres on the island by public transport and slow traffic, by creating amenities within walking distance, and by creating green transition zones between neighbourhoods. Also, the plint of the buildings are activated by housing commercial, retail and office functions. These mixed functions allow for 24/7 activity.

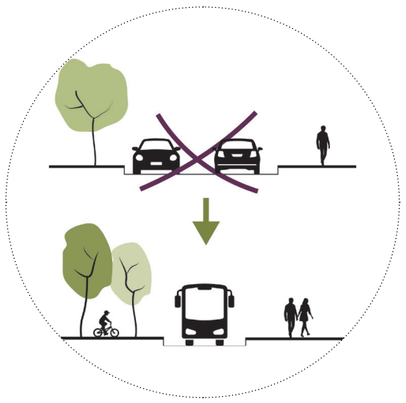


Public transport: The island of Lynetteholm is connected to the rest of Copenhagen by various ways of public transport. On the island itself, public transport is available everywhere within a four-minute walking distance.

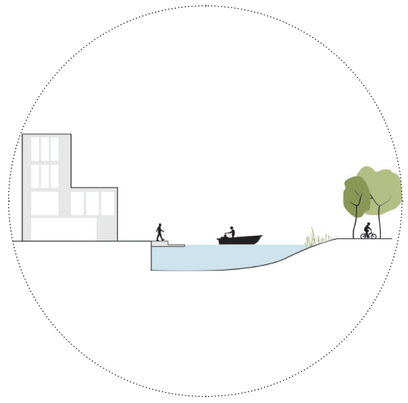


Greenery in close proximity: Green radials spread from, and connect different centres and neighbourhoods are created. Additional small parks and squares result in every inhabitant having the ability to reach greenery within a six-min. walk.

Affordable housing : Creating different neighbourhoods with a variety of densities and housing typologies results in the opportunity for Lynetteholm to house 35,000 inhabitants and the same amount of jobs.



Slow traffic: By banning the car from most of the streets in Lynetteholm there is more room and more safety for slow traffic such as cyclists and pedestrians.



Accessible waterfront: Creating both hard and soft waters edges results in a very accessible waterfront. It has commercial and recreational functions.

Fig. 5.2.1. design solutions derived from the group research booklet of our graduation studio

5.3 - Final proposel - Grøn Lynetteholm - In close proximity

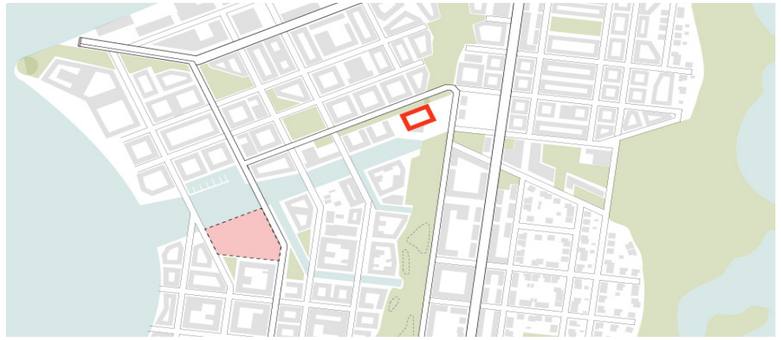
Legend
Bicycle bridge
Bus
Metro
Car
Watertaxi
Metro station

Green corridor
Coastal green
Water
Neighborhood
Parks/public space
Sub-centers

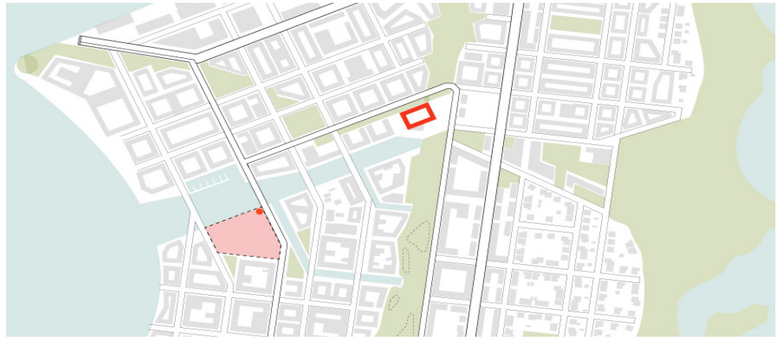
Fig. 5.3.1. final masterplan derived from the group research booklet of our graduation studio

5.4 - Site location

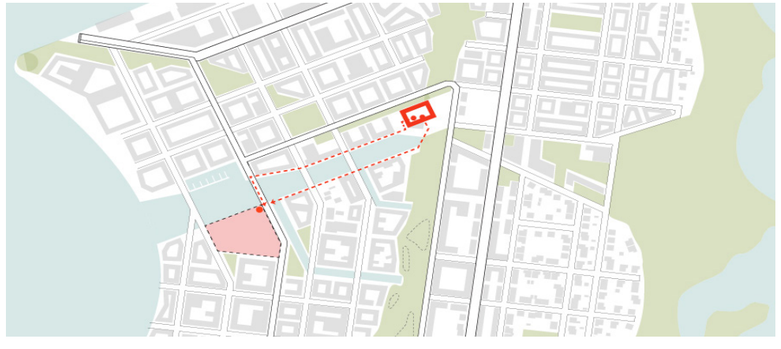
Fig. 5.4.1. site plan location - own drawing - based on group research



I. NEARBY TRAINSTATION - *REACHABLE IN A 5 MIN WALK*



II. POINT OF ARIVEL



III. ROUTE TO THE SITE LOCATION

Fig. 5.4.2. site analysis - own drawing - based on groupresearch

VI. *CONCEPT DESIGN*

6.1 - Case studies in relation to the siteplan

In this chapter, the case studies will be placed on the actual building plot. The site is defined according to its value it brings. Besides that, it is reachable, it has a waterfront and a large open terrain.

To get the sense of scalability, the site plan shows that the five case studies of the university take up a lot of space. In terms of programming and defining the measurements of the new university it gives a clear overview of what the possibilities are.

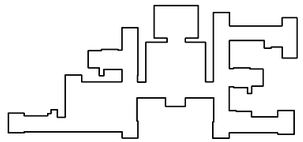
The plot is approximately 16.000m2 in surface (fig.6.1.1). Zooming in a bit more the measurements of the plot are visible these are approximately in the largest side 150 meters and in the shortest close to 36 me-ters.

On the next page, the case studies are projected on the site location. As can be concluded, the Tu- delft university had a large surface area and therefore, which translates into a large program. The Bauhaus, which is a mini-Campus on the terrain fits perfectly within the boundaries with little space on the site left. The Crown hall (IIT) fits like a nice puzzle in the middle, this shape gives the plot a lot more possibilities and opportunities to develop along the building. This is the same for Cooper Union and Bartlett University. Therefore, the more reason to look closer at the last three projects.

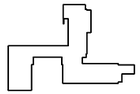
Fig. 6.1.1. site plan and measurements, own drawing based on our masterplan

OVERVIEW
CASE STUDIES

Projected on siteplan



TU- Delft



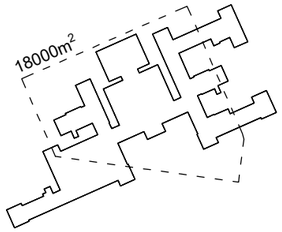
Bauhaus

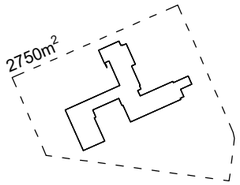
Crown Hall

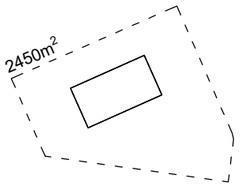
Cooper Union

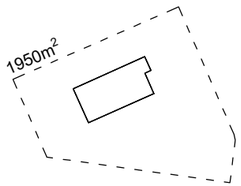
Bartlett

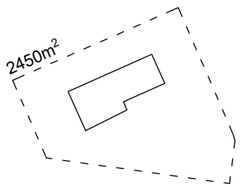
I. *surface area building*



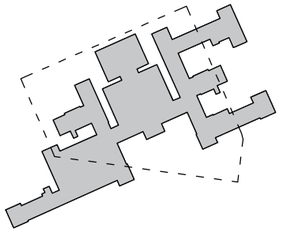


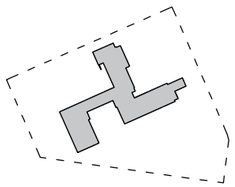


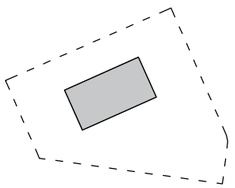


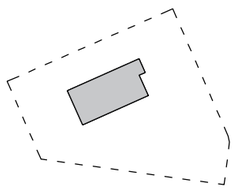


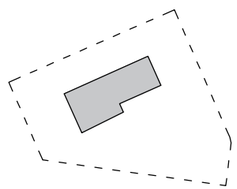
II. *volume presence (grey)*



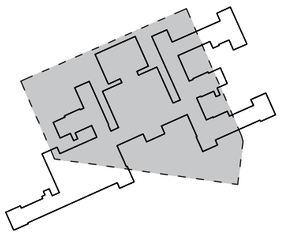


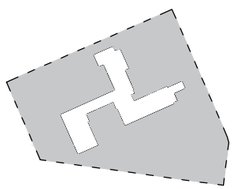


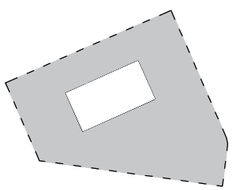


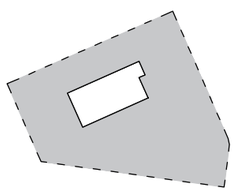


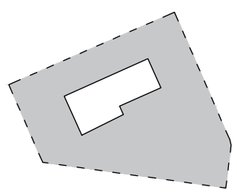
III. *free space to develop (white)*



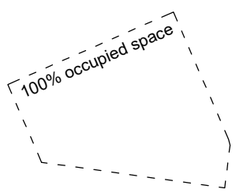


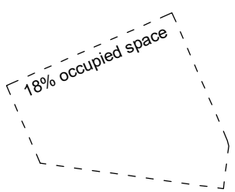


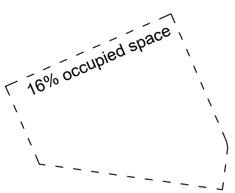


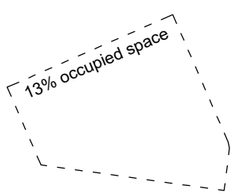


IV. *facts landuse*









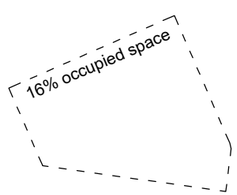


Fig. 6.1.2 scale of projects - own drawing - based case studies

6.2 - Form studies on urban level

This chapter explores the possible form/shape of the new university of architecture considering the urban context.

As discussed in the masterplan (chapter V), during the analysis the design solution for a sustainable urban development.

The design solutions that I will be taken into account are solving congestion by accessibility to the public transportation and provide transportation by boats, busses, e- modes etc. To create a lively environment, possibilities for green access is present with a connection maybe to the waterfront.

These key points of testing and rating are shown in the drawings, and models made during the form study analysis. One and each of the form study will be discussed and rated separately. the rating is from + to +++++ highests scoring.

The chapter ends with a conclusion with the one(s) that have the most/best potentials

Fig. 6.2a form studies, own images and concept

MODEL I.

Solving congestion

+

Acces to public transport

+ + + + +

Green accessibility

+ +

Connect to the waterfront

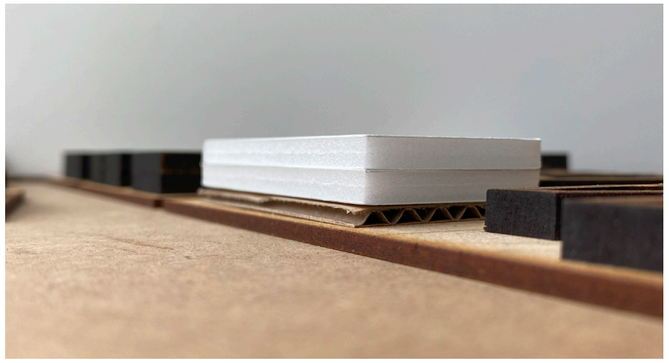
+ + +

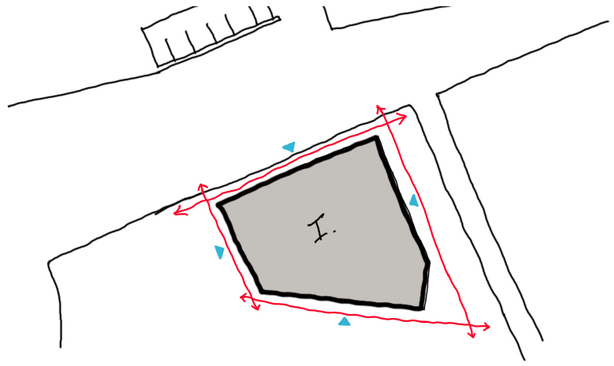
Multiple etrances

+ + +

Circulation for pedestrians

+ +





Total score = 16/30 points

very poor = +
excellent = +++++

Fig. 6.2b scale of projects - own drawing - based case studies

MODEL II.

Solving congestion

+ +

Acces to public transport

+ + + + +

Green accessibility

+ + +

Connect to the waterfront

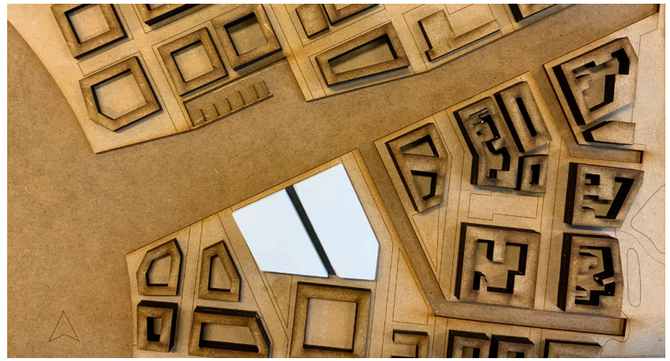
+ + + +

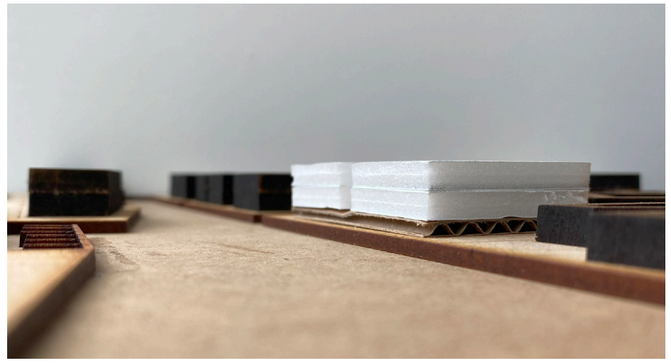
Multiple etrances

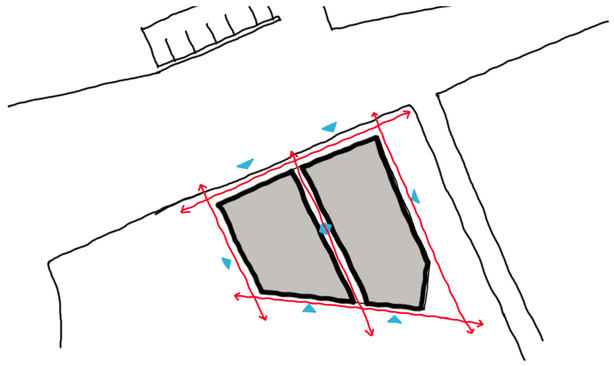
+ + +

Circulation for pedestrians

+ + +







Total score = 20/30 points

very poor = +
excellent = +++++

Fig. 6.2c scale of projects - own drawing - based case studies

MODEL III.

Solving congestion

+ + +

Acces to public transport

+ + + + +

Green accessibility

+ +

Connect to the waterfront

+ + +

Multiple etrances

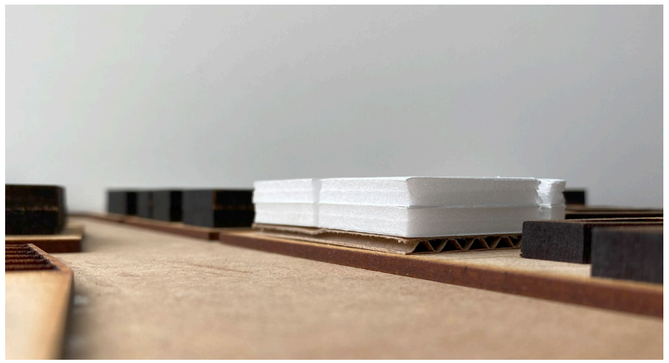
+ + +

Circulation for pedestrians

+ + +

Total score = 19/30 points

very poor = +
excellent = +++++



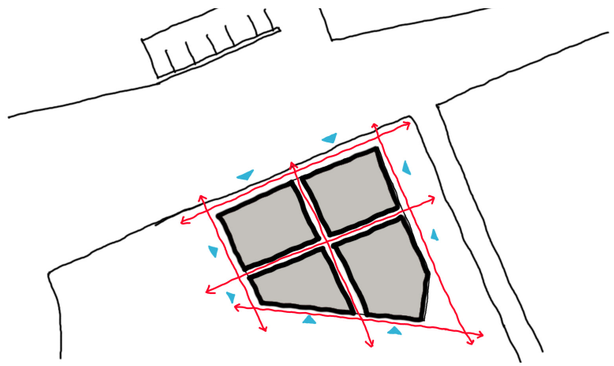


Fig. 6.2d scale of projects - own drawing - based case studies

MODEL IV.

Solving congestion

+ + +

Acces to public transport

+ + + + +

Green accessibility

+ + + +

Connect to the waterfront

+ +

Multiple etrances

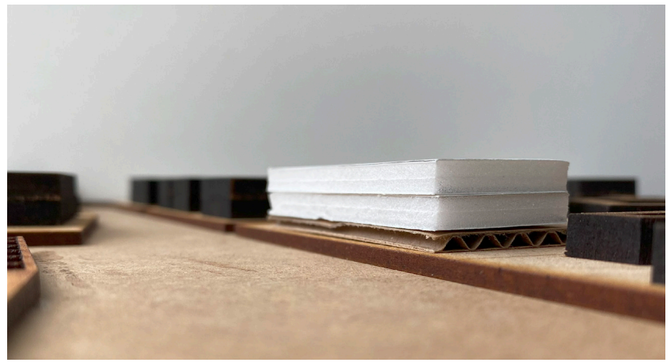
+ + + +

Circulation for pedestrians

+ + +

Total score = 21/30 points

very poor = +
excellent = +++++



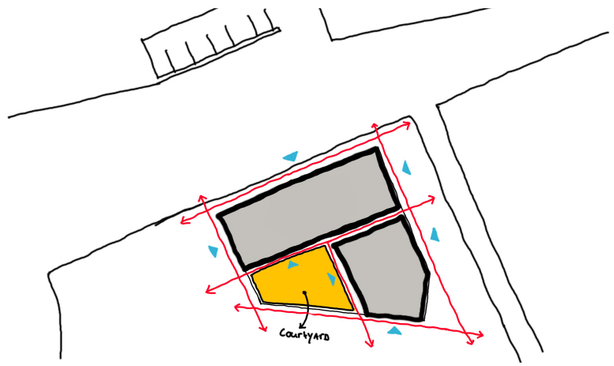


Fig. 6.2e scale of projects - own drawing - based case studies

MODEL V.

Solving congestion

+ +

Acces to public transport

+ + + + +

Green accessibility

+ + + + +

Connect to the waterfront

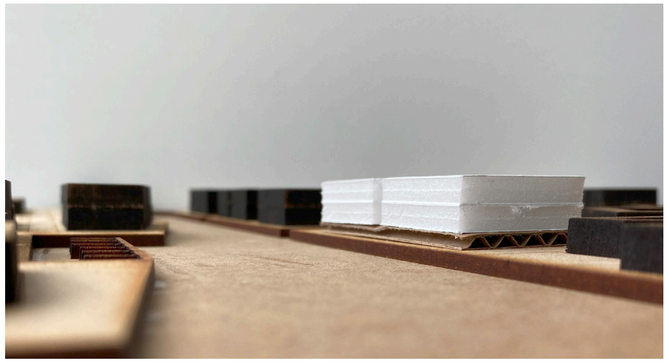
+ + + +

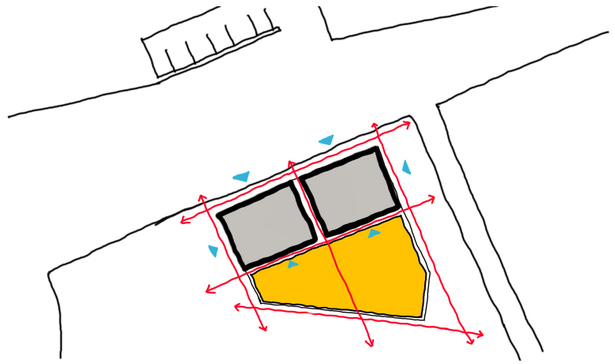
Multiple etrances

+ + + +

Circulation for pedestrians

+ + + + +





Total score = 25/30 points

very poor = +
excellent = +++++

Fig. 6.2f scale of projects - own drawing - based case studies

MODEL VI.

Solving congestion

+ + + +

Acces to public transport

+ + + + +

Green accessibility

+ + + +

Connect to the waterfront

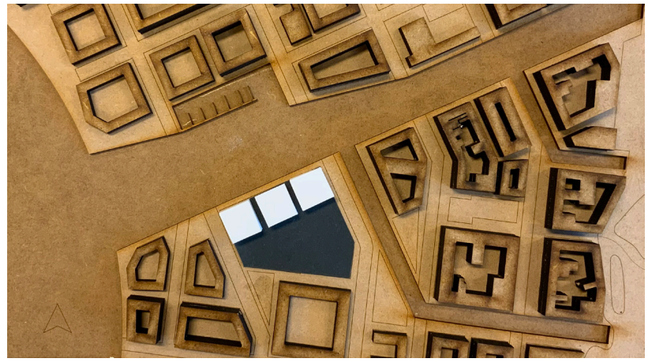
+ + + + +

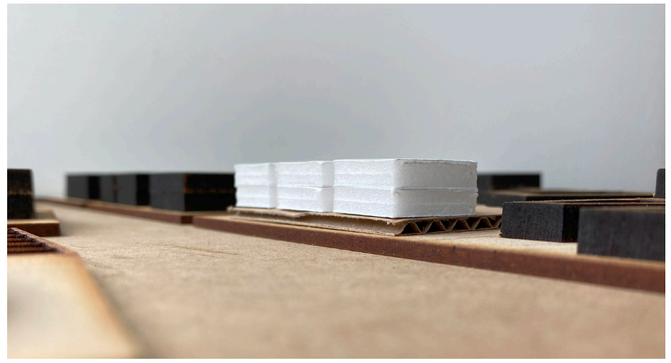
Multiple etrances

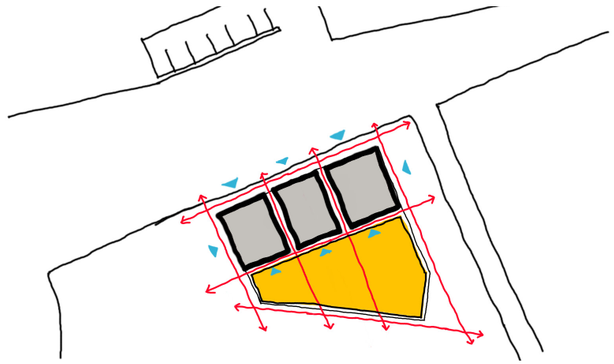
+ + + + +

Circulation for pedestrians

+ + + + +







Total score = 28/30 points

very poor = +
excellent = +++++

Fig. 6.2g scale of projects - own drawing - based case studies

MODEL VII.

Solving congestion

+ + + +

Acces to public transport

+ + + + +

Green accessibility

+ + + +

Connect to the waterfront

+ + + + +

Multiple etrances

+ + + + +

Circulation for pedestrians

+ + + + +

Total score = 28/30 points

very poor = +
excellent = +++++

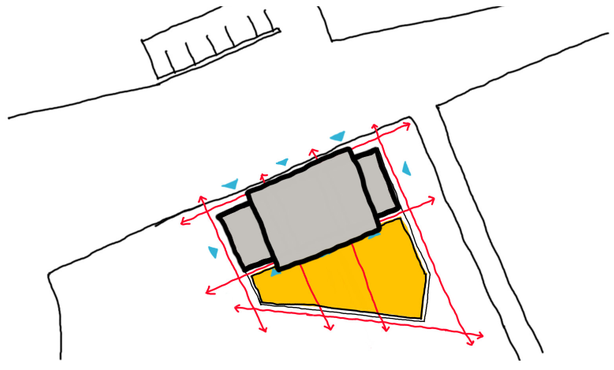


Fig. 6.2h scale of projects - own drawing - based case studies

Conclusion

From the analysis of the form study conducted in relationship to its urban context and taking into account the key elements of sustainable urban development, results in three forms with a heigh score 25, 28 and 28 of 30 points.

The scores from form study I to VII are:

Model I -> 16/30
Model II -> 20/30
Model III -> 19/30
Model IV -> 21/30
Model V -> 25/30
Model VI and VII -> 28/30

As conclude the last three models are the best options. The main differences between the models are the one and double division of the block.

Therefore, there will be taken into account that an access between the blocks is preferred as strategic design implementation. The double division creates three volumes and can be connected between each other with an upper level. The double division of volumes had nice corridor which can be connected with an upper level or a bridge. In the next step, program development and key elements as ingredients for the new university continues.

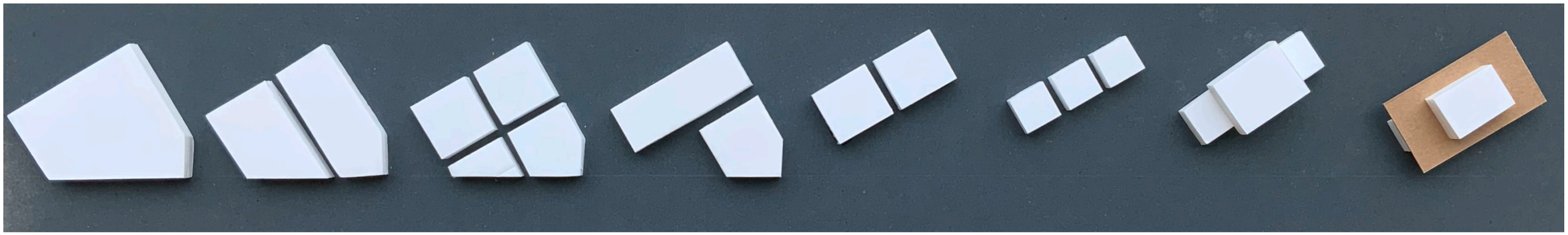


Fig. 6.2K sequence of form study - own drawing - based case studies

6.3 - Concept theme and program developemt

Concept theme

The concept of the design that I want to achieve is to create a sense of place for the university of architecture in Lynetteholm, that not only one could identify itself with but also contributes to health and stimulating learning environment.

In the first chapter literature research, I discovered that timber has many benefits, but also is an important element in creating a comfortable space. Therefore, a space alone for the university is not enough. The program and facilities provided to students, staff and teachers are key for the well-being and creativity.

Timber can and give space character. Therefore, the particular character applied in a place creates a certain atmosphere, this atmosphere contributes to the creation of sense of place. Sense of place is needed to create an identification for a person in the place of being.

In my case, the university of architecture of Lynetteholm, the users will be mainly the staff, teachers, and the students of bachelor and master's program.

As stated before, the largest space needs to be contributing to the students and teacher. Therefore, I chose three important spaces to inplement; the workshop is going to the largest space and the "sense of place", secondly, the implementation of digital advancement, and thirdly a presentation hall.

Program development

The volumes and shape will follow the functions placed inside the university. Therefore, I analyzed specifically the program of different universities of architectures around the world. Combined with the vision of the architect for the university building, I made list of programs. Programs/functions that are needed are necessary are there, but the innovative part of this new program is combining the historical visions with the contemporary visions. Were in history, one states that spaces are for interaction and exploring, the contemporary in summary uses the urban context, social aspect, the use of new technology and thinking about evidence based healthy environment (sustainability approaches like LEED, BREAAM etc.).

The spaces of the new university need to adapt the use of new technologies in order to innovate, learn and create new visionary urban designers, engineers, and architects.

The list program is as follows:

- Small Offices
- Laboratories
- Social Spaces
- Tutorial Hubs
- Auditorium
- Gallery/Exhibition Space
- Open Workspaces
- Collaboration Hubs
- Art Studios
- Library
- Conference Rooms
- Toilets
- Canteen
- Material Shop
- Storage Space
- Print Shop
- Café
- Stairs
- Elevators

Workshop Spaces:

- Cutting Workshop
- Wood Workshop
- Painting Workshop
- Machine Workshop
- Laser Cut Workshop
- 3D Printing Workshop
- Concrete Lab Workshop
- Photo Studio
- Metal Workshop
- Rendering/Digital Workshop/ Computing

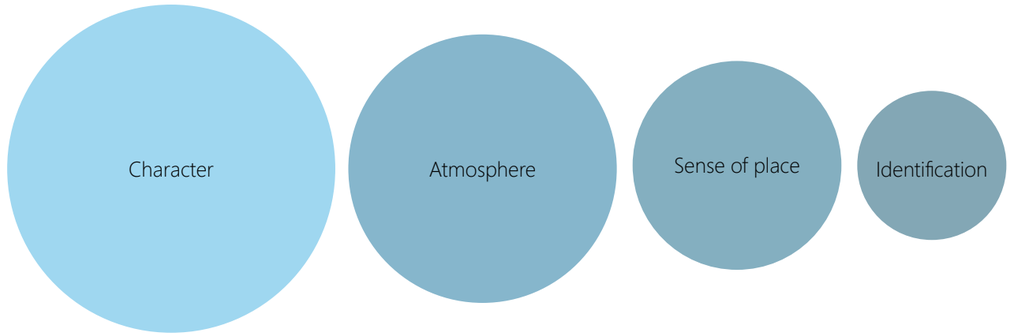
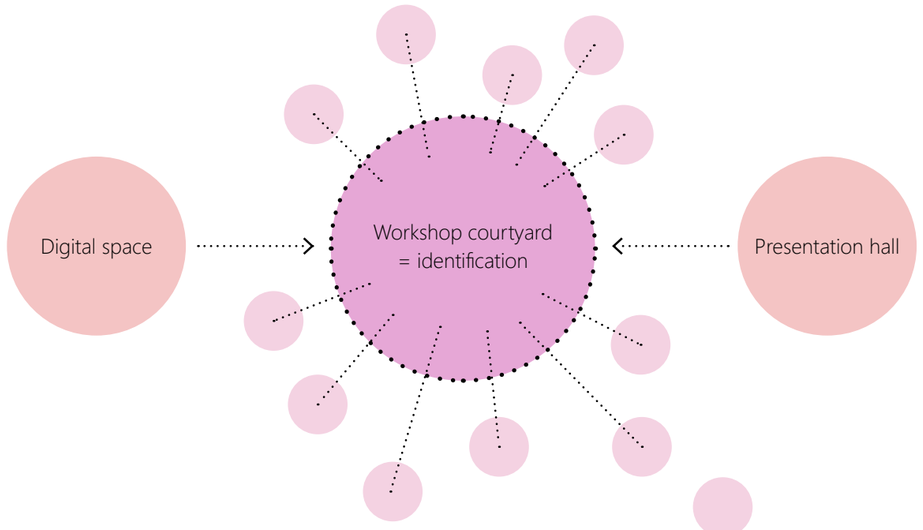


Fig. 6.3a diagram for theme of program - own drawing



other functions connecting

Fig. 6.3b diagram explaining the workshop courtyard as the main - own drawing

6.4 - Scale program to site plan

After defining the theme concept and program for the new university of architecture. The program is fitted on to the site plan in block volumes. In this way the design is reached, adjusted, and placed till satisfied. Therefore, I made a program bar within a defined size in width and depth. All the functions needed for the program have the dimensions inspired from the case studies.

The plot is now more defined according to the use of space. The plot has one urban fabric brought back in its context (fig 6.4a). Were the rest of the plot can be considered as site plan. The reason for this was to maintain the quality of the space in relation to its surrounding buildings.

The program is outlined in strokes of 20 meters, 10 meter, and 10 meters which gives a total width 40 meters (fig 6.4b). The site plan is rectangular shapes and is 50 widths by 150 meters long. The program is shaped into a site plan that is offset 5 meter to create better circulation around the site

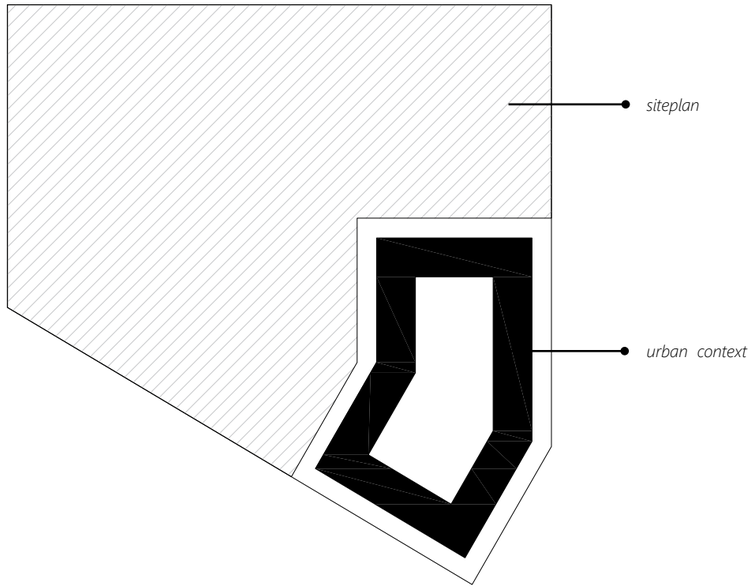


Fig. 6.4a plot after reconsideration is defined with one urban context - own drawing

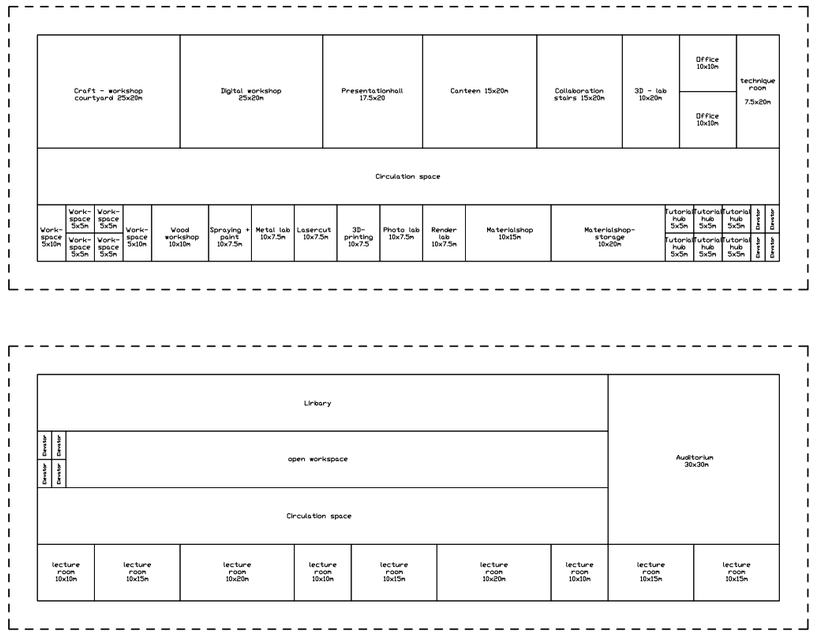


Fig. 6.4b bardiagram of the program - own drawing

Fig. 6.4c barprogram - own image

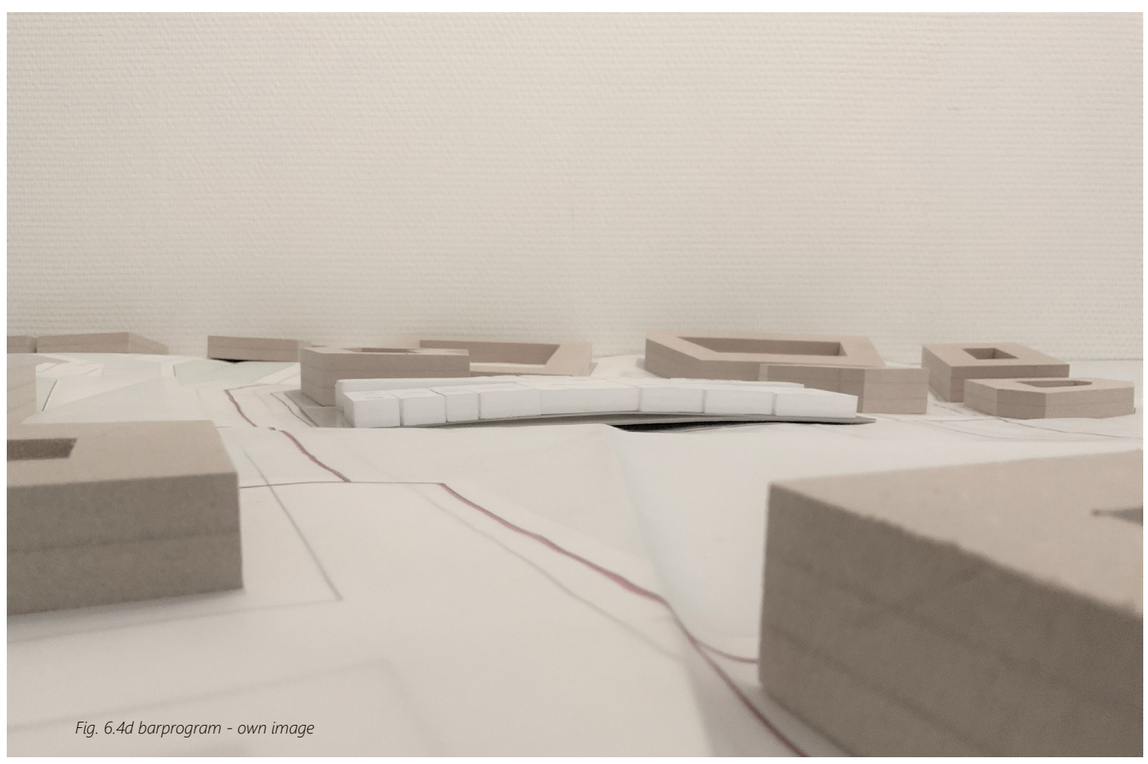


Fig. 6.4d barprogram - own image

Fig. 6.4e barprogram - own image

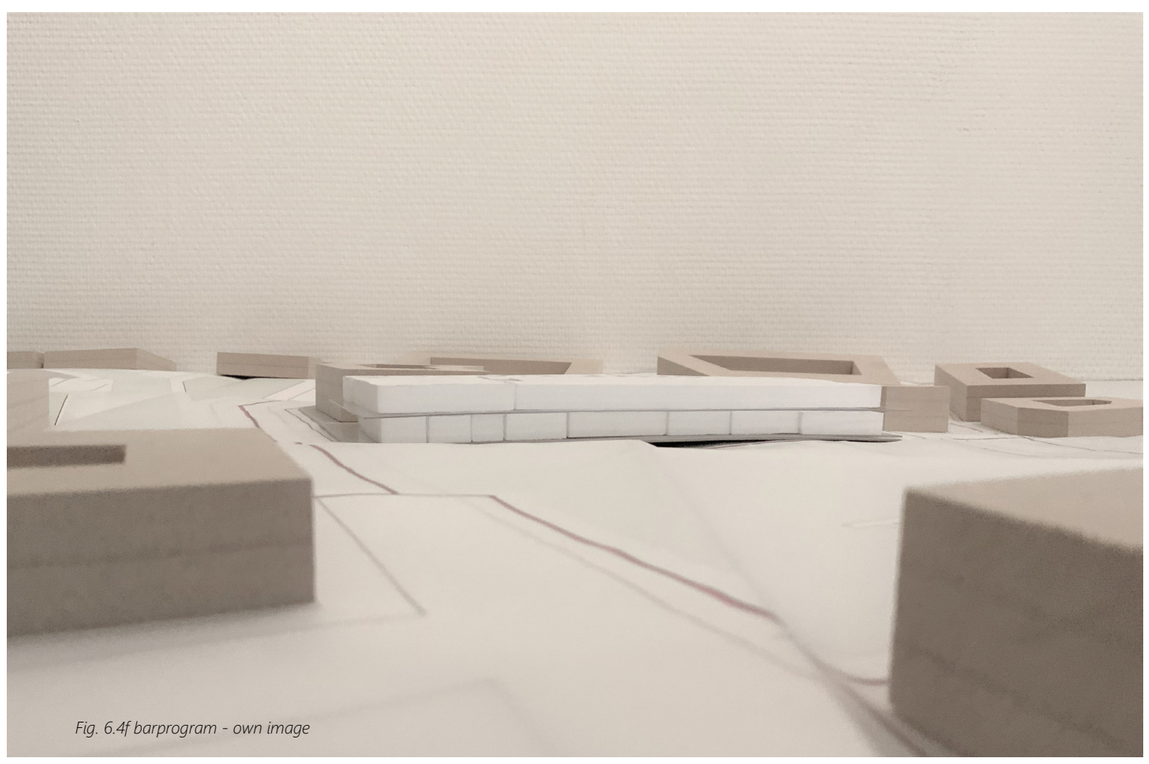


Fig. 6.4f barprogram - own image

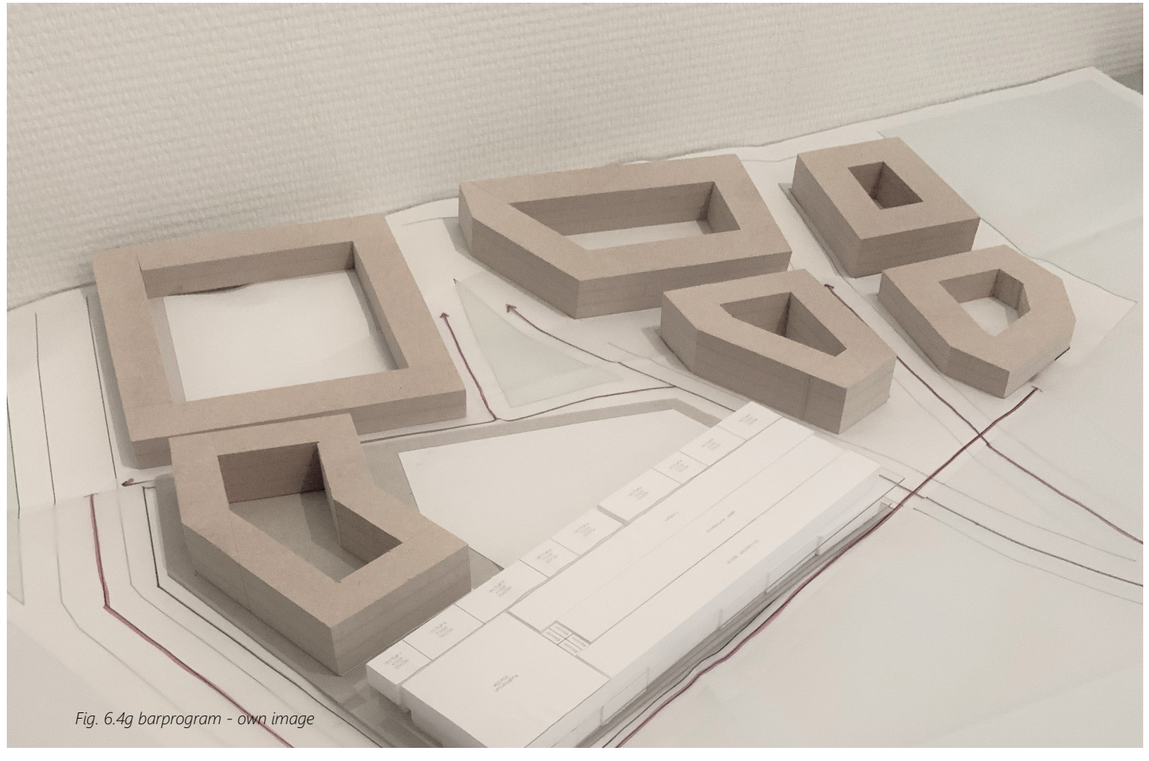


Fig. 6.4g barprogram - own image

Fig. 6.4h barprogram - own image

Fig. 6.4i barprogram - own image

Fig. 6.4J barprogram - own image

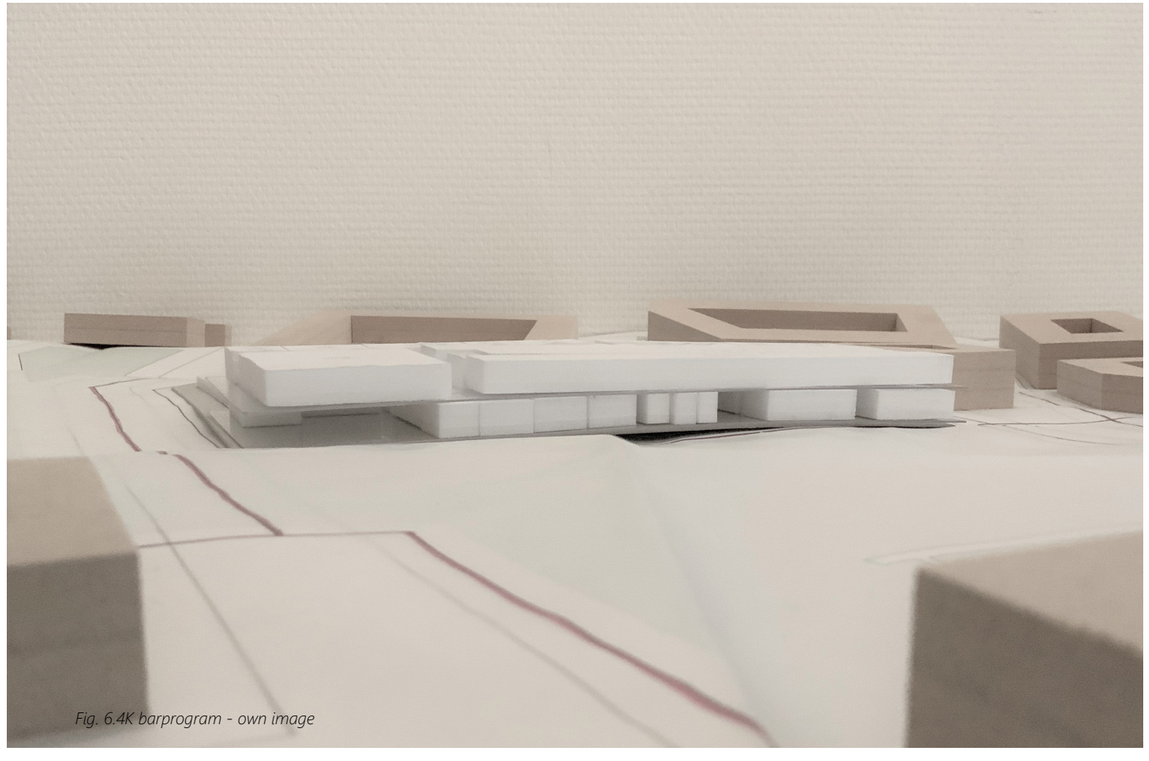


Fig. 6.4K barprogram - own image

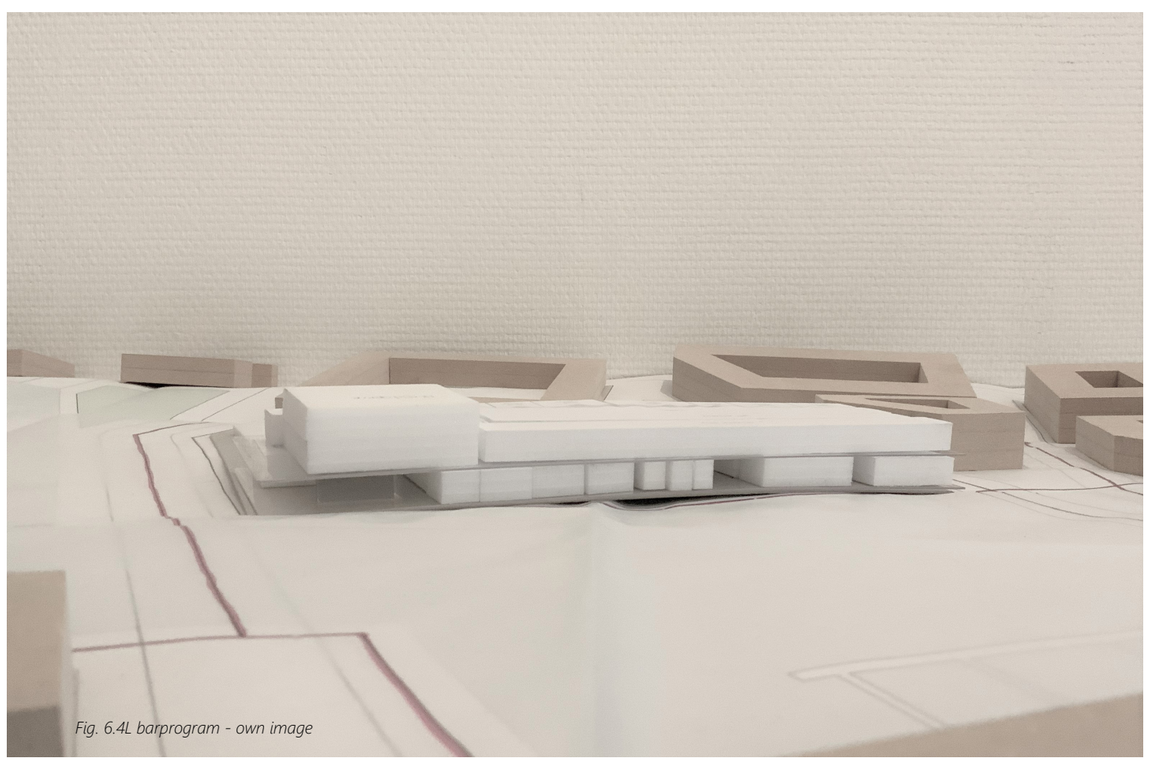


Fig. 6.4L barprogram - own image

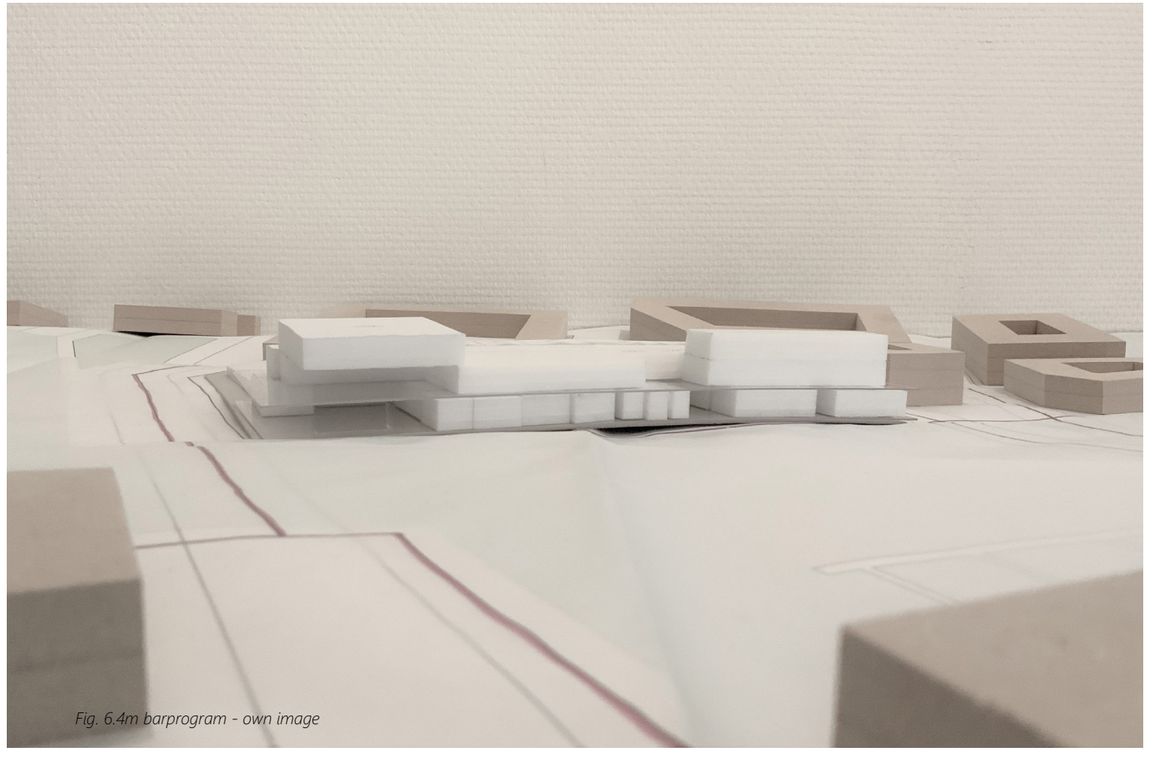


Fig. 6.4m barprogram - own image

Fig. 6.4n barprogram - own image

Fig. 6.4o bardiagram of the program - own drawing

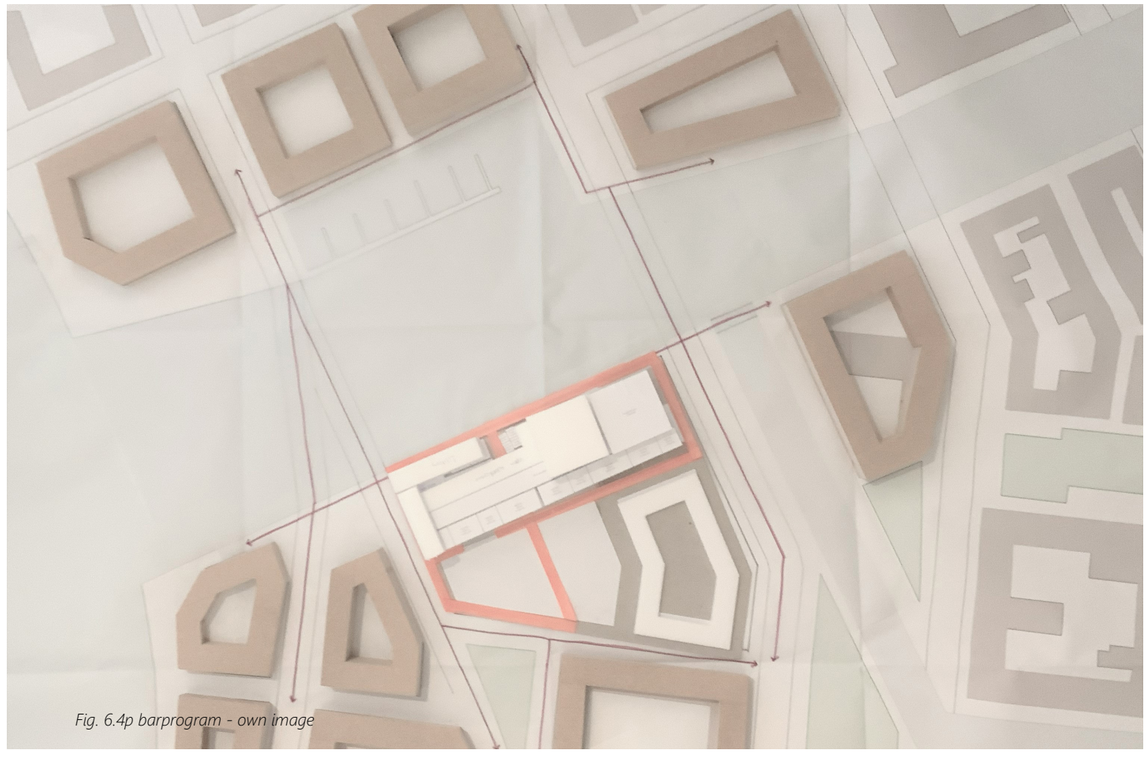


Fig. 6.4p barprogram - own image

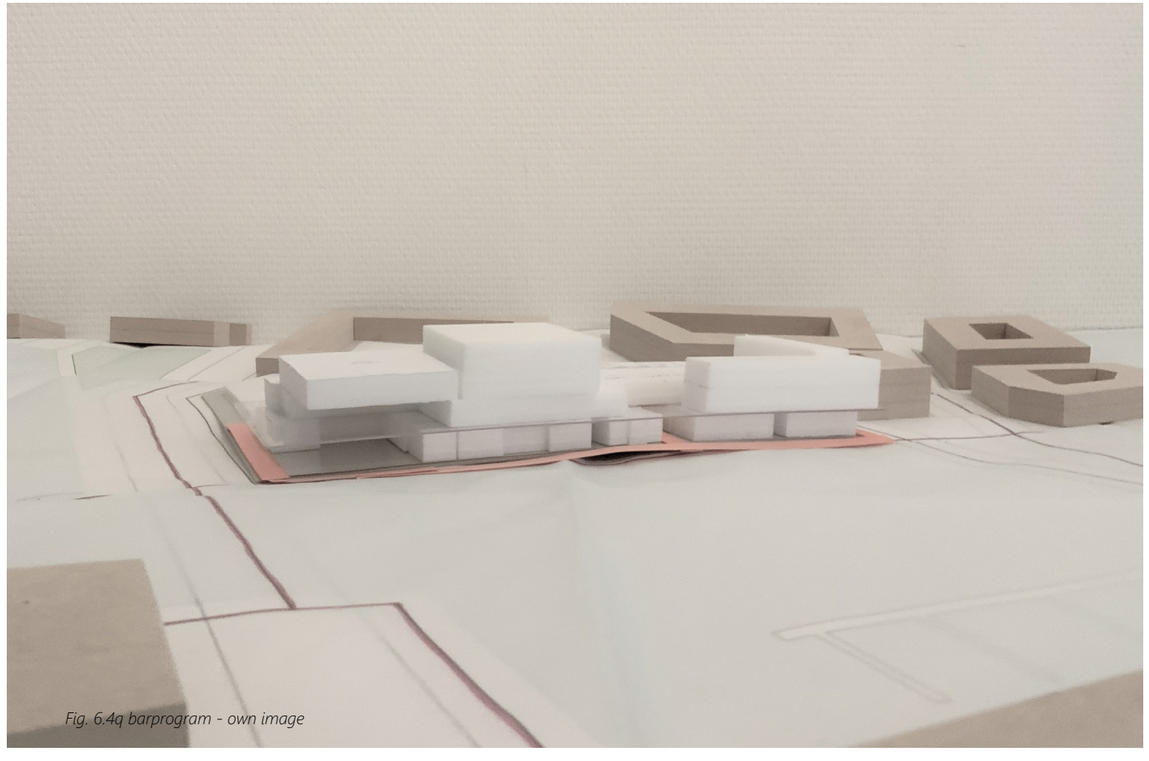
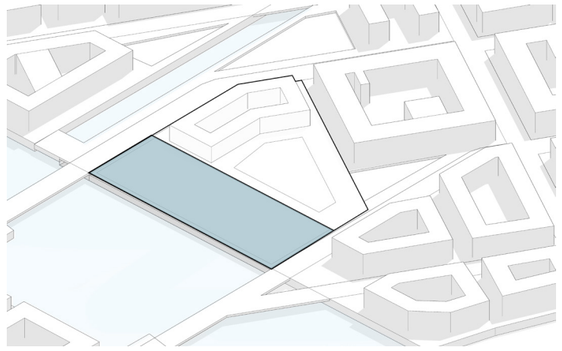
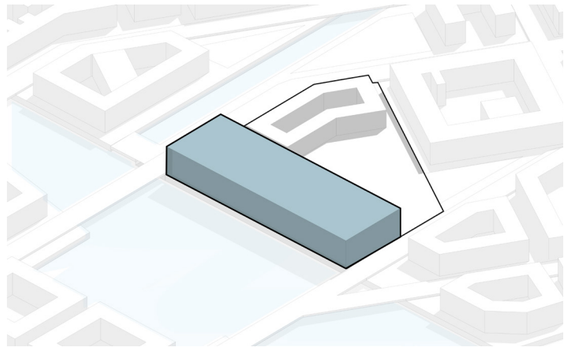


Fig. 6.4q barprogram - own image

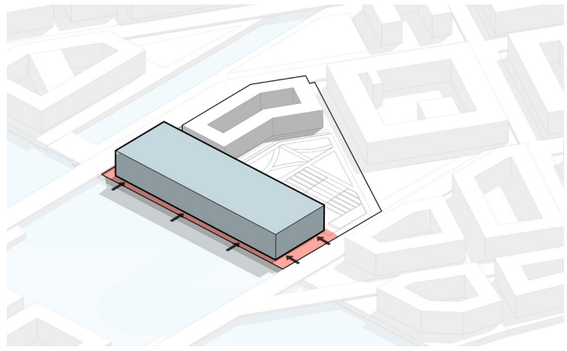
6.5 - Sequence of concept to the final form



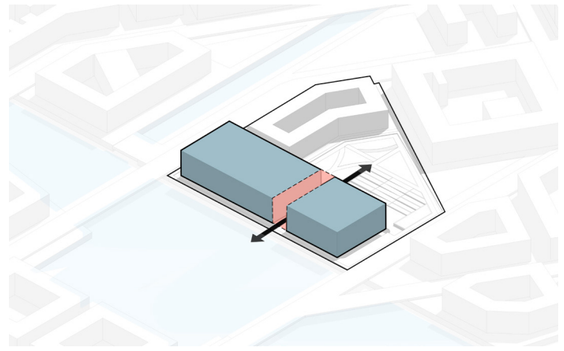
00. *plot development*



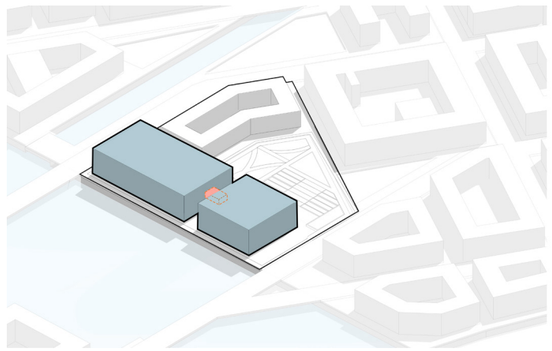
01. *Massing - volume*



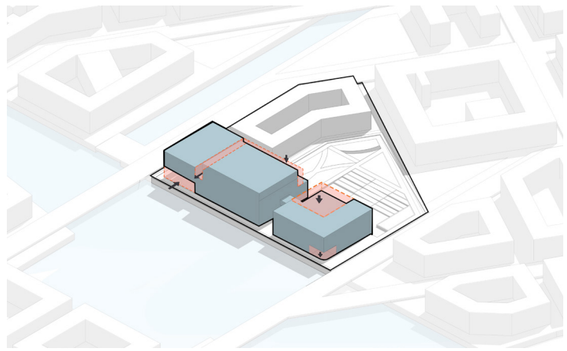
02. *pushback for circulation*



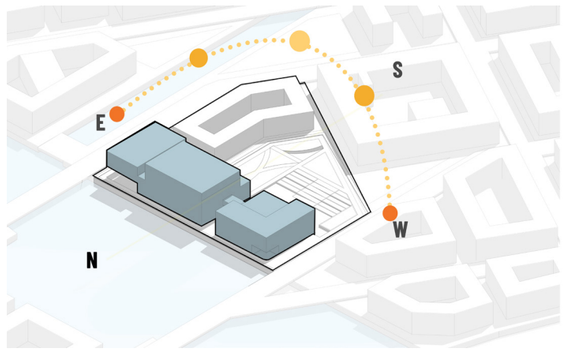
03. *division volume and connection to waterfront*



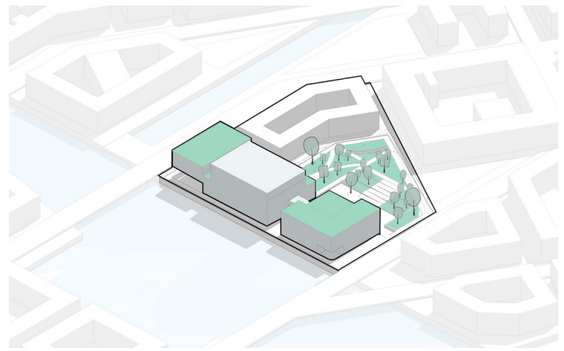
04. *Bridge connect two volumes*



00. *Extracting volumes*



00. *Sun orientation*



00. *Greenery implementation*

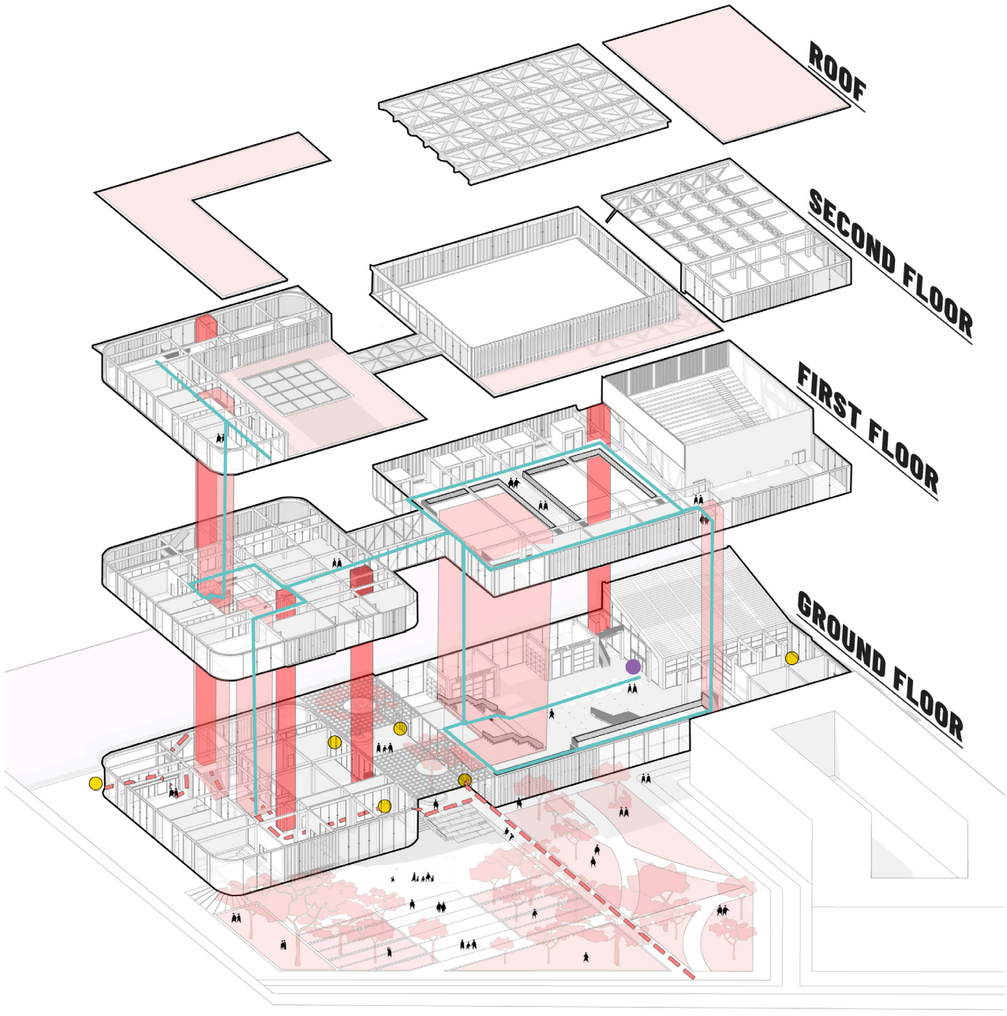
Fig. 6.5a Sequence diagrams final form - own drawing

VII. *FINAL DESIGN*

WELCOME TO THE NEW UNIVERSITY OF ARCHITECTURE IN LYNETTEHOLM

Fig. 7.a, masterplan rendering, own image

7. 1 - Routing and accessibility



The routing and accessibility of the new university is illustrated on the diagram (fig.7.1b) on the left page.

The main level functions as the main gate to the university. Where the round purple is located is the main entrance. It is located in this spot as defined earlier in the urban analysis, due to the gathering point of all the visitors. The crossing off the bridge stops here, the pedestrians, students and people from the public transportation end at this point as well.

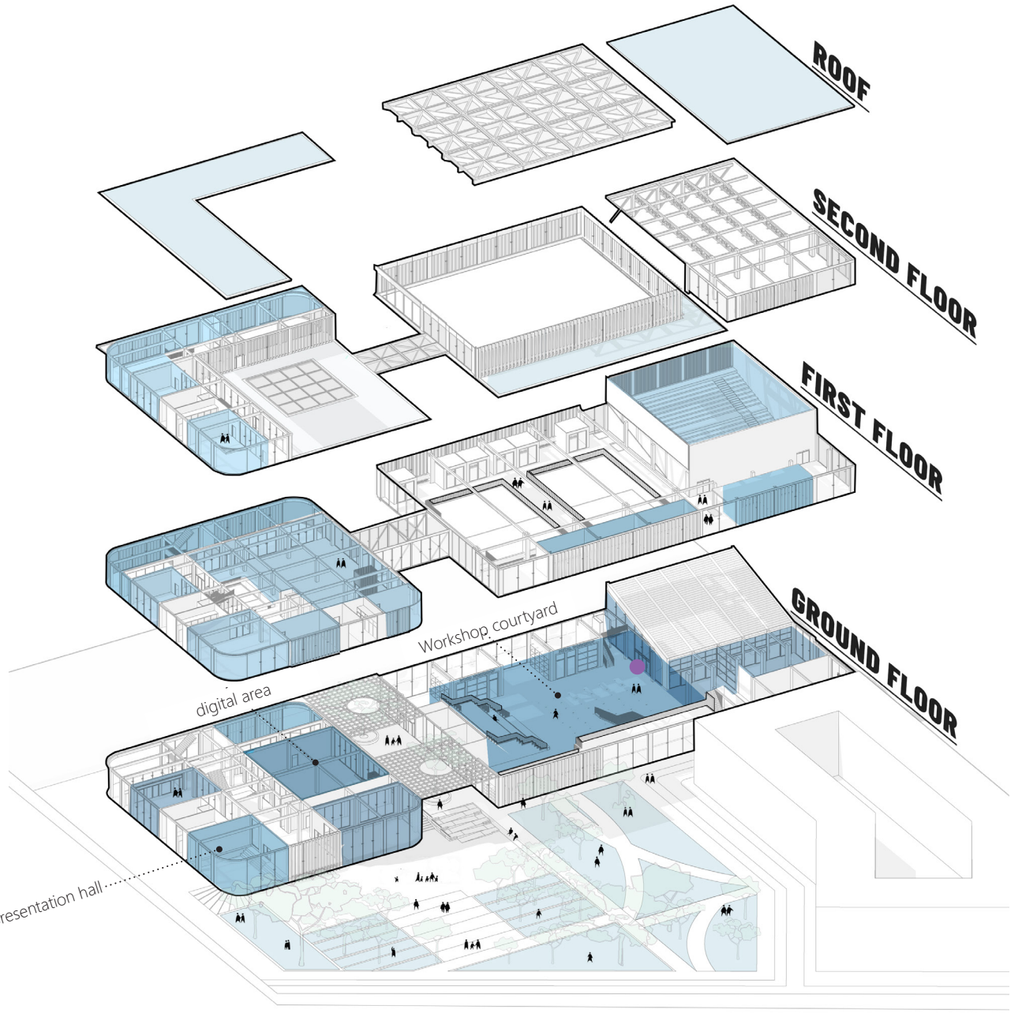
Furthermore, the floor level has no obstacles to enter the building. At the entrance, the social café club is on the left side, and can be used internally in the workshop courtyard as external facing the waterfront and entrance. The ground floorplan has one large stair (collaboration stair). This stair acts as a social, interactive place, and for getting to the rest of the university.

The University has 4 elevators and is accessible for disable, health, and for young and old. The university has seven entrances, one of them is a delivery entrance for the material shop, located in the right corner at the streetside of the bridge.

Externally, the routing is designed to experience the urban area, where green and the university park is connected to the waterfront through a corridor with wooden roof as framework.

Fig. 7.1a, exterior rendering main entrance, own image

7. 2 - Functions and program



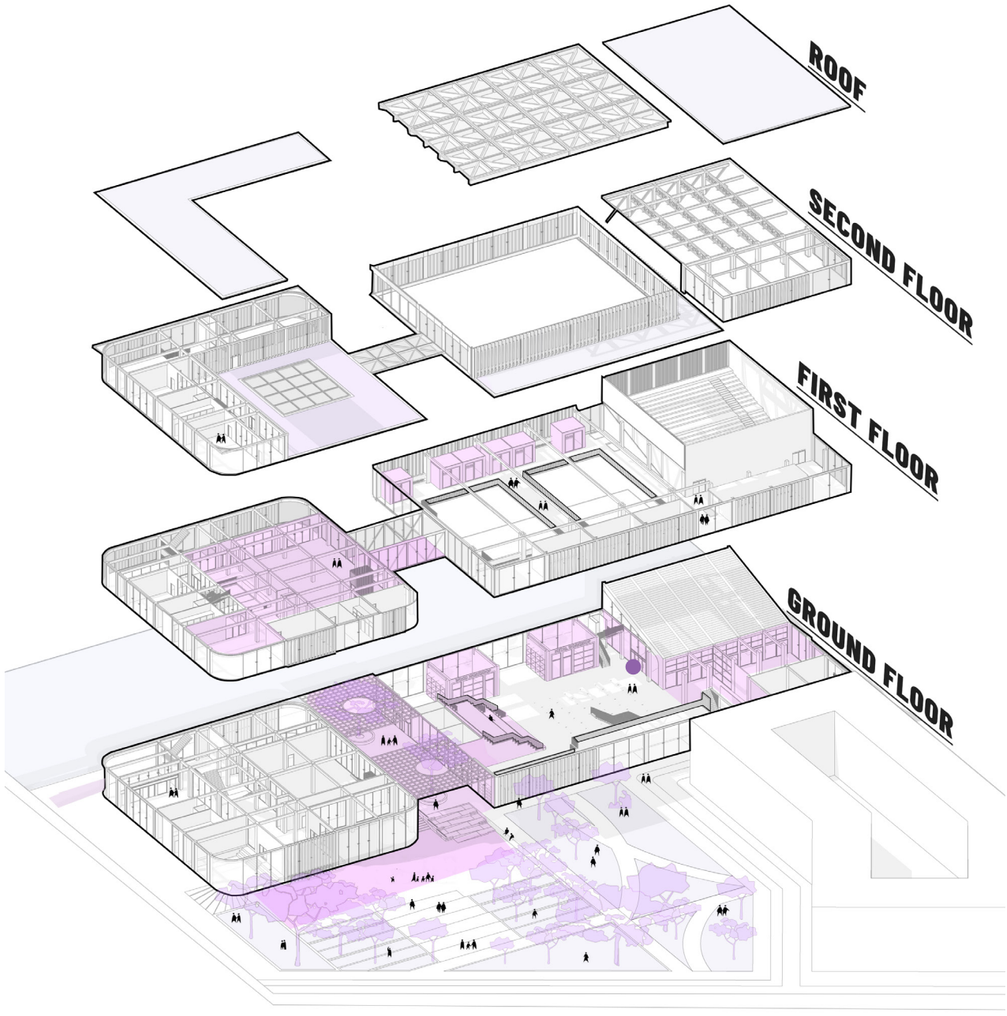
The university of architecture is full of the usage of new technology. Therefore, the workshop is the most important space of the university, it is where students learn, explore, and interact. The teacher on the other hand, are invited to work along the same side. The staff and administration don't belong in an office anymore, therefore the use of workspaces, in closed, open and silent spaces are taken into the program.

The ground floor plan houses different functions where students are mainly the central point of the university. The three most important functions are the workshop courtyard, the digital space, and the presentation hall. The vision behind the program is to stimulate creativity and innovation during the university career. On the first floor, functions are mainly workspaces, an auditorium, and lecture rooms. The double layered library is also located on the first floor with eyesight on the waterfront.

On the third floor, the program is mainly lecturing spaces, and conference rooms.

Fig. 7.2a, Workshop interior rendering, own image

7. 3 - Social interaction spots

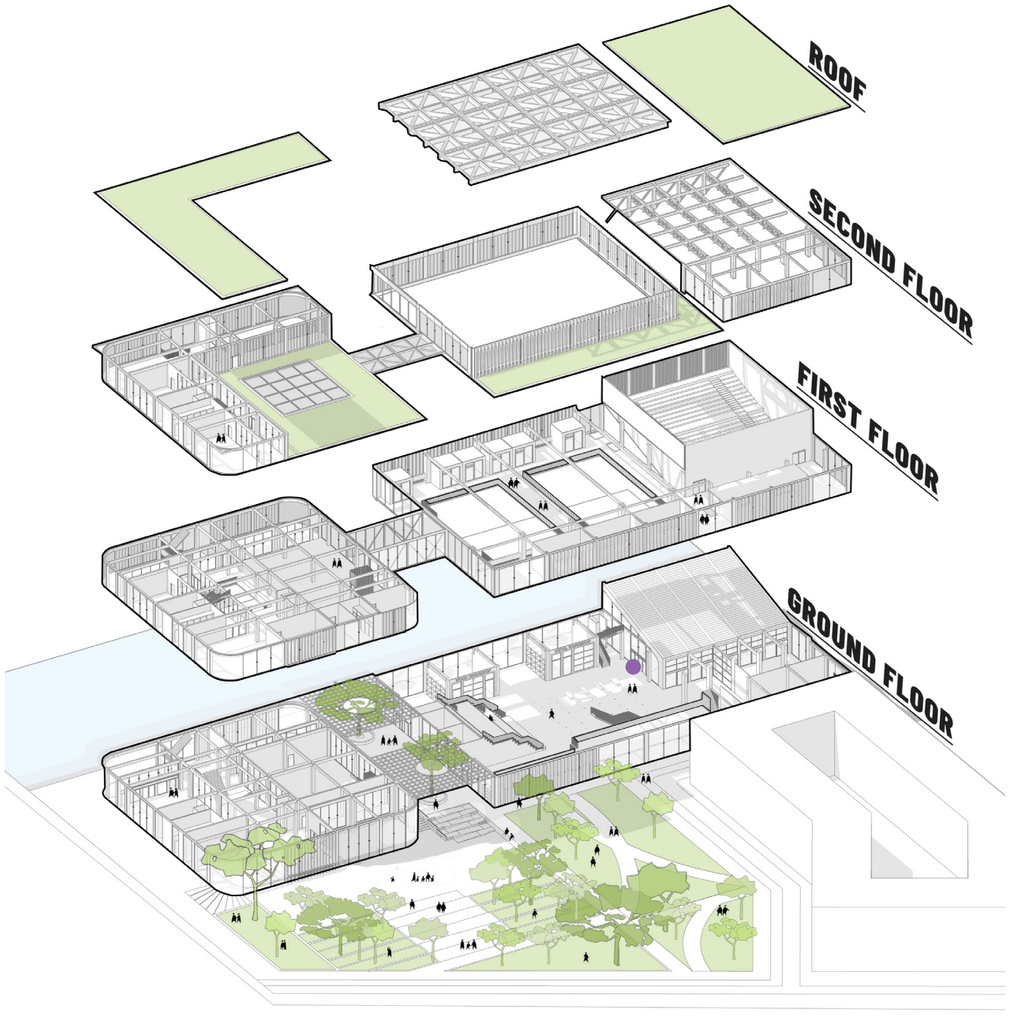


Social interaction is an important element in humans life, without social interaction the healthy environment effected. Not only do we need healthy buildings, but also healthy and happy students. During a students career at the University of architecture, it is most likely that they need to work, speak, interact with each other. Therefore, a lot of space is created for the need of interaction. As mentioned before, at the main entrance, there is social club café, where one could have a drink, breakfast, or just go for a lunch break.

In the interior spaces, the main floor is an open environment, which means that it exists outs of breakout spaces for working, tutoring and even teaching. Also implemented is the use of a collaboration stair, the idea is to teach, give workshops, and even use the stair as presentation bench. The collaboration stair also houses different functions such as toilets, darkroom and presentation space. On the first floor, after the bridge is passed, the social aspect is brought back into a modern completely open workspace. For the exterior spaces there is an amount of opportunity for socializing, like for example, the large university park, located on the south side and the waterfront with declining stairs with sitting spaces.

Fig. 7.3a, Collaboration stair rendering, own image

7.4 - Implementation of greenery



To contribute to the sustainability of urban development. The use of green is adapted to the context of the university building. Greenery is proven to be stress reducing, lowering blood pressure, stimulating the well- being of a person. The park is a connecting element for the neighborhood as well.

The corridor is the connecting element between the green university park and the waterfront. The building exists mostly out of timber, and therefore it is a completely green building in materialization. Greenery is used not only on the sidewalk, the boulevard at the waterfront , but also on the roof. It is proven that green roof can reduce heat in the summer period and cool the building down. In contrast with the winter period, the building then keeps it heat due to the soil layer on the roof. Part of the sustainability on the roof is also the implementation of solar panels integrated in the glass.

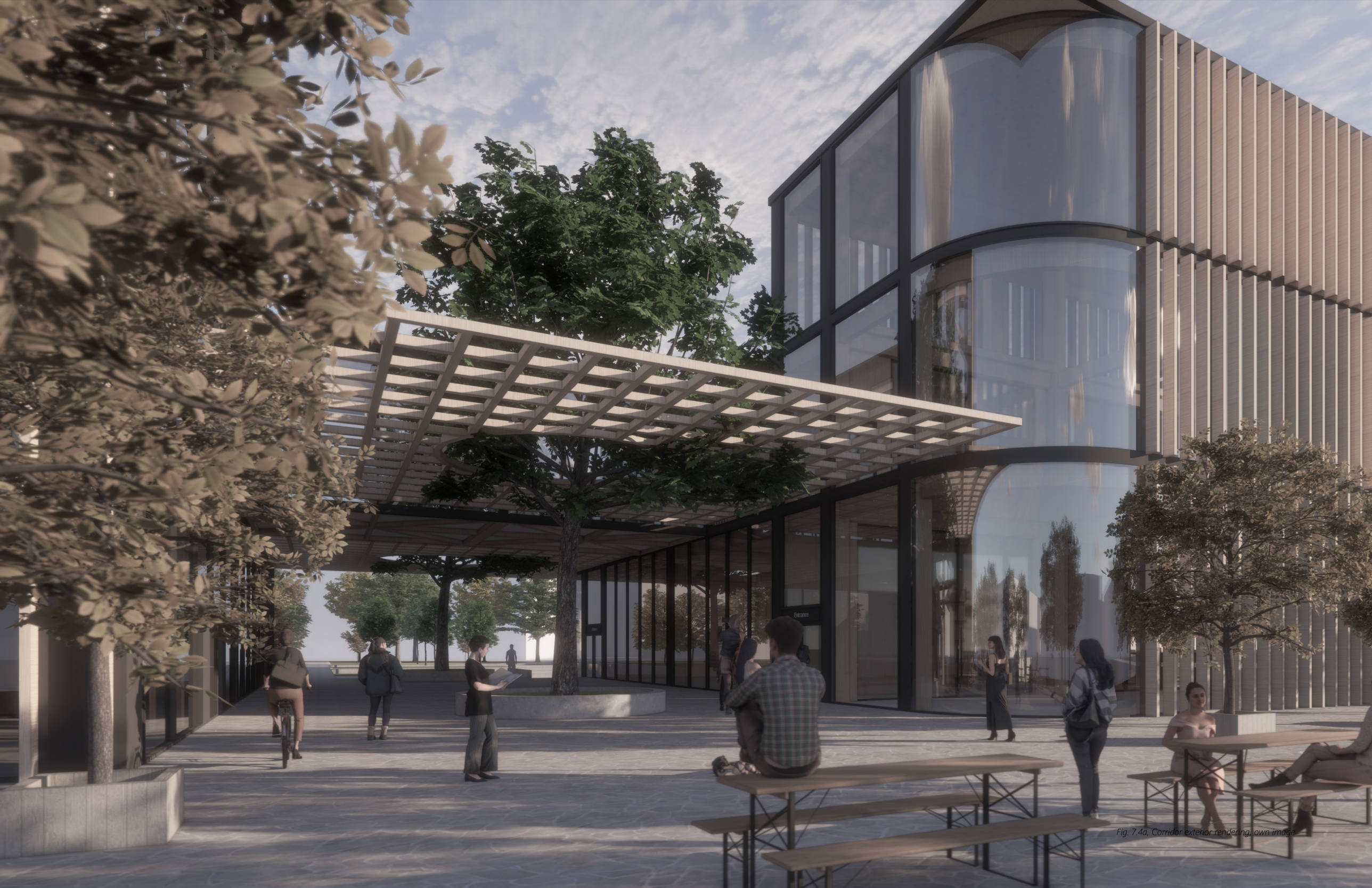
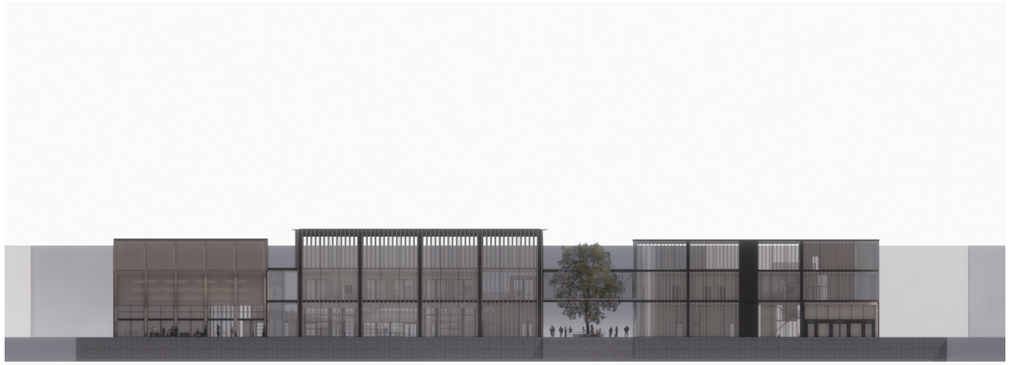


Fig. 7.4a, Corridor exterior rendering, own image

7.4 - Elevations, floorplans and sections

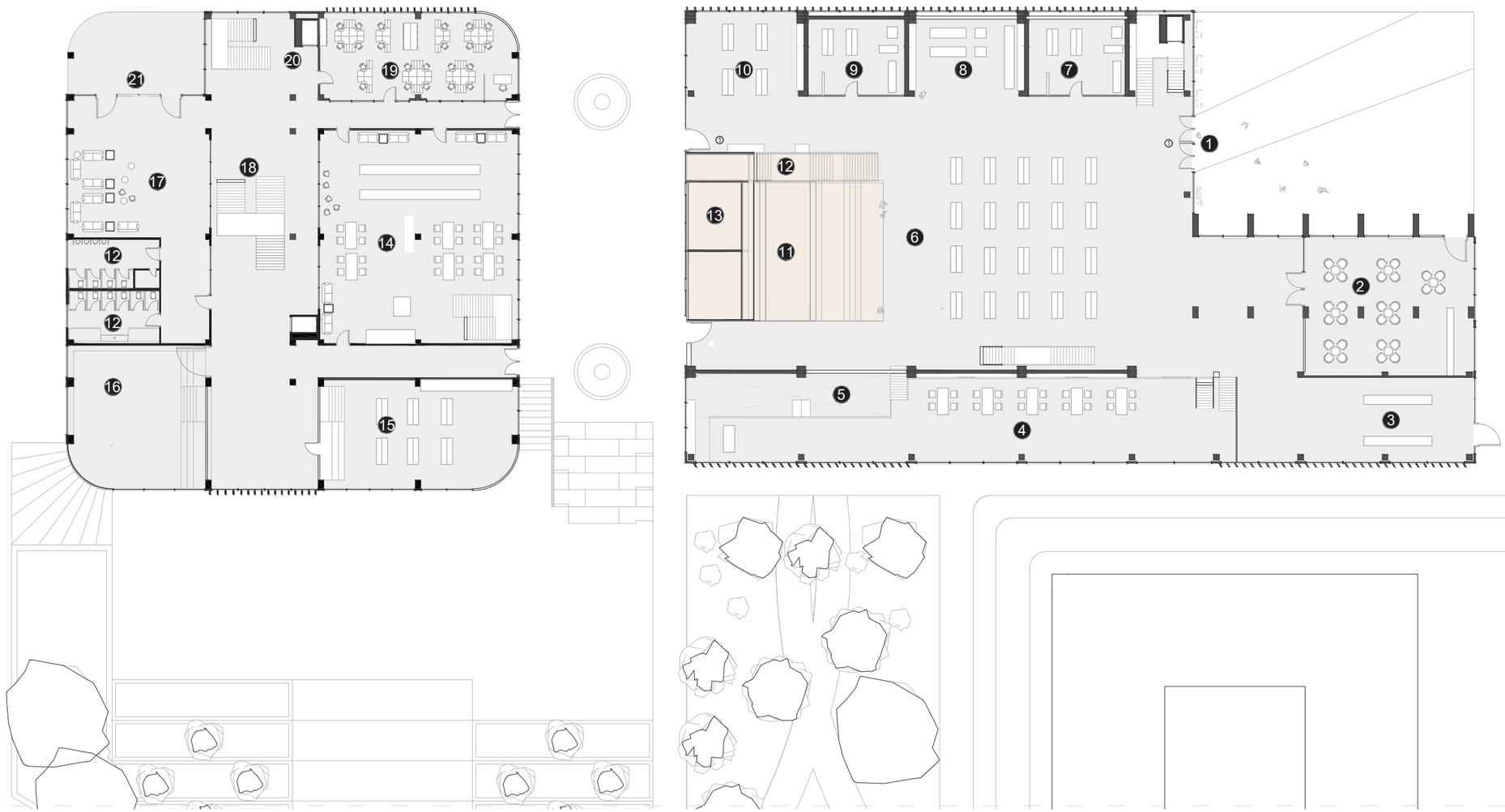


South elevation

North elevation

East elevation

West elevation

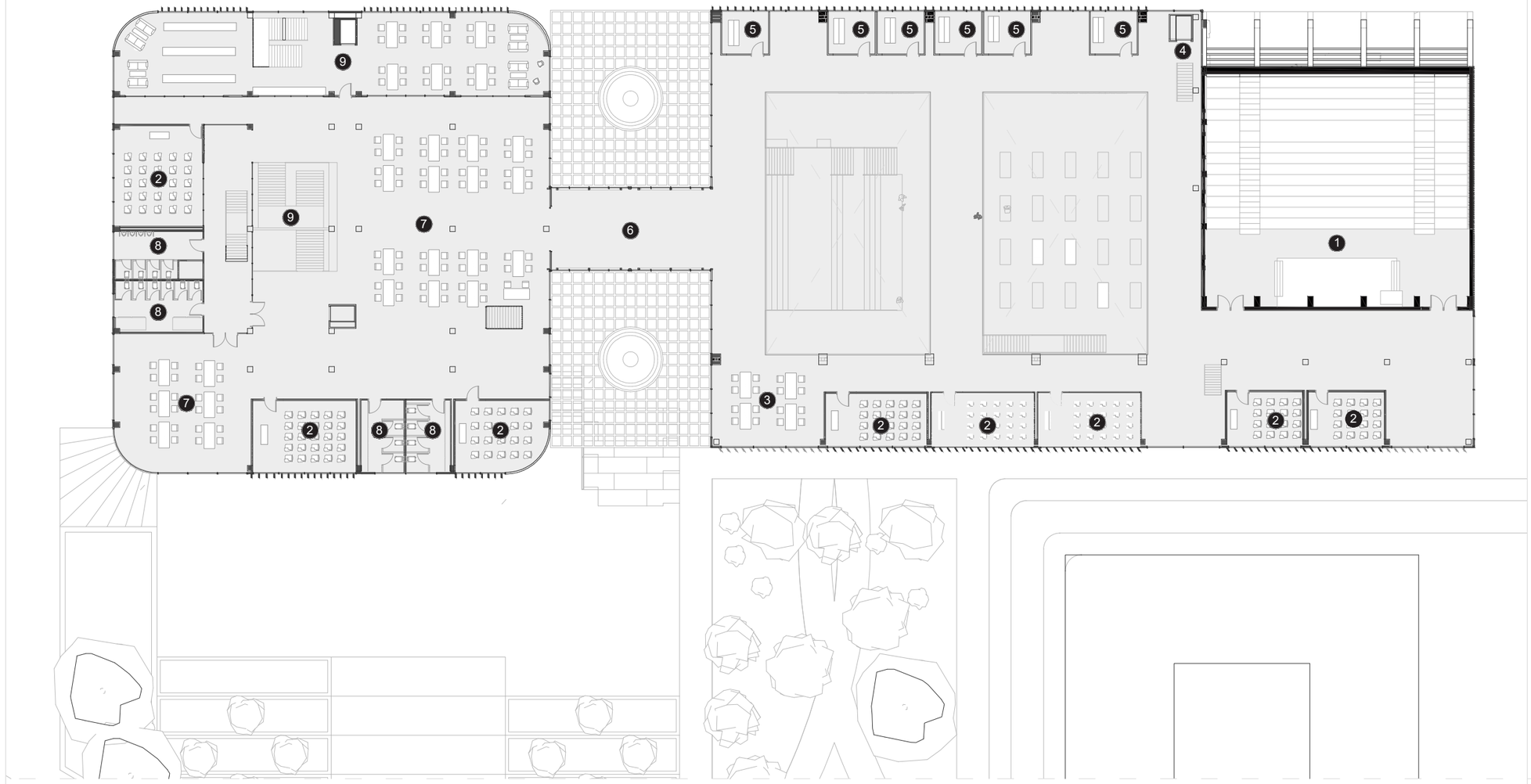


List of program:

1. *The main entrance*
2. *Social café club*
3. *Materialshop and storage*
4. *Open workspace*
5. *Tutoring corner*
6. *Workshop courtyard*
7. *Workshop wood*
8. *Workshop foam cutting*
9. *Workshop metal*
10. *Group workspace*
11. *Collaboration stair*
12. *Toilets*
13. *Dark presention room*
14. *Digital space*
15. *Fabrication hall robotics*
16. *Presenation hall*
17. *Lounge*
18. *Stairs*
19. *Offices*
20. *Elevator*
21. *Entrance*

00_Ground floorplan

1:500

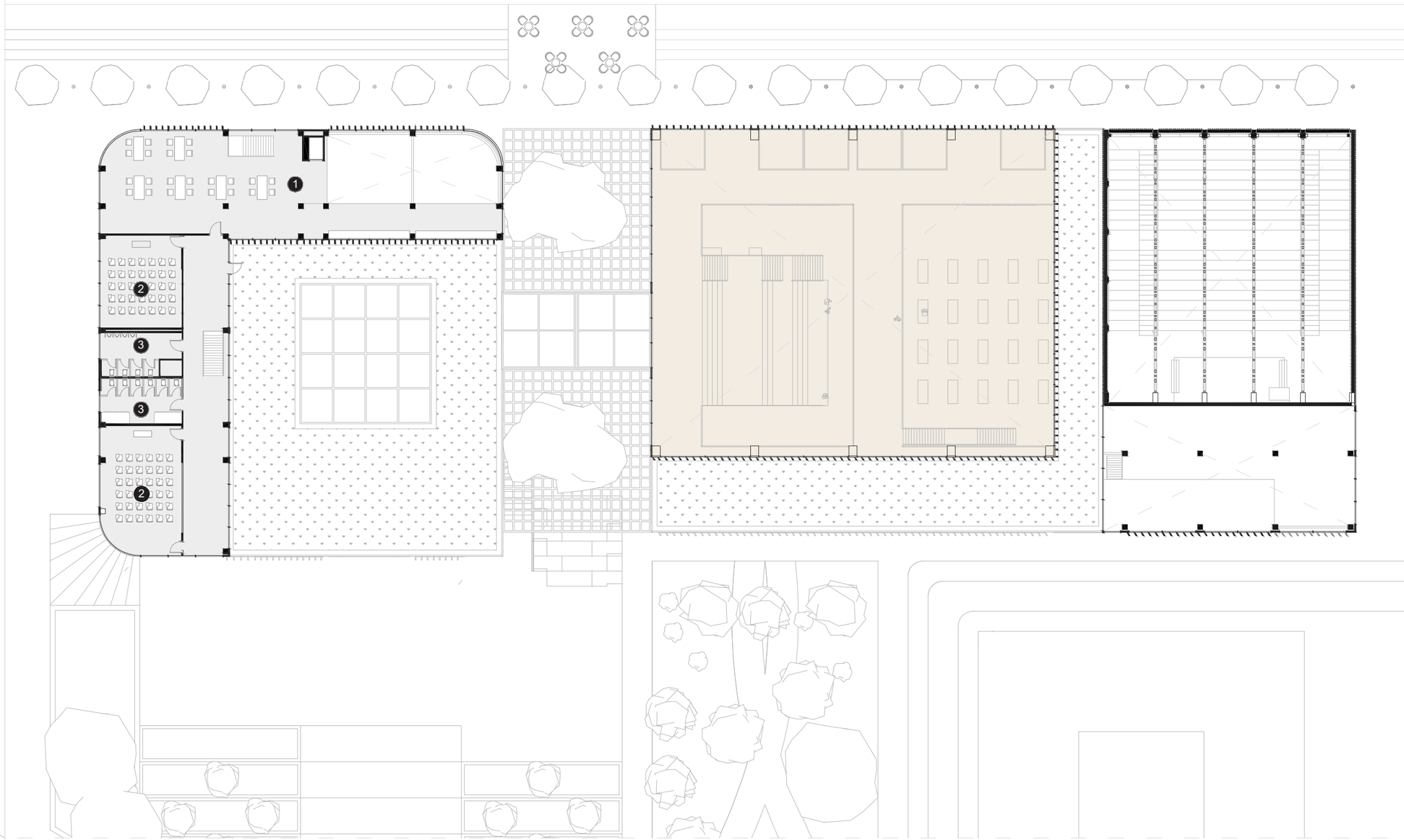


List of program:

1. *Auditorium*
2. *Lecture rooms*
3. *Tutorial space*
4. *Stairs*
5. *Closed workcabin*
6. *Bridge*
7. *Open workspace*
8. *Toilets*
9. *Main stairs building*
10. *Double height library*

00_First floorplan

1:500

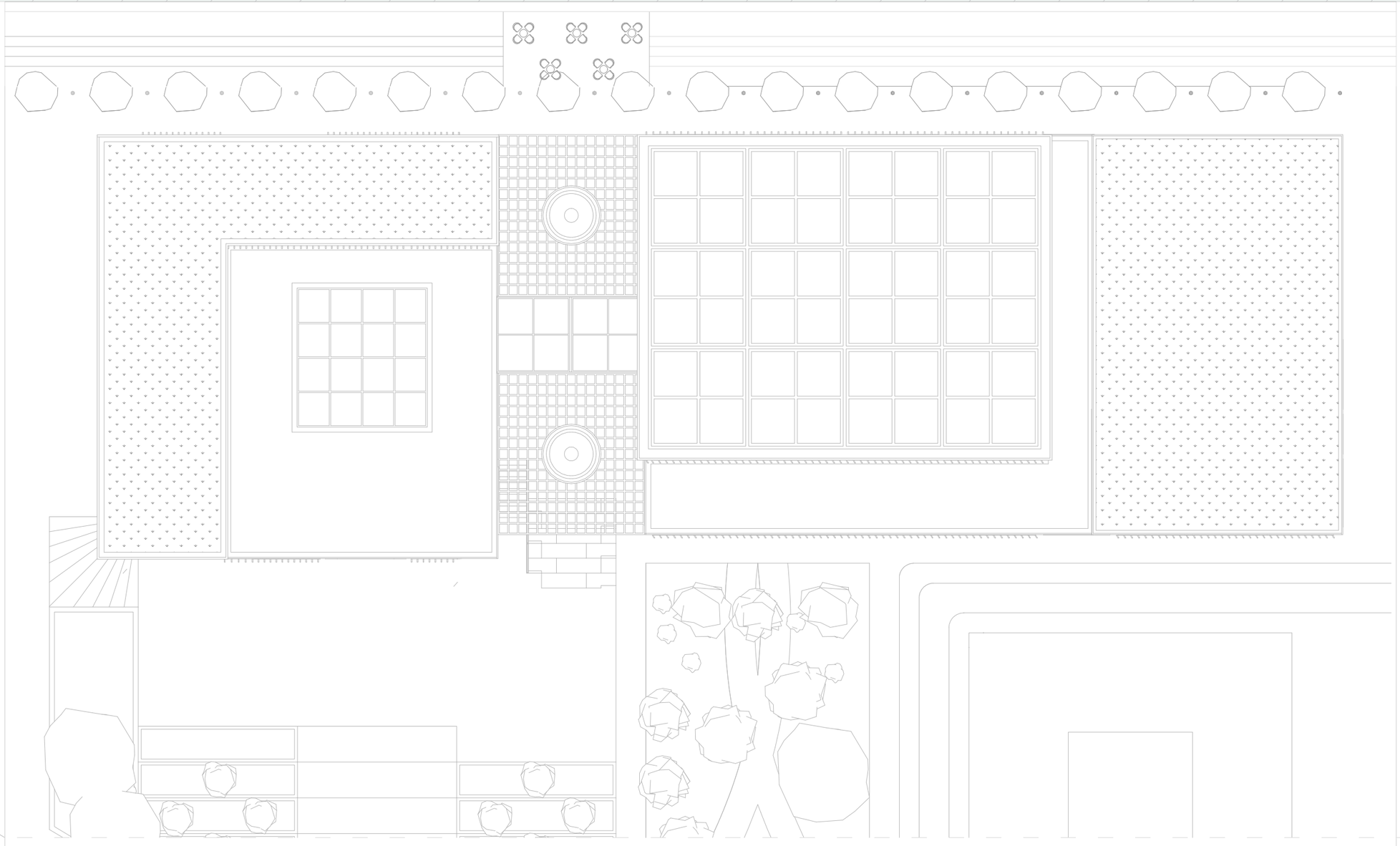


List of program:

1. *Library space*
2. *Lecture rooms*
3. *Toilets*

02_Second floorplan

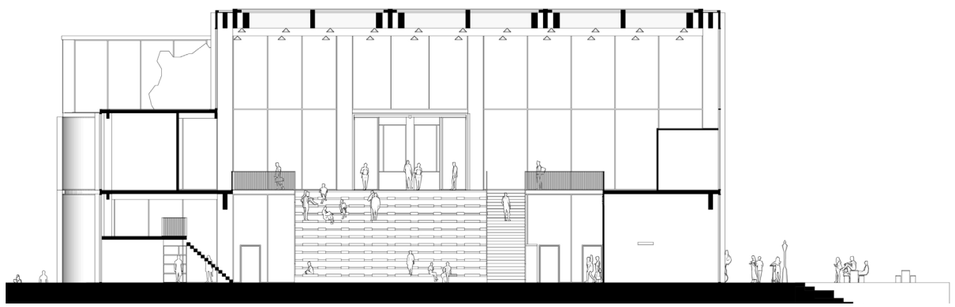
1:500



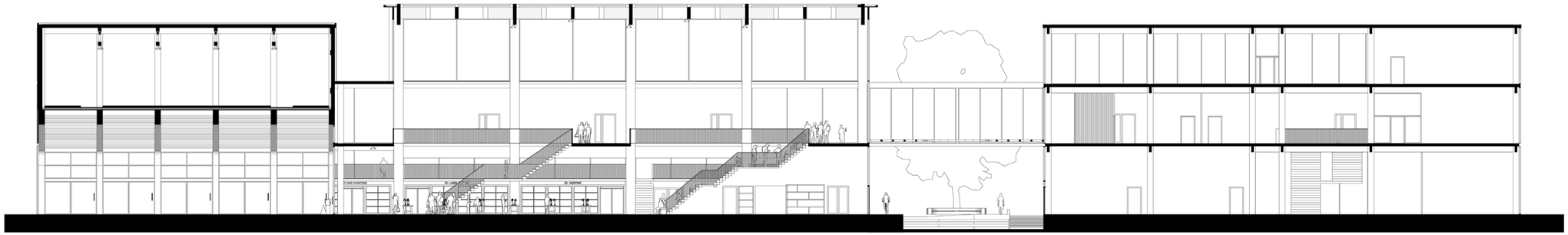
03_Third floorplan

1:500

Sections A-A and B-B



Section A-A - 1:500



Section B-B - 1:500

VIII. *CONSTRUCTION & DETAIL*

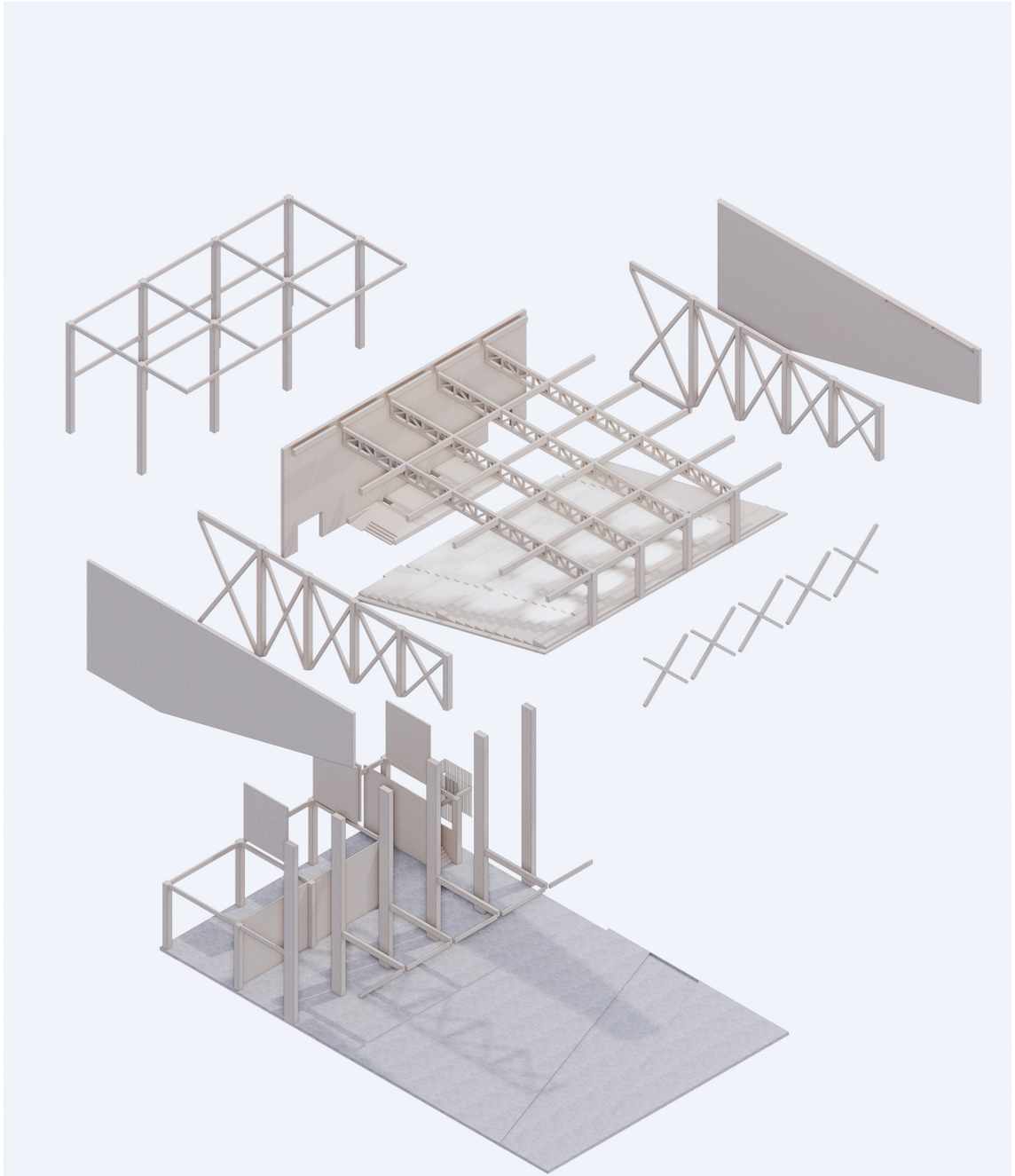
Construction

The construction of the university of architecture is completely built out of timber. The ground floor is concrete, the upper floors are from CLT in thicknesses varying from 200mm to 3025mm. The walls for division applied are from CLT in thickness from at least 110mm. The overall construction is shown in three different locations.

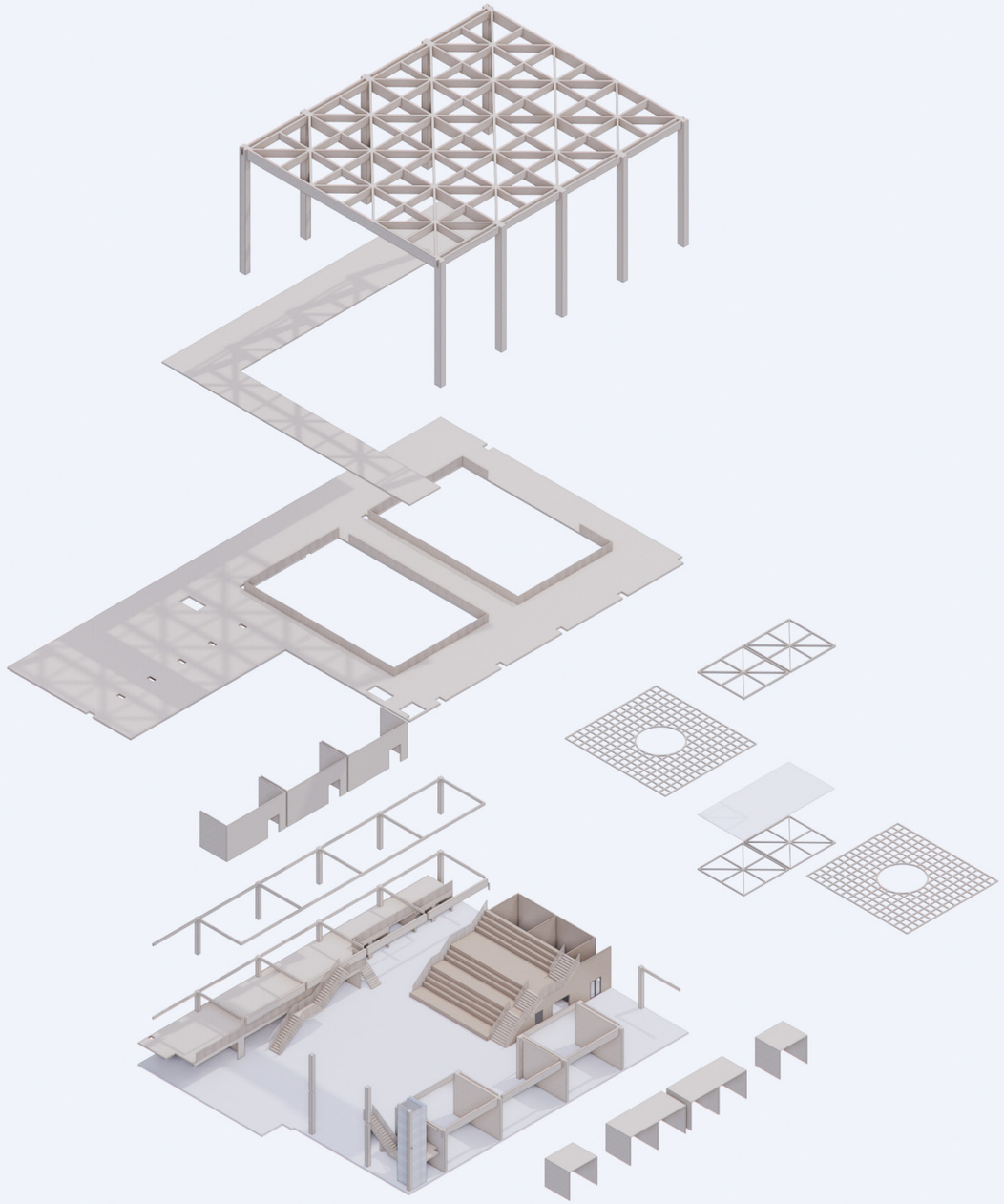
The first axonometric view is from the auditorium. The columns used on the ground floor carry the auditorium above. For more stability, in between construction is added. The Columns and beam are from GLULAM, the type ofbeams can have large span. The roof is shaped in a grid system like a cassette above the roof floor. Overall, the choice for this span and use is to impress the visitor of the building as materiality is part of becoming an architect.

The second axonometric view is the workshop courtyard. This is the most important space of the university. The columns are immense with a height of 17 meters, and the span is huge and is approximately 20 meters. The floors used are from CLT and the walls also. The bridge that connects to the learning center is hung in between the volumes and exists out of cross construction with beams.

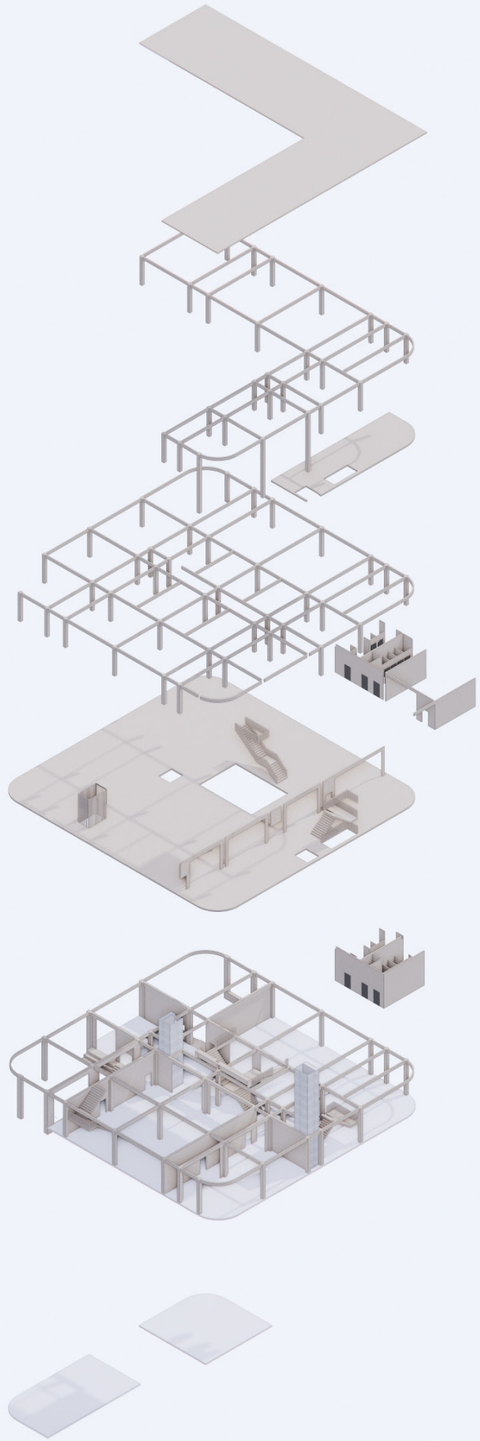
The third axonometric view is the learning center. This part is completely built with post beam construction. A post beam construction is flexible and gives the opportunity to create separate spaces. The ground floor is concrete, while the upper floor levels are made out of CLT. The columns and beams are calculated according to their height. Therefore, the span can reach a maximum of 10 meters. The columns used are around 500x500mm. The beams have a dimension of 300,400 and 500 height.



I. exploded view auditorium and social cafe

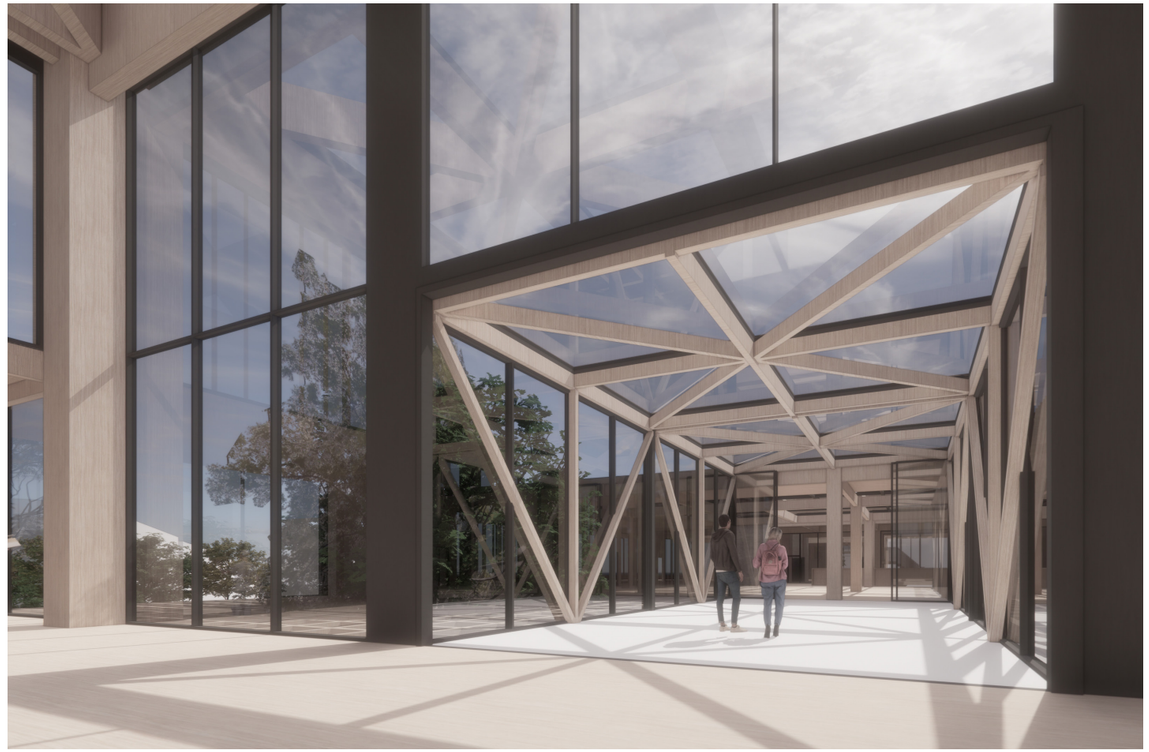


II. exploded view workshop courtyard and bridge



III. exploded view learing center

IX. CONCLUSION & DISCUSSION



"How can we create a sense of place for a new University of Architecture in Lynetteholm incorporating timber materials that contributes to the learning environment and its users?"

This research question is answered through different sub questions. Firstly, exploring the "sense of place" and its meaning. The sense of place is a broad concept applied to the human finding of a place. As mentioned in in the literature research The sense of place is defined by Norberg Schulz as "sense of place" refers to *"the perception and experience of a physical environment (place) or architectural space in relation to its cultural, historical, and social context."*

It is indeed about the experience of a place and how one person can sense it. Place is here described as physical place, for example my University of architecture. This University has a particular atmosphere, atmosphere is achieved by emotional and physical characteristics. A place with a good atmosphere, one could identify itself with create an attachment to it, this results in a high value of environment.

On the contrast, Relph, E. (1976), emphasizes that we have to look out not creating a sense of 'placelessness'. Meaning in this, that a place should convey a message, personality and has a particular identity for its users, otherwise it becomes a place without character and atmosphere.

Secondly, the history of university is researched. Here, we can conclude that the first university was established in 859ad. by a women called, Fatima El Fihri and is located in Fez, Morocco. University means in latin, 'universus', which is an entity or a whole unity. Thirdly, research is conducted into several case studies in order to understand the working relationship of the university buildings. The overall conclusion is that every university of architecture has its own vision, mainly for the users or for the building itself. In my opinion, the contemporary universities still try to combine a lot of ingredients, such as social aspect, healthy environment and implementing the use of advanced technology in the schools program.

However, I do think that the contemporary universities are lacking in some elements as the historical buildings were. Focusing too much to create healthy environments sometimes the character and atmosphere of a place. In the sense of place, the place becomes healthy and not identifiable. In my design however, I tried to design from the architecture student's perspective where physical elements contribute to healthy environments without losing their character of place. It is proven that timber contributes to a person's humor, well-being and lowering their stress level. Which are essential contributions when studying and working.

The final design of the university of architecture in Lynetteholm is a place where the students, the staff and the teachers are captured by the dimensions of the space and the materials used. The overall design is completely made of timber. Timber is a sustainable material, that is used as long as history is recorded. Therefore, the ideal material to built with. It does not only contribute to the human health, atmosphere, and character but also is a material that gives us the possibility to use renewable resources

X. SOURCES

RESOURCES RELEVANCE AND PROBLEM STATEMENT

1. Zimmermann, A. (2022) Copenhagen faces backlash over €2.7B 'Green' Island Plan, POLITICO. POLITICO. Available at: https://www.politico.eu/article/denmark-living-cities-copenhagen-backlash-green-artificial-island-plan-lynetteholm/ (Accessed: December 20, 2022).

2. Cphpost (2016) Every third Danish school has a poor working environment, The Post. Available at: https://cphpost.dk/?p=2933 (Accessed: December 13, 2022).

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Thank you!