THE CREATIVE CAMPUS

Campus Design in Aalborg's phased industrial port, based on New Urbanism ideals

Master project in City Development and Urban Design

Morten Bakken, spring 2012

University of Stavanger

1. The Utzon Center
2. Student Housing
3. Office Building
4. Public Library in downtown Aalborg
5. Friis shopping mall

• The Creative Campus

6. Building complex for Media Technology
7. Common building II
8. Building complex for Humanistic Informatics
9. Building complex for Architecture and Design
10. Common building I
11. Building complex for Art and Technology

12. Northern Jutland House of Music
13. Nordkraft

Illustration 1. Overview over the creative cluster on the banks of Limfjorden

Synopsis

The project evolves around the design of a new city campus for the department of Architecture and Design at Aalborg [A&D] University. The campus will be located on the south banks of Limfjorden in Aalborg. Since the department first started functioning in 1996, several different rented locations in downtown Aalborg has been used to facilitate students, staff, administration, workshops and lectures. As admissions to the different programs increase every year, a severe lack of space for different functions leads to a need for new facilities for the department, and other creative educations at the University of Aalborg. The new campus will offer locations for four different creative educations: Architecture and Design, Art and Technology, Media Technology and Humanistic Informatics. The project will answer the need for these new facilities, both through programming and physical design. The project will display concepts for the campus, as well as master plans, building design, and visualizations.

The city of Aalborg has undergone major social and economic changes over a fairly short period of time. From a reputation of a sleepy city of about 100.000 inhabitants, Aalborg has changed into a contemporary city, with a strong development of creative clusters alongside the old harbour front onto Limfjorden. Aalborg University's main campus is located 5 km southeast of the city centre. However, A&D has an internal goal to use the city as its laboratory, thus locating its premisses in downtown Aalborg. The project site for the new campus is located between the Utzon Centre and the House of Music right in the middle of the harbour [Illustration 1]. When assessing the project site and its surroundings, the campus design will provide buildings and public spaces where innovation and creativity will thrive.

For theoretical and practical purposes, the project sets out to explore how elements from New Urbanism and other theories can be incorporated in a campus design at the relevant scale. New Urbanism ideals are generally deduced from post World War II intimate neighbourhoods. The challenge for this particular project will thus be to incorporate these traditional urbanism ideals into a modern campus design.

Preface

This study is the result of the concluding semester of a five year master program in City Development and Urban Design at the University of Stavanger. The project concerns campus design in city centres, with New Urbanism and other relevant theories constituting the theoretical framework. The old industry harbour in Aalborg is chosen as the site for this master project.

The project report is divided into six different sections: Introduction, Campus design and theory, Context and mappings, Vision and concept, Design section and Conclusion. The first two parts give an introduction to campus design and planning in general, and an overview of relevant theories regarding the specific case and design. The third part covers a contextual analysis of relevant aspects around the project site. The fourth part of the project summarizes the three first parts in a concept and vision for the campus design. This part will tie the three first parts together with the last part, which is the design proposal.

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Content

Understanding the project, a methodological approach

The main purpose of this project is to describe and display how a campus site on the south banks of Limfjorden in Aalborg can be designed in order to support and contribute to innovation and creativity. The structure of the project report is divided into five main parts, where the four first parts will be used conceptually to support several design solutions for the campus, which will be displayed in the fifth part of the report. The project is summarized by a sixth and final conclusive part, as displayed in the list of contents. The different parts of the project will be denoted by tabs on the left side of each page.

The first part gives an introduction to what a campus has been in the past, and how it can appear today. This is explained through the definition of two historical campus traditions. The American tradition has historically acted as a city in itself with all necessary functions for everyday life located on campus. The European tradition however is typically physically and socially integrated within city limits, making active use of information exchange with local trade and industry. The introduction part ends with an input into the location of the campus site in Aalborg.

The second part evolves around relevant theory evolving campus design, both socially and physically. Theories of New Urbanism constitutes a majority of the theoretical framework for the project, with inputs from several other theoreticians. The contributors to this section were first and foremost chosen on account of how they could explain mechanisms on how creative social and physical environments work.

Describing the context of the campus site, the third part of the project gives an overview over relevant physical aspects surrounding the site. The analyses in this part are chosen deliberately to explain the theoretical contributions in the second part on a more physical level, and how these aspects relate to the campus site. The end of the third part gives an overview of the findings in the second and third part, and how they relate to each other.

The fourth part of the project describes the vision and concept for the campus design. This part includes several concrete programming requirements for functions on the campus, which were personally provided by Michael Mullins, institute director for Architecture and Design at Aalborg University. The visions and concepts for the campus design are all based on relevant theory and analyses, thus creating a correspondence between theory, contextual analysis and project concept.

The design proposals for the Creative Campus will constitute the fifth part of the project report, and is thus to be viewed as the result for the project. The design aims to explain how theory, contextual analyses and concepts are translated to a tangible physical design solution. The section will display design solutions for all buildings on campus, their content and how they are interrelated through different networks.

The sixth and conclusive part will summarize the design proposals, and how they have been used to answer the purpose and goal of the project. It will also contain a reflective part that discusses the principal process of the project, and its realism, as this is a student academic work.

As a summary, the methodological approach to this project is somewhat streamlined in form. This does not necessarily mean that this has been the case in the project process. When working with a project of this scope, a few steps back and forth between the different sections will always be necessary. However, the final design is seen as a direct result of theoretical input, contextual surroundings and concepts.

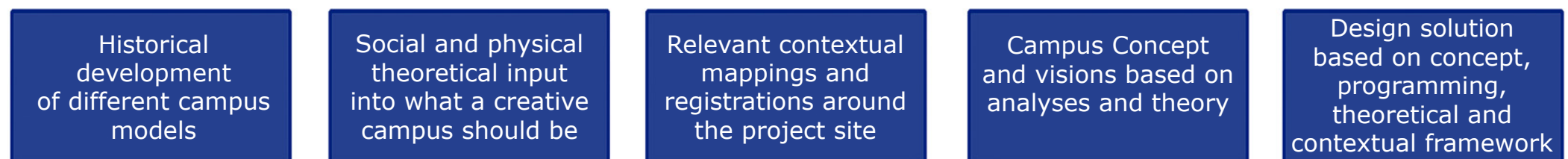| Historical development of different campus models	Social and physical theoretical input into what a creative campus should be	Relevant contextual mappings and registrations around the project site	Campus Concept and visions based on analyses and theory	Design solution based on concept, programming, theoretical and contextual framework

Illustration 2. Methodological approach to the project.

1. Introduction
The historical campus and its constituents

To completely understand the content and mechanics of a modern university campus today, it is important to get an historical overview of the development of different types of campus layouts. As it stands, most modern campuses are in some degree based on the historical American campus model. First off, it's important to distinguish between the typical European style of campus and the American style. The European campus model seen for example in London, Oslo or Edinburgh allows for the universities to be strongly connected to their surroundings, creating several synergy effects with local trade and industry. The typical American campus however, is usually a city of its own.

As the US became independent from England in 1776, the general impression was that the country needed their own universities to consolidate its position as an independent country. As a consequence of this, the government decided to develop a plan to build several new educational institutions around the country. Most of these institutions were initially modest in size. The campus design in America in the start of the 19th century clearly looked to take advantage of the natural terrain and existing conditions at the campus site. As campuses were mostly located in flat terrain, the norm became an extensive use of axial organization, straight roads and buildings aligned with a central mall, such as the main mall at The University of British Columbia, displayed in illustration 4. The idea was that the campus area would function as a small city of its own, with student housing integrated in the building mass as dorms. Several other daily functions would also be included, such as hairdressing, post office, shops and leisure activities. In this way, students wouldn't have to leave the campus area to run their daily errands.

The 19th century American campus was typically built up around a type of landscape architecture labelled as the Picturesque style. The style implemented some on the qualities found in the typical English garden. This campus style resembles an organic park style including lakes, creeks, bridges and lawns, combined with buildings masses arranged

after strictly laid out axes. With this organization, the aim was to create a feeling of a city with all its intrinsic functions placed in a natural park environment. This was also the aim for the campus in Aalborg when it was located south of the city in 1974, whose location is displayed on page 8.

The building mass on the traditional American campuses usually consists of several monumental buildings, built in either renaissance or Gothic style [Illustration 3]. This type of building style was typical when the US developed the country after gaining their independence from England. The style was chosen consciously, used to display the grandeur and historical basis of educational institutions in the young country.

Illustration 3. Alexander Hall at Princeton University, in Gothic style.

Illustration 4. The main axis at University of British Columbia in Vancouver, Canada.

The modern campus and its constituents

Which qualities and functions does a modern campus have? The campus design model implemented by many universities around the world today, is often more or less based on the traditional American campus model. As one would perhaps expect, the modern university campus typically consists of various degrees of infrastructure. The two main types of infrastructure in this context can be divided into buildings and systems for transportation. The different buildings' main purpose is to facilitate for activities required in an institution for higher education, mainly research and education.

Students and staff will both have the need to move more or less freely around the campus area. Because of this, many modern campus areas have eliminated through-traffic. Rather than having roads run though the campus, car infrastructure is usually located on the perimeter of the campus area, implementing drop-off squares and parking spots at strategic places around the perimeter. Some bigger university campus areas have public transport lines running through the area, as can be seen for example at the University of Stavanger. In this way, both merchandise and people can enter the campus in an effective way, without disturbing the natural flow of people within the campus.

Towards a more open and inviting campus area

Several universities that were established in the 60's and 70's were located in isolated rural settings [Dober, R. 1968:8]. This has lead to a recurring theme that the typical modern European university is located outside the city centre without functions for other purposes than the purely academic ones. This meant that other functions, such as shops, dwelling units, sports facilities and so on became excluded from the campus scene. However, recent studies show that several of these types of universities are opening up to create multi-functional campuses, in order to create synergy effects with surrounding trade and industry [Campus and study environment, 2010:29].

This development has to be seen in the light of the fact that universities for a while only had the obligation to provide two services for society: education and research, to in turn receive government funding. The conditions for educational institutions today have changed, as they now intend to communicate innovation and creativity in the physical planning of the universities. This has lead to a change in campus design paradigm for architects, planners and urban designers. The ambition nowadays is to create a vibrant campus area that can function 24 hours a day, with the addition of facilities for functions in the evening as well. As the campuses are closed for lectures during weekends, many locals use the opportunity to visit the area during this time of the week [Campus and study environment, 2010:33]. This naturally results in the need for cafés with opening hours through the weekend. On many campuses, this has lead to the positive development that several students choose to spend their weekends at school as well. However, it is not just the social interplay between the surrounding city and the university that

Illustration 5. The Meridian international sports café at UC Berkeley.

has developed itself in recent years. Universities around the world, even the American elite schools, are thriving to open up the physical gates into the university. For instance, Columbia University on Manhattan has started to give lectures in shop premises on street level, so that everyone can attend classes. In this way, the educational institutions has become a much more integrated part of city life, compared to the traditional campus closing itself against the surrounding city.

Location of the campus

The project area is located in Aalborg, on the banks of Limfjorden along the old industrial harbour. Aalborg lies on both sides of Limfjorden, and the project site is located on the south side. Aalborg is the fourth largest city in Denmark. In the northern part of Aalborg lies the old industrial harbour area, where the project site is located. The harbour is part of an area for extensive urban transformation projects, with the Utzon Center and the House of Music working as catalysts. The area is currently characterized by this, as the visual expression today can seem a bit arbitrary. However, the construction of Musikkens Hus is scheduled to be completed in the summer of 2013, and will function as an organizing physical element in the area.

The department for Architecture and Design at Aalborg University is working to locate their new premises between the Utzon Center and the House of Music. As this property is one of the most popular in Aalborg, it is natural that other interests come into play here as well. Several housing firms wishes to use the area exclusively for apartments and administrative offices, as the property's location would generate substantial earnings. However, officials from A&D confirm that they have a good dialogue with the municipality, and they are confident that their project will be carried on [Quote 1]. As the main campus of Aalborg University is located southeast of downtown Aalborg [Illustration 7], one can ask why A&D does not simply locate their premises in relation to the existing campus. This will be answered in the theory section, in connection to Jan Gehl's theories about cities for people, on page 20. Another point of interest is also that A&D naturally whishes to use the urban city as their own laboratory, thus justifying the new location of their campus.

Aalborg municipality has not adopted a final local zoning plan for the area. However, the architects of the House of Music has drafted a loosely based zoning plan with several overall possibilities for the project area [More on page 22]. The municipality still wishes to develop this area as a creative cluster promoting culture, education and inventiveness. The hope is that this area can enhance Aalborg's status as a city for innovation and creativity.

Illustration 6. Aalborg's placement in Denmark.

Illustration 7. The project area's placement [Marked with red] in the Aalborg area.

Illustration 8. The project area placed in connection to downtown Aalborg.

2. Campus Design and Theory

As this is mainly a design-related project, the theory base will aim to grasp the ideas of the most important theorists chosen in connection to campus design. There are numerous books, papers and articles written about this particular subject, from various decades. Especially during the 60's and 70's when a boom of new universities around the world emerged, several books were written about campus planning and design. Richard P. Dober can be mentioned as one of these contributors, as he wrote extensively about aspects evolving campus design. One of his most known works is *Campus Planning* [Dober, R., 1962], which was based on the need for expansion of American campuses as a consequence of the post World War II birth boom. However, a majority of these university campuses were located outside existing city centres, and were essentially small isolated cities. As many campuses nowadays tend to draw into existing city centres, several of the books and articles written earlier might be outdated. On this note, it has been thrived to make use of theorists that are somewhat timeless in their approach to urban theory. Aside from Richard Florida, which is the youngest contributor of theory to this project, all other contributors have in various degrees withstood the test of time, and are generally considered to be classics.
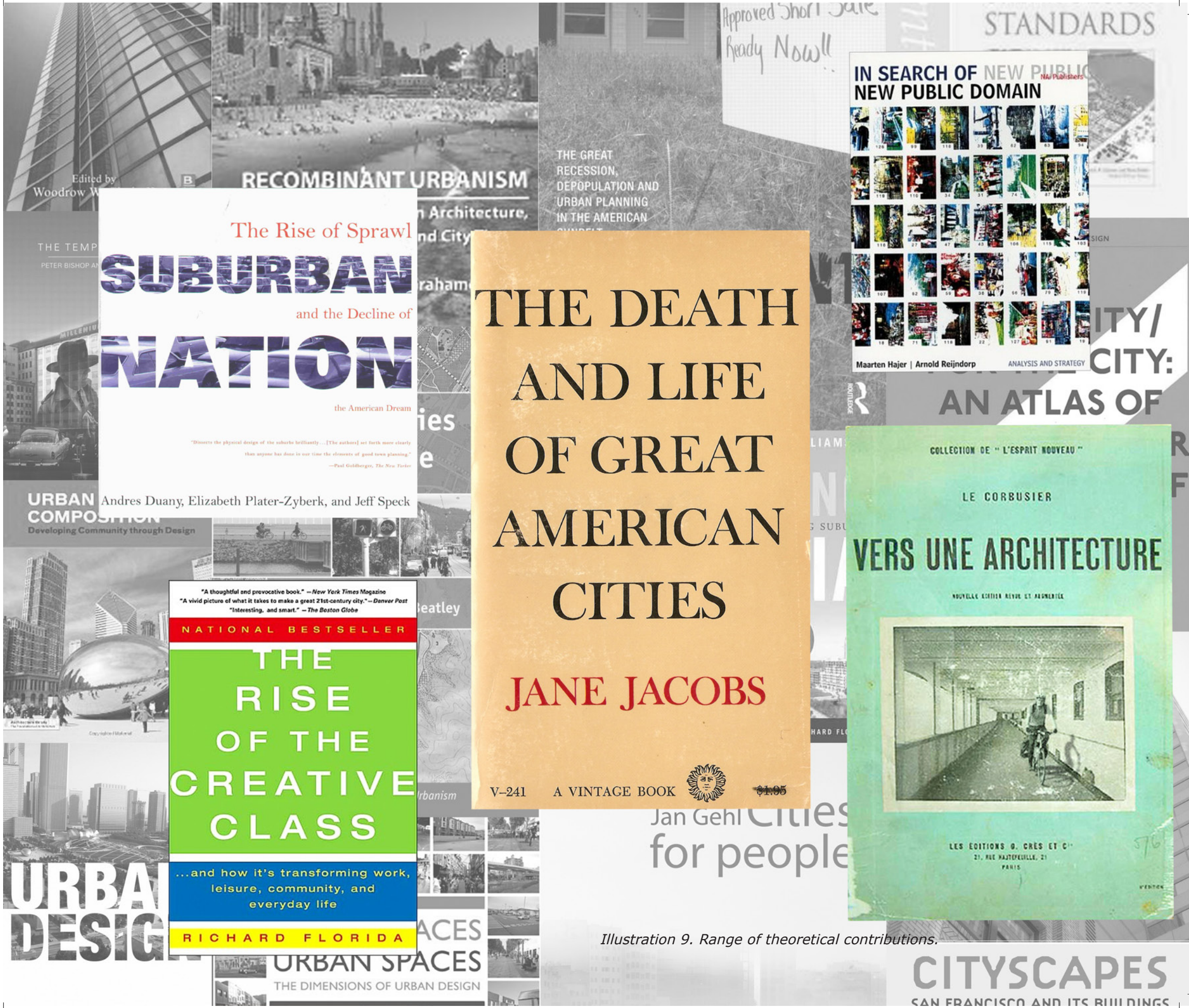
There are several ways of describing campus design as a phenomenon, even on two different levels. On one hand there is a physical structuring of buildings and other infrastructure. On the other hand we have to deal with sociocultural aspects: the human use of the buildings and the infrastructure. As is the case for everything that has to do with architecture, landscape architecture or urban design, there will never exist a blueprint for how a campus should look like or perform. The most trite aspects in connection with campus design, is the fact that all campuses are in some degree different. They have to adapt to the site and the culture present in their immediate surroundings. As Norwegian classic scholar Christian Norberg-Schulz claimed, locally anchored buildings and projects are what might define the essence of architecture and design. In his humanistic and phenomenological approach to architectural theory, he introduced the near poetic term of *genius loci.* Explained as the spirit of a place, he claims that buildings all around the world carry some of the same characteristics. Most buildings have walls, roofs and windows. It's simply a matter of recognizing architecture through its local roots [Norberg-Schulz, C., 1980:10]. Parts of the theory sections aims to explain how a campus design in Aalborg can be related to its local context.

As two opposite poles in planning theory, Jane Jacobs and Le Corbusier are drawn into the theoretical discussion to shed light onto what good places for people might be. This discussion can be related to campus design to explain how the areas between the buildings, and the relationship between inside and outside, might be designed. Jane Jacobs is by many seen as the pioneer in the battle against modernist planning in the US during the 50's. Subject of redevelopment and restructuring, many intimate neighbourhoods in the US experienced massive changes during this period. Jacobs deemed this development as anti-urban, in the sense that the human and social aspects of planning were completely ignored. Le Corbusier on the other hand argued that the era of this kind of ineffective land use was over, and introduced his thought about the multifunctional stand-alone towers in the park. Jacobs critiqued this view as something that would take away the human aspects of everyday city life.

One difficult aspect in developing the architecture of a campus can be to figure out the appropriate typology of buildings. However, a main goal for modern campuses should be to create interactive places that will induce interaction between students and staff. This suggests that a campus design is about more than classes and organized communication. It is also about informal and spontaneous communication. In a campus design, this will have something to do with creating a network of public spaces, and how people move through that network.

According to dutch urban scholars Maarten Hajer and Arnold Reijndorp, it is in these in-between areas that the real campus activity actually occurs. It is here that Richard Florida's creative class exchange ideas and information, not in the classrooms or laboratories. To integrate these ideas in an ideal of a campus design, it is chosen to investigate how theories on New Urbanism can be used to create a tangible layout for a modern university campus in Aalborg, Denmark.

Illustration 9. Range of theoretical contributions.

Campus design related to the Creative Class

Creativity is to the 21st century what the ability to push a plow was to the 18th century [Glaeser, E. in Nijkamp, P. 2012].

Concerning the theme and title for this project, it would be beneficial to integrate theory about social aspects of city planning and campus design. The degree of success related to a campus design is ultimately based on the users of the new founded area. The general conception on campus design is that the base for the design has to come from a willingness to create an inspiring environment to both student and staff. It is a given that universities around the world are the main institutions for educational and research activity. As mentioned earlier, a typical campus consists of two different kinds of infrastructure: buildings and various forms of transportation between buildings, including open public spaces. However, to describe the different mechanisms working in these campuses, an analysis of mere physical infrastructure will not be sufficient. As in every other aspect of daily city life, it is the different individuals and inhabitants of the city that accounts for its vibrancy. This is also the case in everyday campus life.

In both 2002 and 2005, American urban studies theorist Richard Florida wrote about the typical kind of people inhabiting cities and campuses nowadays. It reflects on a class of people that can relate to the sentence at the top of this page. Florida labels this class as the creative class. He claims that human creativity is the ultimate economic resource. His main interest with the research was to find out what makes cities thrive or wither. So what can be defined as the creative class? According to Florida, there exists to kinds of cores in the creative class in the US [Florida, R., 2005: 8]

- The super-creative core. This includes a wide range of occupations, for example engineering, education, arts, design or research
- Creative professionals. Knowledge-based workers in health care, business and finance, legal sector and education

As will be displayed later, this was also the base for Jane Jabobs's study in her book *The Death and Life of Great American Cities*. As Florida's ideas are more related to sociocultural aspects of city life, he insists that the creative class is not fractionated, despite being compounded by people from several layers of society. He argues that if urban areas want to succeed and grow, they need to address issues such as providing an advantageous consumption lifestyle to their residents. In short, he says that if cities want to attract people who are a part of the creative class, they must facilitate for the creative class to live the lifestyle they prefer.

With Florida's research in mind, it would be beneficial to take a closer look at the planning potential for his results. Can a prescription or recipe for campus design be found in his writings? Can the idea about the creative class taking over urban areas be used to lay out the ground rules for such a design? Florida makes the reasonable argument that cities hinge on the development of the creative class. This class of society is the one that provides development and innovation in a vibrant metropolis. This seems to be the trend in most industrial countries nowadays. Further on, he makes the assumption that these cities need to attract bohemian style people who prefers socially free city districts with mixed use and high density [Florida, R., 2005: 128]. But does this really apply for the entire spectacle of the creative class?

At first thought, it seems likely that members of the creative class will have the same preferences as most people do. This can include easy commutes by car, good schools and low taxes. The modern campus thrives on a diversity of users, including all ranges of age, gender, race and interests. The typical student will perhaps range from 18 to 26 years old, while PhD students will usually be somewhat older. Professors and associate professors can for example range from 35 to 65 years old, making up a diverse demographic for the campus. This means that the campus has to facilitate not only for the regular students, but all age ranges of the creative class. But how does the campus demographic's needs differ from the rest of society?

Florida seems to argue that there is a difference between potential in human capital and creative human capital, that the creative class in some degree stands above the rest of society, purely because of their creative abilities [Florida, R., 2005: 123]. His data nevertheless shows that people with

substantial schooling obtain a general higher quality of life than people without schooling, which shouldn't come as a surprise. With this conclusion, it seems likely that the creative class have similar preferences as the rest of the society, but thrives more on urban qualities such us buildings in a more human scale, mixed use buildings and advantageous conditions for pedestrians. As it happens, these are also some of the qualities found in the ideals for New Urbanism, which is explained further on page 18.

The 3T model for successful cities

By establishing that attracting the creative class to the cities will ensure development and growth, Florida has given us the effect of this phenomenon. But what about the intrinsic cause? As with everything in nature and life, every action has a reaction, as a natural way of causality. Florida explains that the key to understanding economic development and regional growth lies in three key factors; technology, talent and tolerance [Florida, R. 2002:249]. He claims that to attract creative people and generate growth, a place must have all three factors. The three factors are interrelated in such a way that they create a synergy effect in attracting creative people.

Technology can be explained as a place where a high concentration of high-tech industry is present. Talent is measured by the concentration of people with a bachelors degree or higher in a place, and the presence of universities and other higher education institutions. To explain tolerance, Florida uses a term he calls the gay index. The idea is that places with a high population of gay people is generally more tolerant to innovation and new ideas. His data shows that regions in the US where all three factors has high ratings, has grown substantially more then other regions. Some will claim that this does not merit a correlation. For example, Apple founder and heterosexual Steve Jobs was born in San Francisco, the city with the highest concentration of gay people in the US, but he never went to college. However, Florida claims that the gay index simply represents a leading indicator of a place that is open and tolerant. This does not necessarily mean that Aalborg need more gay people to develop, but it says something about why a campus will thrive on being located in the city, with diverse building types and efficient pedestrian conditions.

Illustration 10. What conditions are best suited for the creative class?

Jacobs, Le Corbusier and the search for a new Public Domain

As Richard Florida wrote mostly about the sociocultural aspects of a developing industrial city, American Urban theorist Jane Jacobs occupied herself with the more physical aspects of the city. Though credited as the writer of one of the most influential books on urban planning in the 20th century, *The Death and Life of Great American Cities*, Jacobs is also known for her role as an activist in criticising several development projects in New York city during the 60's. Amongst other processes, she managed to prevent the completion of the Lower Manhattan Expressway, which was to connect downtown Manhattan with Jersey City and Brooklyn. This was a project that in her opinion would ruin the identity of several districts in downtown Manhattan, such as SoHo and The Village. As Jacobs was seen as one of the front runners for New Urbanism, it was important for her to maintain parts of the contemporary city that had stayed true to their soul and identity [Jacobs, J. 1961].

Jacobs on Urban Design

In *The Death and Life of Great American Cities,* Jacobs advocates that she wants to restore dignity to streets and sidewalks by understanding the social mechanisms they create, and at the same time re-evaluate parks and open spaces, including their dependence on streets and sidewalks for their vitality, interest and safety. She claims that the sidewalk plays a special role in the city scene, and that a properly functioning sidewalk can act like a security guard against crime in the cityscape:

"Meanwhile, proprietors and neighbours, situated close to the ground, provide 'eyes upon the streets', a citizen surveillance system that builds trust, not destroys it" [Jacobs, J. 1961: 30]

On this notion, Jacobs claims that for security purposes, and a feeling of belonging to the city, a close and intimate street will function much more efficiently than a solution built on wider streets that mainly belonged to the car. The main element in this type of planning is size, width and height of the street scape. Designing the street in a more human scale [More on page 20] would reinforce inhabitants' feeling of ownership to their neighbourhood. The street was to be the city's living room. This kind of thinking became part of the base for *The Death and Life of Great American Cities.* Jacobs claimed that modernist planning ideals had killed the illusion of the close and human-friendly city [Jacobs, J. 1961: 22].

Jacobs vs Le Corbusier

The modernist urban planning style had dominated urban renewal in industrial countries after World War II. This type of modernist planning advocated by swiss architect and urban theorist Le Corbusier depended heavily on motorized commute. The main idea was that the car would be the main catalyst for growth and development in the post-war metropolis. Jacobs attacked and criticised the general planning policies, and urban renewal politics practiced in the US especially in the 50's.

In Le Corbusier's ideal city, Ville Contemporaine, the skyscrapers would consist of both offices and apartments, and the transportation routes for all traffic would be elevated over the open park structure. This would according to Jacobs eliminate everything that constitutes society, namely human interaction. Without intimate streets and street corners, inhabitants wouldn't be able to bump in to each other, walk the dog on the sidewalk, or do any of the random things that happen every day in the city's living rooms. This can illustrated by one of her famous quotes: "Cities were at their best when politicians stepped aside and let the 'ballet of the sidewalks' take over".

Modernist planners mainly used principles that stood in sharp contrast to Jacobs. Offices, factories, shops and residences were kept segregated, which led to neighbourhood streets being deserted during long stretches at a time, and therefore dangerous. According to Jacobs, this created a negative spiral. The more dangerous the streets get, the more people get discouraged to use them. The discussion between Le Corbusier and Jacobs can give an interesting insight into what can create comfortable and innovative educational environments. This will be explained in the theoretical results on page 37.
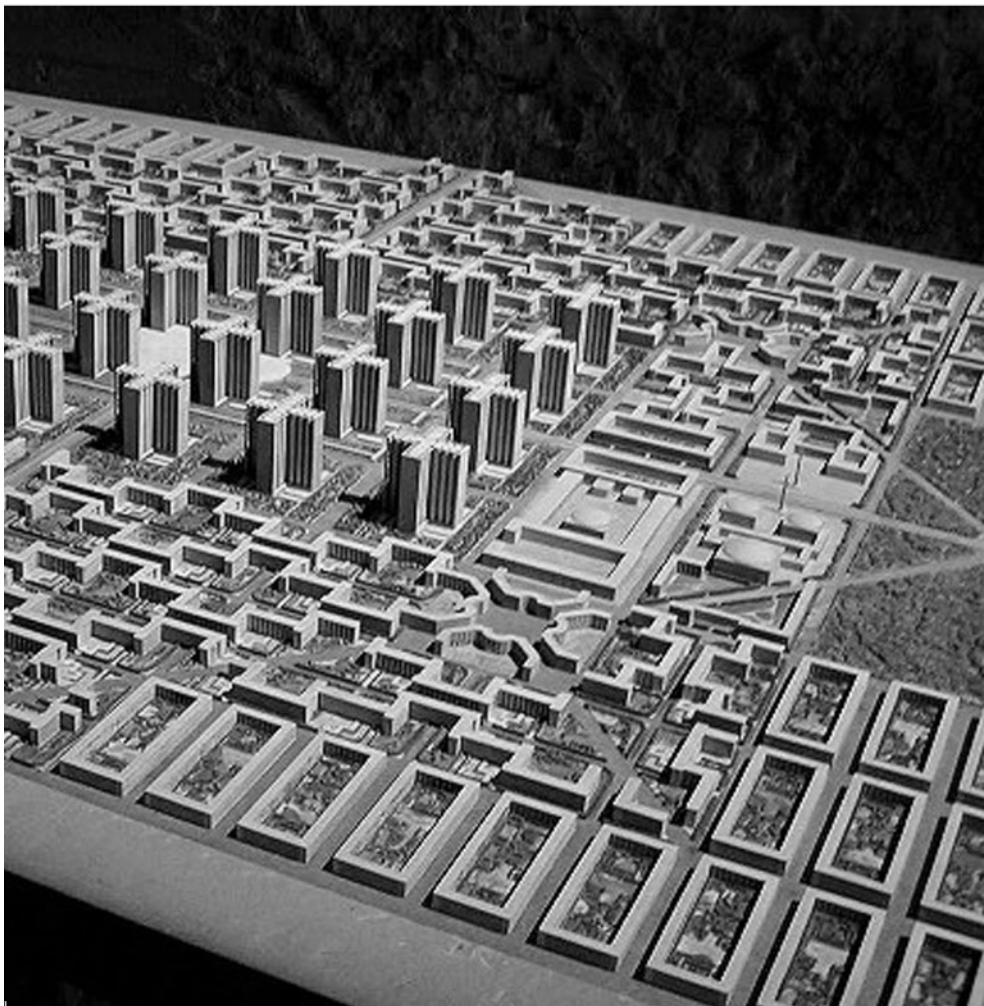
Illustration 11. Physical and social diversity highlights the debate between Jacobs and Le Corbusier

Contemporary issues

As the polar tension between Jacobs and Le Corbusier was at its most intense in the 60's, it is legitimate to ask whether this discussion is valid today or not. The short answer would be yes. In an age where effectiveness, economy and transportation politics are some of the main catalysts in industrial societies, the discussion of the role of the car in the city scene has blossomed once again. As Jacobs managed to prevent some of the bigger highway projects in New York, some modernist planning strategies were still allowed to be implemented. As more and more cities around the world nowadays seem to head for 'greener' strategies, several of modernist areas are being renewed. New York is one the cities preparing to facilitate for a more pedestrian- and bike-friendly future. Especially in residential neighbourhoods, much of the area between buildings are covered with asphalt and sidewalks on the perimeter. In an attempt to create a more 'human' atmosphere in these neighbourhoods, several of these are being redesigned to improve conditions for pedestrians.

The Search for a new Public Domain

Several of the measures implemented in New York are taken right out of Jacobs' playbook, such as mixed-use streets, short, mix-used blocks with high density and buildings of various ages. Jacobs herself was not a practitioner, she was neither an architect, landscape architect nor urban designer. As it was, she only set the boundaries for urban design practice. However, she did set an agenda for future designers in urban situations. How can we as designers create more effective places by working *with* rather than *against* human patterns? As Jacobs wanted to re-evaluate the role of parks and open spaces in the urban setting, she strongly suggested that the park life and urban scene goes hand in hand with the buildings around [Jacobs, J. 1961: 96]. If the programming, use and users of the surrounding buildings are mixed, then the use of the park and open space will vary throughout the day as well. Contrary to Le Corbusier, she wanted to set the scene for a new way of city life that used human patterns to dictate human behaviour. The search for a new public domain had begun.

As an appendix to Jacobs and Le Corbusier, Mike Davis has written extensively about functionalistic projects that face inwards instead of out onto the street. In *Fortress Los Angeles*, he describes several architectural projects in the greater Los Angeles area that effectively work as prisons in the urban sense. He deems this phenomenon as the destruction of accessible public spaces. The reason for this, he claims, is a strong privatization of the public domain [Davis,M. 1990:226]. A sufficient example of this would be the modern shopping mall. Covering a city block, the shopping mall will most commonly face inwards into a private, central room, rather than out onto the street, by which all conditions for city life in that area would be eliminated. As this mostly relies on political debate, it would perhaps be interesting to discuss the supply and demand for public spaces. According to Davis, political processes and lobbying leads to an exchange value for private spaces, such as the shopping mall. However, in reality the place value for open public spaces is much greater, according to Maarten Hajer and Arnold Reijndorp. In their search for urban public activity, they defined the 'Public Domain' as places where an exchange between different social groups is possible and actually does occur [Hajer & Reijndorp, 2002:11]. Further on, they claim that the demand for these public domains is actually significantly higher than the value of private open spaces. If this is in fact the case, one can start to question the mechanics working in bigger cities nowadays, where more and more shopping malls are developed. So what does all of this have to say for a campus design, and future living in Aalborg?

When Aalborg becomes the context in 2012

All of these theorists have conducted research and collected data in the biggest cities in the US and Europe. However, their main ideas are deduced in such a way that they can easily be adapted to smaller places such as Aalborg in Denmark or a minor university campus. On this notion it is important to note that all of theorists are in some degree connected to each other by the main users of this new campus area, the creative class. The regeneration of waterfronts offers nothing new to the urban scene today, as this has become a well known phenomenon in western countries since the decline of old industrial harbours. This can also be seen in Aalborg today, as more and more areas along the waterfront are dedicated to urban transformation and new development. However, what

actually does offer something new to the urban scene, is the fact that people in cities have ever changing preferences for their public places for socializing and exchanging information. This will naturally also apply to the campus situation.

Is it necessary for urban campus design to reinvent itself in order to create successful educational environments for the creative class? If we look back at what was typical for historical universities, it was common to arrange the campus according to an introverted layout. However, campuses today are usually designed as extroverted parts of the city, usually generating more human traffic besides students and staff only. The university is now supposed to be a natural part of the city scape. According to Hajer and Reijndorp, the purposes behind a university campus, which is mainly to offer education and research, will be much more efficient and successful if designed with extroverted principles. In an urban setting such as the harbour in Aalborg, this means that the campus should act as a natural part of the surrounding city, without clear borderlines to its context. The method for ensuring this can be explained through for example New Urbanism.

As many of the aforementioned industrial harbours often leave behind vast, empty wastelands as their role on the urban scene is outplayed, it would be beneficial to discuss whether or not context has anything to say for the final result of a campus design. Does it matter if the context is Boston, London or Aalborg? To answer this, it can be beneficial to relate this question to a form of urban theory. As will be displayed on the following pages, several of the principles regarding New Urbanism are closely connected to the idea about the creative class. In everyday campus life, Hajer and Reijndorp's public domain will often serve as the main catalyst for research and academic development. It is in this realm that students and researchers can exchange ideas and knowledge.

As explained on page 18, one of the main principles of New Urbanism is that architecture in human scale ensures that different users are most comfortable with their surroundings, thus creating a good environment for education. Therefore, when locating a campus in connection to downtown Aalborg, it is important to maintain what is typical for Aalborg. Ill. 12 displays effectively with only three pictures what is typical for spatial relations in downtown Aalborg.

Illustration 12. The physical environment in Aalborg fits Jacobs' theories.

The development of New Urbanism

The ideas of theories around New Urbanism has slowly developed as an alternative to the sprawl and growth that can be seen in every city worldwide nowadays. Its main principles evolve around a goal to reduce dependence of car-based transport in urban areas, and to create walkable neighbourhoods, using mixed-use buildings with a high density of apartments, jobs and commercial sites. In sum, the idea is to create self-sustaining communities, that are not dependent on their surroundings. This is one of the main reasons that the ideas of New Urbanism can be applied to campus development, as the historical and modern campus both aim to be as self-sufficient as possible, with the modern campus drawing more to the city. This means that a campus built after New Urbanism ideals must contain those functions that students and staff need in their everyday lives.

Historical Development of New Urbanism

Looking historically at the development of the New Urbanism movement, it is safe to say that their ideals follow the same ideals that were used in urban planning before the increased use of cars for transportation. Up until the middle of the 20th century, most cities were organized into several mixed-use, walkable neighbourhoods. In spite of already existing transportation routes, the cities were usually entirely walkable. This meant that the people living in the cities had totally different circumstances and conditions to create their everyday social life.

As the growth of the car as a mode of transportation started to increase after World War II, planning strategies and attention began to shift more towards a car based society. This resulted in an extensive use of zoning principles with segregation of use as a consequence. Prime examples of this can be seen in several American cities today, where suburbs containing massive amounts of residential housing eats up substantial areas in rings around the city centre. The strategies of the post World War modernist planning methods has lead to a majority of US citizens living in suburban areas, completely dependent on motorized transportation. New Urbanism as an organized movement did not develop until the late 70's and 80's. However, the organized critique of modernist planning methods

started as early as the 1960's. The critics of this method often tended to label the movement as 'anti urban' [Jacobs], in that urban sprawl failed to accommodate historical urban social values, such as versatile neighbourhoods, intimate streets and independence of cars. American urban and social scholar Jane Jacobs also advocated several of the same sentiments in her classic *The Death and Life of Great American Cities*. As mentioned, the 70' and 80's gave way for an organized movement for New Urbanism. In 1993, The Congress for New Urbanism was formed as the organizing body for the movement. The background for the foundation was the development of a set of land use principles, commissioned by a nonprofit group in Sacramento, California.

10 Principles for New Urbanism

As part founders of the New Urbanism movement, husband and wife Andrés Duany and Elizabeth Plater-Zyberk used observation of a neighbourhood in New Haven to define 10 principles of New Urbanism. The idea behind these principles is that they may be applied as a whole or individually to projects scaling from single buildings to master plans [Duany, A., Plater-Zyberk, E. 2000: 183].

- Walkability. This includes pedestrian friendly street design, with buildings and facades close to the street. For a campus design, this implies that motorized transport will be excluded from the area.

- Connectivity. Interconnected street grids form the infrastructural base for the project area. There is a hierarchy of streets, boulevards and alleys. This will be the equivalent of the main campus axis.

- Mixed-use and diversity. This includes diversity in programming and people that will use the site.

- Mixed houses. A wide range of types and sizes in close proximity to each other.

- Quality architecture and urban design. An emphasis on aesthetics, human comfort and creating a sense of place is applied to the project. According to New Urbanism, human scale architecture will nourish the human spirit, which

is naturally an important element in every educational institution.

- A discernible central square and an edge form the main elements in New Urbanism design. There is a strong focus on what Hajer & Reijndorp call the public domain. For a campus design, this point will be of high importance, as it is in this public realm that informal social and academic bonds are often made.

- Increased density. With more facilities and functions located close to each other, conditions for walking will automatically improve.

- Green transportation. This includes pedestrian friendly design that encourages a greater use of bicycles, scooters and walking as the daily form of transportation.

- Sustainability. High density and energy efficiency can minimize environmental impact of development. Local materials are used on buildings and streets.

- Quality of life. Combined, these first nine points will create places that can enrich and inspire the human spirit.

As the principles for New Urbanism were mainly developed for use in creating better neighbourhoods in the existing city, some of them may not be suitable for application to a project site such as a campus. It is also important to note that the aim for this project is not to create a replica of a typical New Urbanism neighbourhood. As the project area for the A&D campus in Aalborg is a fairly small site compared to other campuses, some of these principles can be more relevant than others. The principles regarding connectivity, walkability and a discernible central square can for example effectively be applied to a campus design as a formative infrastructural element. Other points are more relevant to the design of the campus buildings, regarding diversity in aesthetics and building types.

Illustration 13. New Urbanism thrives on physical and social adversity.

Jan Gehl and the Human Scale

On a fairly trite level, humans interact with their surroundings based on their physical dimensions and limitations. The human scale in architecture and urban design can perhaps be explained as having facilities that generally fit the average person. Because of this, cities are often designed according to a human scale, and usually have walking distances and articulated facades that suits the usual 5 km/h pace of walking.

Combined with Florida's ideas about the creative class and its needs, this can be used to explain why the campus should be located in the city and not in its outskirts. Danish architect and urban design consultant Jan Gehl is, amongst other accomplishments, responsible for the redesign of Strøget in Copenhagen. Seeing how car based transportation slowly took over activities and functions between the buildings in the city, the car based street was transformed into a pedestrian street in connection with the Christmas holidays in 1962 [Gehl, J., 2010: 23], and has since been emulated several other places, such as Times Square in New York. The difference in character between the old and the new Times Square becomes evident when viewing the comparison in illustration 15.

The relevance of Strøget is justified through what a campus should be, according to Richard Florida and the creative class. If the campus is to exist for people and not car based transportation, it is first of all important to locate the Campus within the downtown city limits. Further on, if the four different educations integrated in the campus is to benefit from one another and exchange ideas in the public domain, it is important to maintain walking distances and good pedestrian conditions between the campus buildings, and between the campus and the city. As part of an effort from the ITDP [Institute for Transportation & Development Policy], which is a worldwide organization for promoting sustainable transport solutions, Jan Gehl and Gehl Architects has formed 10 principles to ensure sustainable transportation and development in cities [Our Cities Ourselves, Gehl Architects and ITDP 2010]. By coincidence perhaps, several of these guidelines are in some degree linked to ideas about New Urbanism. That is not to say that New Urbanism ideas are purely based on sustainability, but can however be indicative

of how these theories are interconnected. One could for example argue that buildings in smaller scale in inner city environments, such as New Urbanism usually advocates, is not considered as an economically viable solution. It is hence chosen to focus on the principles that correlate between Gehl and New Urbanism.

As explained on page 19, some of the ideas from New Urbanism are arguably more relevant to campus design than others. This will also apply for the principles from Gehl and ITDP. As the first principle for New Urbanism is that of Walkability, Gehl describes a slightly revised version called Walk the Walk [Our Cities Ourselves, 2010:10]. The revised version says in short that one cannot expect people to walk in the cities if conditions are not laid out for pedestrians. They further on claim that 'the most successful cities in the world have vibrant and walkable streets'. One of the measures for creating these types of streets is to invite people to linger in the streets, rather than just walking through. To ensure that the Campus becomes an integrated part of the city, the idea of walkability will be important to maintain in the design proposal. This includes walkability within the campus area, and connectivity to the city. Findings from the New York Department of Transportation showed amongst others that after the redesign of Times Square, the number of pedestrians using the area had increased by 11 percent.

As two of the principles for New Urbanism talks about diversity in programming and users, and diversity in building types, Gehl talks about a principle called Mix it up, which basically means that in order for cities to be sustainable, functions and different users have to be integrated and mixed into smaller enclaves in the city. When thinking of the campus, different users are obviously ensured from the start, as people of a wide age span will use the area. Further on, the campus in Aalborg will include four different educations, and thus present the possibility to create different kinds of environments and buildings for each education. In addition to this, the Campus building mass will also include common functions such as a library, a cantina and administrative functions that can further on increase diversity in building types and sizes. On this note, it seems that Gehl and ITDP agree on some of the main points from the ideas of New Urbanism that are most relevant to Campus design scale.

Diversity in Function and Use

As established earlier, the campus is a diverse place, that will have to facilitate for several degrees of functions, and also different behaviour from its users. As the users of the Campus go through their day, their need for privacy and interaction will become evident. Both students, teachers and researchers will have the need for both private work places and spaces where they can meet, interact and exchange ideas with other students and teachers. This need of diversity in functions will arise both in terms of interior and exterior. This means that the exterior areas of the Campus will have to integrate both spaces for personal seclusion, and more open spaces for public interaction.

In terms of the physical design of these different spaces, it can be beneficial to define them by some sort of academic terminology. American political philosopher Michael Walzer has defined the difference between non-places and places, as either being single minded or open minded. Non-places are single minded in the sense that they are designed for one purpose and one purpose only. These types of non-places will usually not be relevant on the campus scene. The opposite of a non-place will usually be a place that is defined by an open minded design. This means that an open minded place is a place that is characterized by its ability to offer different activities [Walzer, M. in Kiib, H. 2010: 113]. When talking about open minded places, Walzer argues that in an open minded place, it is not just the preprogrammed uses that are essential, it is also about the other opportunities of using the place. An example of an open minded place can be a pedestrian street, where for example musicians use the street in a way that is not necessarily planned.

This type of paradigm can also be applied to the Campus scene, and is important to ensure a diverse and vibrant Campus area. On the interior level, it can for example be possible to design hallways, open spaces and even rooms in such a way that unexpected activities occur here. This means that the solutions have to be as flexible as possible, in order to change use and programs according to needs and activities. This will also apply on the exterior level, where public open spaces will serve as spots for both seclusion and interaction.

Illustration 14. Pedestrian use of Times Square in New York has escalated after a transformation of the square.

3. Context and mappings

General plans for the area

The municipality's plans for the area is an important part of the restructuring of Aalborg's harbour front. When the development of this part is concluded, the work with the harbour front will be completed. As of today, there does not exist a definite zoning plan for the campus project area, and it seems as though the municipality is still waiting for a sufficient input in the debate about what this area should be used for.

As mentioned earlier, this area of the harbour front will constitute a creative cluster. As the Utzon Center is already finalized, the House of Music is next in line. However, the area between the Utzon Center and the House of Music has not been planned in detail. Architectural firm Coop Himmelb[l]au won the competition for Musikkens Hus [winning proposal displayed bottom left on page 24], and loosely outlined a zoning proposal that integrated dwelling units, restaurants, cafés and facilities for education. Several proposals have been added to the debate about how the project area should be utilized, but further development has not occurred.

Nordkraft

The plan's area is a part of a former industrial harbour, and Aalborg municipality's goal for the area is to re-use some of the old industrial facilities, combining it with this new creative cluster. At the end of the century's first decade, the Nordkraft buildings were transformed into facilities for several cultural institutions in and around Aalborg. Some of these institutions include Aalborg Cultural School, Aalborg Art Cinema, Jutland Handball Federation and The Department for Physical Education at Aalborg University. This has been one of the main focuses in the municipality's work with the plan, to ensure Aalborg's further development as a city of knowledge and education.

Nordkraft's relevance becomes evident when considering the creative cluster. The general idea behind the Nordkraft project was to re-use old industrial building mass in order to ensure a creative environment in Aalborg's old harbour.
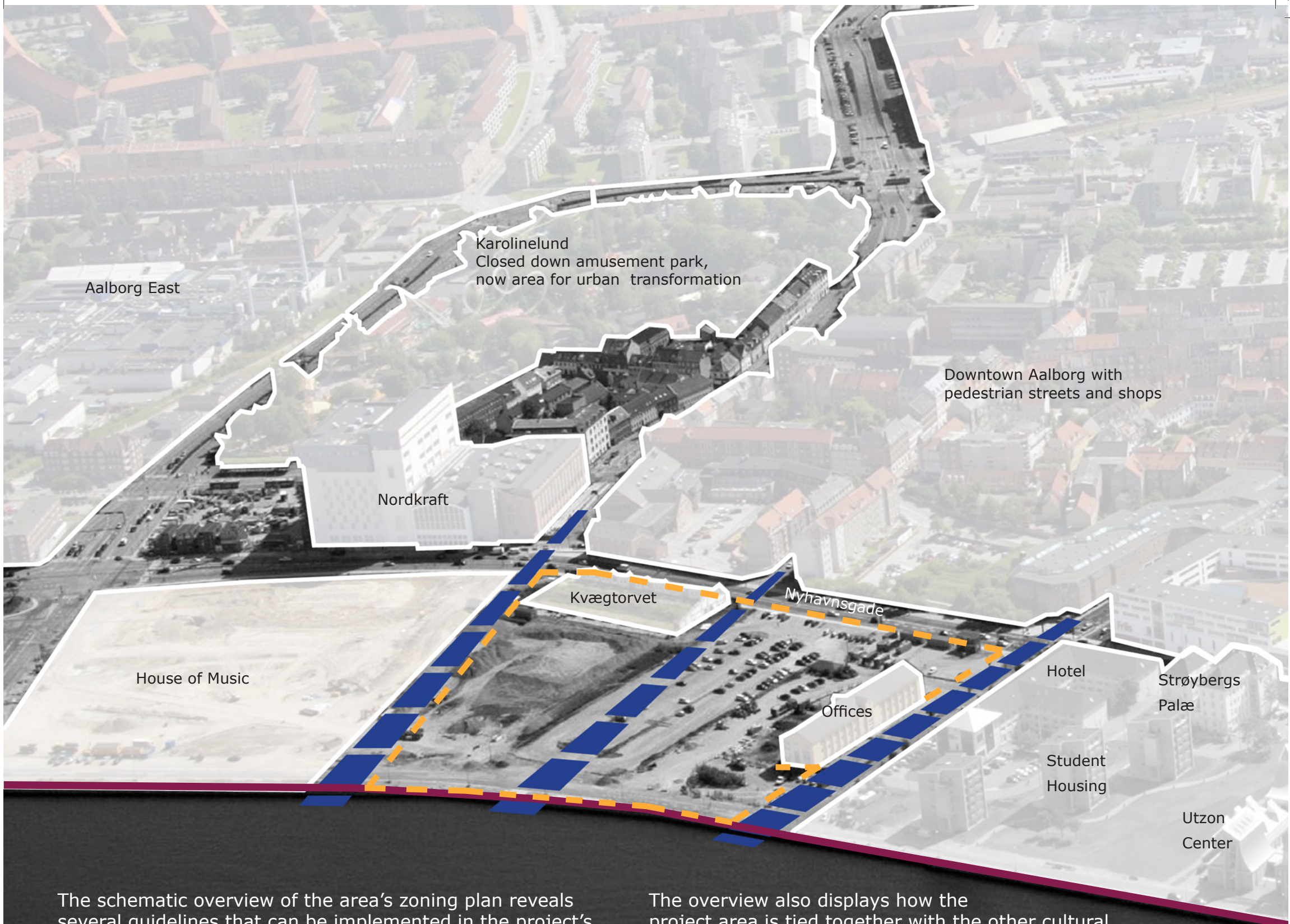
Some detailed provisions

As part of the provisions in the general zoning plan for the creative cluster, there are some detailed guidelines provided by the municipality. As the current zoning plan for the area is somewhat unclear about the direct use of the project area [Outlined in orange in illustration 15], it is important to note that these points are simply used as guidelines in this particular project.

As a historical part of the harbour's industry, there has been several debates about the conservation of Kvægtorvet. It was originally built at the start of the 20th century and was used to keep cattle for industrial purposes. As of February 2012, the building has been torn down to make way for new building mass at the site. The municipality whishes to preserve the office building in three floors and further use it for office.

Assessing the possibilities for access to the project area, Nyhavnsgade has recently been constricted from four to two lanes for cars in order to reduce the barrier-effect between the downtown area and the harbour. The municipality also wishes to construct three different visual axes, as displayed with blue in illustration 16. These axes will create a visual connection to Limfjorden and Nørresundby, Aalborg's sister city on the north side of Limfjorden. Crossing these axes will be a promenade along the waterfront [purple line], that will continue from the Utzon Center to the eastern harbour on the left side of illustration 15. The municipality wishes to integrate the waterfront promenade with new building mass development, but still let it run continuously in a 8-10 meter wide belt along the waterfront.

In terms of programming, the municipality wishes to transform the area with a focus on contributing to Aalborg's further development as a knowledge and experience city. The experience city is to attract human resources and talent, and facilitate for exciting and vibrant urban environments. Further on, all areas are to be developed according to the terms of pedestrians and bicyclists, with possibilities for car parking minimized. It becomes evident that Aalborg municipality uses several strategies for New Urbanism in the planning of this area.

Aalborg East

Karolinelund
Closed down amusement park,
now area for urban transformation

Downtown Aalborg with
pedestrian streets and shops

Nordkraft

Kvægtorvet

Nyhavnsgade

House of Music

Hotel

Strøybergs
Palæ

Offices

Student
Housing

Utzon
Center

The schematic overview of the area's zoning plan reveals several guidelines that can be implemented in the project's design proposal. The strongest formative elements that connects the city to the harbour will undoubtedly be the blue axes traversing through the area, creating a visual connection between downtown Aalborg and down to Limfjorden.

The overview also displays how the project area is tied together with the other cultural institutions in the area. Aalborg municipality has used this as a conscious strategy in order to ensure the further development of Aalborg as a city for innovation. The project area is tied to the rest of the harbour by the waterfront promenade [Purple].

Illustration 15. A schematic overview of plans for the project site.

Aesthetic context

The historical development of Aalborg as one of Denmark's largest cities has always depended heavily on the influence industry has had on the city. This fact has naturally affected the nature of Aalborg harbour's aesthetic qualities. Although the project area today stands more as a barren wasteland, the surrounding areas offer several interesting aesthetic elements.

As mentioned earlier, the project area will be located in the midst of a strong creative cluster, where several of the cultural institutions are already up and running. On each end of this string of institutions, we find two strong anchors of Aalborg as a knowledge and experience city. On the east end, we find Nordkraft, which is a melting pot for numerous different social and cultural activities. The aesthetic qualities of this building is unique in a way that structural frameworks of industrial architecture meets new and innovative ways of building. The re-design of the old electricity supply building was performed by Cubo Architects. To preserve the industrial feel of the building, the architects chose to work with the structural work as a base, and integrate it with new glass walls, dividing the different halls in the building [Displayed in low right corner of Illustration 16]. Nordkraft has since the re-design become one of the most popular cultural destinations in Aalborg.

On the west side of this string, we find the Utzon Center, built on some of famous Danish architect Jørn Utzon's main principles for building design. Utzon and his son Kim Utzon designed the building. Utzon was the architect of the world famous Sydney Opera House, and grew up in Aalborg. The Utzon Center was subsequently the last building Utzon designed, and the aim for the project was to create a gathering building for the department for Architecture and Design at Aalborg University, as well as a centre for promoting architecture to the public. In terms of its architectural qualities, the building can hardly be missed in the harbour scape, with its distinctly curved rooftops. Displayed in the top right corner of Illustration 17, the rooftops almost resemble tents next to each other. The top of each tent consists of glass roofs, which allows each room inside to be naturally lit. Through this layout, the visitors and students that use the building will always have a visual connection with both the sky above and Limfjorden outside. It is not only the

aforementioned creative cluster and the string of cultural institutions that influence the scene in the old industrial harbour of Aalborg. As can be seen at several spots along the waterfront, the area still bears different signs of what used to be here. This is typically the places where the ships are moored and rest when visiting Aalborg. Several ships run through Limfjorden every day, and ships such as displayed in Illustration 16 are not an unusual sight.

The overall impression of the area is that this is a dynamic place of constant urban transformation. The project area itself does not contain any given functions, thus appearing abandoned throughout the day. People essentially have to leave the area in order to find functions such as shopping, recreation and sports. As displayed on page 26, there are several areas being developed at present time along the waterfront for recreation and sports. These areas will be connected to the project site through the harbour promenade.

Generally, it is safe to say that the project area appears as a visually diverse place in terms of aesthetics. This is not just on account of the purely architectural qualities of the place, but rather a combination of cultural heritage and semiotics. A clear example of this is the wave of bicyclists that rush past the area every time the surrounding traffic lights turn green. Small visual elements, such as pullers [Illustration 16, mid left] or left-behind mooring ropes. As mentioned on page 10, one of the main challenges concerning campus planning is to create a locally anchored form of expression in the design. According to Norberg-Schulz, it is amongst others these little things that should be integrated, in order for the design to be successful. For the Aalborg Harbour in particular, it will also be a matter of integrating old industrial elements into the design.
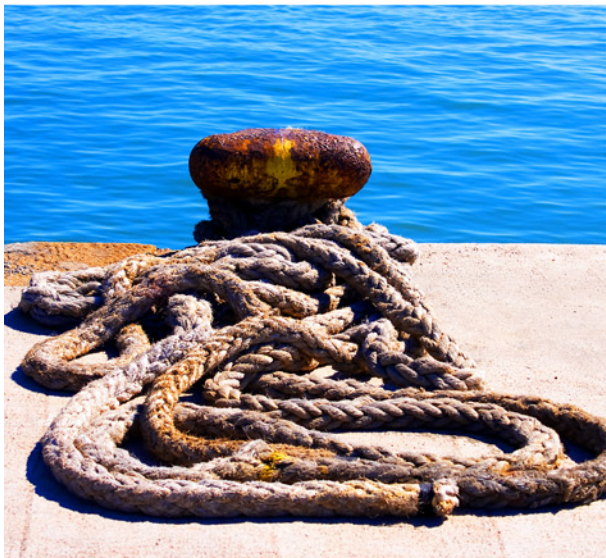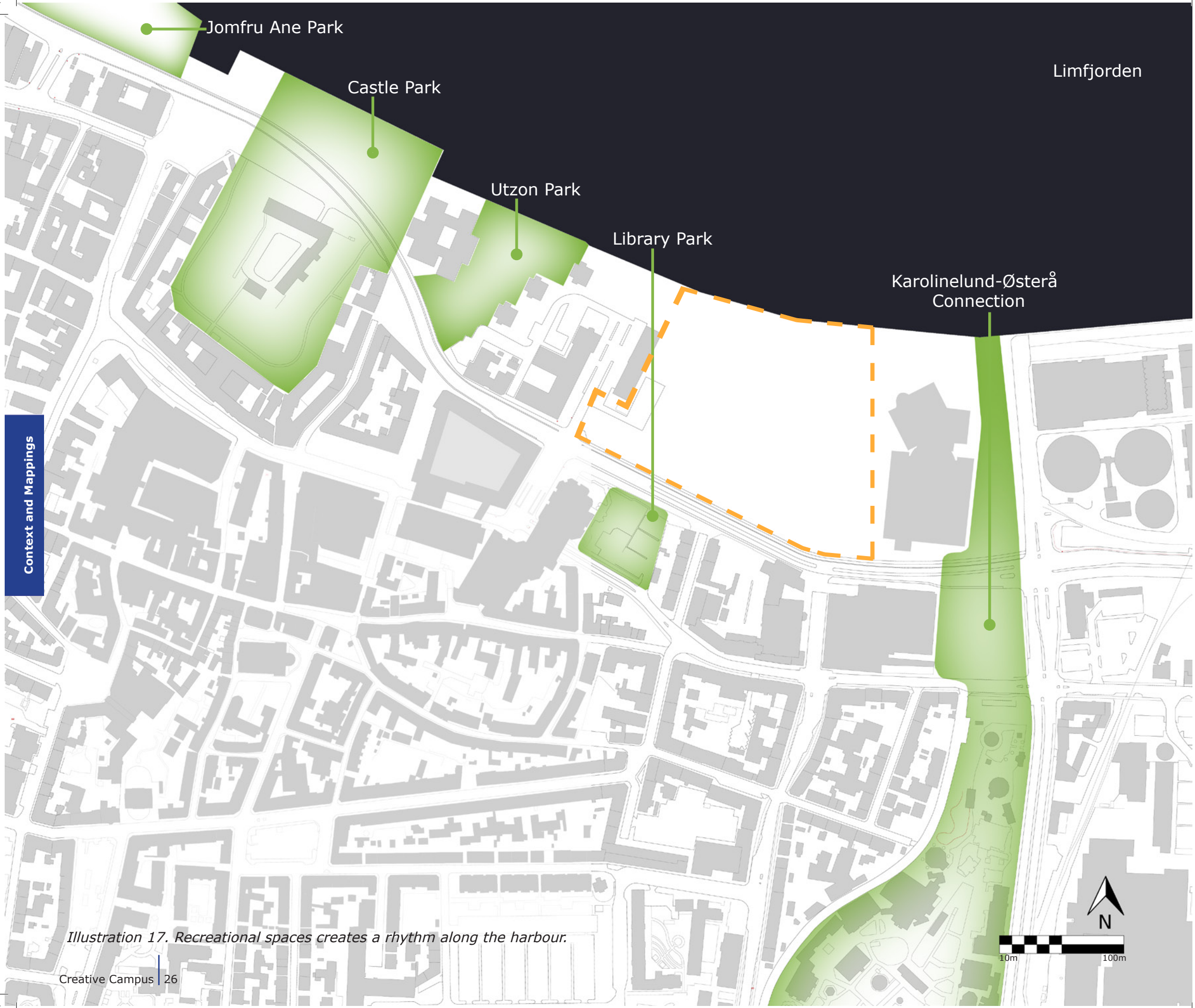
Illustration 16. Several industrial references in Aalborg's harbour front.

Jomfru Ane Park

Castle Park

Utzon Park

Limfjorden

Library Park

Karolinelund-Østerå
Connection

Illustration 17. Recreational spaces creates a rhythm along the harbour.

N

10m   100m

Recreational Connections

As explained in the theoretical section, a campus design is about more than facilitating for classes and research. As important an aspect as any, the ambiguous in-between areas are what can 'make or break' an educational environment. The recreational possibilities along the harbour front can tell us something about the city's connectivity within itself, and how the campus can connect itself to this network of open spaces. There are several recreational possibilities along the harbour, connected through the harbour promenade. The different parks and open urban spaces all have in common that they form a certain physical rhythm along the harbour, acting as notches in a belt along the water, in that they are carved into the city structure. This allows for a strong connection between the downtown area and the water.

Jomfru Ane Park [Top picture, Illustration 18]stretches over 250 metres in front of the downtown area, and is a well visited area during the warmer months of the year. The park is characterized by grass lawns and areas for sporting activities, and is organized by different rooms allowing for a variation of atmospheres.
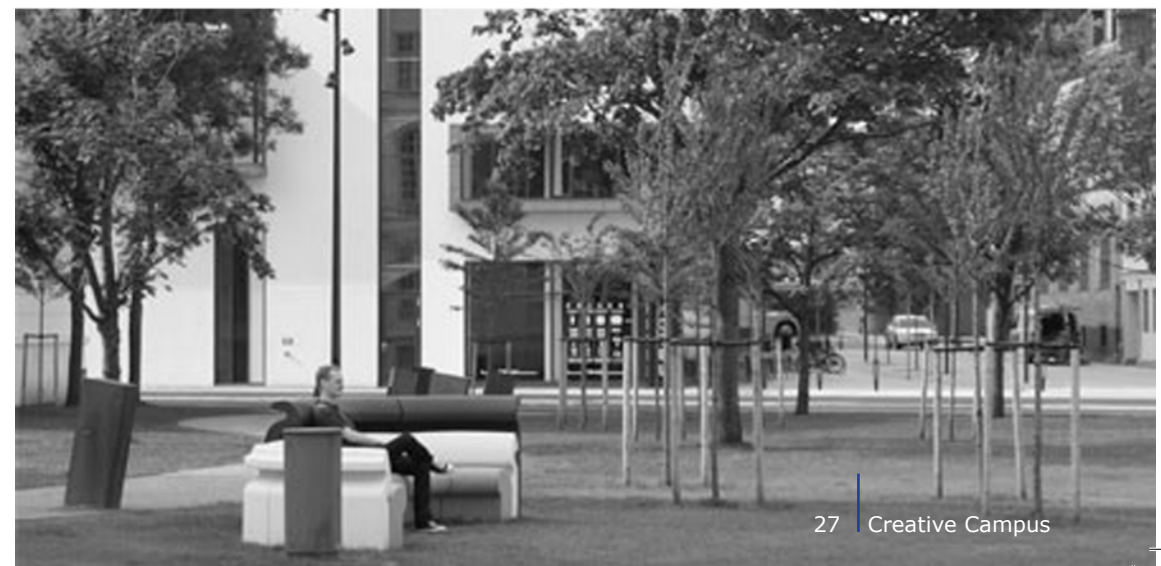
The Castle Park [Middle picture, Illustration 18] surrounds Aalborg Castle, and functions as a public park with varying terrain. With the development of the Utzon Centre and the harbour front, the park has recently been opened up and extended down to the water. This emphasizes Aalborg Castle as an important signature building in the city scape. Nyhavnsgade functions as a barrier through the area, with no regulated crossing points available.
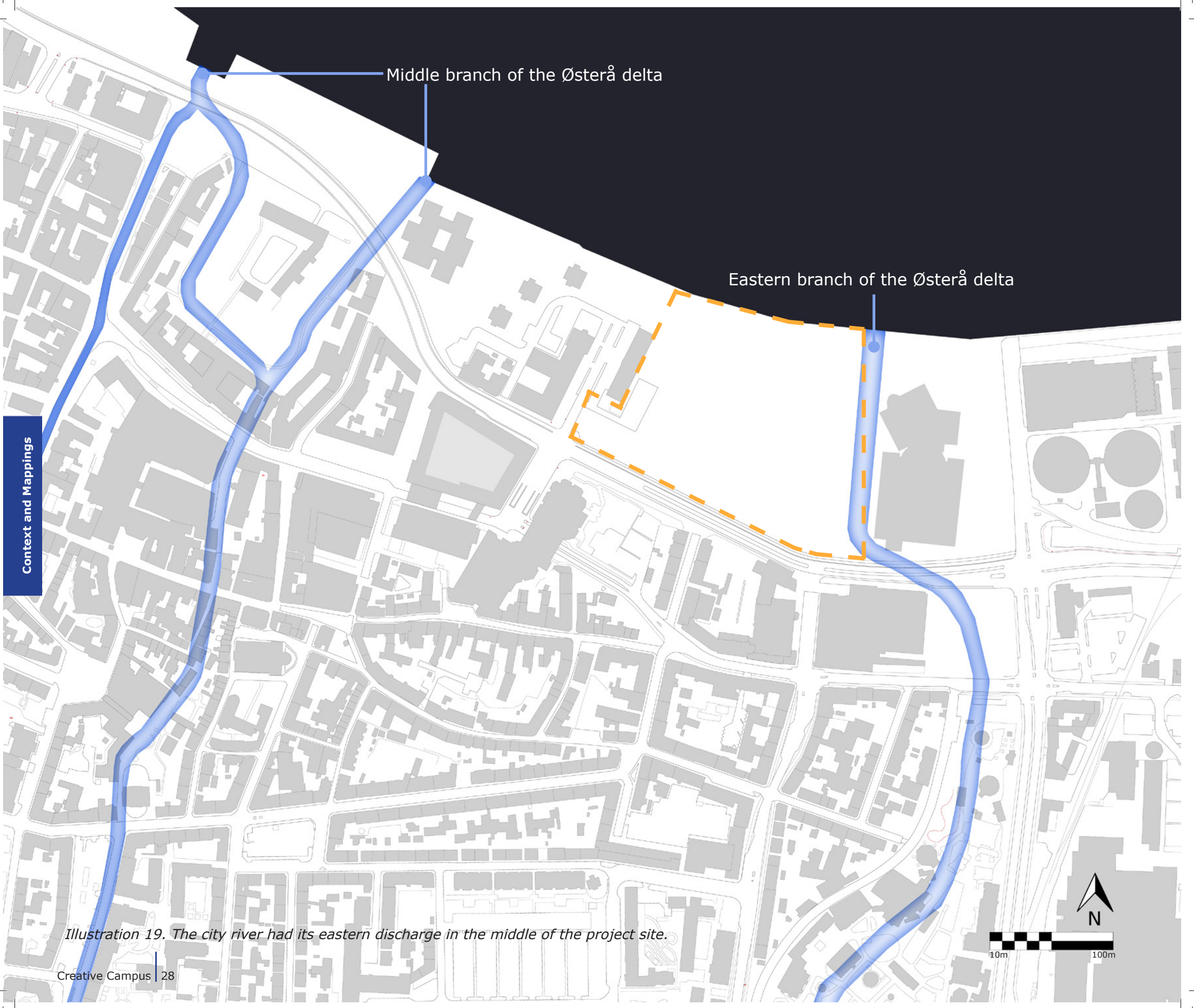
The Utzon Park [Bottom picture, Illustration 18] serves as a public park between the Utzon Center and the Student housing. Utzon's son Kim Utzon has designed the student housing as a natural part of the park's eastern parts.

The Library Park is currently sheltered from the waterfront, but the municipality whishes to use this park to create another connection from the city to the harbour. The Karolinelund-Østerå Connection was originally the pathway for the city's east river, and with the closing of the amusement park, the municipality wishes to reopen this pathway.

Illustration 18. Parks along the harbour ensures connection between the city and the harbour.

Middle branch of the Østerå delta

Eastern branch of the Østerå delta

Illustration 19. The city river had its eastern discharge in the middle of the project site.

N

10m   100m

Reopening of the old river

As the municipality has proposed a reopening of the Østerå river course, the river will be a natural and historic part of the creative cluster area. The southern part of the original river course [Illustration 19] was covered in 1872-74, while the northern part was covered and named Østerågade in 1897 [Aalborg Municipality]. The river was covered and closed from daylight to meet the contemporary increasing demand for transportation areas for horses and carriages. The closing of the river also occurred during a time when sufficient systems for sewage and general hygiene was not fully developed, which naturally affected the general condition of the river.

Winners of the competition for Musikkens Hus, Coop Himmelb[l]a, used the exposure of Østerå actively in designing the landscape plan for the project [Coop Himmelb[l]a, 2009] The reopening of the river allows for an opportunity to recreate some of the historical atmosphere at the harbour front. Historically, the housing facades were placed right onto the edge of river, such as displayed in the bottom picture to the right. The design surrounding Musikkens Hus is laid out in such a way that further connections to the reopened canal can easily be established.
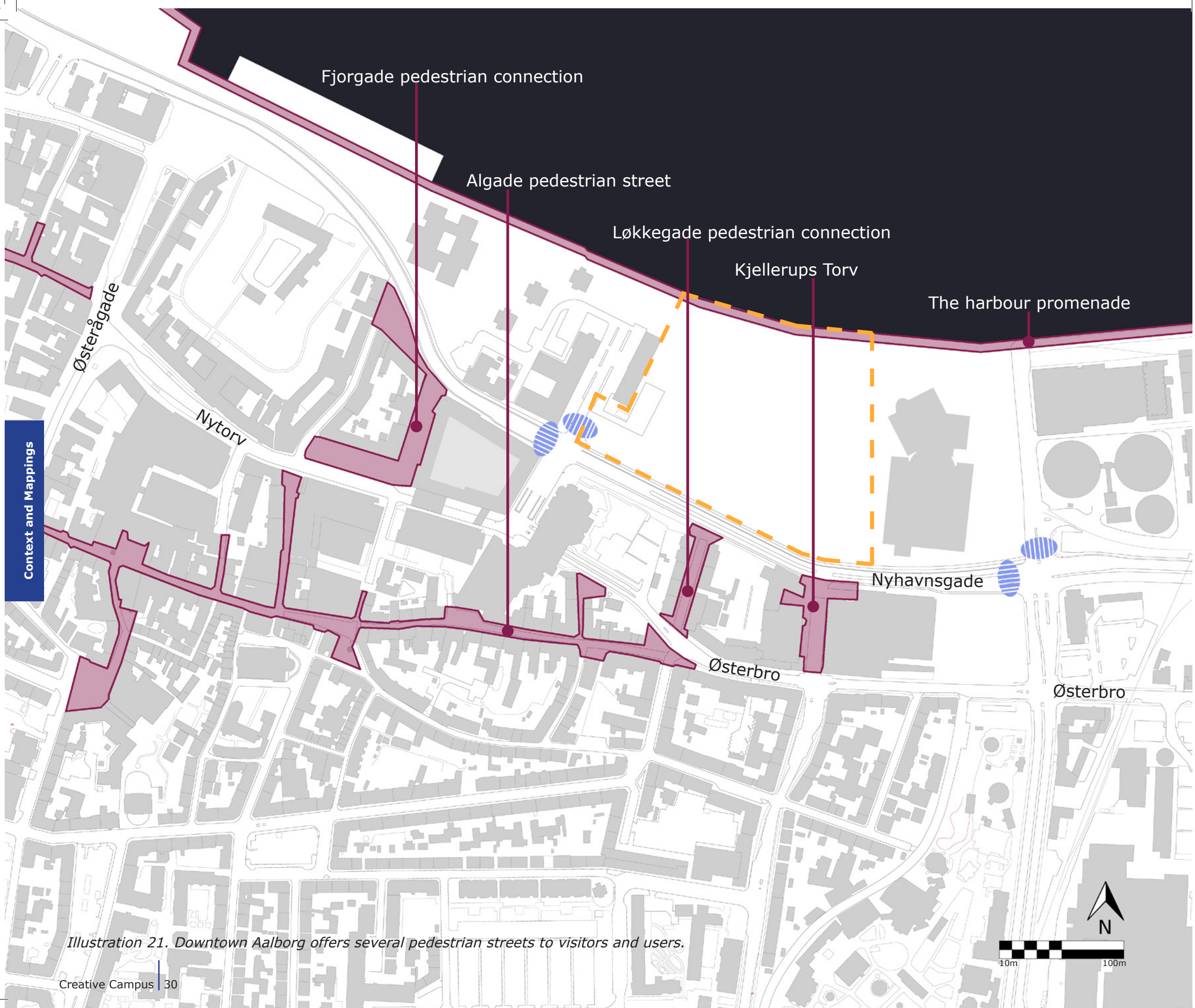
Historically, the city of Aalborg was situated in a river delta surrounded by limestone hills. The physical structure of the city today is a direct result of some of the old river courses from the delta. The river was originally the centre for trade and merchandise in the old city, using the water surface as a floating market. As the top illustration to the right displays, the river would gather the city's inhabitants whenever a market floated into town. This phenomenon is still seen around the world today, for example in Bangkok.

As described by Norberg-Shulz, the degree of success for a design project can often be measured in how the local and historical context is taken into account. As the river delta historically was one of the most important elements in terms of defining social and structural environment in Aalborg, the old river will have to be taken into account when designing for a new campus. The reopening of the river will thus act as a reference to the historical landscape at the harbour front.

Illustration 20. The Østerå river used to be an important part of markets and trade in the city. These pictures are taken on Nytorv.

Fjorgade pedestrian connection

Algade pedestrian street

Løkkegade pedestrian connection
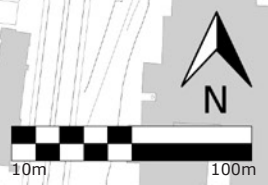
Kjellerups Torv

The harbour promenade

Østerågade

Nytorv

Nyhavnsgade

Østerbro

Østerbro

Illustration 21. Downtown Aalborg offers several pedestrian streets to visitors and users.

N

10m   100m

Pedestrian Conditions

As mentioned in the section about Jan Gehl, Danish cities especially underwent a change in paradigm during the 60's. This change in physical conditions for pedestrians also underwent a change in Aalborg, as substantial parts of the downtown street grid was transformed into pedestrian streets.

In terms of elements from New Urbanism and pedestrian accessibility to the new campus area, it is useful to examine the relevant conditions for pedestrians in the downtown areas leading up to the campus. As mentioned, one of the main elements in New Urbanism is walkability and connectivity. For the campus to be a successful area in these terms, connections and conditions for pedestrians from the downtown area must be as efficient as possible.

The longest pedestrian street in downtown Aalborg is Algade, stretching 550 metres through the medieval city centre. Algade is a typical pedestrian street, surrounded by shops and cafés [Top picture illustration 22]. Two shopping malls and the public library can also be found along the street. In typical medieval cities such as Aalborg, the street grid can often be characterized as somewhat irregular. With a majority of the streets dedicated to cars, this can cause complex conditions for pedestrians. As Algade stretches all the way through downtown from Østerågade to Østerbro, the pedestrian street serves as an organizing element in the city scape, substantially improving conditions for pedestrians in the city.

Østerbro serves as the main bike artery from Aalborg east to downtown Aalborg. As Østerbro runs parallel to Nyhavnsgade, this means that efficient transport routes for pedestrians and bicyclists are already laid out for the campus site. This ensures the ideas about good connectivity in New Urbanism. Combined with Richard Florida's research, Aalborg's pedestrian streets and possibilities for biking will ensure good conditions for retaining the creative class. As for access points to the project area itself, there are two barrier obstacles that divides the project area from the downtown pedestrians streets, in Nytorv and Nyhavnsgade. There are only two pedestrian crossings along Nyhavnsgade [Blue markings illustration 21], in spite of the fact that this is one of the main transportation arteries in the city.

Illustration 22. Nyhavnsgade [Bottom] creates a barrier, but is light regulated in both ends of the campus block.

City blocks and bigger houses

Mixed typologies

Heavy industrial architecture

Light industrial architecture

Utzon Center

Silos

Salling shopping mall

Friis shopping mall

House of Music

Føtex multistore

Public Library

Nordkraft

N

10m   100m

Illustration 23. 'Modern' building structures in Aalborg creates a new typology along the harbour front.

Morphology and Typology

The various functions in the area are reflected in the urban fabric and dominating typologies in the area. As seen in illustration 23, the city is characterized by its history as an industrial city, with the main typologies being industrial architecture and city blocks for dwellings. This can especially be seen east of the project area, where silos stand 40-60 metres high, constituting an important part of Aalborg's vertical profile. One of the clearest examples of this type of architecture is the old Nordkraft building, displayed in the bottom picture in illustration 24. The rehabilitation of the Nordkraft building is indicative of the trend in Aalborg today, where several older industrial buildings are being rebuilt in order to meet new demands in building masses.

Combined with this industrial type of architecture, downtown Aalborg is mainly characterized by city blocks structures and bigger houses. This typically indicates structures in 4-6 floors, primarily built in red bricks. These city blocks are typically organized around a central green private room. The buildings in the city blocks are usually articulated more detailed compared to newer buildings in the city scape. Aside from the typical brick city blocks, a substantial amount of the city centre's older buildings are built in painted stone with wooden trusses, such as the ones displayed in the middle picture of the illustration to the right. These types of buildings usually occur along the older streets in the downtown area, and can thus be viewed as a cultural layer of the old town.

This stands in contrast to newer development in downtown Aalborg. Marked in blue in ill. 23, these mixed typologies are often a result of internal mixed use. Salling, Føtex and Friis are all buildings with shopping as the main function. These buildings are often of a more independent character than the city blocks and industrial buildings, and cannot be categorized in a specific typology. As can be seen in illustration 23, these typologies are starting to create a structural string from downtown, down to the harbour front, with the old downtown city blocks in the background. This string is extended to the silos and Nordkraft, east and south of the project site. As a summary, the urban morphology in Aalborg displays cultural layers that have developed over time, and the most recent cultural layer typically draws out towards the harbour.

Illustration 24. A use of mixed typologies is not a seldom used phenomenon in Aalborg.

Theoretical and Contextual Conclusion

This analysis has focused on relevant theories regarding campus design. The contextual aspects around the project site has shown that the area around the project site is built up around several elements that constitutes the future site of the campus for A&D. Firstly, underneath this hood of physical aspects, a wide range of sub layers unfold. Particularly under the section about reopening the old river, an historical aspect unfolds that can be integrated in several interesting ways in the new design for the campus area. This aspect opens up an opportunity to use an idea of a delta in terms of physical organization of the campus, and would lead to a more historically and locally anchored project.

Located in the middle of an old industrial harbour, it is safe to say that the immediate surroundings of the project site initially is not a destination for the common man in Aalborg, at least not on the north side of Nyhavnsgade. However, with the introduction of Musikkens Hus to the creative cluster, the area seeks to be a vivid and pulsating place that will contribute to Aalborg's further growth as an experience city.

Exploration of Theories

As the new campus will become part of the creative cluster, and thus a vital part of Aalborg's development, it is important to maintain an idea of the campus as a place not exclusively for education, but also as a natural part of the city life. On this note, the review of the relevant theoreticians has proved to be a valuable help in determining which aspects that can constitute a campus design. Richard Florida gives an insight into what is demanded of a modern campus, and explains what is needed for the campus to attract the so called creative human capital. Summarized, he talks mainly about social aspects, explaining how mechanisms work in the creative class. This is valuable in terms of justifying the placement of the campus within the city limits.

As mentioned earlier, the modern campus tends to become a more integrated part of the physical and social city, compared to the historical American campus model. This means that the new campus must necessarily offer functions that can relate to the average citizen, not only those using the campus

during the weekdays. A certain degree of success in terms of integrating the campus as a natural part of the city, can amongst other elements be measured by the popularity of the campus and activities on campus outside of study hours. This means that Aalborg's general public must feel at home, and be offered a variety of activities throughout the week. This can include everything from public exhibitions of student work, to public areas and restaurants.

As Richard Florida documents through his research, human creativity is the ultimate economic resource. As part of the background for why cities evolve in the first place, an economic incentive is necessary for cities to develop and attract more work force. This can be closely related to the fact that the department of A&D mainly thrives on creative people, and it can also explain why the new campus will be located within the city limits instead of the existing university campus. As members of the creative class usually obtain a higher quality of life than people without schooling, it seems natural to locate this campus consisting of creative educations in within the city limits. This will according to Florida create stronger synergy effects between institutions in the city and the new campus, that creates a win-win situation for both parts. As explained earlier, the creative class is not fractionated, in spite of its mix of people from several different 'classes' in society. This reflects well upon the usual demographics of the university campus. To ensure the synergy effect that Florida writes about, it will be beneficial for students, teachers and researchers from all four educations to be located within the same city campus.

Talking mostly about sociocultural aspects of the development of cities, Florida differs somewhat from the more physical aspects of Jacobs, Le Corbusier, and Gehl. All three of these practitioners and scholars are in some degree explaining direct physical phenomenons that can be helpful in understanding how a university campus should be organized. As this project is loosely based on principles of New Urbanism, it is important to note that both Jacobs, Le Corbusier and Gehl all have contributed to develop New Urbanism thoughts and ideas. Jacobs and Gehl are perhaps the ones that are most relevant in terms of supporting New Urbanism, while Le Corbusier however acts as a counterweight to these ideas. In this project, the 'battle' between Le Corbusier and Jacobs is

used to explain how reactions to modernist planning emerged during the 60's and 70's. When talking about facilitating for a learning environment that exists in a campus; safety, calm and a sense of belonging will be some of the most important mechanisms constituting the social environment at the campus. Through her critique, Jacobs explains thoroughly how modernist planning techniques does not take these elements into consideration. As the idea of towers in the park mainly acted as a social experiment to Jacobs, the complex nature of a city campus would in her mind never be successful through modernist planning techniques. Combined with the ideas of Florida, a campus design would flourish further if the building masses are organized in a close and dense manner. This means that the different buildings at the campus should be placed in close relations to each other, with a close relationship between functions on interior and exterior levels of the buildings.

Conditions for exchanging ideas in the public domain

The relationship between interior and exterior is also what defines the ideas of Hajer & Reijndorp and New Urbanism. Amongst other theories, Hajer & Reijndorp defined the public domain as places where an exchange between different social groups is possible and actually does occur. If we can define a creative campus, such as the campus for A&D, as a place where inventiveness and creativity can be exchanged in open public spaces, then the campus can act as such a public domain. However, such a campus is reliant on a number of variables, one being public activity throughout the day and week. In relation to the open public domain and its role in the campus situation, Jane Jacobs evaluated the roles of parks and public places in the city. She suggests that the park life and the urban scene walks hand in hand with its surrounding buildings. In a campus scene, this means that if the aim is to create life and activity in the public spaces throughout the day, the interface between interior and exterior of the surrounding buildings have to be designed accordingly. Functions inside the adjacent buildings of the public domains will also have to be programmed in such a way that opportunities for activity throughout the day will be possible. An example of this would be to locate public functions, such as the library, cafés and exhibition areas in relationship to various centrally located open public spaces. Other more private functions, such

as laboratories and offices would then be placed on more periphery locations on the outskirts of the campus. This could either be solved horizontally or vertically.

The Public Domain in relation to Gehl and New Urbanism

As ideas from the New Urbanism movement is meant to lay out some of the ground rules for the design proposals in this project, it is again important to note that the aim for this campus design is not to create a replica of a typical New Urbanism neighbourhood. As explained in the sections about New Urbanism, Jan Gehl and the human scale, there are some principles that must lay out the ground rules for the Campus design proposal in order for it to be successful. Again, the ground rules are strongly connected to Richard Florida and the creative class.

In order for the department of A&D to attract international students and researchers, the Campus has to offer an environment that can compete with other universities in Europe and the rest of the world. If the creative class consists of people with higher education, then one must assume that its members obtain a higher quality of life than 'other' people, according to Florida. Careful of not deeming the creative class as bohemians, the ideas of New Urbanism and Jan Gehl could be beneficial in facilitating for this part of society. It could certainly participate in attracting creative people to this particular campus, if the walking distance and availability to other creative people is short and effective. In short, this means that the buildings at the campus must be located close to each other to ensure shorter walking distances, and for orientation, buildings belonging to the different educations must be simple to detect and recognize. This again points to the ideas of walkability, connectivity and diversity in the Campus scene.

Connectivity and walkability, such as explained earlier, is not just relevant within the campus area, but also as a connection to the city. This means that clear welcome areas and transportation lines for pedestrians have to be laid out to ensure the campus' integration into the existing city.

Pedestrian connections between public domains

As was illustrated in the section on general plans for the area, the municipality still does not have a definitive zoning plan ready for the area. However, they outlined a few formative elements for organizing new building structures in the project site. The red arrows in illustration 25 indicate sight lines laid out by the municipality, that leads out from some of the main streets coming from downtown Aalborg. The blue arrows indicate where most pedestrians arrive to the area from downtown. These lines also applies for people arriving by bicycle, which will always be a substantial amount in Denmark. These organizing elements will contribute to deciding where welcome squares to the campus will be located. It will also contribute in deciding where principal sight lines and transportation routes for pedestrians will be drawn through the project site. In terms of the aforementioned theoretical debate; connectivity and walkability will be two of the most important aspects in the campus design. Because of this, it is important to use to existing links to the downtown area as entrance points to the campus.

Recreational elements linking the city together

As displayed in the recreational mapping section, Aalborg municipality has undergone an effort to revitalize the harbour area along Limfjorden. Several of the parks all have in common that they create a formative rhythm when walking along the waterfront. They each carve out an open room into the city behind, thus creating open urban spaces.

In terms of Florida, Haajer & Reijndorp and other, it is in these areas that an exchange of ideas and innovation can take place. This can effectively be used as an organizing formative element into the Creative Campus. A continuation of this rhythm will carve an open urban space into the campus' building structure. That does not mean that this will be the only open public space in the Creative Campus. According to the ideals of New Urbanism, there should be a discernible central space, which will also be a part of the campus, in addition to several smaller spaces in connection with the different program buildings.

Illustration 25. Viewpoints, connections between city and water, and entrance points will be important aspects in the design.

Illustration 26. Physical rhythm of carving spaces will contribute in the creation of open spaces on the campus.

Use of canals for site organization

As part of the area's contextual conditions, the river of Østerå has throughout Aalborg's history played an important part of the city's everyday life and physical environment. The project site is located on the exact place where the eastern branch of Østerå had its discharge before being covered. To create a sense of historical affiliation, a water system resembling a river delta will be used to organize the buildings and street structures of the campus. As the landscape plan for the House of Music also contains a similar water system, the campus area will achieve a stronger connections to the HoM area.

The water system should appear as city canals to apply the idea of a delta to the relevant scale. The canal system can also contribute to creating a more human scale feel to the campus area, carving out areas where streets can appear too broad and large. The canals can also contribute to a stronger sense of a creative environment, which has strong traditions in Denmark.

Illustration 27. A canal system will constitute the main formative part of the campus.

Deduced aspects from theory and mappings

Several of the aspects found in the theoretical and contextual sections is found to be applicable to a project of the scale of a campus design. In determining what aspects to deduce from these sections, an appropriate contextual basis has been emphasized. This will for example mean that some aspects from New Urbanism are not suited for a project such as a campus design in Aalborg. It is also important to have a fundamental understanding of the correlation that exists between the different theoretical and contextual aspects, and that these can work together in contributing to a successful campus design.

- Florida and Hajer & Reijndorp. Facilitating for the creative class in a way that allows the users to meet other creative people in a formal and informal manner. This means that an emphasis has to be made on creating both exterior and interior meeting places of various sorts and sizes in the design. This can relate to the aforementioned rhythm of urban spaces, creating a connection between the downtown area and the waterfront.
- Jacobs and Gehl. Designing a campus where the users can relate to the scale of the buildings, material use and historical layers. When discussing human scale, it is also important to remember typology and morphology around the project site and Aalborg in general. This can also relate in some aspects to the use of Østerå as an organizing formative element.
- Elements from New Urbanism. As mentioned, several of these aspects may not be applicable to a campus design, for example because of programming needs. Others are well applicable. Connectivity and walkability both within the campus, and between the downtown area and campus will be important to facilitate for the creative class. The campus will have a discernible central square, with other smaller urban spaces for informal meetings and exchanging ideas. Diversity in both aesthetics and buildings types will be heavily weighted to ensure an exciting and vibrant campus design.

4. Vision and concept

Visions of the Creative Campus

The whole premise for this project evolves around an exploration of how we can incorporate ideas from New Urbanism and other relevant theoreticians in a Campus Design at this scale. The Creative Campus on Aalborg's harbour will consist of premises and buildings for five different functions:

- Common buildings, centrally located to accommodate all four different educations. These buildings will house functions such as libraries, cafés, student bar, and exhibition areas. One of the common buildings will also house common laboratories.
- A building complex for the Architecture and Design program. This complex will house seminar rooms, offices for teachers, researchers and PhD students, as well as drawing room clusters for the students.
- A building complex for Media Technology. This complex will house both private and open work spaces for students, and offices for academic staff and PhD students. Media Technology also has the need for bigger laboratories.
- A building complex for Humanistic Informatics. This complex will have functions ranging from centrally located dark rooms and laboratories, group rooms for students, and open mingle areas.
- A building complex for Art and Technology with all necessary functions integrated for students and teachers.

The Creative Campus will be organized using existing physical conditions, as well as elements from the relevant theoreticians. The design will contribute in developing Aalborg as a city for creativity and innovation. A main corridor will lead visitors and students from downtown Aalborg and the Utzon Center, through the campus to the House of Music. Water elements in canals will constitute the idea of a delta running through the campus area. As will be displayed through the programming on the following pages, the more private activities on campus, such as personal studies and specialized laboratories will be placed on the peripheral outskirts of the campus. Other public functions will thus be located in the more central parts of the new Creative Campus.
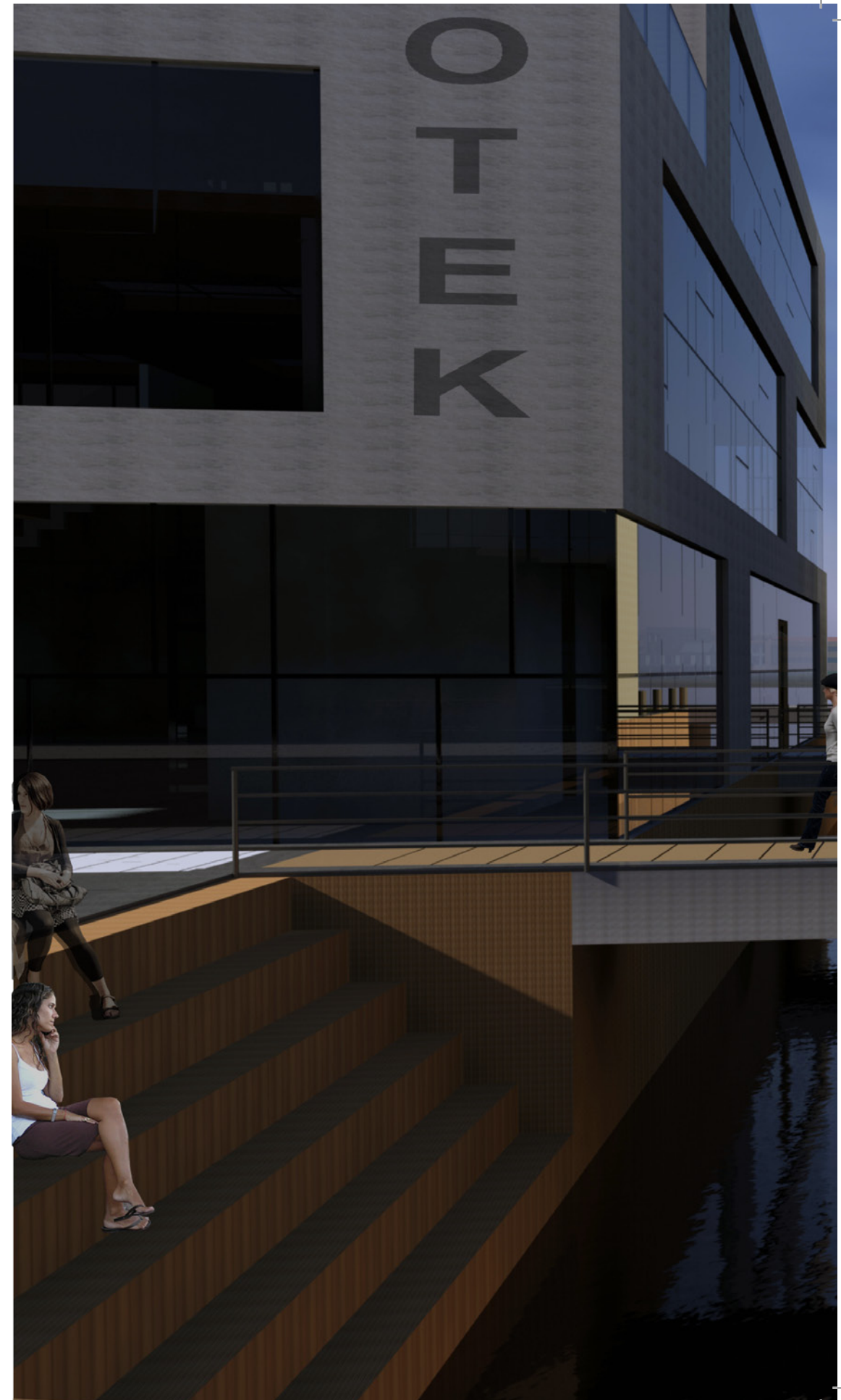
Illustration 28. The Creative Campus will be a vibrant place built around principles for human scale creativity and innovation.

General and Concrete requirements for size and program for the Creative Campus

As part of the strategy for integrating the four different educations in one compact campus area in the midst of downtown Aalborg, the department for Architecture, Design and Media Technology at Aalborg University has published a set of design principles and overall demands for the new campus area. Amongst other elements, this design guide consists of specific requirements for the four different educations incorporated in the department. As mentioned earlier, the four different educations include Architecture and Design, Art and Technology, Media Technology and Humanistic Informatics, and will each have their own building. Through this formative grip, it will be easy to distinguish the different educations from each other. Further on, Architecture and Design includes four different academic directions: Architecture, Urban Design, Industrial Design and Digital Design. As can be seen through the names of the educations, they can all in some degree be labelled as creative educations, where innovation and creativity are some of the main factors within the study programs, as well as various research.

One of the stated main goals for the campus design is to connect the different study environments even closer together than at present time. As the different educations today are scattered across downtown Aalborg, this is of course given in the new campus plans. However, the principal idea is to create an environment where the different educations can create a synergy effect off of each other. This includes the student mass as well as researchers from various fields of study. This is also highly relevant according to Richard Florida's research. As people deemed as members of the creative class often seek to be close to other members of the same class, it would be beneficial to the aforementioned synergy effect to integrate all four educations in one City Campus. According to Gehl and the ideas of New Urbanism, the campus will also become a much more integrated and natural part of the city if systems for pedestrian connectivity and walkability are as efficient as possible.

The mentioned design principles from the department of A&D state that the building complex at the harbour is to reflect that the campus is part of a creative environment. This will not only evolve around academic specialization, but more about education, creativity and everyday life melting together in symbiosis. In terms of functionality, the buildings should be able to be used during all 24 hours of the day. This means that certain parts of the campus have to be organized in such a way that admission cards are required in order to enter.

Overall organization of the building mass

Architecturally, the buildings are supposed to have an open appearance with a friendly expression. The programming will range from fully public spaces to semi-private auditoriums and seminar rooms, to private and introverted offices. Connection between public and private sectors will be enhanced through transparent transitions between public and private zones. As the general wish from the department is to facilitate a personal work space for each student, drawing rooms for group and personal work should be arranged in clusters with common functions such as kitchens and plotter rooms. As the above mentioned requirements are somewhat general, revisions can be made in order to facilitate for the different educations' needs. Further on, the design principles requires an imaginative main disposition of the area. In the final design proposal, this will be combined with the results from the theory and contextual section, to ensure a flexible building organization that can meet the specifics in the programming in an efficient manner.

Concrete Programming and Content

The design guide clearly states that each student is supposed to have their own personal work space. With such a vast amount of students, it will be paramount for the Creative Campus' area efficiency to solve this programming demand in an integrated manner. This means that the personal work spaces should be combined in for example bigger drawing room clusters, where group work also can take place. This will naturally result in rooms where the base floor will be perceived as substantial. In terms of building physique and study environment, it will thus be important to increase the relevant room heights, to ensure sufficient lighting and acoustic conditions for the students. This means that all rooms should have a floor height of minimum 1, 5 [4.5 meters]. Moreover,

the drawing room clusters have to be flexible in use and function, in order to facilitate for a varying amount of students each year.

Teachers and researchers will each have their own personal work space. This does not necessarily mean that the scientific staff will be organized through the traditional office landscape, but it will be more important to facilitate a sufficient amount of meeting rooms and lounges, where students, staff and PhD students can interact and exchange ideas. For practical purposes, it is important that these functions are located in the meeting points between areas for students and staff, having the theories of Gehl and Florida in mind. It is not just a matter of walkability and connectivity to the surrounding city, but also within the Campus itself.

Architecture and Design [A&D]

This program is widely based on the ideal of integrated design. Whatever the scale of the design project, it is the program's stated goal to ensure that candidates are able to convert functional, aesthetic, technical, and environmental demands into intuitive form and design. This means that a combination of creative, technical, and analytical skills are paramount in order to transform early sketch ideas into sustainable solutions.

All students follow more or less the same program from the 1st to the 5th semester. After these introduction semesters, all students will chose what direction they wish to pursue after that. During the 6th semester, all students write Bachelor projects in either Architecture, Urban Design, Industrial Design or Digital Design. After this, the students can chose to either graduate with a Bachelor's degree, or continue to pursue further specialization in their relevant academic field. Each semester is usually built up around a specific theme, with a main design project that is supported by smaller theoretical subjects. This means that the A&D building must contain a large variety of rooms and spaces for different use. In terms of laboratories, the program requires access to premises where models can be built with all sorts of materials.

Lab for Product Design [A&D]

This lab is to be established as a room with double height [6 metres], and should essentially be lit by daylight, again indicating a south-facing location. The lab will most commonly be used by those students who specializes in Industrial Design under A&D. For practical purposes, it will be beneficial to locate this lab in connection to the model workshop.

Key numbers for A&D

	Number	Approximate size
Student	600	2400 m²
PhD students	15	200 m²
Academic staff	35	420 m²
Administrative staff	15	180 m²
Meeting rooms	2 + lounges	300 m²
Seminar rooms / Auditoriums	3/1	650 m²
Laboratories*	2	900 m²

*One of the laboratories/workshops will be located and integrated in one of the common buildings. This laboratory is not mentioned above [Only the lab for Product Design], but it applies to the model workshop. The reason for the model workshop's placement is the fact that all four educations will need to have access to the model workshop. However, A&D's excessive use of models in the everyday work justifies that this lab counts as an A&D lab.

As an important part of this project, the in-between areas where informal contact between the users of the campus occur, are not mentioned in the key numbers listed above. It is however important to note that these areas nevertheless will act as an important formative aspects of the building's layout and design. This is where the innovation and creativity will have the chance to flourish within the campus. These in-between areas will be strategically placed between the aforementioned functions. This can for example be in welcome areas on the first floor, between seminar rooms, in open central staircases, or on mezzanines.

Media Technology [ImI]

The program for Media Technology focuses on research and education that combines technology and creativity to design new processes and tools for use within the fields of art, design, and entertainment. The program was initially started to meet the new demands of the media and experience industry. When creating and designing interactive media solutions, the combination of several fields of study is the most problematic part of the process. Interdisciplinary work with other researchers and students is therefor strongly recommended.

The program employs how the computers and information technology plays its role in media production today and in the future. This innovation can be used to develop new computer games, educational systems for children, different forms of interaction, sound technology and so on. The program is meant to give a fundamental understanding of the creative processes and choices needed to develop new ideas within this academic field.

The program wishes to support an environment that is both transparent to highlight a creative expression and mutual inspiration between students, teachers, and researchers. At the same time, the study environment must give opportunities for more private spaces for computer programming, writing reports and personal studies.

Each semester is usually built up around a main project, that will be supplied by smaller subjects and workshops. In these main projects, the students will work with sound, computer visualization, and media technology that in many cases will demand shielding from the surrounding environment. Floors, walls and ceilings have to be constructed in such a way that mounting and displaying of prototypes is as easy as possible. The program also require access to a common laboratory for model production. As mentioned in the A&D section, the model workshop will be located in a common building, where all educations will have access. Throughout the semester, the students will form groups from 7-8 to 1-2 students, causing a need for group rooms, work spaces and smaller seminar rooms in various sizes.

E-learning Lab [ImI]

This will be a lab for experimenting with how people learn various subjects through the use of new information media technology. The room will be located in a building constructed strictly for labs in the ImI complex, due to the fact that the program's activities demand shielding from the surrounding environment.

Living Lab/Help + [ImI]

This will be a lab for experimenting with the use of media in an everyday context. It will contain a room of a suitable size that can be organized as a living room environment with modern media technology. It will also contain a room for observation adjacent to the living room. In addition, there will be a storage room for gadgets and equipment.

Key numbers for ImI

	Number	Approximate size
Students	200	950 m^2
PhD students	10	150 m^2
Academic staff	15	225 m^2
Administrative staff	5	80 m^2
Meeting rooms	3 + lounges	250 m^2
Seminar rooms/ Auditoriums	4	450 m^2
Laboratories	2	400 m^2

As the program for Media Technology requires two labs that demand both visual and audible shielding from their surrounding environment, and not forgetting New Urbanism ideals, it is thought best to section the ImI building into three separate building structures. This means that the two labs will have their own, smaller building. Students and teachers/researchers/PhD students will also have their own building. These three buildings will be located adjacent to each other, to fulfil the general idea about one building for each educational program. As for A&D; common areas, lounges, bathrooms and so on is not accounted for in the table above.

Humanistic Informatics [HuM]

The program for Humanistic Informatics at the City Campus includes only bachelor students, as the master students will continue to use premises in Nordkraft. Students on the 6th semester can choose to specialise themselves within either Communication, Informatics or Interactive Digital Media.

The program evolves around creating products for for example communication, web design, computer games, commercials and so on. It is therefore paramount that the environment in this program fosters creativity and inspiration. The solutions are produced through group work, individual work and workshops. Because of this, the premises must support a variety of activities.

The different semesters are usually built up around lectures and exercise work during the first two months. The program's students are during this time divided into groups of 25 or 35 students, something for which the lecture premises must facilitate. During exercise work, the students will draw to more secluded and private parts of the building. This implies the need for smaller group rooms, lounges, and relevant laboratories. After the first two months, the students start working on a bigger semester project in smaller groups, such as 6 or 8 people per group. In the design guide, it is underlined a particular need for areas where the groups can receive supervision from teachers and researchers, thus laying guidelines where these functions are integrated. This indicates educational needs for both seminar rooms of various sizes and group rooms for 6-8 students.

As the program already uses premises for its master students at Nordkraft on the other side of Nyhavnsgade, the building complex for Media Technology will only be used by bachelor student, PhD students and researchers. Some employees [Teachers and researchers] will also have offices at Nordkraft, but some of these will move over to the Creative Campus as well. The relevant number for this is shown in the table to the right. Common areas and lounges are not included.

Lab for Room, Shape and Colour [HuM]

This will almost resemble a studio in appearance, and will be used for photography of models, drawing lectures, filming and modelling. Because of this, the room should be located facing north, but with an entrance to a south-facing terrace.

Geminoid Lab [HuM]

A lab for interaction experimenting. The experiments evolve around children's interaction with robots. The lab contains of two rooms, one for the robot and one for observation. A "one way mirror wall" will be placed between the two rooms.

Key numbers for HuM

	Number	Approximate size
Students	200	800 m²
PhD students	10	150 m²
Academic staff	15	250 m²
Administrative staff	5	80 m²
Meeting rooms	2 + several lounge areas	300 m²
Seminar rooms/ Auditoriums	4	580 m²
Laboratories	2	350 m²

The program for Humanistic Informatics requires two labs with various demands. The lab for Room, Shape and Colour can perhaps be deemed as an extroverted lab where good, natural light conditions is essential for its use and purpose. This lab will also be used by the other programs for drawing courses and so on. The other lab is far more introverted in nature, and requires shielding from light and audible disturbance.

The premises for HuM will be divided into two separate, adjacent buildings. The biggest building will include seminar rooms of various sizes, a larger open area for education and workshops, and group rooms of various sizes. The smallest building will contain the two labs, various groups rooms, an open office landscape for PhD students, and offices for teachers and researchers.

Art and Technology [ArT]

The program for Art and Technology appeals to students who work with the interaction between art and technology. ArT can probably be deemed as the most artistic of the four educations on Campus. The students learn how to design bigger art installations and events in interdisciplinary teams. The students create design installations through the use of modern materials, light and sound, physical design, and new media. Students that complete a degree in Art and Technology can continue as students within the fields of Experience Technology, artist, designer or event manager.

ArT as a program wishes to attract creative students worldwide and facilitate for an international environment where the best teachers and researchers within the relevant fields are represented at the Creative Campus. Because of this, the program wishes to exploit Scandinavian traditions within vision and vitality in the building structure. This can for example be solved through a mixed use of materials and a diverse use of rooms, which is typical for Nordic architecture and urban design.

Project work and the idea of creating is central for the program. This will typically take place in an everyday interaction with local and international artists, designers and media professionals, and in collaboration with the local relevant business locations. This does not necessarily mean that offices for visiting teachers have to be accounted for, but this would in some degree be beneficial.

Workshops and lab work play a vital role in everyday studies at the ArT program, combined with theoretical lectures. As the number of students on each year will vary, localities of different sizes will be in demand. As the ArT students mostly have a way of working similar to the A&D students, there will also be a need for drawing room clusters, where the students have their personal work spaces. There will also be a need for a few more personal and secluded work spaces. Because of the fact that the students work with bigger models and installations, the program also requires access to a model laboratory. The ArT building will hence be located close to the A&D building an the common laboratories for model work.

Lab for Virtual Architecture and Design [ArT]

This lab is to be established as four interconnected rooms with double height [6 metres], and should essentially be lit by artificial light. The most appropriate location for this lab will be inside the ArT building on the first floor, in connection to one or more seminar rooms. The lab will be used for video editing, blue study [Blue background] and CAD. The lab will also be used by students from A&D.

Key numbers for ArT

	Number	Approximate size
Students	200	1050 m²
PhD students	5	100 m²
Academic staff	15	250 m²
Administrative staff	5	80 m²
Meeting rooms	3	120 m²
Seminar rooms/ Auditoriums	4	360 m²
Laboratories	1	200 m²

The ArT building will be built as a single building complex, including all functions. As a building concept for organizing the different functions, the ArT building will work as most of the other devoted program buildings at the Creative Campus, where the most public functions will be located closest to ground floor, and the more private functions will be located on the top floors. At the same time, for innovative and creative purposes, there has to exist a transparency between the floors, to ensure well functioning conditions for interaction between the students and teachers.

The lab for Virtual architecture and design will be organized as different rooms with double floor height. As mentioned earlier, the lab should be placed on the first floor in connection to a seminar room. The meeting rooms in the table above does not include internal meeting rooms for the academic staff. However, they only denote facilities where students and teachers can gather for meetings and supervision.

Common Buildings [C1 and C2]

The common buildings will house several of the functions that will be shared by all four educations, students and staff. One of the main intentions of developing a common campus for these four educations was to create an environment where students and teachers from all directions can create and exchange ideas. In order for this to happen, there has to exist premises and areas that can allow this to happen. The idea is that these formal and informal meetings will take place in two centrally located common buildings. The common buildings will also house laboratories and other functions shared by all four educations.

Informatics Workshop [Common]

The informatics workshop will be a common laboratory available for all four programs. This indicates that this particular laboratory should have a central location at the Campus site. It is to be divided into two separate rooms with at least 28 PCs in each room, each containing printing rooms.

Model Workshop [Common]

The model workshop will also be a common laboratory available for all four programs. However, the design guide shows that A&D and ArT will be the most frequent users. This indicates that this laboratory should have an equally central location at the Campus site, and in connection to the A&D and ArT buildings, respectively. The model workshop should have at least 1.5-2 times floor height [4.5-6 meters], and essentially be lit by day light. This indicates a south-facing location.

Library [Common]

The university has two libraries at present time, one at the main campus outside the city centre, and one at the Utzon Center. The library at the Utzon Center will be moved to the new City Campus, and the old library will be used for Utzon activities. The new library will be centrally located, and will include a traditional library, with a librarian, physical books and other physical material. It will also include a work area for students and lounges. More private work spaces will be located on the peripheral outskirts of the library premises.

General Common areas [Common]

With the integration of four different educational programs in one common campus, the university can save both funds and efficiency since the programs are sharing common areas. This includes the following:

- Café
- Areas for a common kitchen
- Student Bar
- Exhibition areas for semester projects and research
- Common student supervision

Key numbers for Common Buildings 1 and 2 [C1 and C2]

	Number	Approximate size	Building
Cantina with indoor and outdoor seating, kitchen	Can seat 200 simultaneously	800 m^2	C1
Model workshop		550 m^2	C1
Lab for product design		300 m^2	C1
Administrative staff	All adm staff, 45 people	500 m^2	C1
Meeting rooms	2 designated meeting rooms, several lounges	120 m^2	C1
PC labs	2, for 58 students	200 m^2	C2
Café, indoor and outdoor seating		125 m^2 indoor	C2
Exhibition area		550 m^2	C2
Student bar		130 m^2 indoor, 130 m^2 outdoor	C2
Library		1100 m^2 indoor, 170 m^2 outdoor	C2

Conceptual development

The concept for the Creative campus will form the basis for each chosen design solution, both on an overall and a more detailed level. The different concept solutions can be viewed as a continuation of the different aspect that were deduced from the site analysis and theoretical contributions, which were explained on page 37.

Overall conceptual layout of the campus

Illustration 29 displays the overall layout of the site, where a discernible center is established in the heart of the campus. The concept relies on a gradient without definitely established boundaries. The establishment of a discernible center of the campus is both based on the principles of New Urbanism, but also the ideas of Richard Florida and Hajer & Reijndorp, which state that creative ideas and innovation is most efficiently generated in an appropriate public domain.

The gradient follows an idea of a transition between private and public, where the public activities and common functions such as administrative departments, library and common labs are located closest to the centre of the campus. More private functions such as drawing rooms for students, offices for teachers and PhD students, and specialized laboratories are located on peripheral parts of the campus.

Overall conceptual plan for building construction

As a continuation of the overall conceptual layout, the building structures on campus will be organized in a similar, logical fashion. The typical campus building will be organized around three different floors, with transparent boundaries between them. This can for example mean that functions usually belonging on the second floor will in some cases draw down to the first floor. The first floors will typically consist of public functions such as seminar rooms, auditoriums, lounge areas and open spaces. The second floor will typically house students functions, such as reading rooms, drawing room clusters and meeting rooms. The third floor will be dedicated to facilities for teachers and PhD students, with meeting rooms for external meetings and supervision.
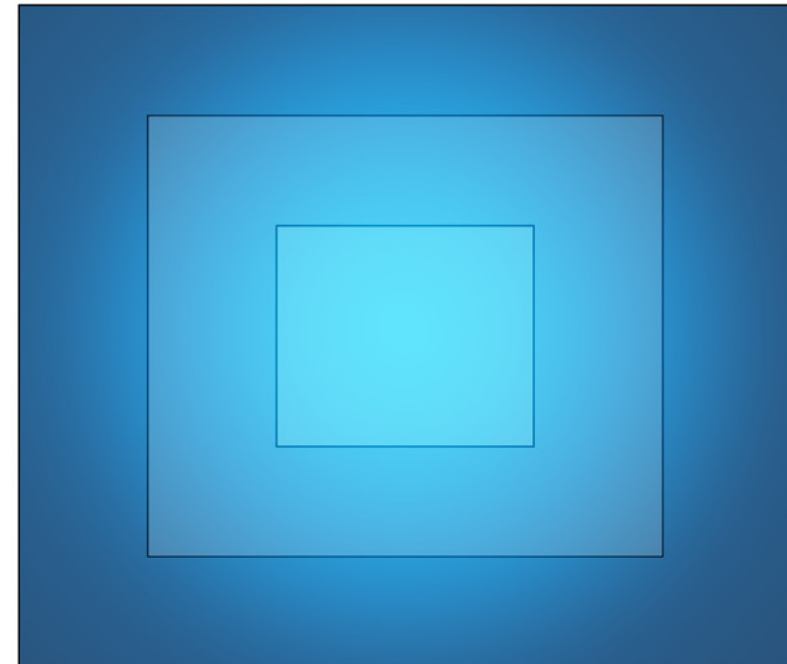

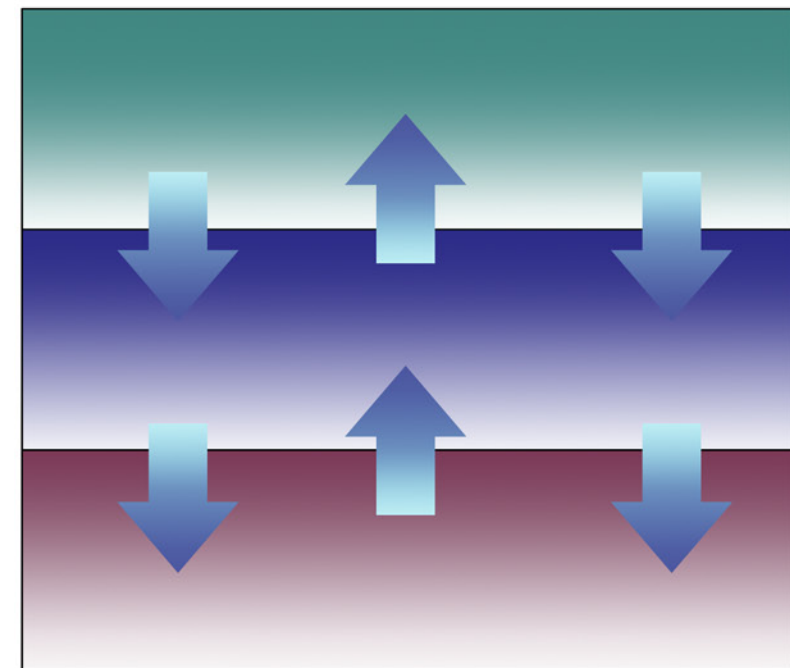*Illustration 29. A conceptual overall layout of the Creative Campus.*

Illustration 30. A conceptual layout of the vertical layers of the Creative Campus.

Detailed conceptual layout of the building construction

Illustration 31 displays a continuation of the conceptual layout displayed in illustration 30. To ensure a physical and social transparency between the different functions, openings will in some degree be established between the different floors. This will contribute in establishing visual and audible lines between the different functions. With this layout, teachers and students have the opportunity to communicate across boundaries, but also have a chance to draw back to more private areas of the buildings.

As mentioned earlier, the different functions will in some cases switch between floors, and will thus not be locked indefinitely to any given floor. The physical open connection between the open floors can contribute in simplifying this transition. In the in-between areas between private and public; lounge areas and meeting rooms will be established, to ease the meeting circumstances for the different users. This demands a logical location of armatures for movement between the floors, such as stairs and elevators.

Illustration 31. A conceptual detailed layout of construction of campus buildings.

Overall conceptual plan for building construction

As yet another continuation of the overall conceptual layout, the building structures on campus will be organized in a way that ensures a central location of the different functions. Illustration 32 displays how the six buildings can be organized on campus around a central square. Two common buildings, containing the aforementioned common functions, will constitute a central south-north axis on campus. This can contribute in enhancing effective connections between the common functions and the buildings for the four different programs.

The location of the different education buildings will be organized according to programming needs, such as shared laboratories which is placed in the common buildings. For example, if two educational programs will share the same lab, the two buildings should be placed on each side of the appropriate lab's building. Exits and entrances to each building should be located to streamline flow patterns between the buildings.
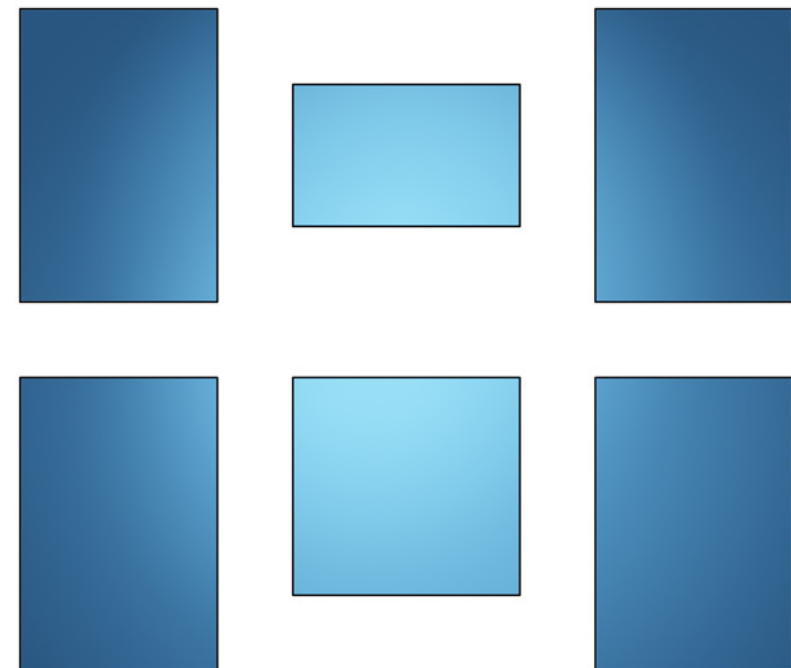

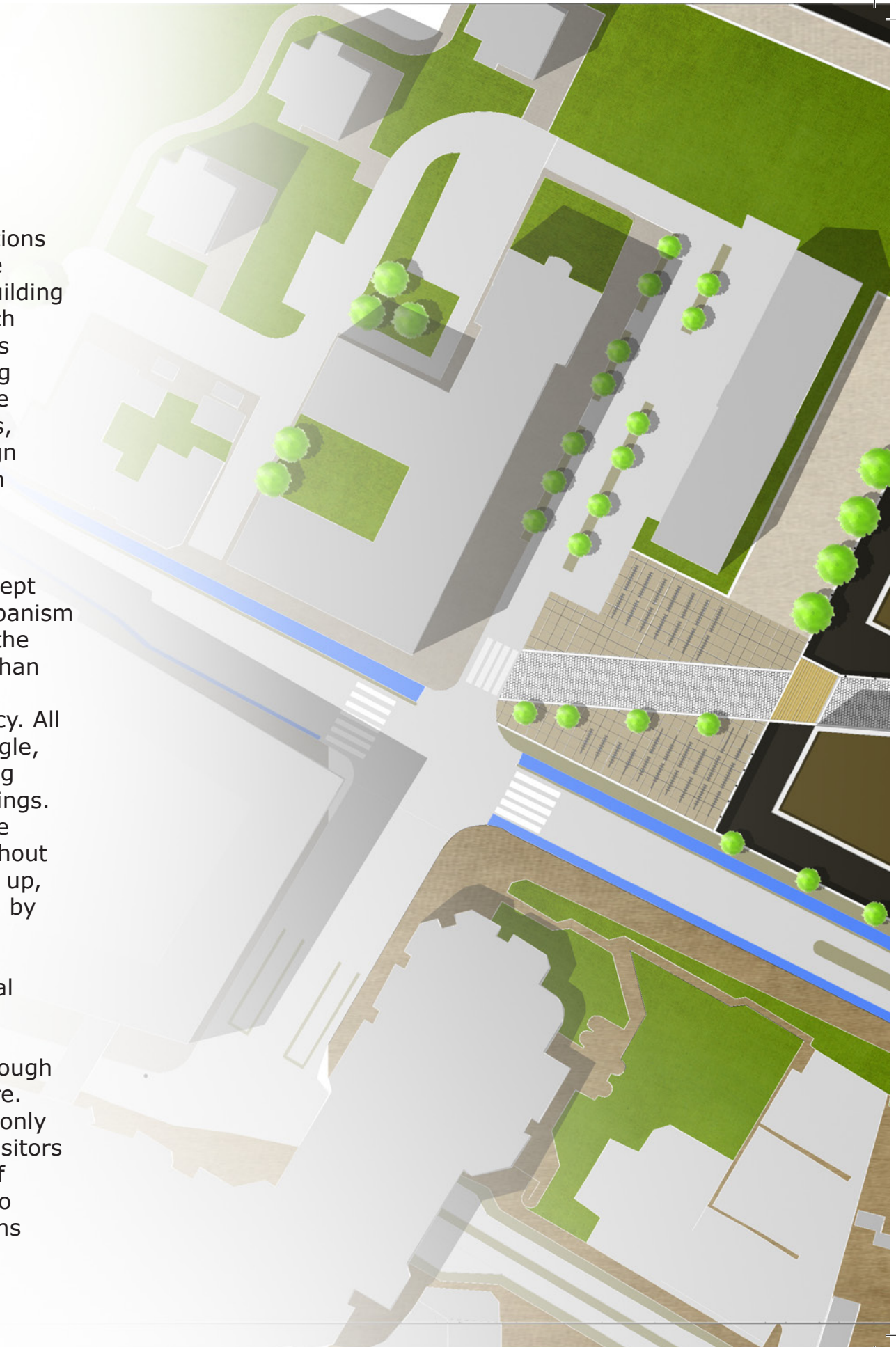*Illustration 32. A conceptual layout of the horizontal layers of the creative Campus.*

5. Designing the campus

The master plan

The following section will display the chosen design solutions for the Creative Campus. The master plan introduces the section, giving an overview of the project site and the building structures. Further on, the design section focuses on each of the campus buildings as well as the open urban spaces in between the buildings. The presentation of the building complexes for the different educational programs and the common buildings will include indoor plans, key numbers, atmosphere illustrations and relevant sections. The design section will in general aim to explain how the buildings in the Creative Campus are interrelated and how the users experience their environment.

As displayed in the visions and concept section, the concept for the campus plan relies heavily on ideas from New Urbanism and Richard Florida. As can be seen in the master plan, the campus is divided into several smaller buildings, rather than one single bigger building complex. There is an obvious advantage in using this solution in terms of area efficiency. All the corridors and hallways you would experience in a single, bigger building complex is instead moved outside, carving outdoor corridors and passageways in between the buildings. Although this was a wish from Aalborg municipality in the first place, it also allows for open spaces to occur throughout the campus. By nudging each building, new spaces open up, allowing the creation of the new public domain explained by Hajer & Reijndorp.

Beside the fact that the Creative Campus contains several smaller buildings rather than a big one, there are other aspects from New Urbanism incorporated in the plan. Connectivity and walkability to the city is established through welcome squares, and a clearly organized street structure. The main welcome square on the bottom left invites not only students and teachers to enter the campus, but it also visitors to walk through the campus on their way to the House of Music. Another welcome square is established adjacent to Nordkraft [Bottom right], allowing for efficient connections within the creative cluster.

Design

N

10m   50m   100m

Illustration 33. Master plan of project area. 1:1000

Infrastructural Layers

Building Structures

Considering the project site as a whole, the Creative Campus has a gross use of almost 100 %, with a net use of about 50 %. The size of the project site is estimated at around 31.300 m², while the gross size of the building mass is estimated at around 29 000 m². The substantial difference in gross and net size of the building mass is a direct result of the ideas from Richard Florida and New Urbanism, where spaces for informal and formal meeting is weighted heavily, compared to area for self study and offices. In terms of programming, the two central buildings [C1 and C2] are used for common functions, while the remaining four are organized as following: Art and Technology [ArT], Architecture and Design [A&D], Humanistic Informatics [HuM] and Media Technology [ImI]. Size and height of the campus buildings [Indicated in illustration 34] are deduced from programming needs and light conditions.

Illustration 34. Indication of number of floors and heights for the campus buildings.

Street Structures

The street structure of the Creative Campus is thought to be organized as shared space throughout. However, the space is primarily meant to be used by pedestrians and bicyclists. Cars used for delivery to the different cafés and laboratories can enter the campus on the west side. Through this entrance, vehicles are able to reach all buildings in the campus area. The different bridges leading into the campus will therefor have to be dimensioned accordingly, with a minimum thickness of 1 metre. The break along the main south-north axis occurs to prevent area reduction of the space towards the water [Cross].

The east-west axis running through the campus is thought to be the main street, and all buildings towards this area. This street will also lead visitors to the House of Music, from the downtown area, through the Creative Campus. The south-north axes running through the campus will ensure an efficient connectivity between the downtown Aalborg area and the harbour front. The street structure is also organized in such a way that connectivity and walkability between the different campus buildings will appear as efficient as possible.
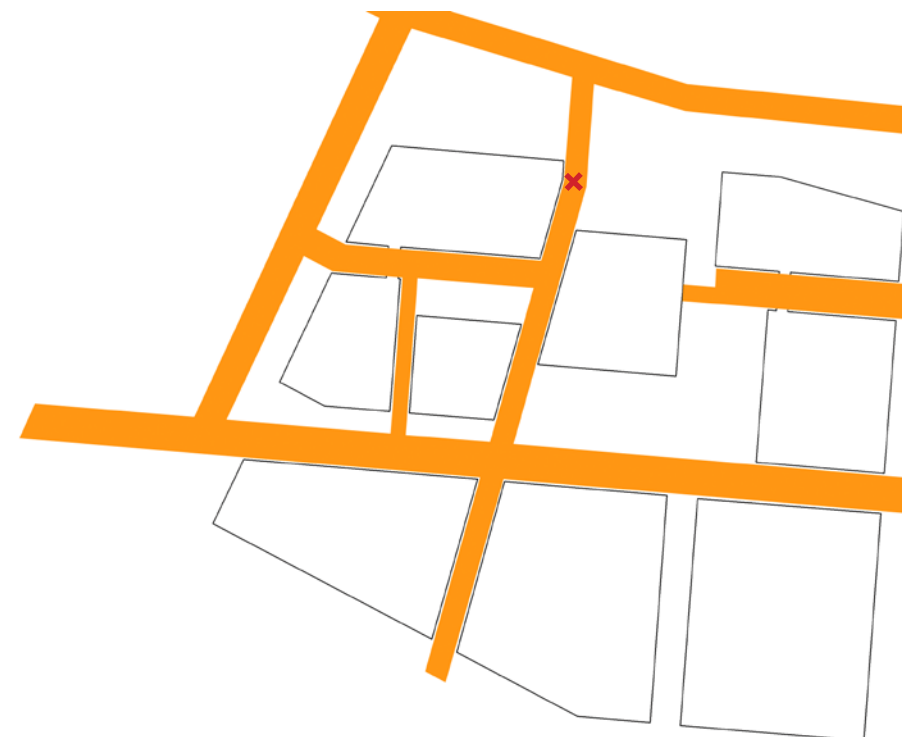

Illustration 35. Principal street structure on campus.

Canal Structures

The canal structure is one of the physical aspects that will give the Creative Campus a historical anchor. As explained in the section about vision and concept, the canals will resemble a delta system in form, bringing back the formative element of the historic Østerå river.

The canals will have a width of about 8 metres throughout the system, with several crossing bridges were this is necessary. The system is directly linked to limfjorden, with sea water running into the campus area. The height above sea level thus vary around 3 metres, depending on the water level. Users of the campus will have the opportunity to put their toes in the water at two different locations along the central south-north canal [red cross], making it a vital part of the campus.

Illustration 36. The canal structures will be the main organizing element on campus.

Welcome squares and open urban spaces

The Creative Campus will have two different welcome squares, each located appropriately according to where users will enter the campus. This is further explained on page 30 and 36. The two welcome squares are marked in blue in illustration 37, and will give information and a logical entrance point to people coming from the downtown area [west welcome square] and the area around Nordkraft and Aalborg East [south-east welcome square]. The welcome squares will in both cases contain signs and plaques with information regarding the different buildings and where users can find the different functions.

The squares marked in purple will be used for lingering and other activities within the campus area. The central square is located along the main west-east axis and will as a connection between the two central buildings. The spaces north of the campus area will act as the connections between the water front and the campus area, where the central square carves an open space into the campus, thus ensuring a continuation of the rhythm along the waterfront.
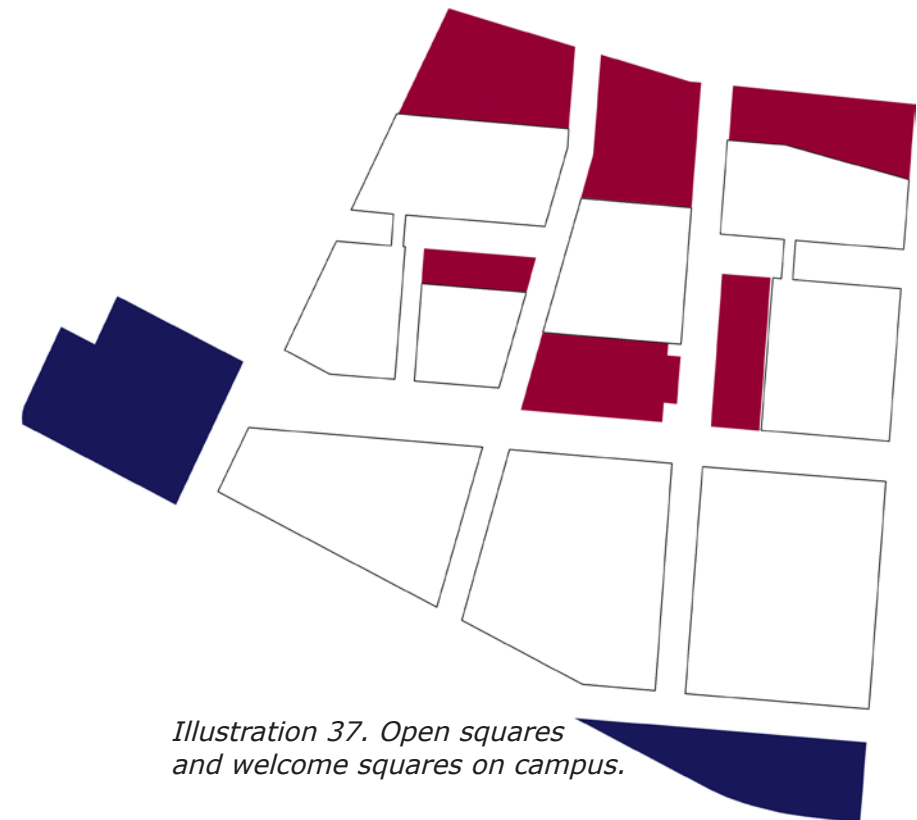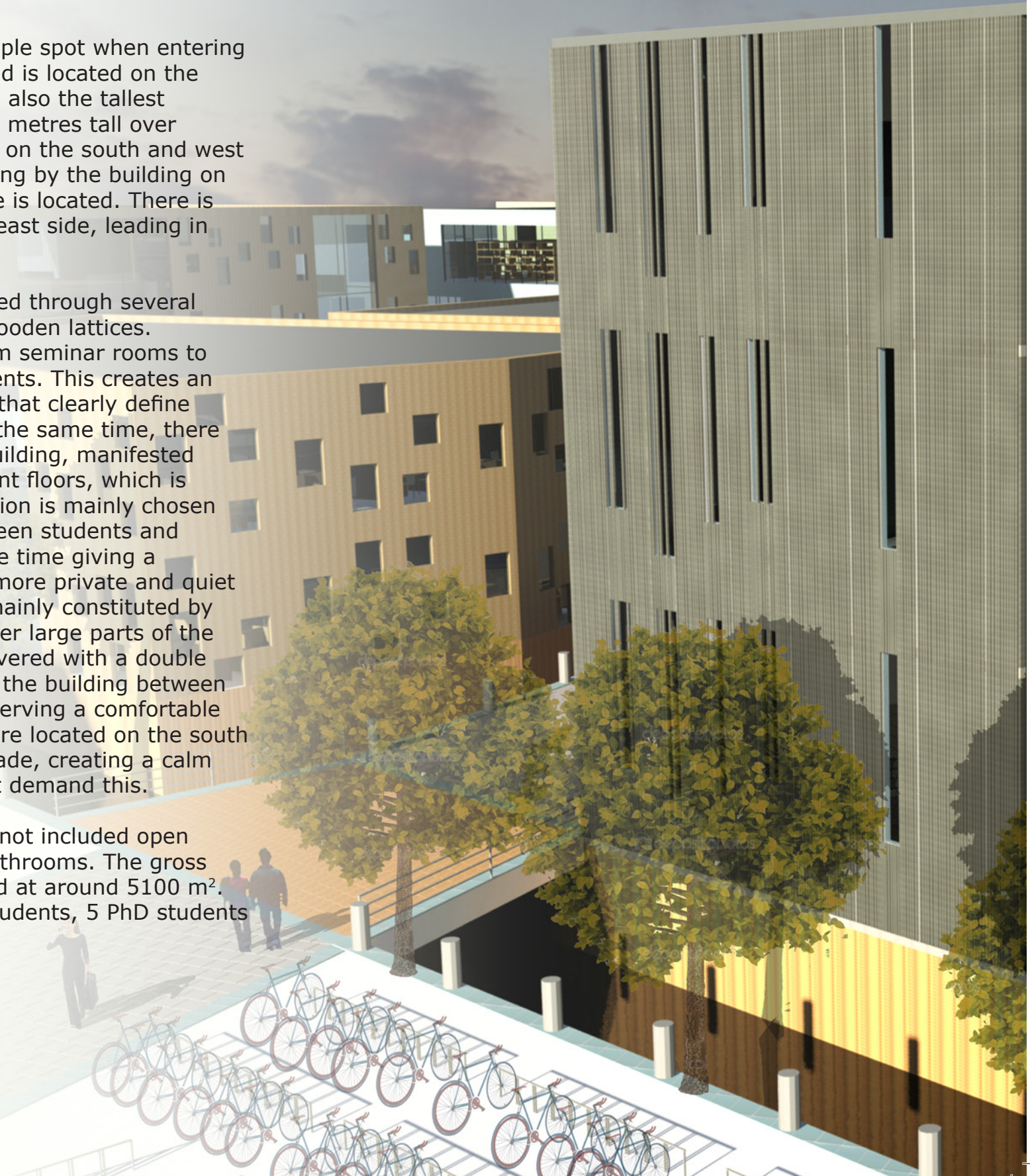

Illustration 37. Open squares and welcome squares on campus.

The ArT building

The ArT building is the first building people spot when entering the campus from downtown Aalborg, and is located on the south-western part of the campus. It is also the tallest building on campus, standing almost 20 metres tall over ground level. It is surrounded by canals on the south and west side, with the campus main street running by the building on the north side, where the main entrance is located. There is also an entrance to the building on the east side, leading in from Common building 1.

Architecturally, the building is constructed through several different modules, covered in vertical wooden lattices. These modules contain all functions from seminar rooms to bathrooms and drawing rooms for students. This creates an illusion of buildings within the building, that clearly define diverse functionality of the building. At the same time, there exists strong transparency within the building, manifested through open areas between the different floors, which is displayed on page 54 and 55. This solution is mainly chosen to create a seamless environment between students and teachers in the building, but at the same time giving a possibility for the users to withdraw to more private and quiet areas in the building. The facades are mainly constituted by the aforementioned modules, which cover large parts of the surfaces. The rest of the facades are covered with a double glass systems that allows most parts of the building between the modules to be naturally lit, yet conserving a comfortable indoor climate. Private reading spaces are located on the south side of the first floor towards Nyhavnsgade, creating a calm and quiet environment for students that demand this.

The building has a net size of 2340 m², not included open spaces, hallways, stairs, elevators or bathrooms. The gross size of the building complex is estimated at around 5100 m². The building will house up to 200 ArT students, 5 PhD students and 15 teachers and researchers.
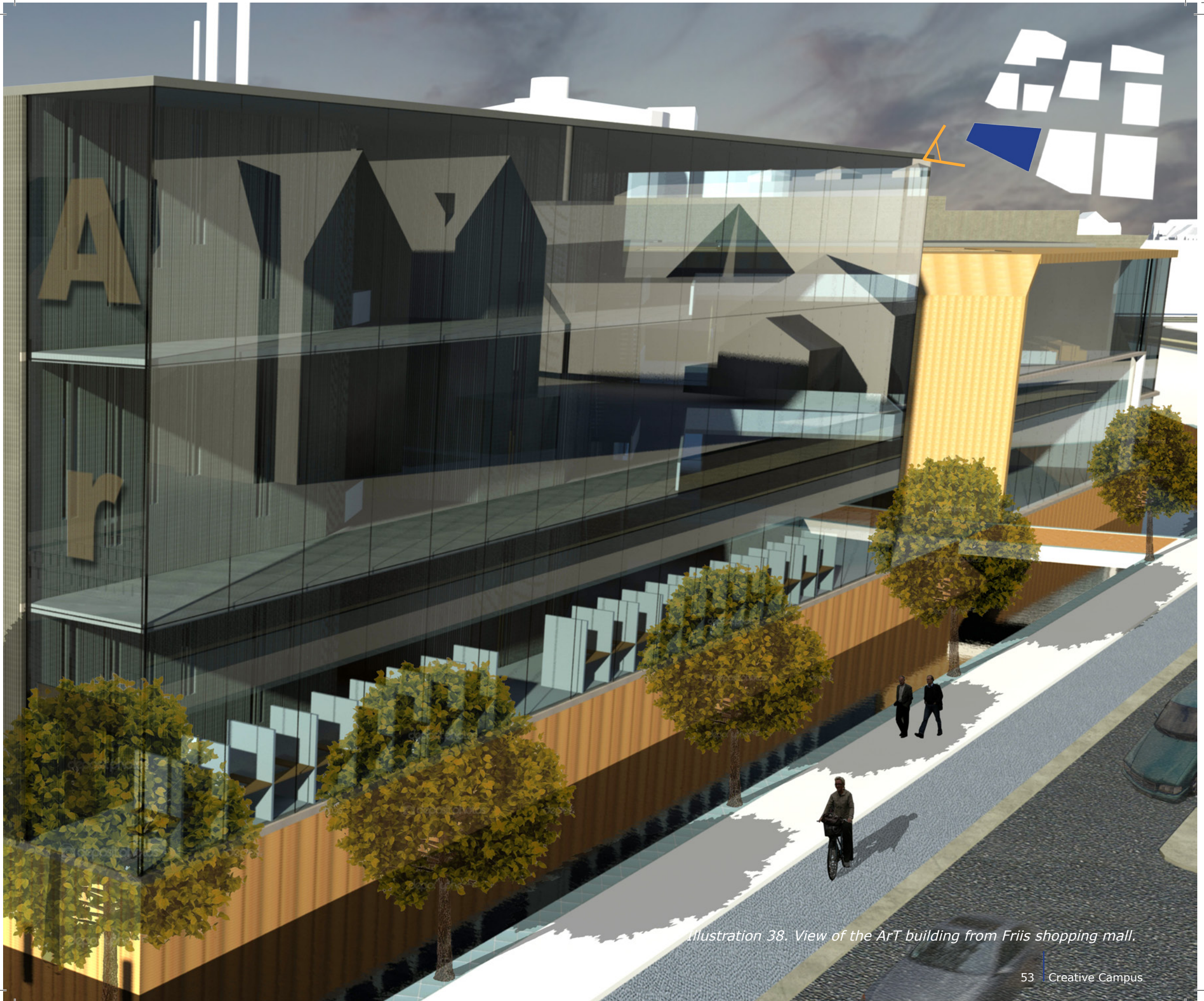
Illustration 38. View of the ArT building from Friis shopping mall.

Illustration 39. View of the personal study areas from the south-east entrance of the ArT building.
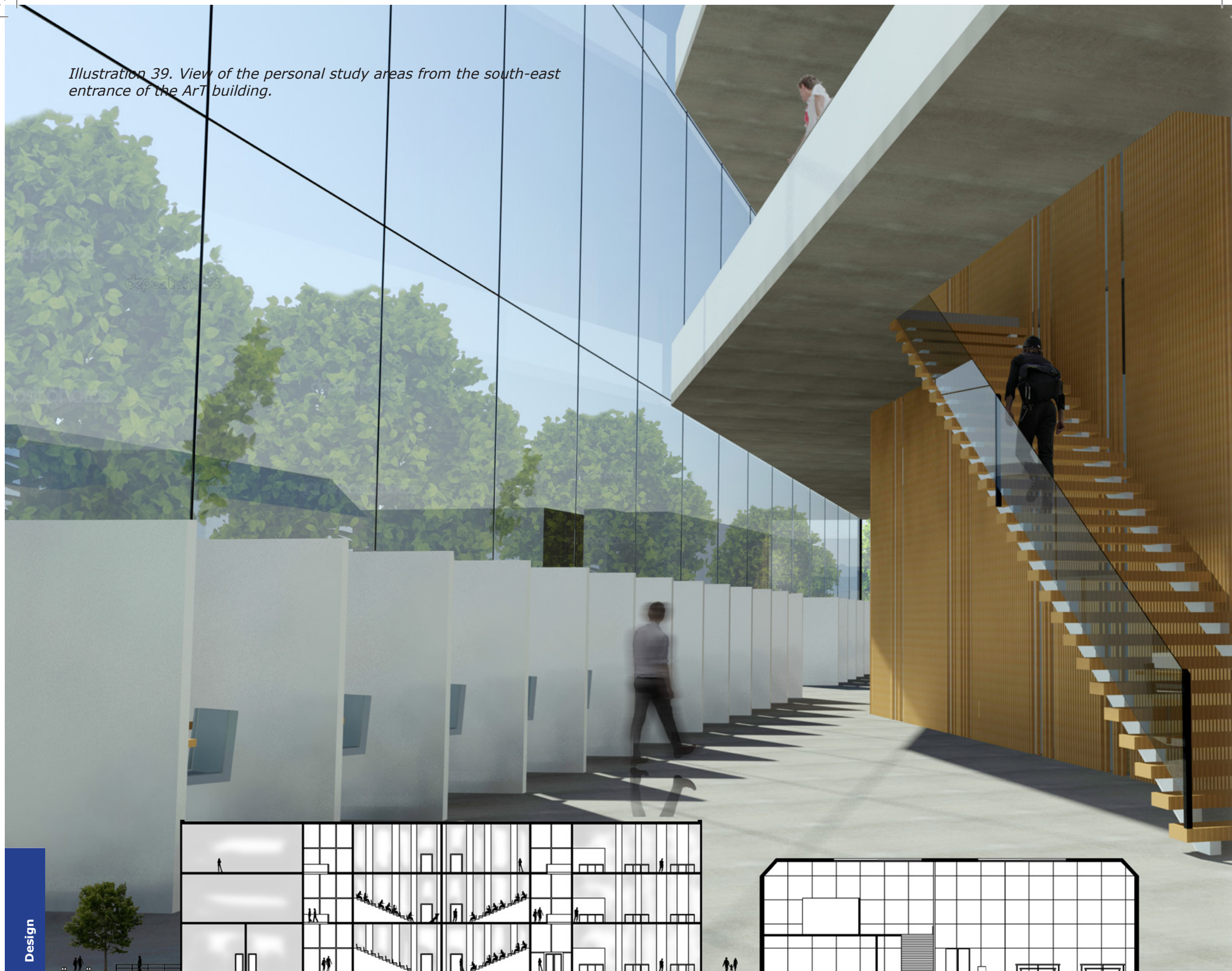
Illustration 40. Section through the ArT building and Common building 1. 1:500

A'

B'

Design

The first floor of the ArT building contains several different functions, facilitating for a diverse use of the area. As in all floors in the ArT building, there is a large drawing room cluster for 68 students [Blue]. The laboratory for Virtual Architecture and Design [Green] is also located on the first floor, in close connection to two seminar rooms, one for 80 students and one for 68 students. The first floor has nine bathrooms, centrally located between the other functions. Along with the seminar rooms, the bathrooms constitute the common functions on the first floor, and is on this purpose centrally located. The first floor has one meeting room of 40 m² [Light purple], located close to the drawing rooms for the students. 22 more personal work spaces are located in the southern part of the first floor, which can also be seen in illustration 39. The view of illustration 39 is indicated with a blue eye on the floor plan on the first floor.

The second floor of the ArT building clearly resembles the first floor, with the exception of several openings that create a transparency between the two floors. This is done to erase the physical distinction between floors and functions, and in general facilitate for a more open building structure. Also having the thoughts about the public domain in mind, the aim of the openings between the floors is to encourage informal contact between functions and floors. The second floor also contains areas for teachers, PhD students and researchers [Pink].

The third floor is mostly reserved for students, PhD students and teachers. This floor has no seminar rooms or auditoriums. As with the second floor, this floor also has cutting openings on floor level down the floor below. In the applicable areas, this creates a room in three floors running all the way through the building. The floor has three rooms for teachers, researchers and PhD students, along with another drawing room cluster for students, containing a kitchen and two bathrooms. As with the first and second floor, the third floor also has a meeting room of 40 m², which gives all users the possibility to have informal and formal contact on this floor. The meeting rooms are purposely located in the middle of the building, to ensure short walking distances from all other functions.

Lab for virtual architecture and design

Seminar rooms for 80 and 68 students

Drawing room cluster for 69 students

A'

1st floor

B'

22 personal study spaces

5 PhD students

Seminar rooms for 80 and 68 students

Drawing room cluster for 69 students

A'

2nd floor

B'

Lounge area

10 academic staff

Drawing room cluster for 69 students

5 academic staff

5 academic staff

A'

3rd floor

B'

Lounge area

Illustration 41. Plan drawings of the ArT building. 1:500

Common Building 1

The first common building houses common functions such as cantina, common labs and administrative staff. As explained in the vision and concept section, there is a need for two laboratories that both Art and Technology and Architecture and Design will use on a daily basis. This applies to the model workshop and lab for product design. Because of this, these two labs are located on the first floor of the building, facilitating for easy access from the ArT building [west] and the A&D building [east]

The illustration to the right is taken from the Nordkraft side of Nyhavnsgade, according to the orange view indicator. As it is first common building the visitors spot when entering the campus from this area, the glass wall facing Nyhavnsgade is covered with Aalborg University's logo. The threes along the canal creates an audible and visual softening buffer between the heavily trafficked Nyhavnsgade and the campus area behind. As this facade faces south, the trees also prevent the sunlight throughout the day from hitting directly into the labs on the first floor and the offices and reading rooms on the second floor. The rooms in the building are almost enveloped in a wooden shield that stretches from the east to the west wall, with glass facades in the northern and southern walls. This allows for natural lighting to run through the buildings throughout the day.

The entrances to the buildings are located on the west side of the building towards the ArT building, and on the north side towards the central square. There is also an entrance leading over the canal from the A&D building on the east side of the building.

Common building 1 houses the administrative staff for all four programs, and is located on the building's second floor. The administrative and technical staff is located here to provide centrally located facilities that are easy to reach from all the other buildings on campus. The building has a net size of 3000 m^2 , not included common lounges, bathroom, open spaces or hallways. The building has a gross size of 4500 m^2.
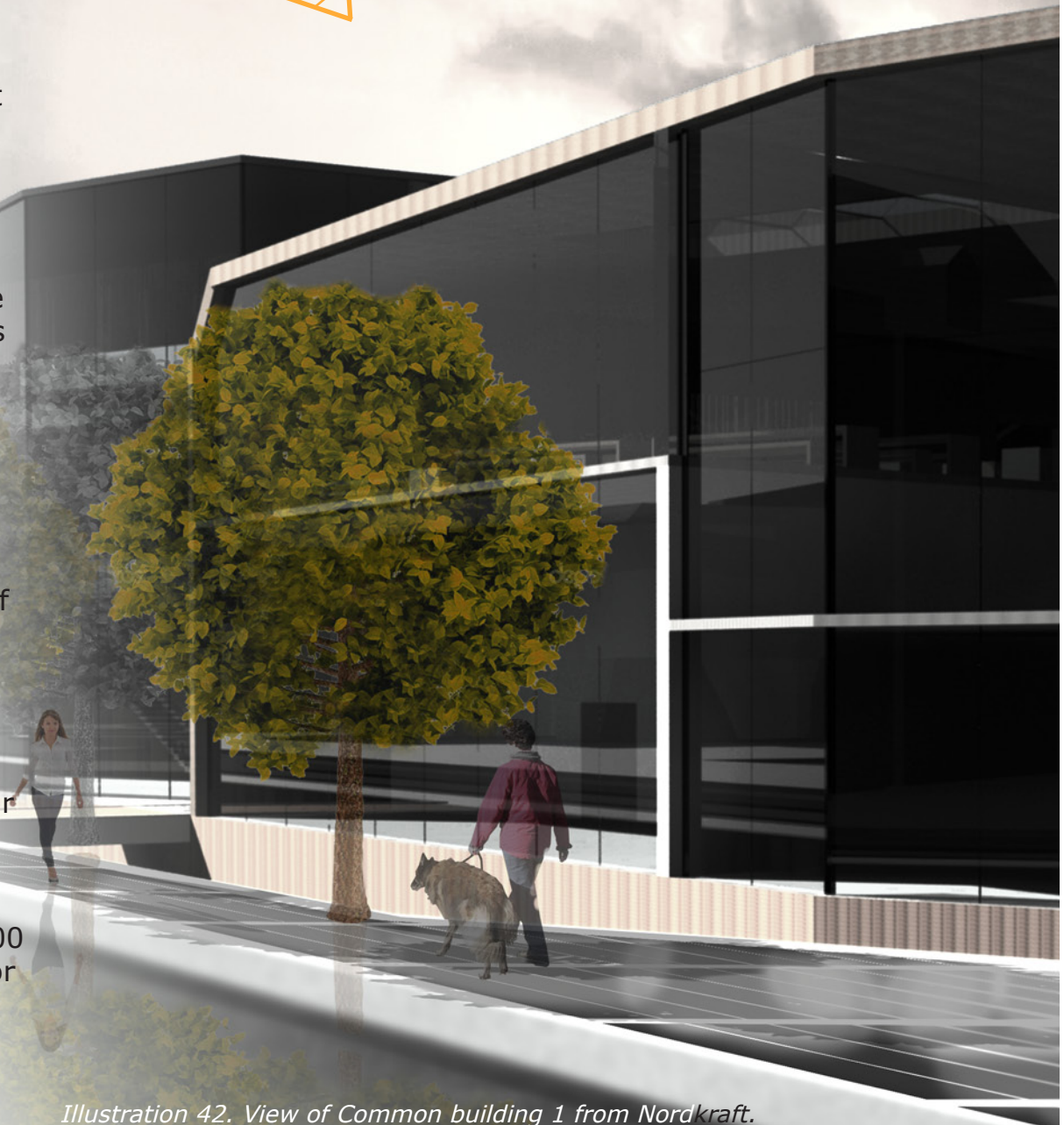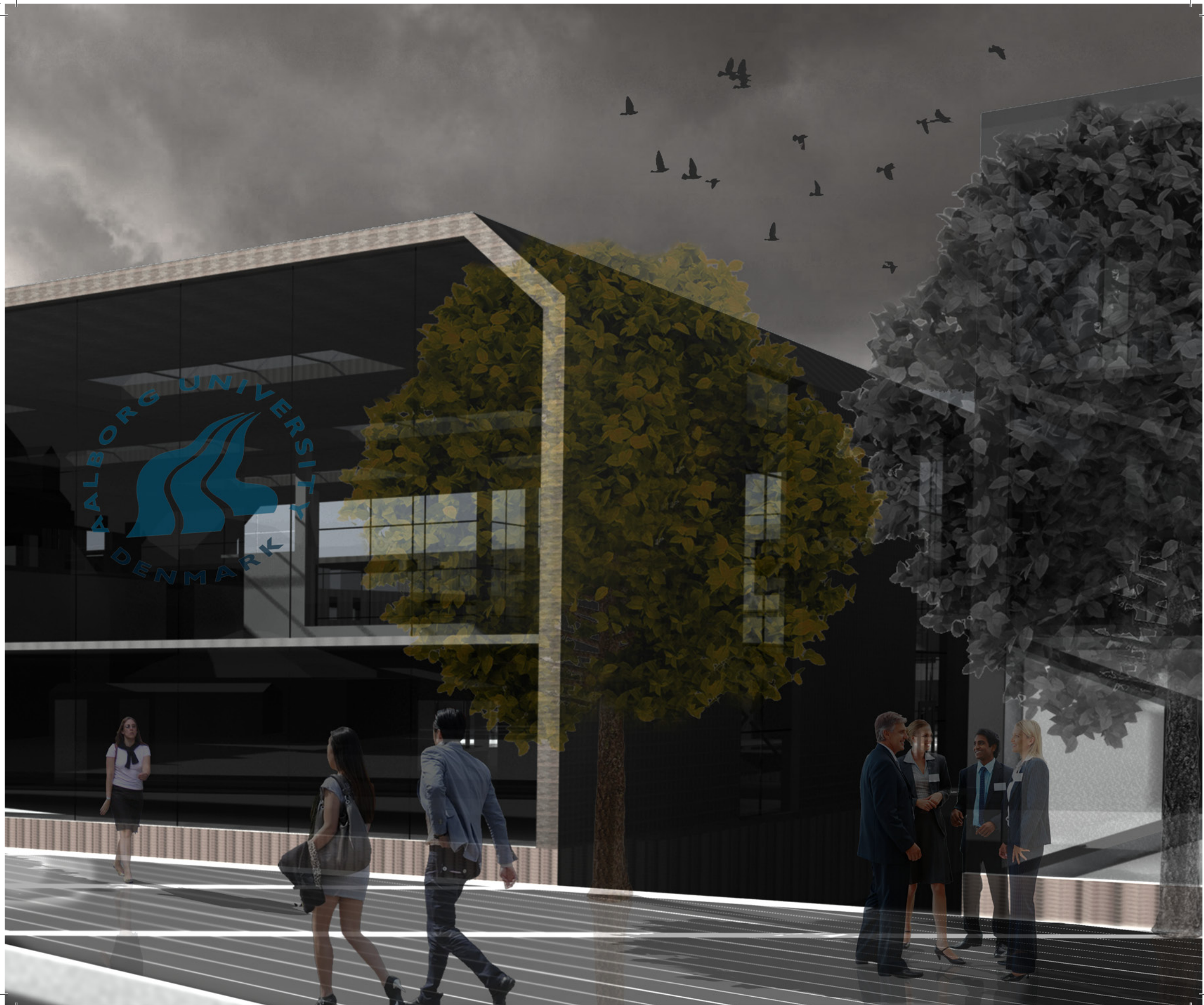

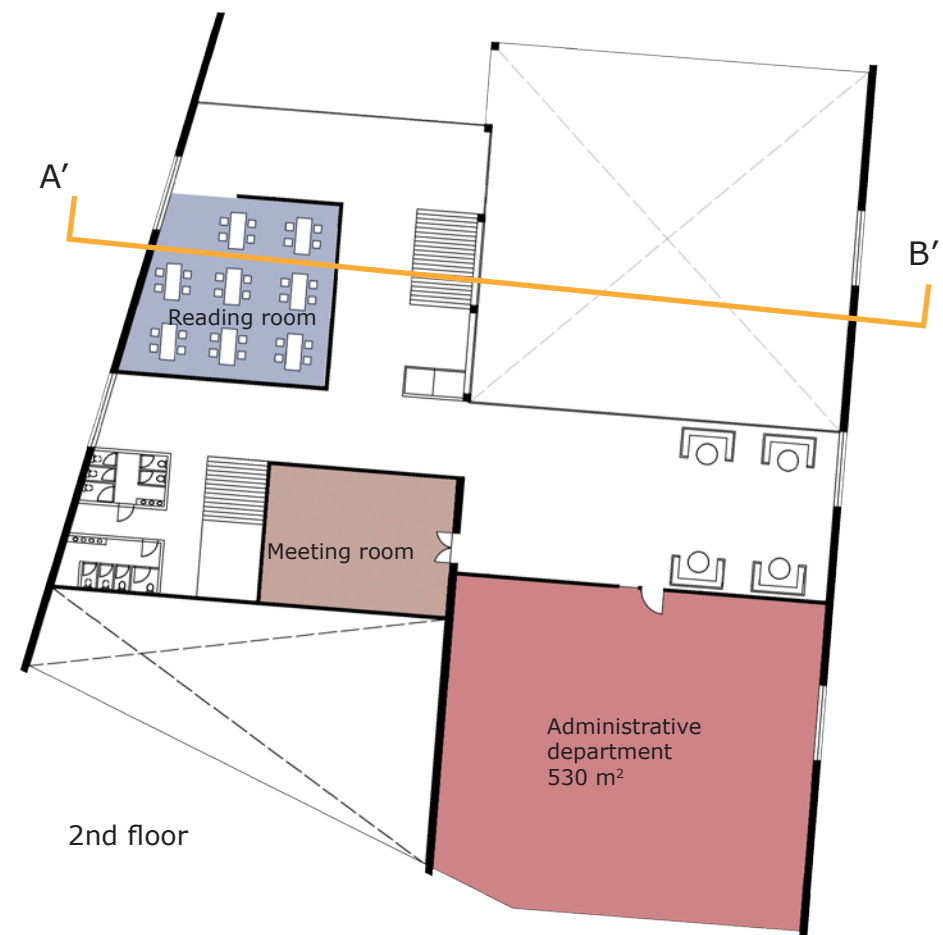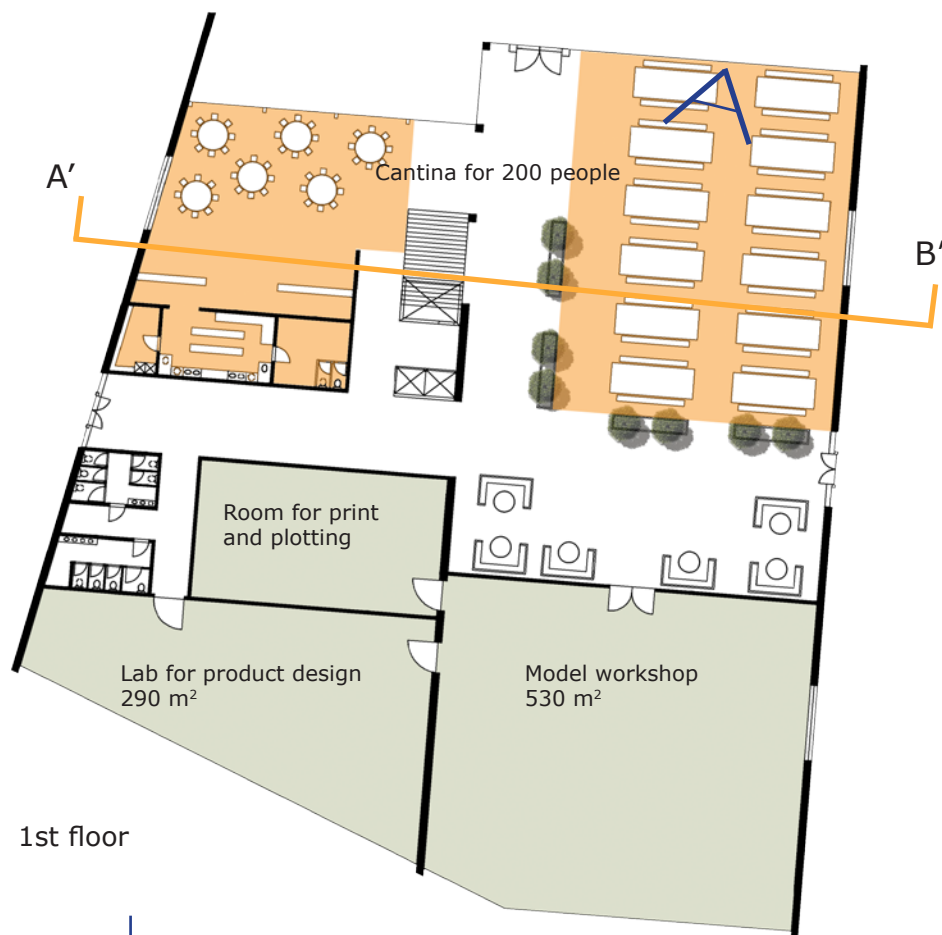*Illustration 42. View of Common building 1 from Nordkraft.*

The first floor of Common building 1 is also the biggest floor of the building, covering 2500 gross m² and 1750 net m². The aim for this floor is to create a welcoming environment for both visitors that come to the campus for the first time, and students and other users. The first floor contains a cantina with seating for up to 200 people at the same time [Orange]. The cantina also has an industrial sized kitchen that can be used for other events for example during the evening. The kitchen is located next to a break room and bathrooms for kitchen staff during the daytime. The cantina is separated into two parts, divided by a main staircase, elevator and technical room. This division constitutes the main central room of the first floor, leading down to the two labs of the building and a lounge area. The east-west axis running through the first floor ensures effective connections to the ArT building on the west side as well as the A&D building on the east side.

As the lab for product design covers 6 metres in floor height, this area stretches up through the second floor. This floor covers 1500 gross m² and 700 net m². The net area is mostly used for the department for administrative staff, which covers all four programs of the creative campus [Pink]. This will function as an area where administrative staff have their offices, and were students can contact the department for matters concerning study plans, exams and so forth. The department is located next to a meeting room, which is meant to be versatile in use. This meeting room is for example meant to be used for oral examination and other official meeting. The meeting room covers around 100 m².

The second floor also contains a lounge located outside of the administrative department, where students can wait and prepare for oral examination and other meetings. There is also a reading room on this floor [Blue] which can be used by all students.

Illustration 43. Floor plans for Common building 1. 1:500. Section in 1:500 can be seen on page 54.

A'

Cantina for 200 people

B'

Room for print and plotting

Lab for product design
290 m²

Model workshop
530 m²

1st floor

A'

Reading room

B'

Meeting room

Administrative department
530 m²

2nd floor

Design

The third floor of the common building is located on the top of the lab for product design, and is easily reached by stairs from the second floor. This stand alone floor will be used for reading areas for up to 120 students, also containing a lounge area.

The reading area covers roughly 500 m^2 and will have superior view over both Nyhavnsgade, and the rest of Common building 1. It will also be possible to look down to the Cantina area, which is displayed on the illustration to the right. The view of this illustration is indicated on the floor plan of the first floor. These areas are all meant to offer the possibility to have formal and informal meetings between students, teachers and other professionals, justifying the central and easy accessible location.
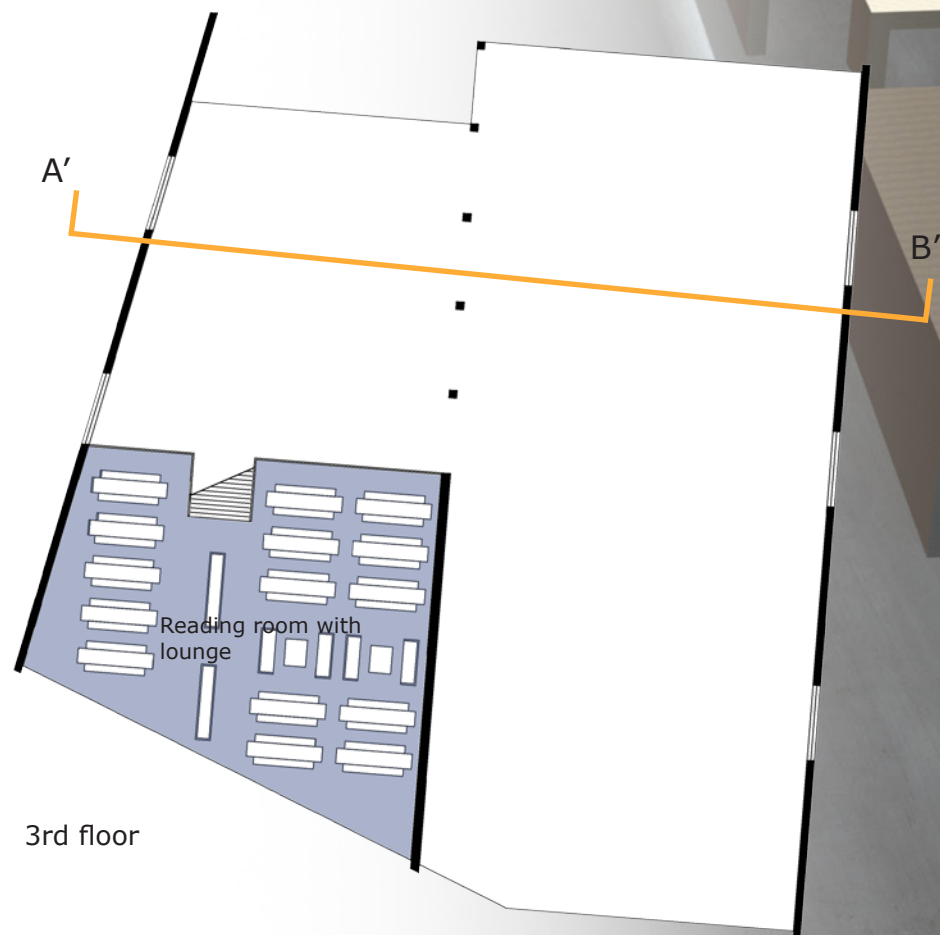
A′

B′

Reading room with lounge

3rd floor

Illustration 44. Illustration of the cantina in C1.

The A&D building

The A&D building is the single building that will house the highest amount of students on the Creative Campus. The building is located on the south-east corner of the campus, adjacent to the House of Music. The building will house up to 600 students at the same time and up to 35 teachers and 15 PhD students. The program for Architecture and Design will have a daily need of using the model workshop and the lab for product design, which will mostly be used by the Industrial Design students. The building is because of this located right next to Common building 1, which houses these laboratories. The A&D building and the C1 is divided by the main south-north canal that runs through the campus.

To ensure easy access to the two labs in C1, there is a bridge on the west side of the building, leading over to C1. This bridge is part of the internal network on campus, where users have access to the other buildings on campus independent on the main streets and external flow lines, explained more thoroughly on page 80 and 81. The main entrance to the building is located on the north facade in a secluded area of the building, which can be seen on the closest corner in the illustration to the right. The third entrance to the building is located on the south facade, which can be reached by crossing over a bridge from the south welcome square. As can be seen in the plan drawings on page 63, all three entrances form a structure which is part of the internal flow network of the campus.

The view in illustration 45 is taken form the top of Common building 2, and is facing south-east towards the A&D building. The illustration shows the location of the building in relation to Common building 1 and the HuM building on the left side of the illustration. The organization of the building structures and distances between the buildings in this area of the campus contributes in creating an intimate atmosphere where informal exchanges of ideas and information can take place across disciplines. Architecturally, an extensive use of glass in the A&D facade has been emphasized to eliminate the boundary between interior and exterior. This is done not only to encourage social and academic interaction with students and teachers from other academic, but also create a friendly and inviting exterior to the building.
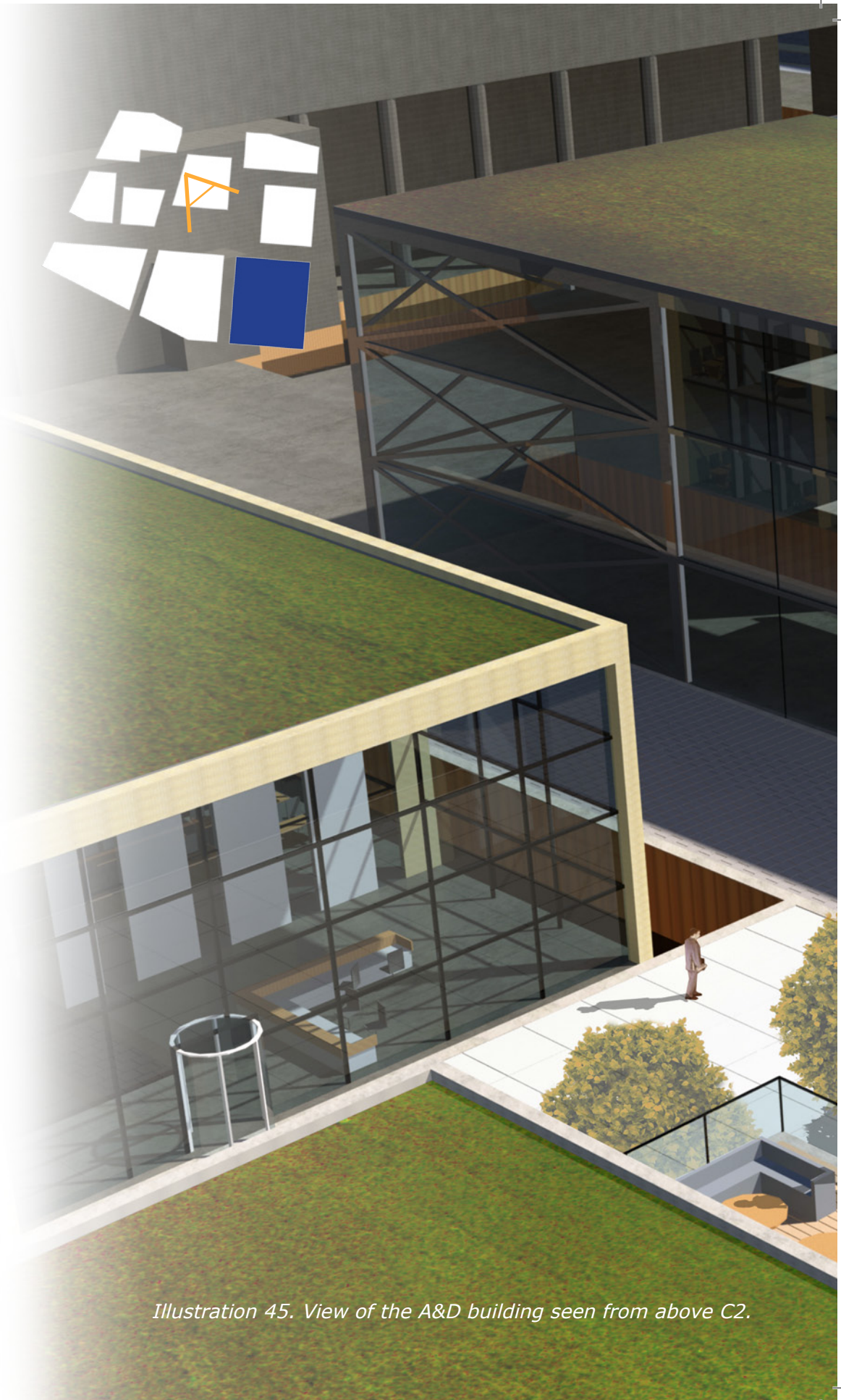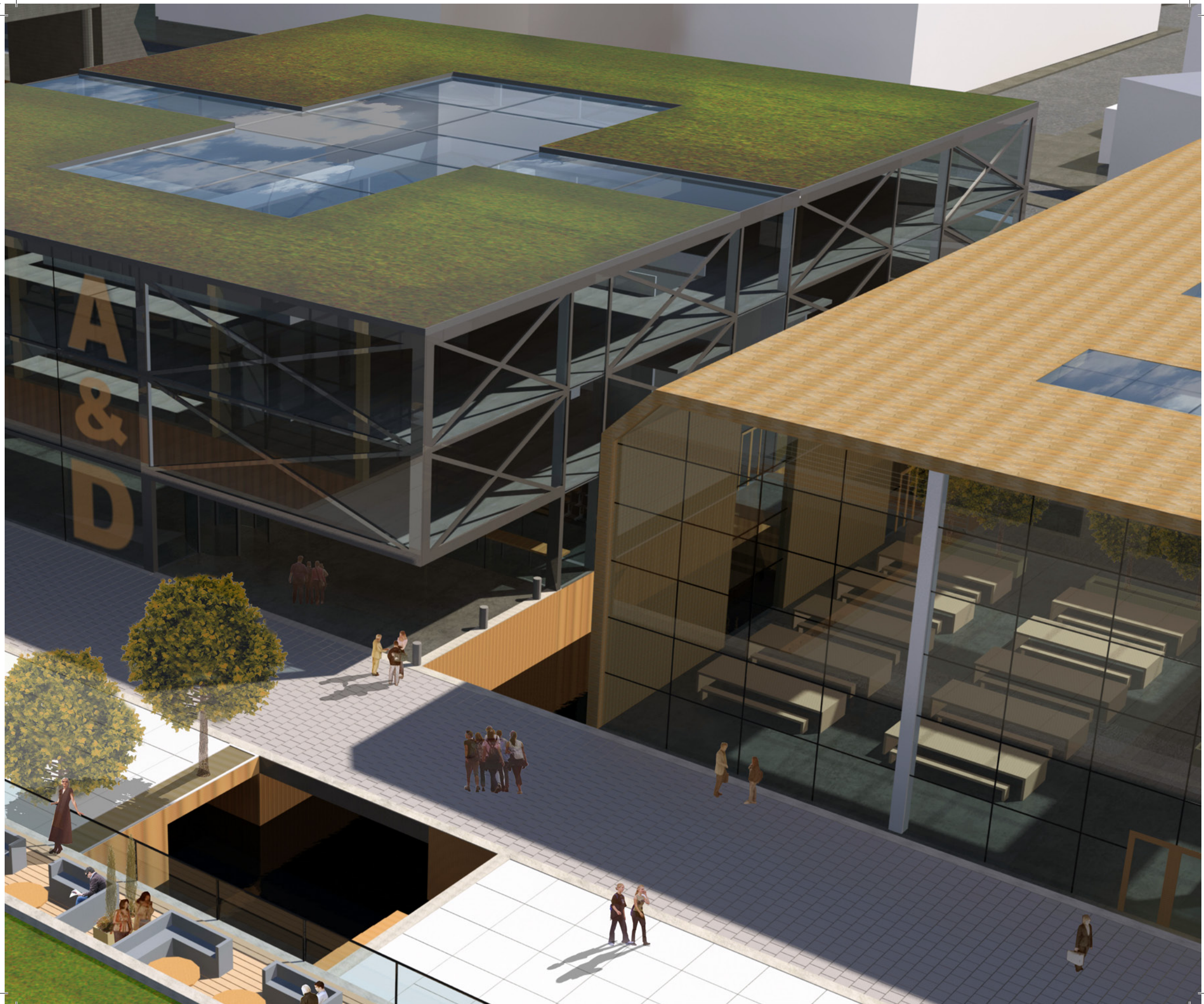
Illustration 45. View of the A&D building seen from above C2.

Design

The sections and plan drawings for the A&D building aim to display how the areas are used in terms of area efficiency and in relation to the building's other functions. As explained on the previous page, this building will house up to 600 students and 35 academic staff at the same time, which presents a demand for substantial area dedicated to group and personal work. With 600 students spread across three floors, there is a need for an efficient spacing system that allows for students to participate in group work as well has having access their personal work space. Illustration 46 displays how the work areas for students throughout the building will be organized. A larger table suited for a group of 6 people is placed between the personal work spaces with computers. As group work at the A&D department usually run through the whole semester, and groups hold together for the duration, this setup allows students to switch quickly between group work and more personal work.
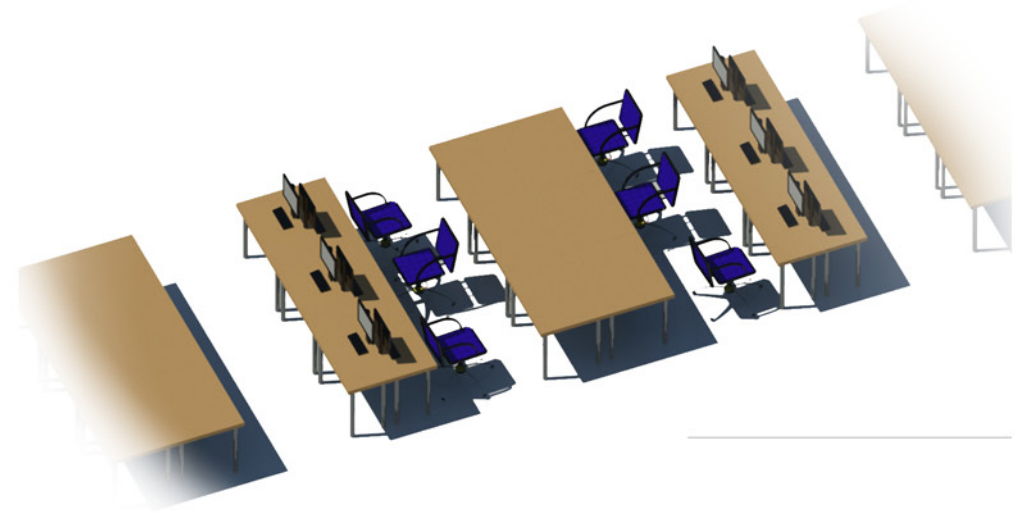
The first floor of the A&D building contains four seminar rooms and auditoriums in different sizes. The largest auditorium seats up to 216 people simultaneously, and will be used for common functions, such as semester starts, information meetings and so on. This is also the largest auditorium on campus, and can for example be used for guest lectures and other events. The first floor evolves around a central staircase, which will be displayed on page 64. The floor also contains a drawing room cluster for 93 students [Blue], placed on a slightly elevated floor as displayed on the section. Students also have the possibility to meet teachers and other students in a designated lounge area [Purple].

Access to the large auditorium can also take place from the second floor, where users will enter at the top of the auditorium stairs. The second floor is almost entirely used by students, with drawing rooms for 264 students. These work space clusters each have their own kitchen, bathrooms and printing/plotting rooms. This floor also contains a meeting room.

The third floor is shared between students and teachers/PhD students [Pink]. The work space cluster on this floor will have space for 267 students, and students and teachers will have access to two larger meeting rooms on this floor. Teachers and PhD students will in addition have their own meeting rooms.

Illustration 46. Organization of work areas for students.

1st Floor

Design

Illustration 47. Section through the A&D building. 1:250

2nd Floor

3rd Floor

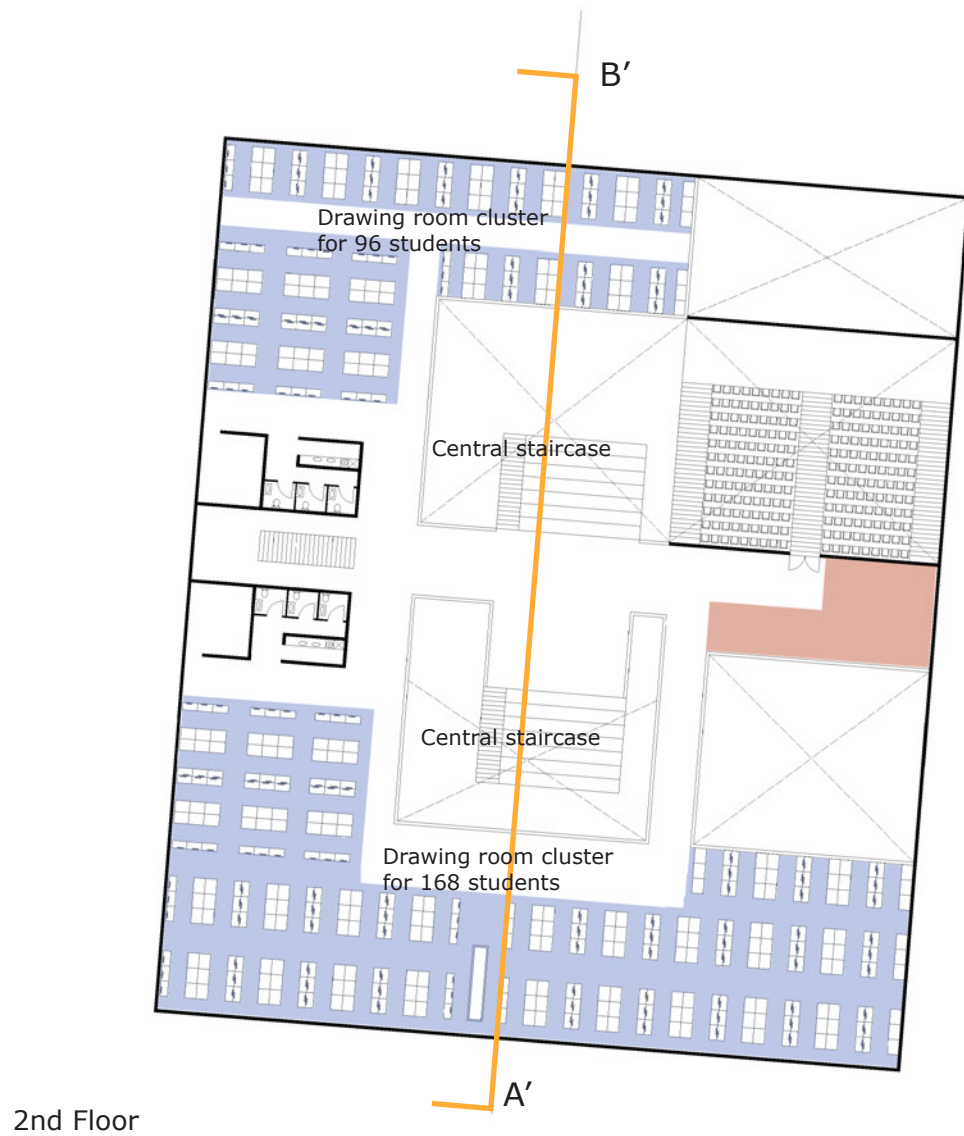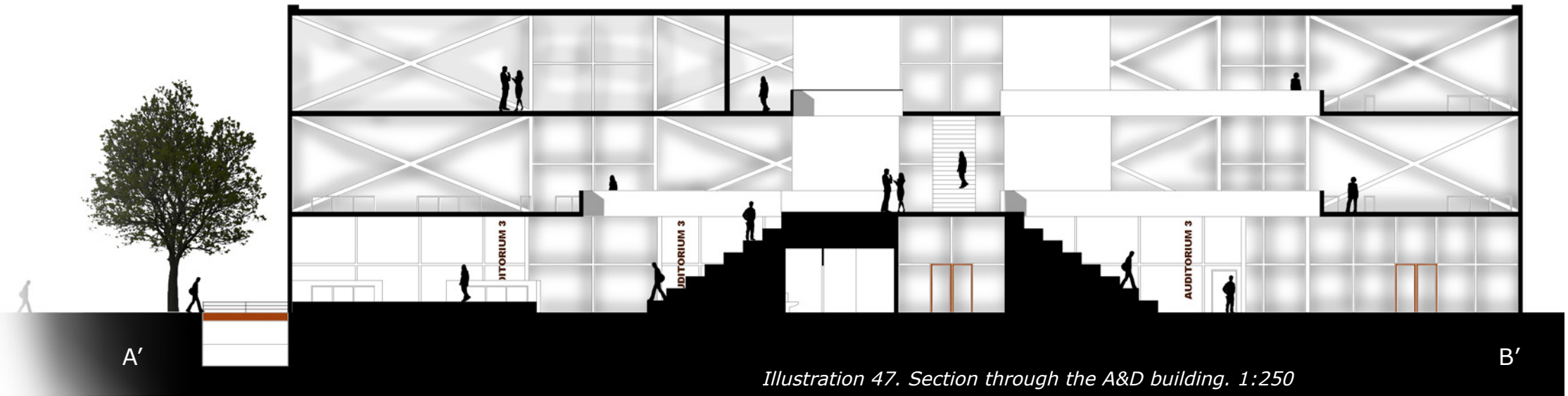*Illustration 48. Floor plans for the A&D building. 1:500*

Illustration X displays the central staircase of the A&D building, leading up to the second floor on two sides. The centra staircase is located between the seminar rooms/auditoriums and the drawing room cluster for students. The view is taken as indicated in the plan drawing for the first floor and displays how the staircase is placed on the first floor in relation to the welcome area of the building.

As both Richard Florida and Hajer & Reijndorp has explained, it is highly important for creative expression and exchange of ideas to have a suitable forum for this. In locating a central staircase such as this in the largest and busiest building of the   campus, the design ensures not only efficient flow within the building, but also allows people to in an informal manner without having to plan it.

The aforementioned internal flow systems between the buildings also 'end' here. The intention behind this is to attract users to common areas where they can meet other students and professionals. The staircase is also intentionally located at the centre of the building to let natural sun light flow down on the area from the glass opening in the roof above. The second and third floor both have openings that lead down to the staircase, as can be seen in the illustration.

The A&D building is the single building on campus that will be experienced as the most open, but in terms of physicality, aesthetics and tectonics. The facade is almost completely open, with only metal crossbars acting as frames for the double glass facade. In terms of building physique, this can be done because each room on the first floor is built in by concrete and wooden walls, thus creating buildings within the building. At the same, the building will at every time throughout the house a substantial amount of people, contributing to the building physique.

The A&D building has a net size of 4000 m^2, and a gross size of 7000 m^2 and will house as much as 650 users at the same time.
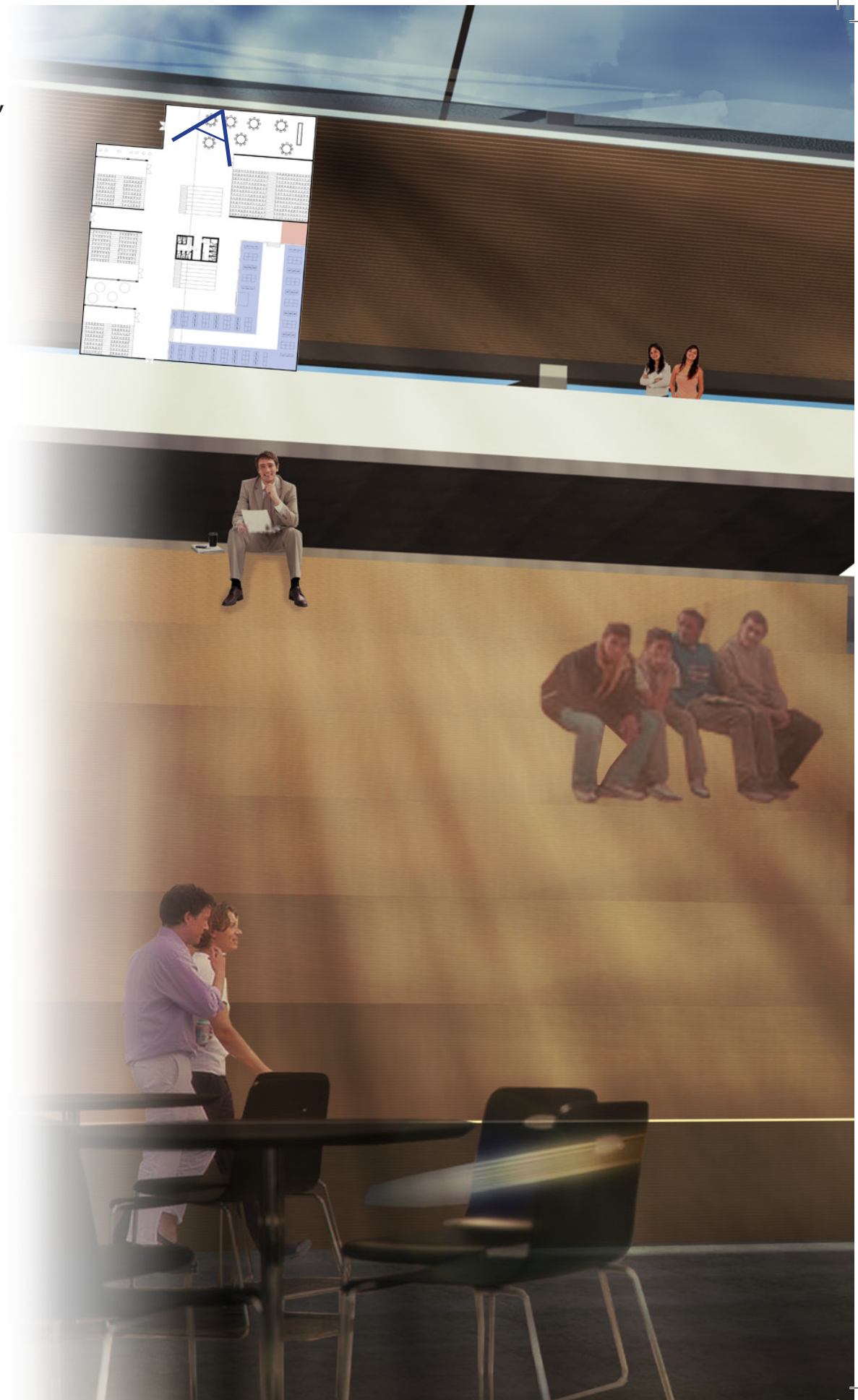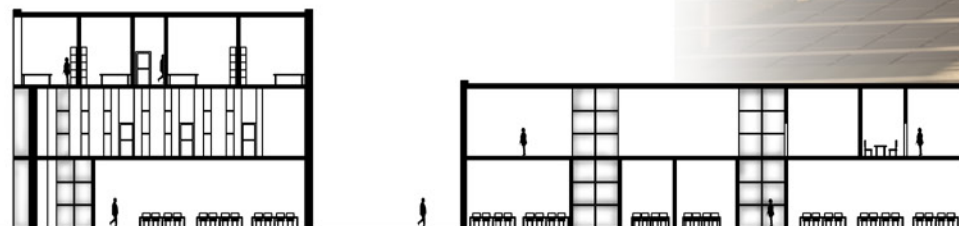
Illustration 49. View of the central staircase in the A&D building.

The HuM buildings

As mentioned in the vision and concept section, the HuM complex is divided into two buildings, and houses functions for the program for Humanistic Informatics. The two buildings are connected by a skyway, which is essentially a covered bridge. The bridge connects the buildings on the second floor, as displayed on the plan drawings on page 68. The complex is located on the north-east corner of the creative campus, adjacent to Common building 2. Programming specifics for Humanistic Informatics dictate a need for a large number of isolated group rooms, as students will work in groups from 6 to 8 throughout the semester. The buildings will house up to 200 students at the same time, in addition to 25 academic staff and PhD Students.

The building consists of two labs, one Geminoid lab, which will be used to explore how children relate to robots and technical elements. The other lab is a drawing lab for room, shape and colour, and will be located on the second floor with access to a terrace which can be seen on the illustration on page 69. Both buildings have entrances in connection to the open urban space between the HuM complex and Common building 2. This area is displayed in the illustration 51.

Architecturally, the buildings project a solid base, with a mixture of yellow bricks and glass with a black lattice pattern. The facades facing the open space in front of the buildings appear as the most open facades, ensuring a welcoming atmosphere when visiting the complex. The gross area of the complex is estimated around 4200 m^2, while the net area is projected at around 2100 m^2. This translates to roughly 10 'active' m^2 available for every user. The net area does not include lounge areas and other common functions such as bathrooms and hallways, which suggests that users will have plenty of areas for informal meetings.

A'   *Illustration 50. Section through the HuM buildings. 1:500*   B'

Illustration 51. View of the HuM buildings from public space in front.

Illustration 53 is taken during a croquis class in the lab for room, shape and colour on the second floor, which also has access to a terrace. The first floor consists of a meeting room, four seminar rooms in different sizes and personal reading spaces in the peripheral areas. It also contains group rooms for 72 students, in room sizes varying from 6 to 8 students. The Geminoid lab is also located here, sheltered from noise and daylight.

Aside from the drawing lab, the second floor mainly consists of group rooms for 126 students, again ranging from 6 to 8 students in size. Several lounge areas are also available to students and staff. The third floor is used for offices for academic staff and PhD students, in addition to a larger meeting room on the west side of the floor.
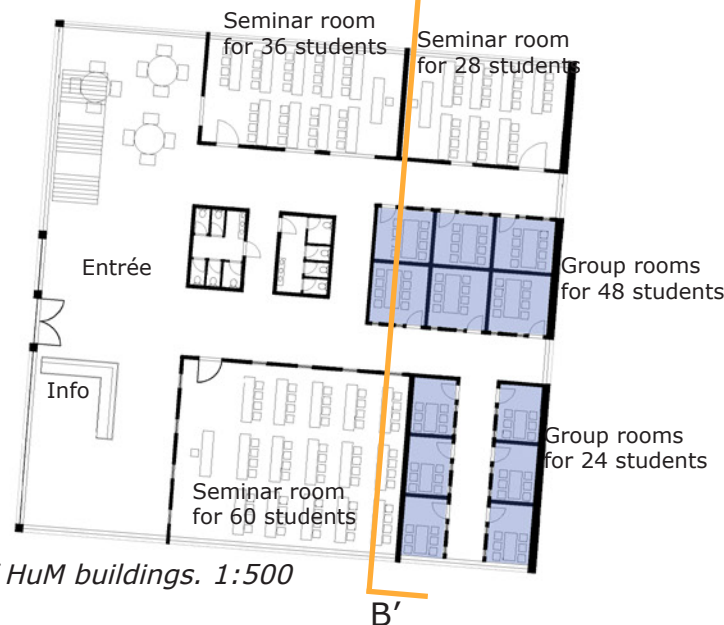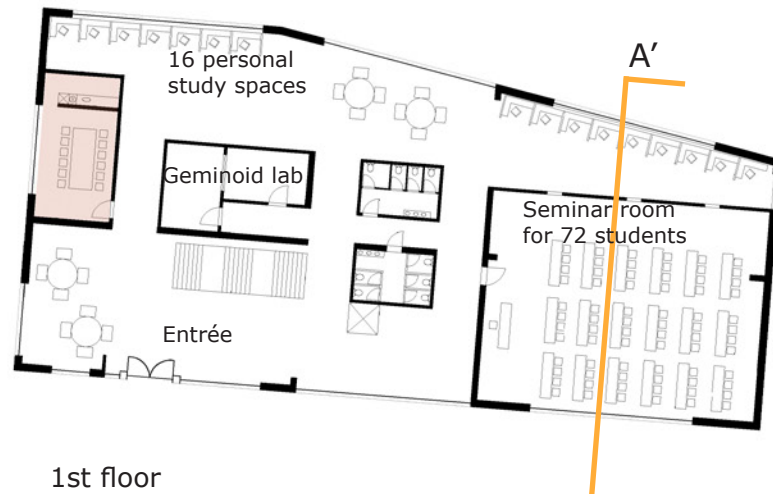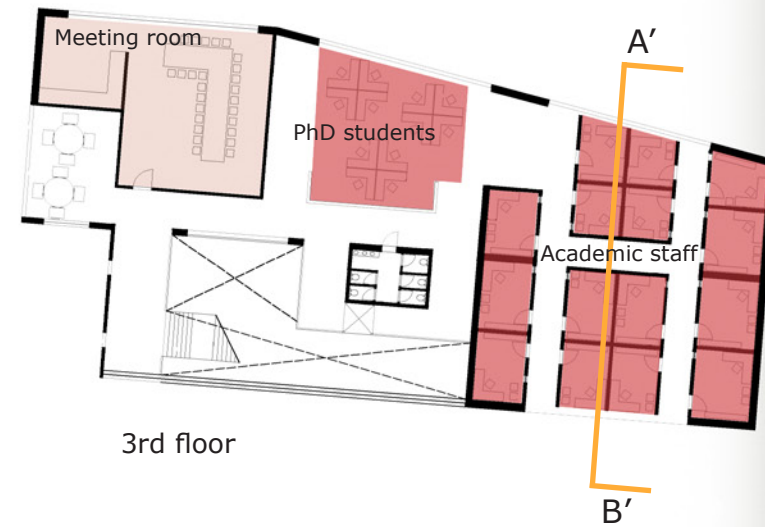
Meeting room

A′

PhD students

Academic staff

B′

3rd floor

16 personal study spaces

A′

Geminoid lab

Seminar room for 72 students

Entrée

1st floor

Lab for room, shape and colour

A′

Group rooms for 60 students

2nd floor

Open area for student workshops and other relevant functions

Seminar room for 36 students

Seminar room for 28 students

Entrée

Group rooms for 48 students

Info

Group rooms for 24 students

Seminar room for 60 students

Group rooms for 66 students

Quiet room

Illustration 52. Floor plans of HuM buildings. 1:500

B′

B′

Illustration 53. View from the lab for room, shape and colour.

Common Building 2

The second common building houses common functions such as a café/restaurant, PC labs, exhibition area, student bar and library. The PC labs will act as common labs available for all four programs, and will be used for training in creative software and other relevant programs. The two labs will each have room for 30 people simultaneously, allowing for smaller group education in the initial years of the different programs. The PC labs are located in C2 to ensure efficient availability in relation to the four program buildings. This can be seen in detail on page 80 and 81, were the internal network of the campus is displayed. C2 covers approximately 3400 gross m^2 and 2350 net m^2.

Common building 2 is also located adjacent to the open space that is connected to the harbour promenade. By locating this particular building against this square, C2 plays an even more central role on campus. As can be seen in the plan drawing of the first floor of C2, the exhibition room is located right next to the open space in front of the building. There is also a door that leads from the exhibition room inside the building out the public square. This allows for exhibitions of student work and other exhibitions to draw outside when the weather allows it. Illustration 54 shows a view of the building seen from the harbour promenade, and displays the exhibition area on the first floor, and the library on the second and third floor. Users of these functions will also experience a great view over Limfjorden and the harbour promenade.

As mentioned, the library covers most of the area on the second floor, sharing it with the student bar, and the entire third floor. There is also direct access between the exhibition area and the first floor of the library. On the third floor of the building side that faces the central square, the library will have direct access to an outdoor, south facing lounge terrace that has excellent sun conditions throughout the day. The student bar is located on the second floor, as displayed on page 72 and 73, and will also have direct access to a south facing terrace. Architecturally, the building aims to display the diverse functions it houses, with several vertical variations in the facade.
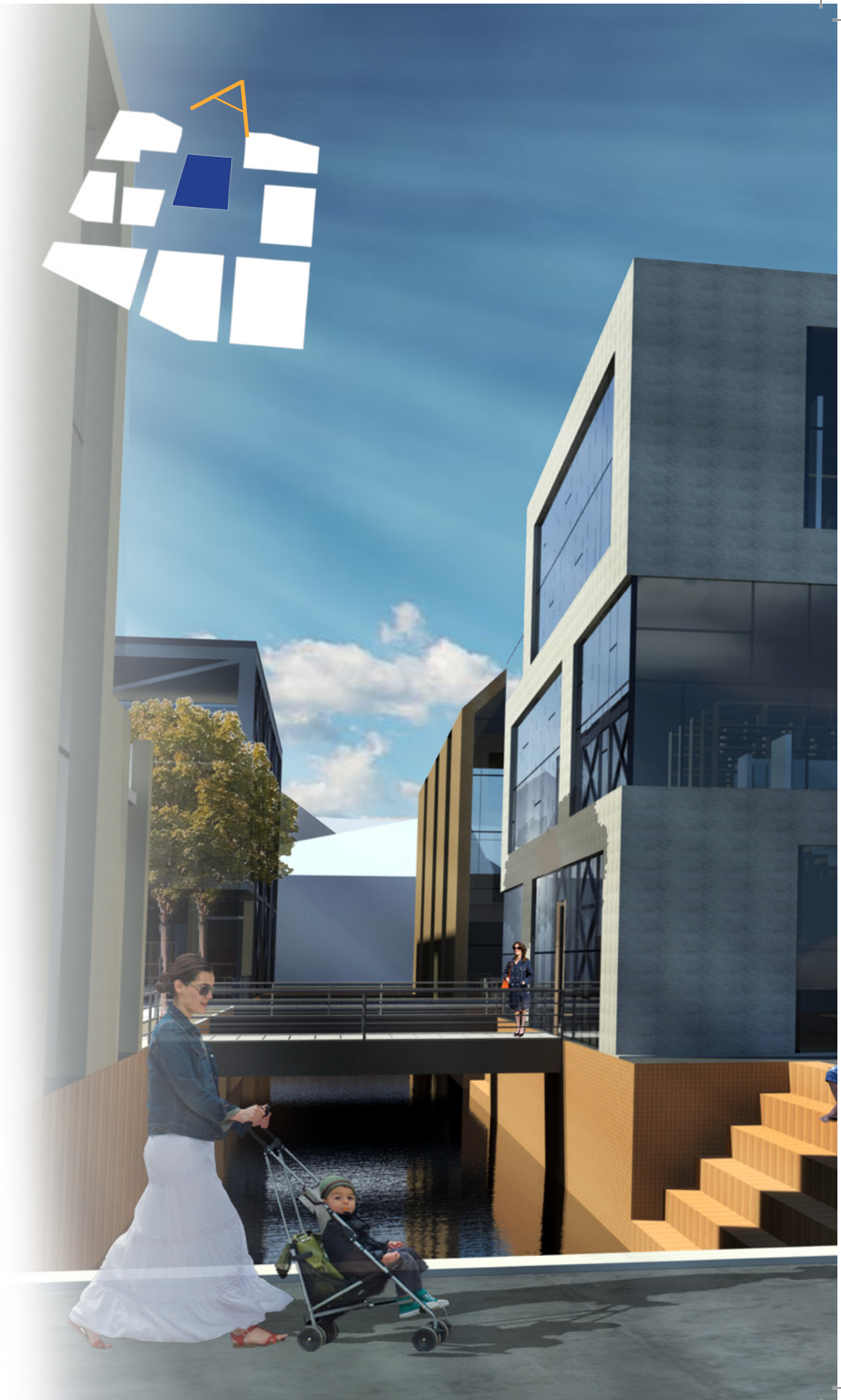
Design

Illustration 54. View of Common building 2, from the harbour boardwalk.

Illustration 57 displays how the library will be experienced on any given sunny day. The library itself will act as a place for information seeking, quiet reading and group work. The library stretches over two floors, the second and third floor of the building.

The first floor of Common building 2 contains an entrée area inside the main entrance were first time visitors and others can approach campus officials for inquiries about the location of functions and other questions they need answered. The first floor also contains a larger exhibition room which will be used for semester exhibitions and presentation of other works. The room is designed to fit posters, models and installations from for example ArT students. The room covers roughly 540 m^2 and has direct access to the open square outside, which is displayed on the previous page. Further on, the first floor also contains one of the two PC labs in the building, which will have PCs for up to 30 students. The PC lab is located next door to a café and restaurant. This establishment will serve as a café during the daytime and evenings during the week, but can for example be used for catered arrangements and restaurant during the weekend. This will contribute to ensuring a vibrant and lively campus during the weekend as well as regular weekdays. It is also a point that the café is located at the south facade, where an exit to an outdoor service area will ensure good sun conditions for diners and other visitors.

The second floor of the C2 building is principally used for library purposes, but the floor also contains the second PC lab and the student bar. Both the PC lab on the first floor and the lab on the second floor contains a separate room for plotting, printing and 3D plotting. The student bar is a very important part of the student community environment, and is thus located in one of the common buildings. The bar will usually be open during certain times of the week, and every Friday night, which is the big party night for the creative students in Aalborg. The bar has direct access to a south facing terrace of roughly 130 m^2 with a view over the central square. The bar is accessible both by stairs and elevator from the lobby area on the first floor. The bar contains its own storage room.

The third floor is exclusively used for library purposes. The floor is divided between several bookshelves and study table groups, which is located on the south end of the floor to ensure good lighting conditions for reading. The floor also contains 19 personal study spaces on the peripheral areas, with views over Limfjorden and the campus' main south-north canal respectively. The third floor can be reached by elevator, in addition to an open central staircase that ensures an experience of the library as a single unit. The floor has direct access to a lounge terrace of about 170 m^2.

Illustration 55. Floor plans of the C2 building. 1:500

1st floor

A'

Exhibition room

PC lab

Info

Café/Restaurant

B'

2nd floor

A'

PC lab

Student Bar

Library 1st floor

Terrace lounge 130 m²

B'

3rd floor

A'

19 personal study spaces

Library 2nd floor

9 group work tables

Terrace lounge 170 m²

B'

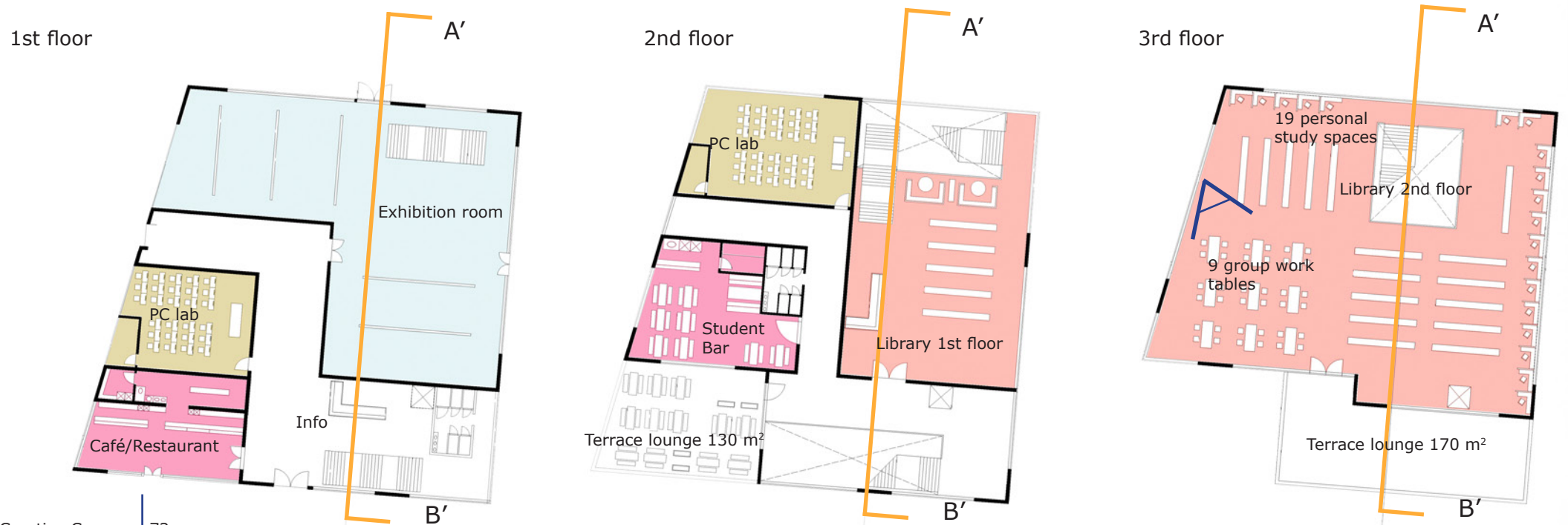*Illustration 56. View of the library in Common Building 2.*

Illustration 57. Section through C2. 1:250

A'   B'

The ImI buildings

As mentioned in the vision and concept section, the ImI complex will be divided into three different buildings, and house the different program functions for the Media Technology program. The separation of the complex into three buildings is done in part to facilitate for New Urbanism ideals, but also create an efficient learning and research environment in line with the programming needs for ImI.

The three buildings all have differences in programs, and the physical and architectural construction of the different floors will reflect this. In terms of facades, all buildings are designed in a similar fashion to specify that these three buildings belong to the same program. The rhythm in the facades reveal the different functions inside the building. Areas were the facade is opened up with large glass sections will correspond with the area inside the buildings which is used for public functions such as lounge areas and staircases. The more enclosed sections of the facades will cover more private functions such as offices and group rooms.

The south and west boundaries of the complex will be located next to the canal system on campus, with bridges crossing over on appropriate places. While the south-east building of the complex will be a stand alone laboratory building, the west and north buildings for students, and teachers and PhD students will be connected by a crossing skyway on the second floor, as displayed in illustration 58 and the floor plan of the second floor on page 77. The north building will also have direct connection to the harbour boardwalk on Limfjorden and a park area in front of the building.

In line with the conceptual organization of the buildings on campus, the west building of the complex is exclusively used for student functions such as group rooms and personal study rooms. This also corresponds with the programming requirements for ImI, which dictates a variety of group rooms in different sizes. As mentioned, the south-east building will be used for the two required laboratories, while the north building will be used for teachers and PhD students, with seminar rooms and auditoriums on the first and second floors. The building has a net size of 2260 m^2, and a gross size of 5815 m^2 and will house up to 225 people simultaneously.
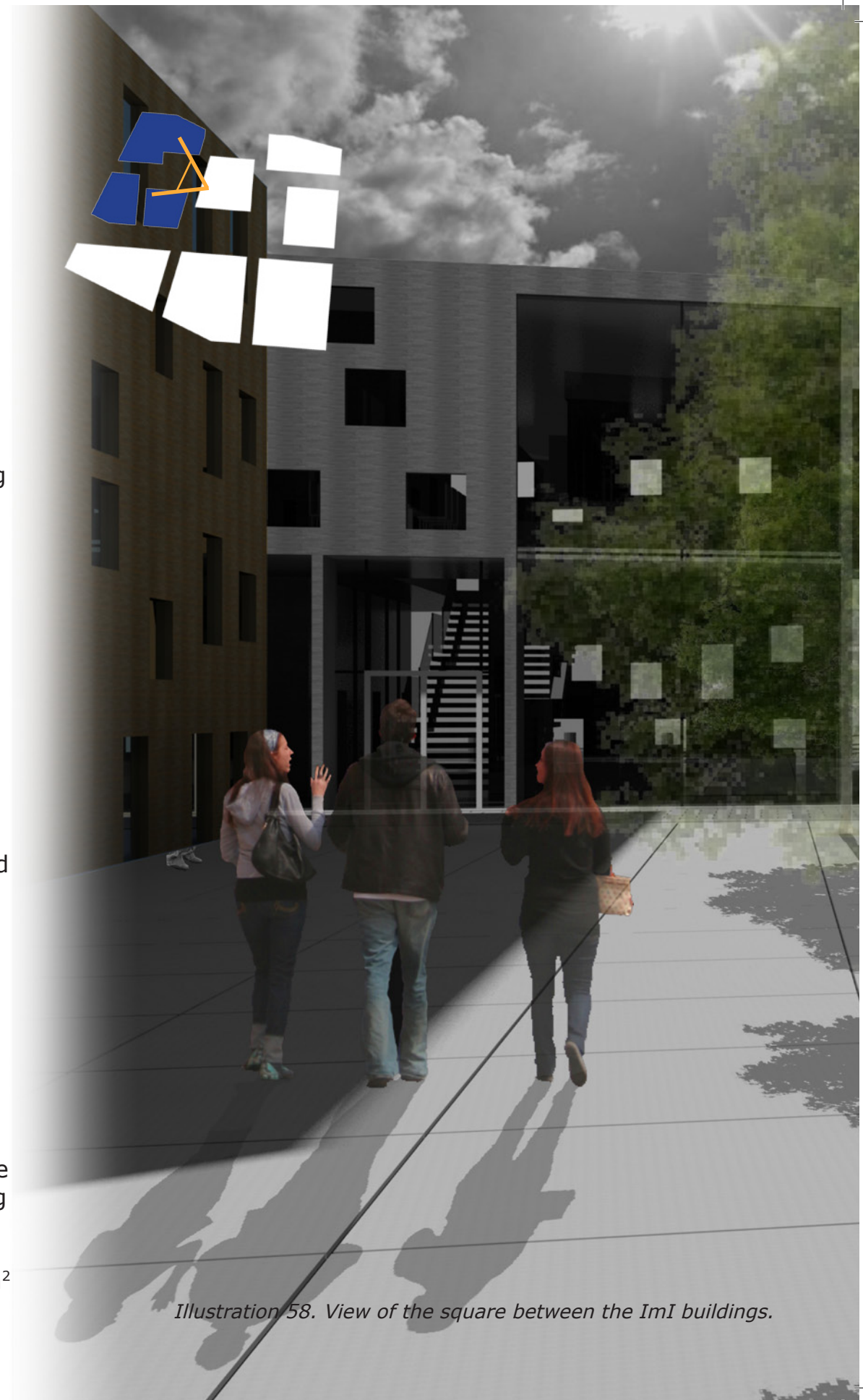
Illustration 58. View of the square between the ImI buildings.

Illustration 59. Lounge area on the first floor of the west building.

A'

Illustration 60. Section through the ImI buildings. 1:250

B'

The ImI complex consists of three different buildings. This is in part to facilitate for programming needs for the laboratories, which require audible and visual shielding from surrounding environments. The lab building is labelled as the south-east building in the floor plans. The first floor of the west building contains group rooms for up to 88 students, as well as personal study rooms for 50 students. The first floor of the north building contains study rooms for 36 students, and two seminar rooms for 80 people each, in addition to a meeting room for 10 people. The second floor of the north building is identical to the first floor. The second floor of the west building has group rooms for 112 students, and a personal study room for 50 students, in addition to lounge areas. The third floor of the north building is used for teachers, PhD students and a meeting room.
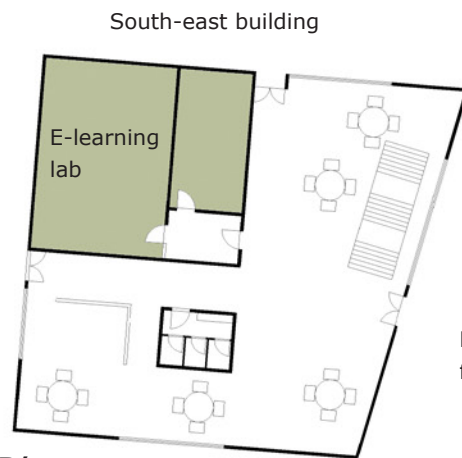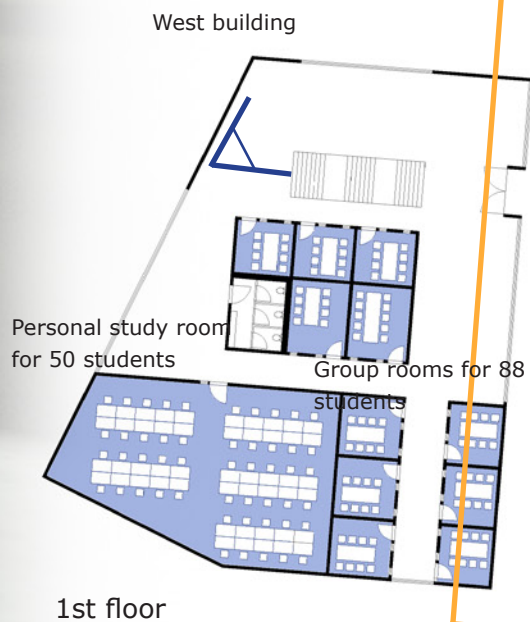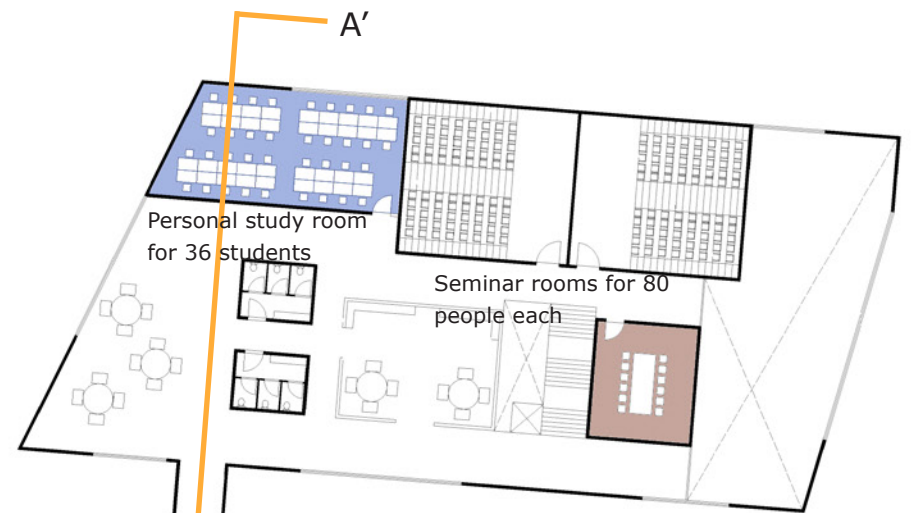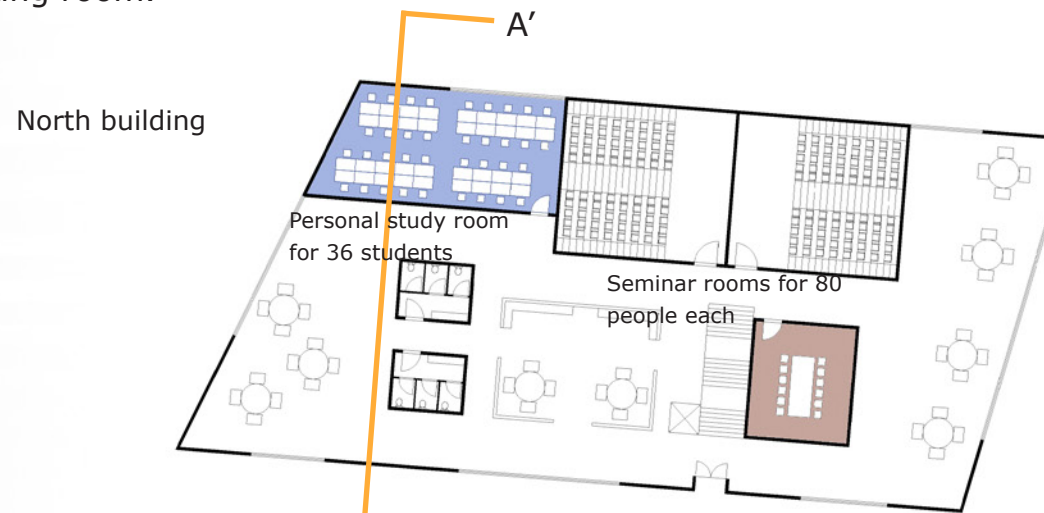
A'

North building

10 PhD students

15 academic staff

3rd floor

B'

A'

North building

Personal study room for 36 students

Seminar rooms for 80 people each

West building

South-east building

E-learning lab

Personal study room for 50 students

Group rooms for 88 students

1st floor

B'

A'

Personal study room for 36 students

Seminar rooms for 80 people each

Living lab/Help+

Group rooms for 112 students

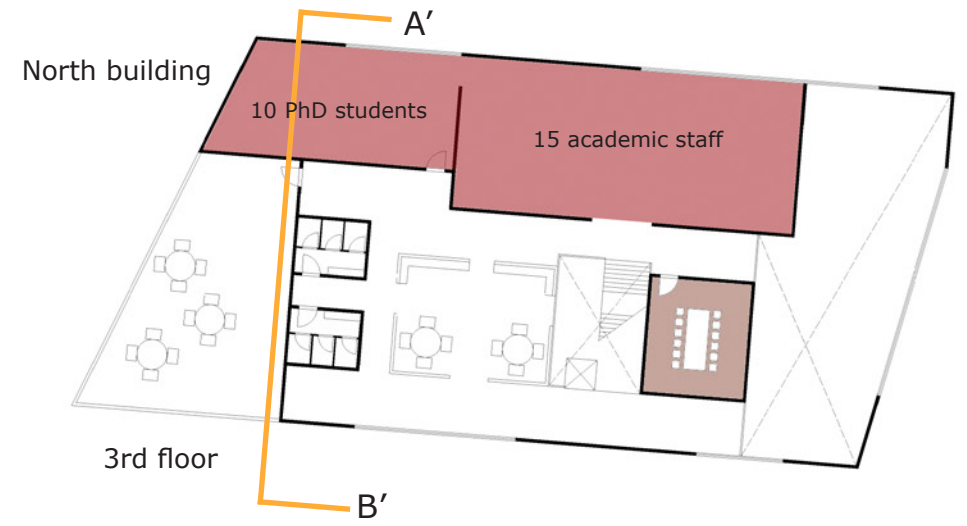Personal study room for 50 students

2nd floor

B'

Illustration 61. Floor plans of the ImI buildings. 1:500

The Central Square

The central square will work as the unifying centre on campus, and is the one place that will tie the internal and external networks within the campus together. The main campus mall that leads from downtown Aalborg to the House of Music will pass the central square, and the square will thus be an important part of the campus' connection to the city. As part of the main formative concepts of walkability and connectivity on campus, the central square plays an important part in tying the different armatures together.

The square is designed as a typical roman forum square in plan with a length of 38 metres and a width of 20 metres, and ties the two common buildings on together. Further on, all four education buildings have a connection to the square in some degree, whether through facade doors leading directly onto the square, or across canal bridges.

The square is thought to function as a gathering place for bigger events, such as speeches and information on semester starts and other occasions. Because of this, the square evolves around a fairly open plan solution. With an estimated size of about 800 m^2, the central square is dimensioned for larger masses of people for the aforementioned activities. According to Walzer, this would be labelled as an open-minded place, as it is the users of the square that determine its activities. The estimated size of the square does not include the adjacent main axis through campus. The square is also designed to facilitate for everyday use, by using floorscaping and pattern to reduce the experienced scale when crossing or staying in the square. The row of trees on the west side of the square along with the outdoor service of the restaurant also contributes in reducing the experienced scale.

The central square also answers to the concept, in that it ensures a discernible centre of the campus, which can be used for navigation in between the buildings. For first-time visitors for example, this can be helpful and important when late for a meeting or other appointments. Most of the users of the campus will cross the square at least once a day, making it the busiest area of the campus.
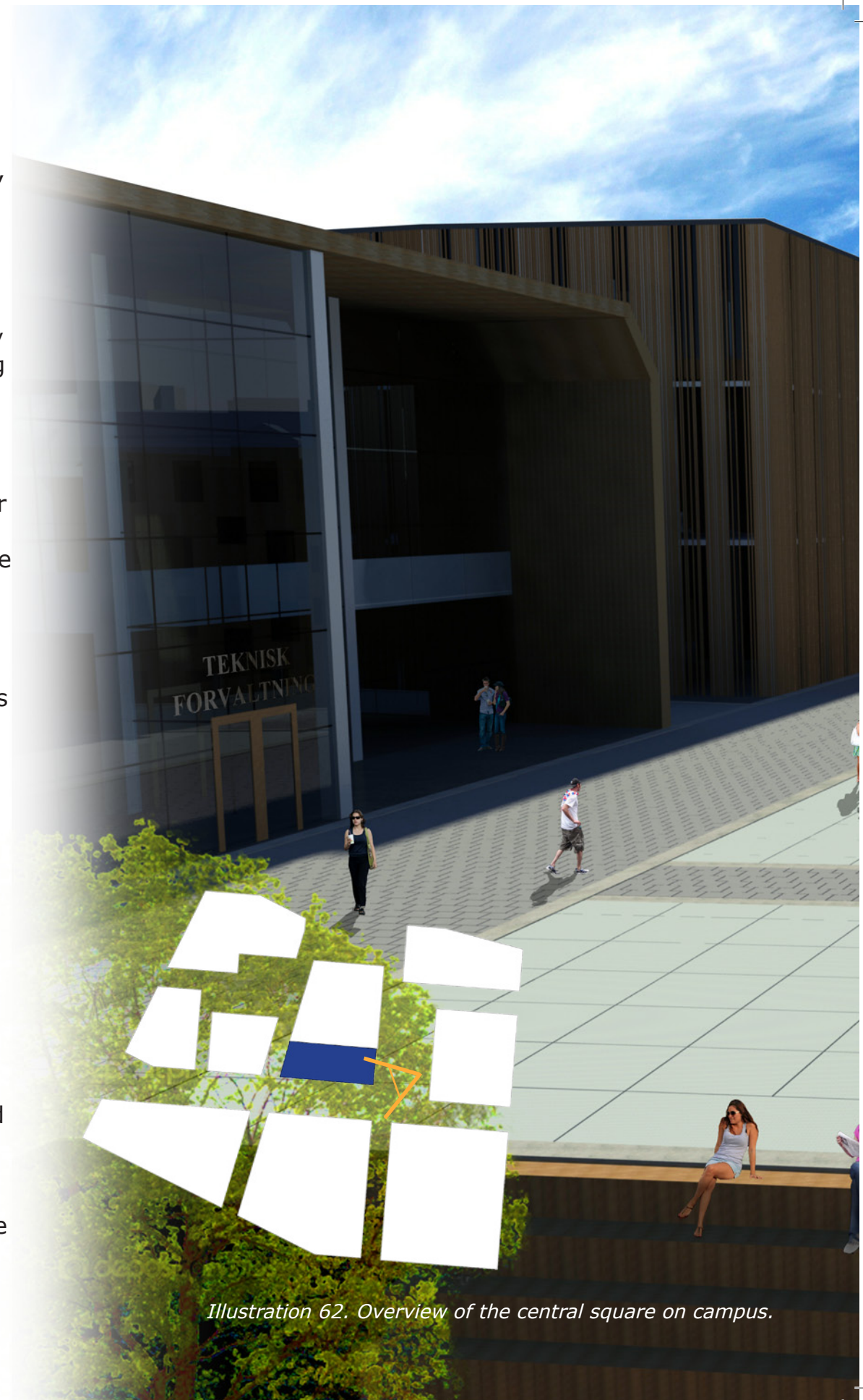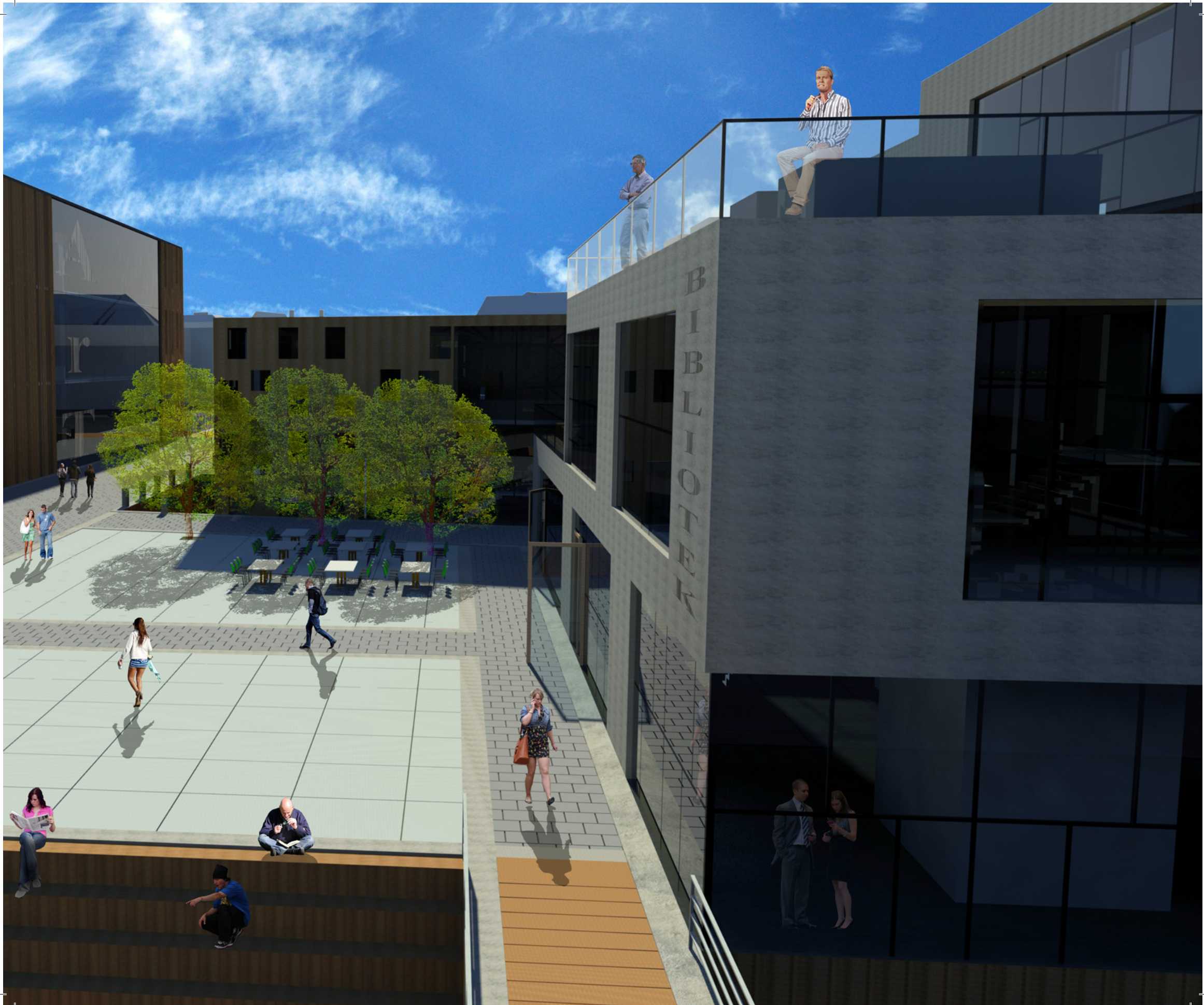
Illustration 62. Overview of the central square on campus.

Internal Networks on Campus

The connection between the buildings which has been mentioned several times during the run through of the six campus building complexes will aim to serve as an internal network, connecting staff and students from all four educations closer together. The network work to create efficient connections between the different buildings, which essentially means that users will not have to make use of the ordinary street system on campus to visit another building. This can be beneficial for example when a person has errands in several buildings. The plan drawing in illustration 62 shows the first floor plans of all campus buildings, and how they are interconnected. Open, public spaces within the Creative Campus are outlined in orange.

As displayed in the main concept for the campus, the common functions such as administrative staff, library and common labs are all located. At the same time, more personal functions, such as drawing room cluster, certain laboratories and offices are located farther away from the centre of the campus. In accordance to the theoretical and conceptual approach of the project, the aim for the campus design is to create in-between areas where creativity and inventiveness can thrive on synergy effects created between the four different programs. As Florida, Hajer & Reijndorp and New Urbanism explains, the creative types in society crave constant contact with other creative people to develop and try out ideas and solutions to social and physical aspects of society. These meetings do not usually take place inside the office, but out in the open in-between areas.

Included in these in-between areas are not only the open public spaces outdoors, but indoor lunge areas and open spaces as well. As phenomenons and types, these two kinds of spaces usually offer different things. The indoor spaces usually gather users of the relevant building, while outdoor spaces tend to gather people form different locations. In the case of the Creative Campus, the internal network aims to link the two types of spaces closer together, enhancing the desired synergy effect created by the different users of the Creative Campus. It is also important to note that the outdoor spaces are designed in an open manner, to facilitate for the open-minded places explained by Walzer.
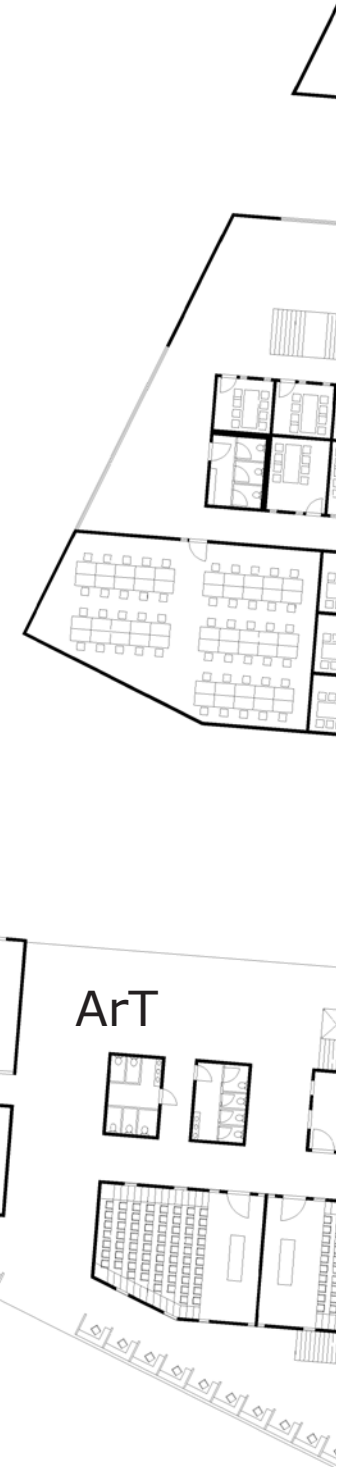

Illustration 63. The internal network of the campus ensures efficient flow patterns between the buildings. 1:500

ImI

Common 2

HuM

Common 1

A&D

Illustration 64. Night time overview of the campus looking from Nordkraft.

The design section is rounded up with a visualization of how the Creative Campus will appear during the night time. The section has aimed to give an insight into some of the aspects concerning the design solutions of the project site. The Creative Campus will be a busy place, with flows of people going through the area throughout the day. The six different buildings on campus will house as much as 1350 people simultaneously.

Embedded in one of the most exciting development areas in Aalborg, the chosen design solutions poses several interesting questions in regards to how the new campus will become an integrated part of the city. The chosen design aims to reflect various aspects found in the initial analysis and run through of relevant theories. The main purpose of the design is to not only to facilitate for students and staff on each of the four programs, but also create a campus where creativity and innovation can thrive.

6. Conclusion

Concluding remarks

The project area today appears as somewhat of a barren wasteland in the middle of the creative cluster, with the Utzon Center on one side, and the House of Music and Nordkraft on the other side. Small portions of the area are used for provisional parking in connection to office building and a hotel on the west side of the project area.

In a few years, the department for Architecture and Design will start the work with building the new campus. As of today, there exists no definite zoning plan for the area, but the department has confidence in the process, and has received reassurances from the municipality concerning the approval of the plans. When the campus is finally built, it will serve as an important part of the creative cluster, and everyday life along the harbour front. This campus design proposal will not only affect students and staff in the department, but also other users of the area. The House of Music is for example located in the immediate surroundings of the campus, with a mere distance of 30 metres over to the A&D and HuM buildings. Combined with the fact that the main access to the House of Music will go through the campus, this can lead to even more people using the campus at the same time. The open squares in the area, and the open areas around the House of Music will contribute in handling the masses of people for example when a popular concert takes place in HoM.

The goal for this master project was to explore how ideals from New Urbanism could be combined with other relevant theoretical ideas and contextual mappings to create a campus design for the department of Architecture and Design at Aalborg University. The main focus in the initial parts of the project has thus been to understand mechanisms that function between create groups of people in society. The review of relevant theories showed that creative people usually thrive when certain measures are made in their physical surroundings. This can include an enhancement of typical urban environments, where most functions are within short walking distance. In addition to this, creative people will draw to other creative people. This gave the way for a dense

campus organization, where the buildings are located close to each other, in addition to efficient flow networks between them. The other deduced elements from theory and analysis included designing a campus that related to a human scale, the establishment of a discernible central square, difference in building types and adversity in facades and volumes. These elements are all included in the design proposal. In terms of adversity in facades and buildings expressions, the main goal was not to apply an innovative or imaginative architectural expression. The goal was however to make use of established architectural styles to create a building adversity related to the human scale. This means that all facades are broken down with open sections and other elements to reduce the experienced scale from ground level. This also corresponds well with the idea of the campus as an open and transparent institution.

The contextual analysis showed that a clear physical rhythm exists along the harbour front, which gives way for the creation of rooms where creative groups can meet outdoors. In terms of Hajer & Reijndorp, these outdoor rooms combined with lounge areas and meeting rooms inside the buildings will constitute the public domain in the design. It is in these public domains that an exchange of ideas and information between different people can and actually does happen. In addition to this physical rhythm that calls for the establishment of outdoor rooms within the campus, the analysis also showed that the Østerå river used to have its mouth here. To ensure a contextually anchored design, this historical value was used actively as an organizing formative elements in the design. The canals will contribute in creating an intimate, yet vibrant atmosphere on campus.

When designing a project of this scale and complexity, it is important to stay true to an overall concept that applies for all elements in the design. The conceptual development explained on page 46 and 47, has been leading in all phases of the design, and has ensured that common functions are centrally located on campus, while private functions have more peripheral locations. This will contribute in creating an adverse campus environment, where creative students, staff and other professionals can come together and develop new and innovative ideas for tomorrow.

Remarks in retrospect

The project process initially started in January 2012, when an exchange semester was completed at the department for Architecture and Design, Urban Design at Aalborg University. Rumours constantly flew around about the development of a brand new campus site in Aalborg Harbour, with no concrete progress having been made. This initiated a process where information about the site was gathered, and the search for relevant theory began. One of the supervisors in Aalborg, Ditte Bendix Lanng, helped tremendously in establishing contact with the right people when searching for information. In this manner, the confidential design guide with programming needs and other specifications was personally delivered by the institute director for A&D.

The project was thus initiated with a gathering of relevant information about the site and theory. It was early established that the social layer of the campus design would be as important as the physical one, prompting to give Richard Florida and Hajer & Reijndorp a lot of elbow room in the theoretical discussion. Their contributions led to a deeper understanding of how social mechanisms can work in the campus scene, and how to best facilitate for this. When deciding what theory would be most fitting for the project, it was decided to use something best described as common sense to link social and physical theoreticians. It is for example not a coincidence that Richard Florida and Jane Jabobs are both chosen as contributors, as they explain some of the same aspects with different points of views.

The project carried on with a more thorough analysis of the place and its surroundings. Having lived in Aalborg for six months, the project site was fairly well known, given its central location in connection to the downtown area. However, the analysis lead to a deeper understanding of the site and its history. This especially applies to the fact that the river used to run through the site, thus giving the project a historical anchor. Through various meetings with project supervisor Anders Langeland, fellow students, architects and planners from both Stavanger, Oslo and Aalborg, the design process carried on from the initial process of analysis and gathering of information. It was early decided to make strong use of the reopening of Østerå as an organizing element on the site.

The initial design process was also based on the loose plans from the municipality of Aalborg. The building organization on campus took form partly based on New Urbanism ideals, and partly because of the fact that four different creative educations would be relocated to the campus. This fitted well with the notion of a diverse campus, where the spaces between the buildings would be as important as the buildings themselves.

When describing what Urban Design is in laymen's terms, it is often mentioned that it is an interdisciplinary field which combines architecture, landscape architecture, urban planning and civil engineering. This master project has aimed to incorporate all four different fields, with a weighted use of architecture and urban planning to best answer to the initial purpose of the project. As mentioned earlier, the architectural aspect is used deliberately to explain and display how six different campus buildings can be designed and organized after chosen New Urbanism ideals. The urban planning aspects is addressed through the location of the campus, and how city development has been used deliberately to develop a creative cluster along the harbour front.

When discussing the realistic nature of these student academic projects, it is important to have the work context in mind. This design solution is ideally to be viewed as an input into the debate about how the campus can appear and be organized within the creative cluster. It is believed that this input relates quite strongly to the contextual and sociocultural aspects of the projects site, and the project purpose, and that this can be a valuable input in the debate.

References

Quotations

Quote 1: Michael Mullins, institute director for Architecture and Design, Aalborg University

Reports

Campus and study environment - physical framework for universities of the future. Klima, energi og bygningsministeriet, Denmark

Landscape plan proposal for the House of Music. Coop Himmelb[l]au, 2009

Literature

Davis, M. 1990. *City of Quartz. Excavating the future in Los Angeles.* Verso

Dober, R. 1962. *Campus Planning*. Society for Campus and University planning

Duany, A., Plater-Zyberk, E. and Speck, J. 2000. *Suburban Nation. The Rise of Sprawl and the Decline of the American Dream*. North Point Press

Florida, R. 2002. *The Rise of the Creative Class*. Basic Books

Florida, R. 2005. *Cities and the Creative Class*. Routledge

Gehl, J. 2010. *Cities for People*. Island Press

Gehl, J & ITDP [Institute for Transportation & Development Policy]. 2010. *Our cities ourselves. 10 Principles for Transport in Urban Life*. ITDP, Gehl Architects

Glaeser, E. in Van Geenhuizen, M. & Nijkamp, P. 2012. *Creative Knowledge Cities*. Edward Elgar Publishing Limited

Hajer, M. & Reijndorp, A. 2002. *In Search of New Public Domain*. NAI Publishers

Jacobs, J. 1961. *The Death and Life of great American Cities*. Random House

Norberg-Schulz, C. 1991. *Genius Loci: Towards a Phenomenology of Architecture.* Rizzoli

Walzer, M. in Marling, G. in Kiib, H. 2010. *Performative Urban Design*. Aalborg University Press

Illustration list

Illustration 1: Own production
Illustration 2: Own production
Illustration 3: http://upload.wikimedia.org/wikipedia/commons/a/a8/Princeton---University---Alexander-Hall---Front-View---(Gentry).jpg
Illustration 4: http://www.planning.ubc.ca/vancouver_home/news_and_events/enewsletter/february_2012/articles569.php

Illustration 5: http://www.bunrab.com/dailyfeed/2009July/dailyfeed_july-09_p3.html
Illustration 6: Own production
Illustration 7: Own production
Illustration 8: Own production

Illustration 9: Own production of collage of book covers
Illustration 10: http://www.myurbanist.com/archives/8235
Illustration 11: Own production of collage of historical photos
Illustration 12: Private photos

Illustration 13: http://www.cooltownstudios.com/2008/03/04/small-town-absorbing-growth-in-the-center
Illustration 14: http://www.treehugger.com/sustainable-product-design/pedestrian-friendly-improvements-coming-to-nycs-herald-and-times-squares.html
Illustration 15: Own production
Illustration 16: Own production of collage of private photos and illustrations from Coop Himmelbl[a]u Architects

Illustration 17: Own production
Illustration 18: Private photos
Illustration 19: Own production
Illustration 20: Own production of collage of historical photos

Illustration 21: Own production
Illustration 22: Own production of collage of private photos
Illustration 23: Own production
Illustration 24: Own production of collage of private photos
Illustration 25-64: Own productions

Key numbers for the campus

Dimensioning number of users: 1350, 1200 students, 150 staff

Size of project area: approximately 31.300 m^2

Building	Gross size	Net size
Art and Technology	5100 m^2	2340 m^2
Common building 1	4500 m^2	3000 m^2
Architecture and Design	7000 m^2	4000 m^2
Humanistic Informatics	4200 m^2	2100 m^2
Common building 2	3400 m^2	2350 m^2
Media Technology	5815 m^2	2260 m^2
Total	30.015 m^2	16.050 m^2

This implies a gross use of about 100 % for the campus, and a net use of 51 %. This also indicates a distribution of the net space of about 12 m^2 per user of the campus.

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