

A NEW WATERFRONT FOR
COPENHAGEN



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Intro

A brief introduction to Copenhagen

Copenhagen is the capital of Denmark, and its most populated city; it's situated on the eastern coast of Zealand and stretches across part of Amager. A number of bridges and tunnels connect the parts of the city together, and the cityscape is characterized by promenades and waterfronts.

36% of the population use the bicycle to do ordinary movement around the city (shopping, going to work or school, etc.), thanks to a strong policy against cars and pollution. The city itself, which gained the title of most livable city in the world, aims to be carbon free before the year 2050.

It has always represented the most "european" scandinavian city, due to its position compared to the rest of the Northern countries. It is characterized nowadays by a huge growth, due to expansion toward the Swedish city of Malmö, just across the Canal of Øresund, connected by a bridge completed in the year 2000, which aimed to the creation of a continuous city crossing two countries.

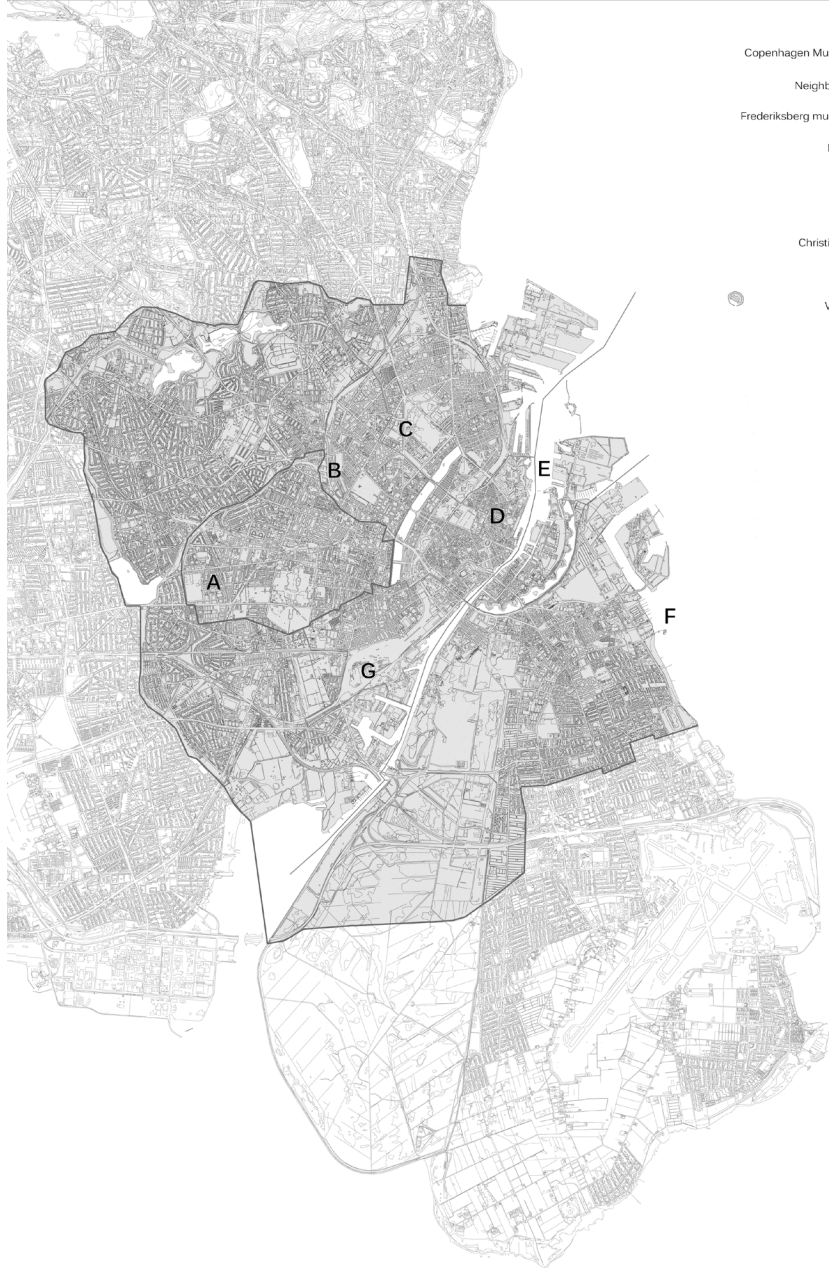
Thanks to a welfare society, the economic and cultural growth is constant and steady, allowing an homogeneous welfare to all the citizens.



The city itself is divided in six neighborhoods, characterized by different particularities (the three neighborhoods across the lakes are the most residential ones, characterized by multi-ethnicity, the meat packing district and the high class area) and it's crossed by a different municipality, Frederiksberg, due to historical reasons.

Christiania, the city inside the city which is more like a self-governed neighborhood, is part of Christianshavn, and it has been established during the '70, claiming itself as independent, even if still under laws and regulations of the city.

Water, and the relation with it, characterize the city, and became part of the culture since the establishment of the town. Canals cross Copenhagen all around, creating opportunities for great public spaces solutions around them. The city is facing in these days how to manage all the free areas along the waterfronts, which has been freed through the history of modernization. These decisions are led obviously by economical forces, but also and mostly by the community which populate them, characterizing a well structured democratic society. But still, these spaces need to be organized in rapid times, due to their central positions.



Copenhagen had an history of expansions and creation of islands that brought it to have this kind of waterfront setting nowadays. All of them were led by economical forces, due to the centrality of the city in the maritime routes. As a commercial city, the only connection with the rest of the world, and especially with the colonies (Island, Greenland, etc.) was by sea, and that made the city develop toward the water century after century.

The first expansions happened around the 1160, with the construction of the first city fortress Slutholmen. Under king Christian, later in the century, the creation of the second fortress Kastellet, situated more North compared to the first one, led to the creation of the most famous canal in town, Nyhan, used as the commercial dock of the town. As the city kept to expand, new artificial islands started to be constructed, and Christianhavn is the result of it (17th century).



The development of the city waterfronts

Christianshavn always represented the harbour side of the city, and the working class was pushed to live and occupy the island, in order to encourage the development and the expansion toward that direction. This created a strong feeling of community between the inhabitants of the area, and it was so strong that even nowadays the neighborhood claim to be an independent commune. In fact, later in the 1970 this would have been the cradle of Christiania, the well known "city into the city". Thanks to this island, all the commercial dock were moved here, while the civil ones were left for Nyhavn and the rest of the coastal area next to the city center. The first trading corporation started to spread along the island, and the buildings today still reflect the atmosphere of that period.



As the Danish society transitioned to industrialism, around the middle of the 19th century, the development of the port areas changed radically. Due to the need of high capacity areas that could fit larger boats and constructions, Christianshavn was expanded again, to the real size it has nowadays, with the creation step after step of smaller branches toward the inner canal.

But, as we know, industrialism developed quickly, and it started to require more space. This led to a big social discussion, if to move some of the industrial areas either to the North, or to the South, or even to the East coast of Amager, the big island East of Copenhagen. In contrast to former times when the proposals for expanding the port area came from the King, the private industrial sector became the motor of the development of the sites.

After several discussions and competition, the decision led to an improvement, as main industrial port, of the North area, while the Southern land hosted industrial buildings. Christianshavn was characterized by industrial factories, together with smaller harbours.

The creation of the North harbour, though, was the beginning for understanding how precious are the areas connected to the water. As opposed to the commercial period of the city, where the waterfronts were just filled by commercial boats, and the relation between water and people, as public spaces, were insignificant, during the industrialization the city as a community started to see the potential of these areas. In fact the North harbour, named Free Port, was thought as a mixed functional place. Green parks and promenades along the water were established, and made this district one of the most popular at that time.



Around the end of the 19th century, the development of the South harbour took place, thanks to the construction of the cargo railway along the shore-line south of the city center, which created a disconnection between the land and the sea. This is the time when the creation, on reclaimed land, of Kalvebod Brygge happened, which concentrated the fish market that was hosted in Slutholms before. Together with this area, on the other side of the canal, another reclaimed land was occupied, earmarked for port and industrial activities, named Island Brygge. We'll come back on these two sites later in the text.

As the city kept developing, the harbours had to follow, and new addition and creation were completed to suit the needs of the market. But moving on with time, the Harbour which had more attention on itself, was the North one, while the South one, due to its position on the map, was left as industrial area, where the main big factories were situated, with smaller port activities.



This situation kept going on until the period right after the Second World War. The main industrial centers were still focused around the city or even inside it, as we can see in the Southern part of Copenhagen and on Amager. The working class, as a result, occupied all the portions close to these factories, especially Christianshavn.

After the war, the industrial market started to be replaced by the tertiary sector, which displaced the offices, both private and public, in the City center. This led to two consequences: first of all, the employees of the tertiary sector started to populate the areas around the offices, mainly in town; on the other side, the working classes of the old factories, which were lying abandoned, especially the ones close to the city, became unemployed, but kept living in those areas. This led to a decrease of the cultural level, and to a clash between two different working classes. To try escape from this situation, the modernist concept in vogue during the 80s, demolish the old and construct the new, was carried on. Demolishing considerable parts of the old working class, new residential projects based on the welfare system were built, but at the end the result was the opposite as expected: most of the occupants of these blocks were still the poor classes, and not the tertiary ones. During all the 90's, as a result, Copenhagen was characterized by this social disintegration, which increased the inequality between classes.



Copenhagen waterfronts nowadays

From this point on, the rebirth of Copenhagen started.

The city found out that it has space in the city center, where the modernization can take place. Obviously, the period that Europe was crossing on the development of the main capital cities and due to the investment from abroad, the attention was moved from the resolution of the social reintegration to major international causes, creating a big mix between tradition, social accountability and attention to the external investments. And because the main areas, which were free to reorganize, lay along the waterfronts, the negative effects are reflected on them and on their organization.

The old areas, though, are huge and several, and still under development, which creates great opportunities for the city, now that these spaces started to be considered as valuable and rare.

The city is expanding copiously toward the South, with the creation of huge residential areas, trying to connect as fast as possible the city with Malmö, in Sweden, according to the urban plan made in the 1947 named Finger Plan. This means that the areas along the canal in this direction are under development, with a particular attention to residential and social destination, while the North side is pushing slowly the commercial and industrial harbour further out, allowing long term planning, like the completely sustainable neighborhood which should host more than one hundred thousand inhabitants.



The research

The method

The research started with the inspiration received from several waterfronts in town. Experiencing the city for a long time, I started to point out and track which were the real areas of leisure for the Copenhagen inhabitants. As well known, Nyhavn it has always been a touristic space, and together with some other major ones, I'm not going to take them in consideration for this analysis.

Trying to understand which were the causes that are driving a successful public space along the waterfronts was the first goal. Registering some of these areas (as the picture shows on the side) allowed me to define in simple elements the complexity of these situations, and on the other side, once understood how a good waterfront was working for the city, I could understand which were the missing elements in a situation that wasn't working at all.

Farther, these elements were strictly connected to each other, and trying to understand each one separately would have been the wrong move. An in deep investigation started at this point.

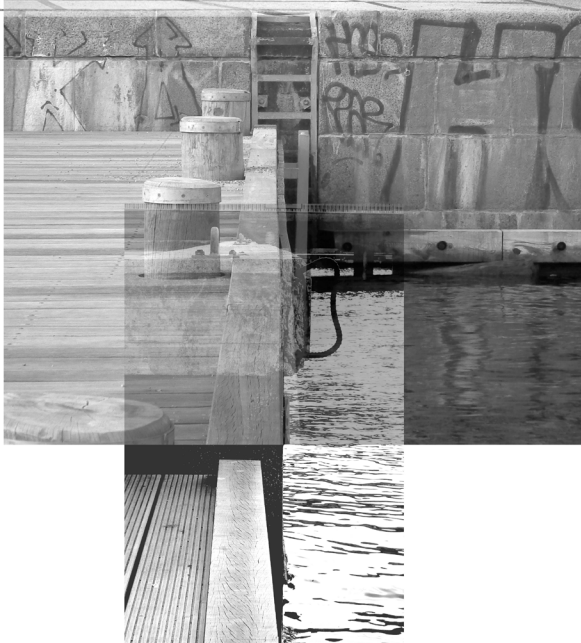


Trying to simplify and brake down all the elements contributing to the creation of a proper public space along the waterfront, I pointed out three parts: The site (city scale); the margin (material scale) and the User. As shown in the picture, the elements are singular, but are strictly connected in the middle, in a key point. I'm going to explain them separately now, in a random order that could be read even the way around, to underline the necessity to study them at the same time, understanding the close connections.

Site



User



Margin

The Site allow us to understand which are the boundary conditions that define the area from a larger scale. This mean that studying the position in town, strictly connected then to the destination (connection to the user scale) situated around, and how well the area is articulated compared to the rest of the city is going to help understand whether there are the basis to have a proper and suitable public space. The understanding of this is obviously strictly connected to the built and not built ground, and which is the detail (connection to the material scale) that define them. Articulating this city scale even more, it's possible to see how many green areas are there, how many lies around it, how much does the sun hit the surfaces along the waterfront, which are the private and public spaces, and so on.



The margin goes to define how does the boundary between land and water works. There might be several example: a straight line, a step after step closeness to the water, and a double alley that run along, a beach like slope. All these elements develop a different way the users will interact with it, and which kind of action they will lead on. Even more, the materiality of these parts, will affect how much a person could like or dislike the area. For example, concrete or hard stone will be immediately connected with the idea of walking buy, running on it, which lead to a movement action. On the contrary wood, and the way it is assembled together, make the users feel more familiar with the place, and call them to sit down and enjoy a minute. It is a scale discussion by the end, because even here like in the Site analysis, the quantity of space left to the margin affect the capability of it.



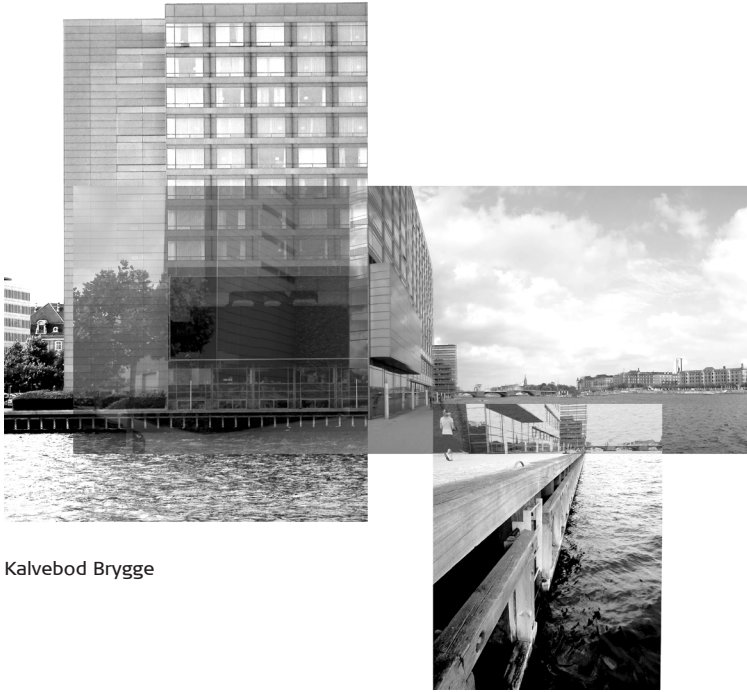
The user of course analyze the inhabitants or tourists that will populate these areas. It's not just a classification of which kind of people will pass by, but which will be their activities, for how long they are going to use the spaces, at what time of the day. Understanding this, will immediately go back to the other two scales, to the spaces gave to disposition and to the materiality of them. Most important, though, will be the interviews with them, to understand what they will think about the spaces and what would be their needs for a proper public space.



Two case studies

After understanding where to look at, I decided to select two cases. The decision was led not by a random choice, but instead by the need to study two completely opposite situations. Along the main canal, slightly South from the city center, lie, facing each other, Kalvebod Brygge and Island Brygge: the first situated on the city site, to the West, and the other along the coast of Amager, to the East. These two areas has a slightly different history, even if both of them were used as industrial zones during the industrialism, but what differentiate them the most is the actual situation. Kalvebod Brygge is mainly composed by straight and tall buildings, with a small waterfront quay; Islands Brygge instead, has larger open and green spaces, with residential buildings lying on the back. One is most of the time empty, or used as a transition area, the other is well populated, especially during summer. Their good or bad balance is well represented in the picture in the next page, where the composition look unbalanced on the first one and properly constructed on the second one; as a matter of fact the pictures represent the scale proportions.

At this point, an in deep analysis of the three scales has been led on, to understand what was making one a good public space along the waterfront and the other one no. At the end the comparison of the results will lead to an understanding of which are the real causes for a proper space along the water.



Kalvebod Brygge



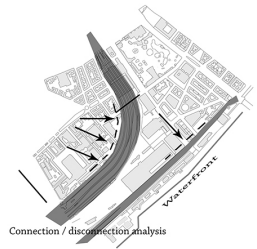
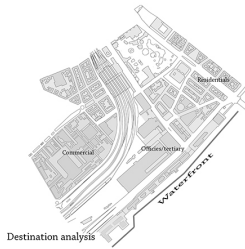
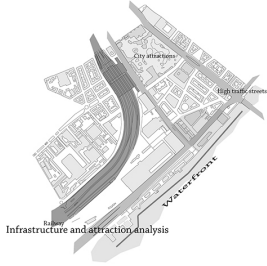
Islands Brygge

Looking at these two cases on a large scale (images in the next page) the main differences come immediately on sight. Kalvebod Brygge developed when the railway behind it was set up. Seen as a good choice for the time, today it completely cut this area out from the rest of the city. The connection over it are few, and not pleasant for pedestrians and cyclists. Plus, the area had to be sorted fast after the industrialisation, and that led to the creation of huge buildings, and mainly offices and hotels, without a real sense of continuity between each other. Even more, these buildings have been built really close to the water, leaving few space for a walkway along the waterfront, and just in front of them, on the other side, a big street with high traffic cut again the connection with the town.

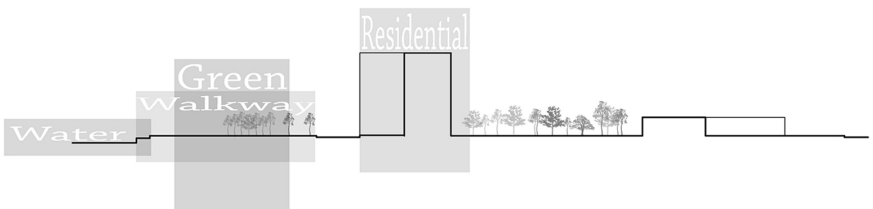
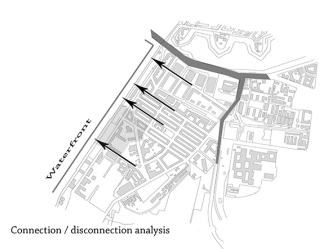
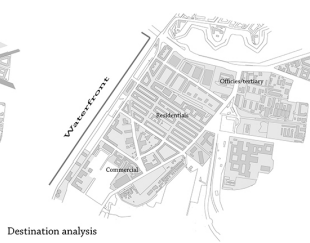
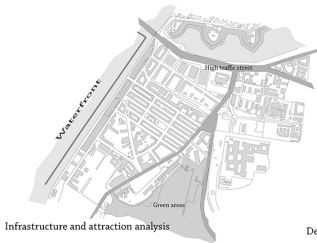
Islands Brygge, instead seems to be quite balanced in its position. The fact that it lies in a residential area, even though it has some mixed functions, makes it more suitable for hosting the citizens. Plus, the main road that run next to it, it's detached from the water with several buffer zones: an alley for walking, gardens and leisure areas like sport fields, and another path surrounded by trees for the bicycles; this create a graduated movement from the tall buildings on the back to the water, with a right balance of scales. The spaces are large enough to host many people which might do several activities. Even though this area is across the main canal, and quite distant from the city centre, it's highly populated during summer.



Kalvebod Brygge



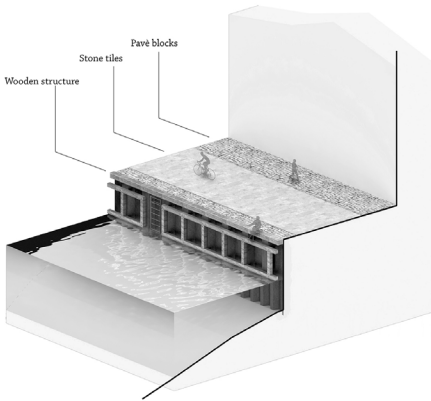
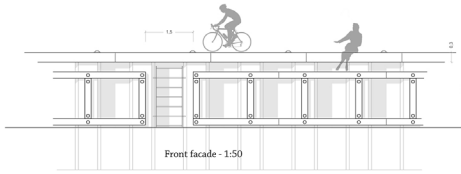
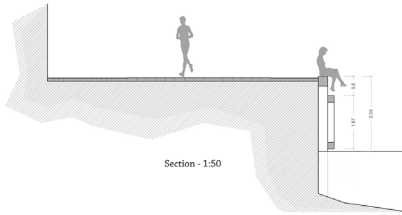
Islands Brygge



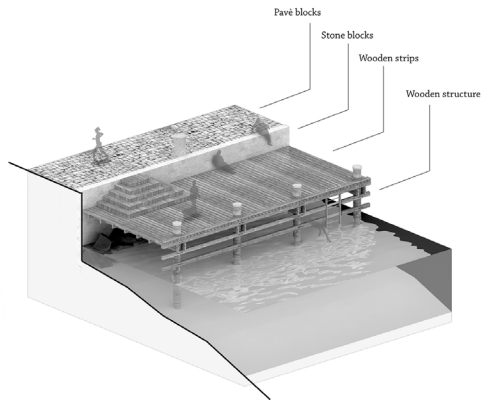
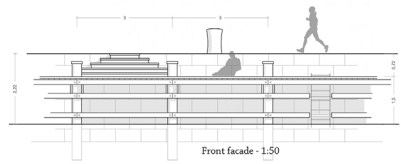
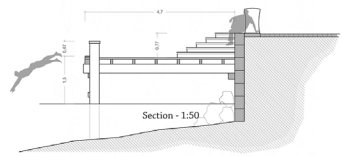
In the margin study, the quay as constructed element has been taken in consideration. The understanding of which kind of materials and distances have been adopted would lead to an explanation in how the space is used. For example in Kalvebod Brygge the walkway immediately next to the water is covered in little stones, an hard floor which recall to walking or jogging actions. Not having any green areas or even seats next to the water lead to a transition effect. Plus, the quay is severely straight, it has no second step into the water. The building just right next to it, with a straight and hard facade make it hard for people to enjoy.

Island Brygge on the other side seems to be thought as a step by step proximity to water. The quay is straight as Kalvebod, but a second path made out of wood planks give the possibility for people to interact with it, sitting down, enjoying a sun bath or a jump into the water. Even more, the closer proximity to the sea of this path let people understand that a different interaction can be made. The wood, especially, seems to recall more the water than hard stones, which are present on top of the quay and used as walkway. Also the way it has been constructed allow people to enjoy more the sea, especially trough the visual and acoustic senses.

Kalvebod Brygge



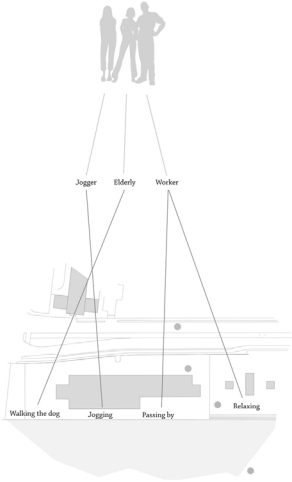
Islands Brygge



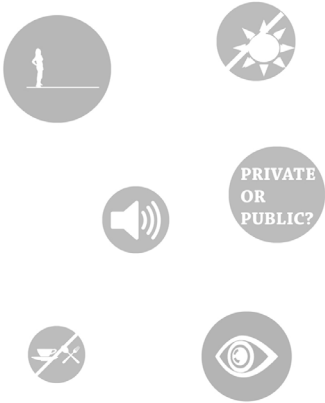
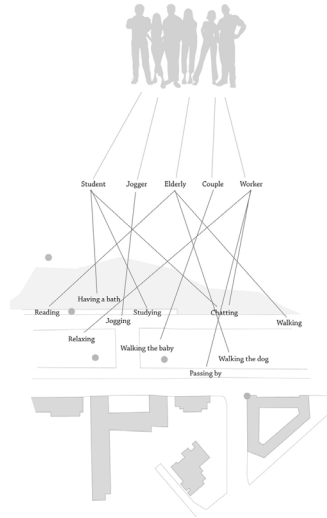
The user analysis has been made according to interviews taken on site. The people interviewed were mostly people passing by or living nearby. This was accompanied by an observation of the activities carried out. Kalvebod Brygge, as shown in the diagrams, is mainly occupied by the employees of the adjacent office buildings, which consume their lunch during the breaks. Even if there's a presence of hotels, no tourists pass by this area, which seems to be kind of hidden. Few joggers and some citizens walking dogs pass by, but the main problems resulted to be the sun exposure which is covered by the buildings, the noise created by the high traffic street and the misunderstanding of public space, because most of the time people can't figure out if these waterfronts are under private domain of the offices or are city spaces.

Island Brygge instead has a good and wide sun exposure, thanks to its south west facing. Plus the green areas define clearly a public space, together with the leisure areas like basketball or skating fields. The people there unwind different activities: walking and jogging along the hard stone walkway; read books or relax after work on the wooden quay enjoying the sun; play several sports on the green areas and dive into the canal when the weather is good. Plus the proximity to bars and other activities mixed with the residential buildings make this area a well balanced public space along the waterfront.

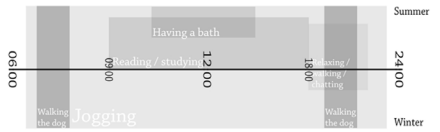
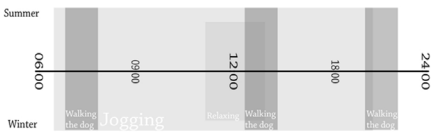
Kalvebod Brygge



Islands Brygge



PRIVATE OR PUBLIC?



The result of the research

Having carried on this kind of research led me to some interesting and useful results. The most important tool that I extracted from it was the understanding of scales, that is obviously followed by the other elements. As explained, when the scales are kind of balanced between the built and not built they create a better environment for the people. Getting closer step by step to human scale creates the perfect comfort zones that are require for a proper public space. Another interesting element that always impressed me is the sunlight situation in Denmark: while in summer the sun path is long enough to guarantee a 20 hours bright day, winter is the way around, and tear down all the open air activities to zero. A good exposure to the sun in those 4 hours of sunlight come to be essential for a public space. Plus, I was obsessed by the question "how can I guarantee a proper open air perception of public space even in that period of time and in those weather conditions?". This allowed me to start looking for a proper project site to experiment the kind of answer I needed to this question.



ANALYSIS PROPOSAL

Divided in

Comparison between

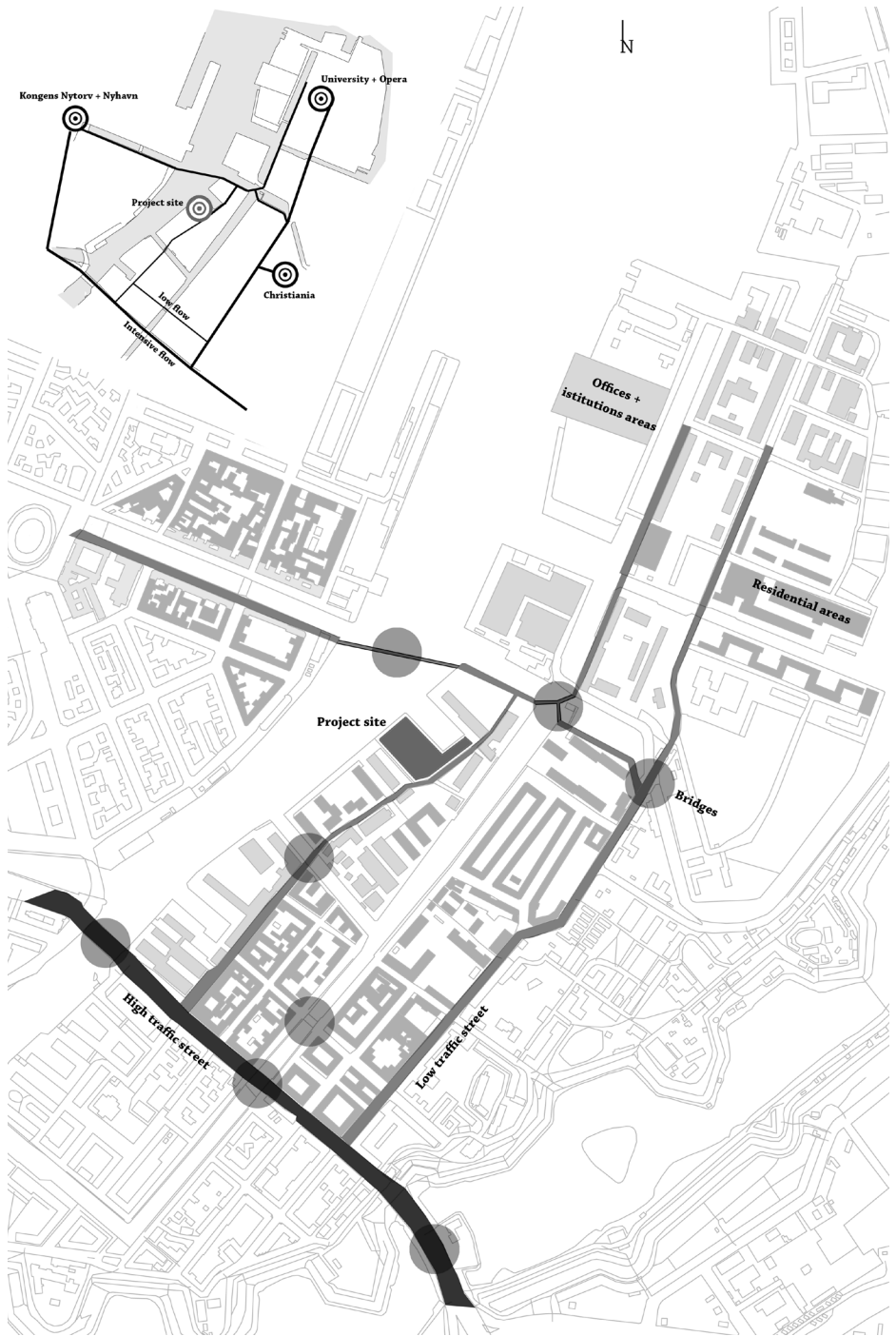
~~CONCLUSION~~

The project

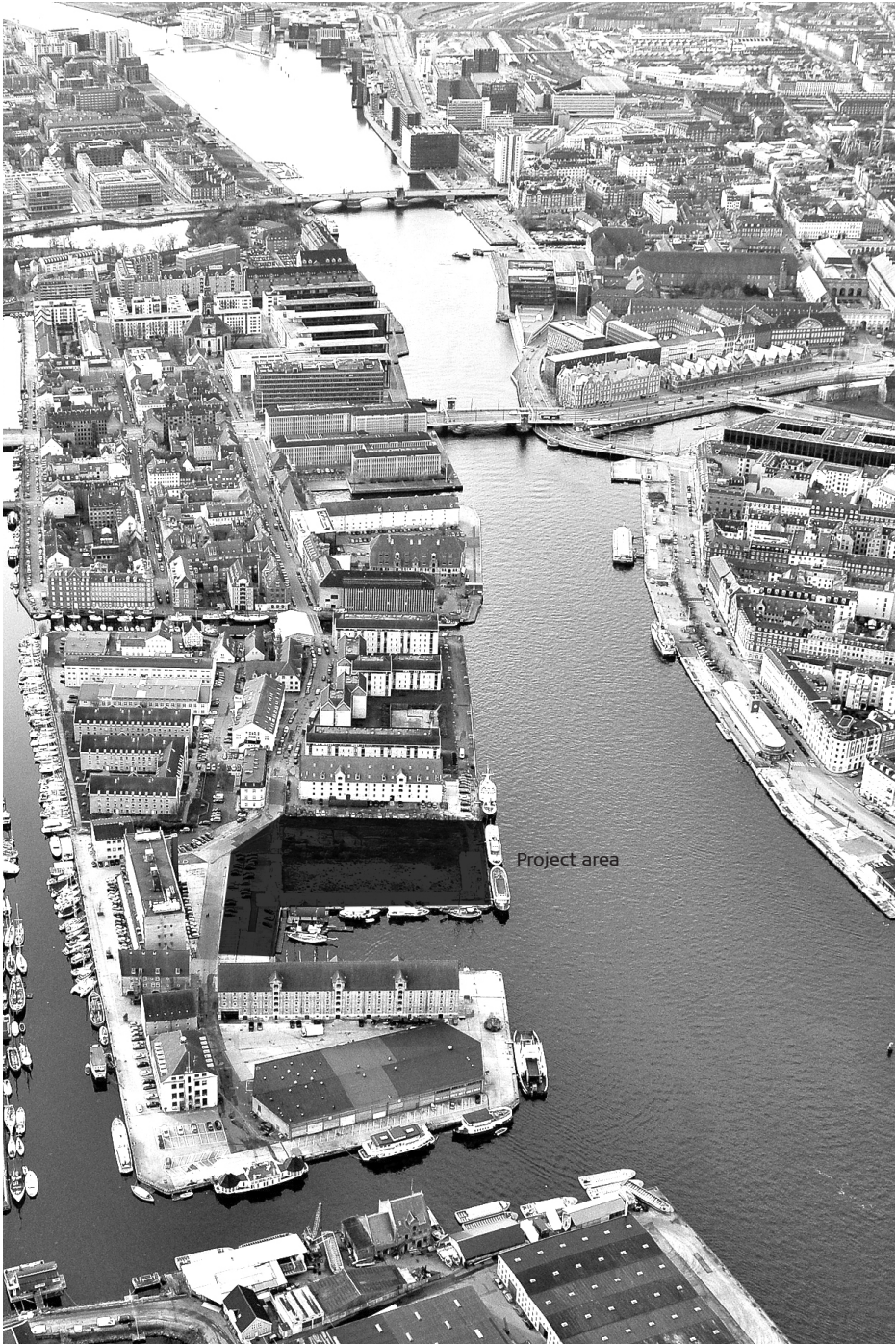
Looking at the map, the city had planned the few remaining old industrial areas around the city center. Most of the expansions, especially to the South and to the North, are already under development, and doesn't have enough space. One of the few remaining spots is a quite troubled area: Krøyer Plads. It's situated just across the canal, on Christianshavn side, just separated from the city center, specifically from Nyhavn, by a bridge which is still under construction. The area has already a development plan, project led by COBE, a Danish studio, but it has an history of failure proposals, which has always been tear down by the community. This one, from my point of view, doesn't have many different points from the others, but it's quite easy to see the economical reason that led to its approval: the buildings planned will host luxury apartments and rented offices, with a really low care about the public space and the history of the place.

All characteristics that makes this area the best for a research about public space.

Krøyer Plads has always been hardly connected to the rest of the city, having only one access, identified with a bridge. The creation of the ongoing bridge will completely change the setting of the area, allowing a way large flux of people coming in and out, or just passing by. In fact all the students, or employees working in Christianhavn and leaving in town would use this bridge, instead of taking a long round from the Southern bridge, the only existing connection right now.



This little island had an historical past as mentioned before in the city history part: it has been part of the creation of Christianshavn to serve the city as commercial dock. The buildings are strongly influenced by the destination they were hosting: warehouses, working site for boats and loading-unloading docks. It was a great center for exchanging goods with the colonies, especially with Greenland and Iceland. The main structure is made out of simple grids, which follow all the buildings in the neighborhood, and simple materiality, which evoke the use of the area: main structures in wood, local bricks and steel elements serving as cranes or port infrastructures, like railways. Nowadays, it is mainly occupied by residential and tertiary buildings. No squares are visible, no main attractions or leisure areas, which force the people leaving there to move out searching for them. The panorama over the canal, though, is one of the most astonishing of the entire city: a long quay topped by a line of 1800 buildings which end up in the prospective toward Nyhavn, with its colors and boats. The next step now is to lead an analysis of the existing based on the research made before.



Project area

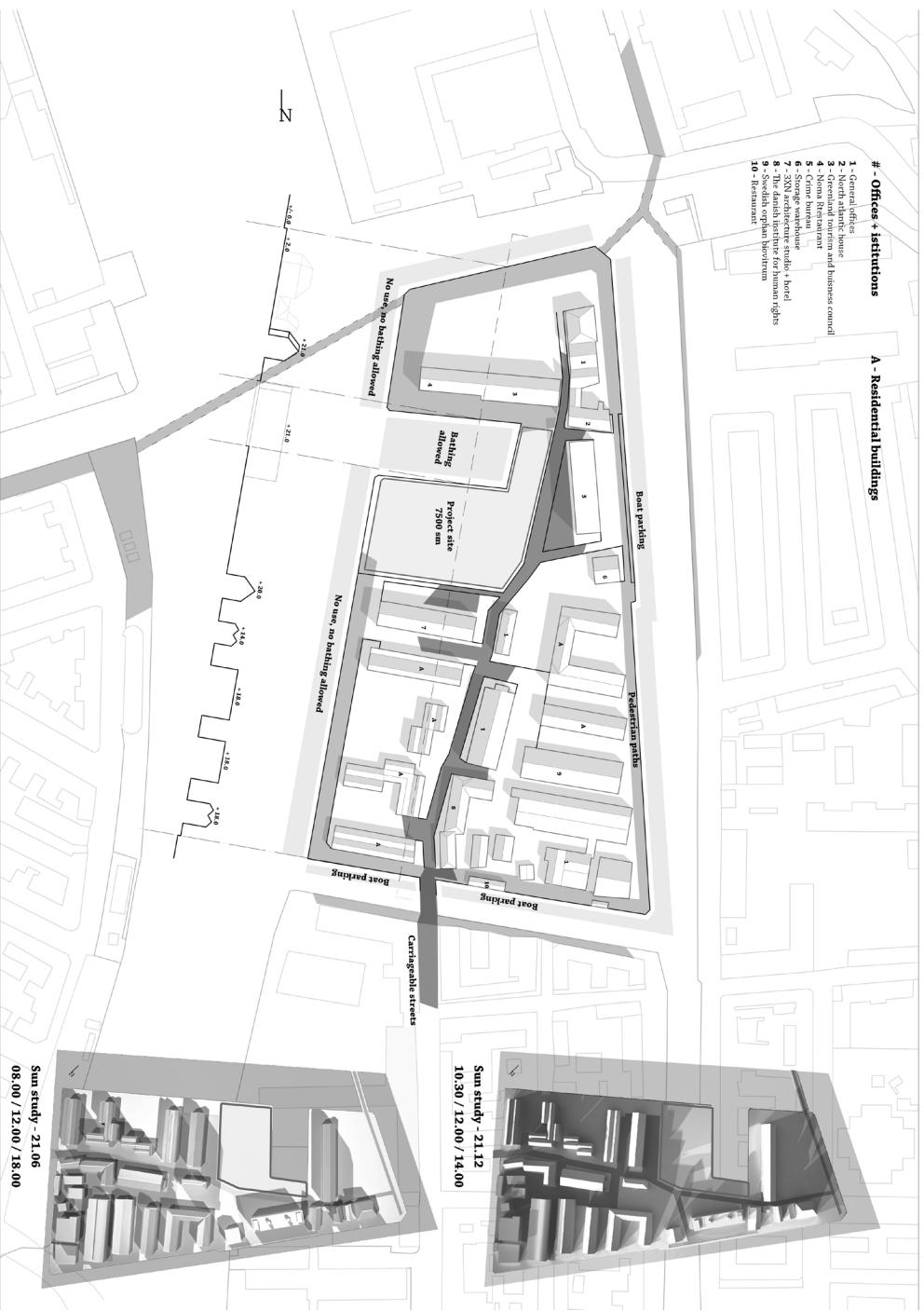
Analyzing the area and the surrounding on a larger scale was possible to understand the main particularities. The main road goes to serve all the offices and residential blocks, and reconnect itself with the two bridges on the other side. Little collective voids are created between the older structures, which serve as little squares of entrance. The average height of the buildings is higher on the main canal side, reaching 21 meter, while on the other side they are kept around 17-18 meters. Particular, and a bit out of place, the crime bureau building, 21 meters tall with a flat roof and a different materiality. The only bathing area lies in the middle of the project area selected, inside a little inlet of the quay.

With the analysis of the sun path, instead, was easy to understand that the area lies in one of the most lucky spots along the waterfront: in summer the sun hit all the surface, and the shadows don't interfere for all the daylong; while in winter the shadow hit almost all the time, but still leave some free spots especially along the quay.

A - Residential buildings

- Offices + institutions

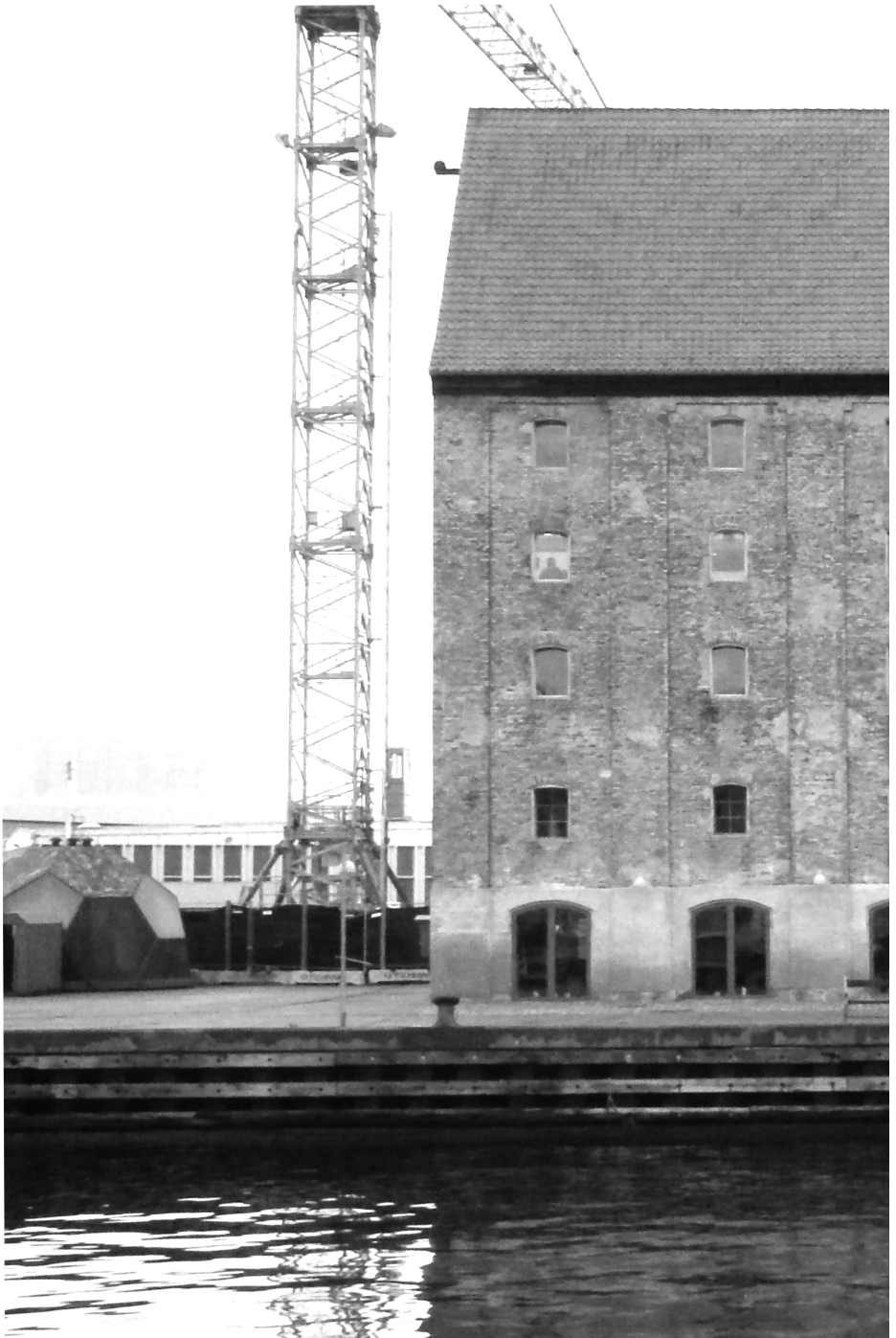
- 1 - General offices
- 2 - North atlantic house
- 3 - General offices
- 4 - Norwegian urban and business council
- 5 - Norwegian urban and business council
- 6 - Crane bureau
- 7 - Storage warehouse
- 8 - Storage warehouse
- 9 - The Danish Institute for Human Rights
- 10 - Restaurant



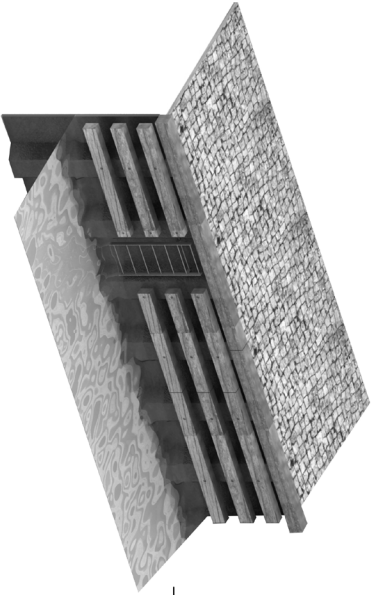
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Sun study - 21.06
08.00 / 12.00 / 18.00

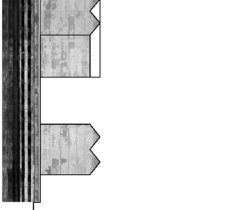
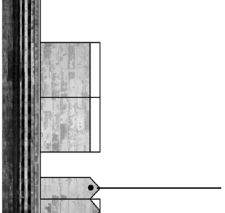
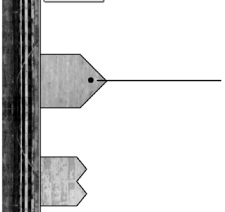
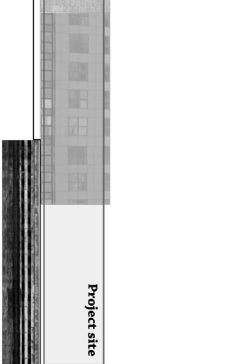
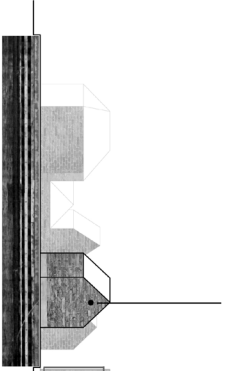
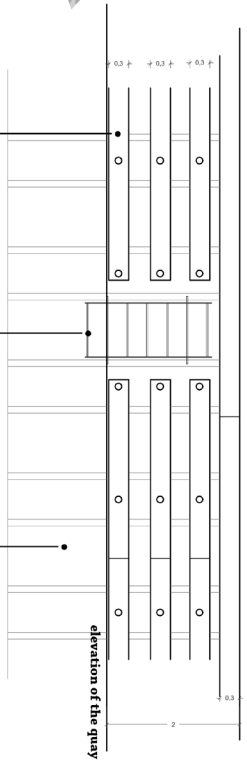
There are several interesting functions that might attract an intense flow of people in the area. One of the top restaurant in the world, Noma, is placed inside the long building laying on the West side, together with the Greenland touristic center. A part of the residential buildings which has between them some interesting green and collective spaces, the rest of the buildings host local functions: another little restaurant, an architecture studio and so on. As said before, the atmosphere created by these simple and quite huge buildings reflect strongly the past of the place, where the local aspects of Christianshavn are at its top.



The quay represent what has been shown before: an almost straight line into water, characterized by wooden planks laying horizontally, with a background of dark metal sheet as terrain restraint. It's definitely a pure recall of the old function of the area: allowing the ships to dock. step by step the tone of color is kept homogeneous, using a pavè in little stones which arrive to touch the brick buildings, an antique tradition of the country. Even if the bricks change a bit the color, and sometimes are slightly covered with white or gray plaster, they characterize the area. The only broken note is the bureau building, made in concrete, with two facade covered in bricks, to recall the surroundings.



Orthogonal view of the quay



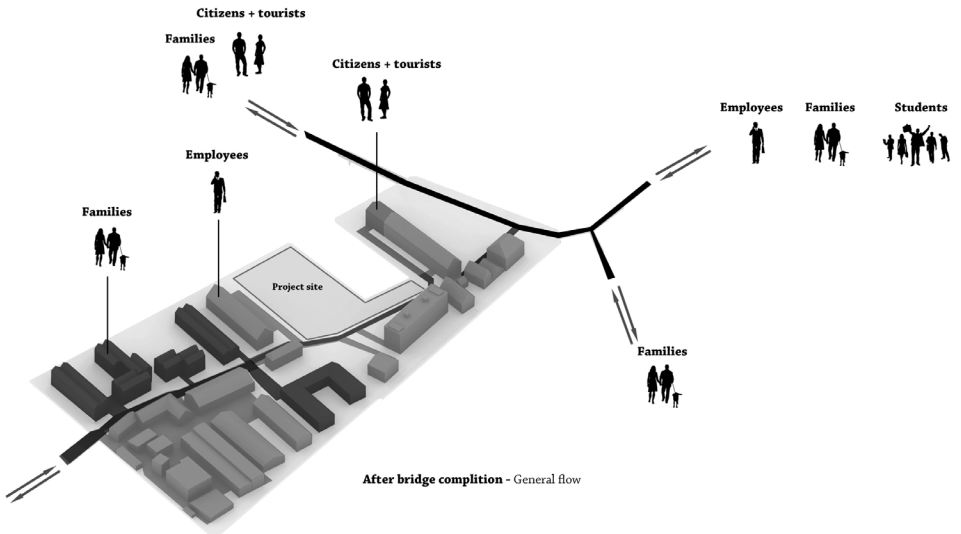
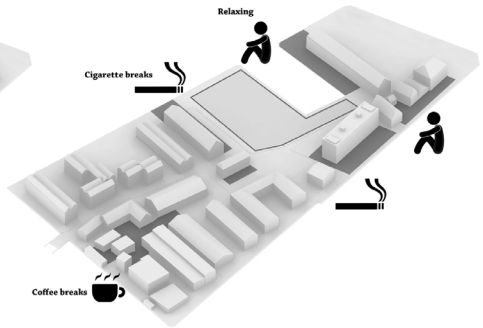
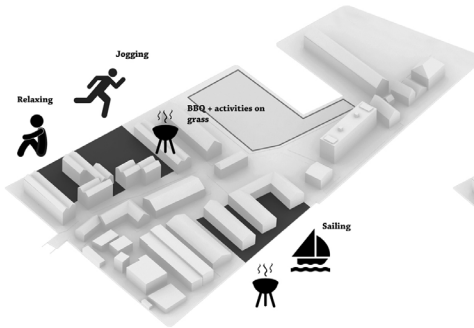
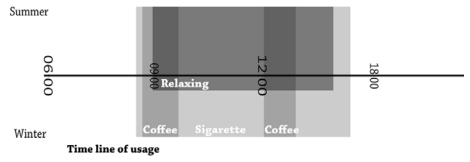
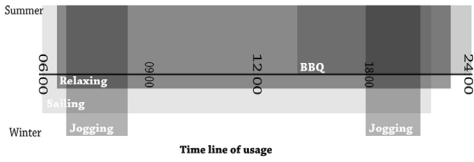
Project site

elevation

The distances between the elements are well balanced, the waterfront runs around the entire island always leaving a 6-7 meter distance between the buildings and the water. Sure is that the buildings are so tall that a gap of scales seems to appear, and that might be taken in consideration for the planning of the site.

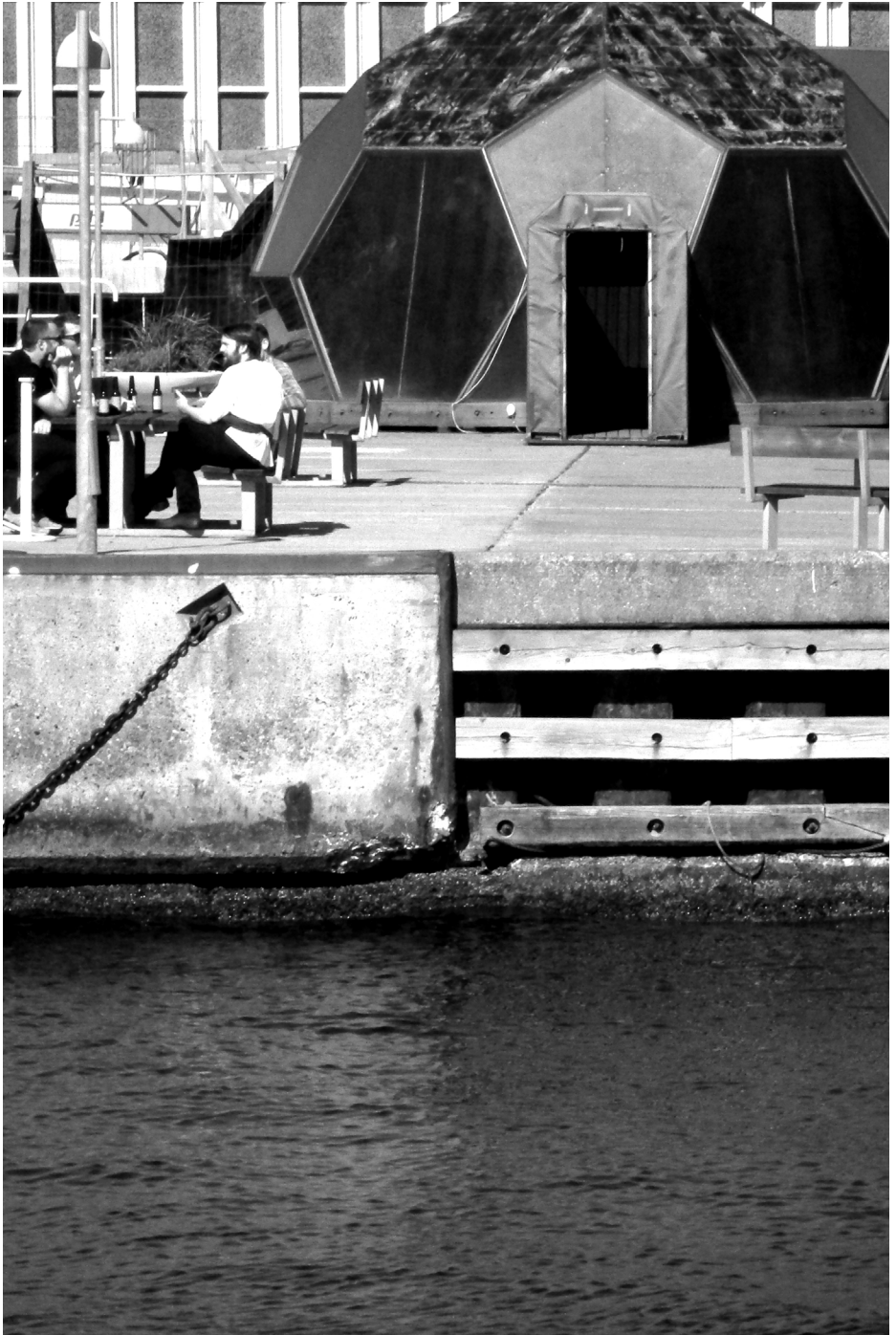


As mentioned before, the island is poorly populated. The bridge, when it will be completed, will affect a lot the flow of people passing by. Is possible to make a prospect of what the flow is going to be, and who will compose it. From the main access, the only one right now, not big traffic is identified, and it's mainly composed by the residents of the area which move out and in according to the working hours. No tourists comes in, a part for the few that will go and visit Noma. With the bridge completion, a wider range of people will populate the area, and the traffic will be heavier. Mainly students, residents and employees coming from the other side of the canal will pass by to go to the rest of Christianshavn. The project site selected is directly on sight coming from the bridge, and this might mean that the "travelers" might be recalled to come and take advantage of it.



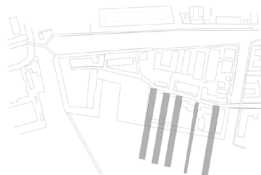
The activities carried out are quite few. With the fact that the island has no major attractions, residence tend to move out and look for them somewhere else. Anyway, they are strictly related to the residents leaving there. Jogging, walking the dog, or having a walk are the main activities, which are broken only by the few employees of the area, which might take a break and have a walk around.

This is going to be another useful point to work on, because increasing with a project the palatability, will permit to the rest of the population to enjoy one of the most central and authentic area in town.

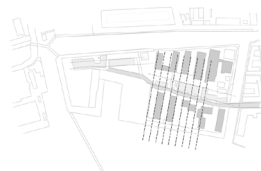


The first step has been to summarize all the information collected through the analysis. According to the different scales, I made some diagrams showing which were the strong points by my side. Looking at the city scale, what gives an incredible strength to the site are five points: moving through the main road the first thing to notice is the astonishing view toward the other side of the canal which is broken down homogeneously by the buildings laying perpendicularly, which end up in an open and clear view when the street meet the project site; The main grid is easily recognizable, as the secondary one, both following the quays trend; the local collective voids are kind of hidden from the sight, but maintain an incredible local atmosphere; the walkway along all the island perimeter, which guarantees a tranquil promenade and, finally, the only allowed bathing area of the site.

Optical cones toward the city center



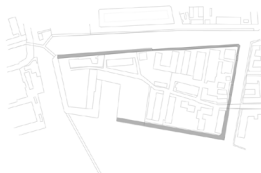
Main grid
Secondary grid, car access



Collective voids



Tranquil pedestrian waterfronts



Unique bathing area

