

URBAN DESIGN MASTER THESIS MA4-URB5 JUNE 2013 AD:MT AALBORG UNIVERSITY ANN SOFIE GRIMSHAVE CHRISTENSEN & THOMAS OXVIG HÅKANSSON





OPENING.

THE WELFARE CITY IN THE FUTURE

When talking about Copenhagen, a danish welfare city, the characteristic concerns a green city, a beautiful cozy city that, because of its size, let the inhabitants use their bike everywhere. The city skyline is formed by slender towers and a low-rise building height of 6-7 floors. A dynamic vibrant city life in human scale, where there is a sense of community, found in both the architecture and the urban spaces that makes the city life of Copenhagen an attraction itself.

"This description is part of what defines the good welfare city, of what makes Copenhagen a popular city to live in. "An informal coexistence and enjoyment for everyone ... The urban spaces should manifest the welfare states vision to create the liberal and equal setting for the humans to enjoy" [s. 166 NEW NORDIC]

The popularity of Copenhagen is also reflected in the numbers of population growth. Today Copenhagen faces an 'inhabital boom' growing by around 1.000 inhabitants pr. month. [http://politiken. dk]. This make the future city planning of Copenhagen an in-

teresting field to work with as this 'boom' requires a variety of development strategies.

Looking at the development strategies of Copenhagen Municipality, (ill.01) the residential development areas is primarily in the outer regions of Copenhagen transforming uninhabited areas into new neighbourhoods in the city. (e.g. Nordhavnen, Ørestaden, Sydhavnen). On Nordhavn they even require a 100 Ha enlargment into Øresund. But what if Copenhagen worked with strategies on how to densify in the existing urban fabric? Not only transforming old industrial areas as Carlsberg, but instead use undiscovered in-between areas within the inner city?



FOCUS.

WHAT IS DENSITY?

"When the word "density" is brought up to architects, district planners, politicians, and occupants, and their initial reaction will frequently be similar in density is usually understood as pertaining - somewhere between "population density" and "building density" - and the replies will usually reflect consensus or opposition in equal measure...What is missing is an exploration of the qualitative aspects of density that draw their legitimacy from more than just the mere circumstances of providing an easy alternative to urban sprawl." [Dense cities, s. 3-4]

To define and discuss the notions quantitative and qualitative density the project has established ten headlines that are all tools for the development of the good dense city. These are all headlines that could describe the sustainable city as well, but the project states that a sustainable city is a good dense city. Five out of the ten topics, (ill.02), forms the focus in the projects discussion of 'the good dense city', according to the research question below.

RESEARCH QUESTION.

How do we clarify to the people that the dense city could ensure the good quality of life? What makes people want to move closer together? What is important to be aware of, when talking about the dense city?

A DEFINITION OF THE QUANTITATIVE DENSITY - FAR/DU/POP.

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To make sure how the quantitative density is calculated and understood, the project uses the description from the website "density atlas".

"The cases in this atlas show three different quantitative measurements of density: dwelling units per hectare or acre, people per hectare or acre, and floor area ratio. Although these are common measures of density, they are often used alone, without respect to the other measures. It is important to look at all three numbers to obtain an accurate depiction of density." [http://www.densityatlas.org]

Further "Coverage" is introduced to make the FAR more precise.

"Coverage is the relationship between the ground floor area of enclosed buildings and the area of the lot." [http://www. densityatlas.org]

This quantitative density shows the scientific way of working with density.

The 4 categories make sure that every urban structure can be compared to one another, across different cultures, countries or sizes of the structure, if we only focus on the measured numbers. (ill. 03) URBAN SPACE GREEN CITY HUMAN SCALE PUBLIC VS. PRIVATE SPACE

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LIVEABILITY SAFETY THE FULLY UNFOLDED EVERYDAY LIFE TOLERENCE

INFRASTRUCTURE PUBLIC TRANSPORT EASY ACCESS FOR EVEYONE PEDESTRIAN & CYCLIST FRIENDLY

WATER BLUE CITY SUDS* SEWAGE SYSTEM

URBAN FABRIC MIXED USE COMPLEXITY LIVING CLOSER TOGETHER BUILDING ZERO ENERGY HOUSES CONTRIBUTING TO URBAN LIFE CONTEXT RELATED

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HEALTH ACTIVE CITY CARE TAKING HAPPINESS

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ENERGY RENEWABLE ENERGY SELF SUSTAINING CONSUMPTION REDUCTION

GROWTH GLOCAL POTENTIALS FINANSING REAL ESTATE

WASTE CLEAN CITY RECYCLING ENEGY RESOURCE

i.....i iII.02 | FOCUS AREAS



ill.03 | FAR/DU/POP





NYBRO.

The project site is located in the area around the divisional railway cuttings next to Vesterport S-train station. The possibility of covering the railway cuttings [Banegravene_taskforce], creates a unique empty building spot in the inner city of Copenhagen. Vesterport station defines a natural building boundary. As a further transformation, a reduction of the dominant car traffic in the area, let the project involve parts of the surrounding streets as well as parking lots, which enlarge the covering plots and creates a new in-between building plot along the buildings in Nyropsgade. These two well defined areas forms the basis for the building site with an area of 4.6 ha.

DENSITY MEASUREMENTS	
	POP
	AVG FLOORS
OVERALL PROGRAMMING	
	HOUSING



VISION.

The project wants to explore the potential of the in-between areas of Copenhagen using Nybro in the inner city of Copenhagen as an example. The project will explore how to densify in the existing urban fabric without reducing the existing qualities of the good welfare city.

In order to densify, the project will examine and discuss the role of density in the context of Copenhagen.

The understanding and use of the term density will through design show the qualitative aspects of the dense city. The project vision is to define urban forms that make people want to move closer together.

With personal experiences and fascinations of the urban structures in the residential areas of central Tokyo, the project will find its inspiration towards new structures and planning methods for the good dense welfare city in the future.

ANALYSIS.



LIVEABILITY.

What makes people capable of moving closer together?

It is very important to take into consideration that not all dense cities are good places to live in. Whether density is considered socially sustainable, a high liveability standard, depends on parameters, based on the good quality of life, such as health, crime and happiness.

In the book New Nordic architecture and identity, they use the notion "The nordic society pact" and talk about the alliance between the state and the individual in the nordic welfare countries. "Citizens who feel they are legally competent, accept modernity's requirements and are willing to make compromises to achieve economic efficiency and rational decision-making. In this aspect, the Nordic model distinguished itself from both its Anglo-American and continental European counterpart." [New Nordic p.131].

As urban designers this is very important to understand when designing and planning in the city, the structure and the model of the society. The results of density can be either good or bad, depending on the society. There is no direct rule for the level of density. What's important is the information of the citizens good-will, which tells us if the city structure and the inhabitants are capable of moving closer together. The goal towards a sustainable welfare city, is with out doubt closely related to a more dense city - that we live closer together.

DENSITY & CAPABILITY.

When a city is liveable, it means that the citizens are happy. In the last years there has been a lot of focus on how to calculate on the citizens well-behaviour and the results of this are often various. One thing that is common for all the analysis is that they try to tell us how does the happy citizen look like and how do they interact in the city life. [http://gobike.dk/]

"In a global perspective the Nordic countries does not have a very big impact. 25 mio people are living in the countries all in all (red. in the nordic welfare states), just a tiny bit and still a small percentage of the world population. Nevertheless they all have a very important position on many fields because of a long history with constant economical growth, political stability, transparent institutions, technological adaptability and a cultural innovation, all things that rank the Nordic countries in the very top of the international ranking list, both according to economical power and quality of life." [s. 126, New Nordic]

The life and the mentality of Copenhagen seems to be quite unique because of the Nordic welfare society. The social security system as well as the educational system leaves Denmark as a very equal society where a higher social mobility is shown from statistics. [s. 128, New Nordic] With a GINI of 24.8, Denmark is ranked as the 4th most equal society in the world and the population have a high prosperity. If we look at the statement from Dense cities, the equality of the inhabitants might indicate that the people are able to move closer together:

"High density in itself does not ensure a good life, especially not in situations where the concentration of people is a by-product of poverty and inequality. It may sound like a truism, but city life is better if its inhabitants can afford something. It is no coincidence that the best places to live are all to be found in wealthy and democratic countries. In those affluent conditions, people generally have more space, literally, but not always. However, because of their prosperity, they usually have more space in the metaphorical sense: the possibility to choose, to a certain extent, how close and together they prefer to be." [p. 66-67, Dense cities]

The good welfare city create the environment to the citizens to accept new urban challenges and changes. Proof of this is also the newly won price The European Green Capital 2014[http:// ec.europa.eu], which is about making the city more sustainable. Copenhagen is the frontrunner for new projects, and can easily lead the way in the search for the good dense city. This indicates that the citizens of Copenhagen are the best suited people to live in a dense environment.

To get a better understanding of why the inhabitants of Copenhagen live as they do, the project takes a look at both the quantitative and the qualitative density of Copenhagen through its history.







OUR DENSE HISTORY.

How are we going to live closer together?

Looking at the history of Copenhagen an interesting hypothetical development give you an understanding of the concept of density. In 1672 the population of Copenhagen was 41.000 inhabitants, growing to 120.000 in 1840 without enlarging the area of the city significantly. If the present municipality of Copenhagen had the same population density today, it would consist of 5.4 mio inhabitants living inside the border of the municipality today. Almost the same amount of inhabitants as the Danish state itself in 2013. [http://ing.dk].

People used to live closed together, but at that time it was a by-product of poverty. The primary reason for the high density was a low prosperity, people were living close together to save money. The area of Copenhagen was only 3km² and the population density was approximately 400 POP / Ha. The sanitary conditions were awful and people died from deceases.

Through the 19th and 20th century the classification of Copenhagen created a differentiation in the neighbourhood. The wealthy people choose to live on Østerbro and Frederiksberg, and the workers was packed together resulting in more dense areas on Nørrebro and Vesterbro. Later the modernism era started changing the city, with the mantra of light and fresh air as a necessity.

"If we look at the thoughts in this trade regime, then the ideal ever since the modern urban planning grew around 1900 been working for low densities and open urban form." [p.13, www. naturstyrelsen.dk]

The city of modernism was primarily build outside of the inner city, and people started moving out of the city to the new developed areas. A requirement for more space and the transportation by car controlled the modernistic planning. It changed the way people wanted to live.

"Given that modernist thinking was dominant in the greatest period of expansion in the western urban history, we have created very large urban areas and urban regions, characterized by low densities. We have created cities where many generations have been brought up to live in a house and act within the daily rhythms and daily life, as the open and functionally divided city creates." [p. 14. www.naturstyrelsen.dk]

Also in the inner city people wanted more space. An example of this is Vesterbro where the workers used to live. Around 30 years after the modernistic era, Vesterbro started facing a huge gentrification, which resulted in a less dense area, kicking the workers out of the area while creating a more homo-gen environment. [http://www.information.dk]. The result of this has turned Vesterbro into the area with the lowest density in the inner city, 72 POP / Ha.

"The urban past and future trends has happened and happens as an interaction between social, economic and physical changes. This has been called the city's spatially-social dialectic [p. 14 www.naturstyrelsen.dk"

Vesterbro shows that people want to live nearby the inner city, but the requirements to the dwelling might not always be the right. This results in a huge renovation, to raise the living standards for a neighbourhood forcing a segregation.

"The greatest resistance against densification is found in the most affluent areas, which consist exclusively of housing. In mixed areas and less attractive areas populated by less privileged groups could however noted a general interest and acceptance of condensation because condensation was seen as an opportunity to improve the area physically and in terms of services, and public transportation." [p. 9 www.naturstyrelsen.dk]

The last example is situated on the outer Nørrebro where the density is 186 POP / Ha. The area has stayed dense, and the people are living much closer together. The area is characterized by its dynamic and vibrant city life. There is a clear and understandable relation between the density and the income [http://kbhkort.kk.dk/] The area of Nørrebro is characterized by a big diversity in the population and the culture as well. Nørrebro is an attractive place to live, where companies and the citizen want to be situated also today. The different types of dwellings and the location of them is very often a result of local city politics and the control of the city in the municipalities.

"This geographical location of housing types is largely a result of the local urban policy and urban management in municipalities. Municipalities have also had a major impact on urban transformation that can change the individual neighbourhoods in properties in positive or negative direction for different groups." [p. 119, www.sbi.dk]

But how do we as urban designers make sure that the dwelling standards and each neighbourhood attractiveness at some point are able to invite all the different population groups? You can not force people to move closer together, you need to find the qualitative arguments. In the PDF "Den tætte by" af Copenhagen Academy of Fine Arts they talk about the fully unfolded everyday life:

"Dense city structures who can support a fully unfolded everyday life. The citizen should be able to reach the dwelling, their job, grocery shopping, the daily institutions, culture institutions, sport and leisure facilities and different kind of spaces and environments that supports different lifestyles and social practices." [p. 15, www.naturstyrelsen.dk]

It is important to prove that living in a dense city creates a lot of opportunities if they are exploited well. Both travelling time and opening hours are important parameters for the flexibility of the daily life. The adaptable city is working when the mixed-use programming and the diversity of people work in a synergy and create a liveable city life. People want to transport themselves as easy as possible to reach their goal.

If this is fulfilled, these parameteres might be even more valuable than the amount of squaremeters in the individual apartment. If people have the opportunity to live centrally, they will go on compromise with the size of their apartment? The quality of life is not measured in the individual homes only, but also in the urban spaces:

"Interesting things can happen when there is a mix of people and activities in flexible spaces. Well-designed buildings and public spaces can encourage social inclusion and bring joy to users. If we build well, we can create a socially inclusive environment. A way of measuring the quality of life in cities is by the design of public spaces which can contribute great vitality." [Dense cities, p.11]

If we want to move closer together to obtain a sustainable city, we need to think of other values than of how much private space we have. We need to share the space and instead receive a substitute - a better public environment of urban spaces as a better support of the fully unfolded everyday life.



INFRASTRUCTRE.

What impact does infrastructure have on the densified city?

Infrastructure and mobility have a big impact on the rhythm of the city. When talking of the dense city the importance of an efficient public transport system is indeed needed. There is simply no room for the car to the same extent as previously. At the same time the cars produce traffic jams and thereby waste of hours. Further, more than half of the energy consumption today results from living space and motorized private transport [Dense cities p.4] The bikes and the public transport can be very efficient, if they are treated well. One car requires the same amount of space as 8 cyclists. [http:// www.information.dk] In the dense city the amount of space is limited, we therefore need to think of new transportation methods.

COPENHAGEN AND MOBILITY.

In many cities there has been a big design discussion towards a more efficient city. Looking at the transport methods of Copenhagen the bike represents a very big part of the transportation. The inhabitants use their bike to go everywhere and the citizens of Copenhagen has a very unique mentality towards biking. The citizens of Copenhagen have made it modern to bike.

In Copenhagen, 37% of the inhabitants use their car to go to work, where 31% use their bike. The municipality of Copenhagen wants more than 50% to use their bikes to go to work in the year of 2025. [http://www.kk.dk] This would lower the percentage of people using their car, and affect the amount of cars in the city. It is therefore very important to emphasize the benefits of using the bike besides the obvious healthy reason. Taking the bike can be emphasized mentally through design securing a faster alternative to the car.

This project do not see the car as 'the evil city monster'. The importance is to regulate it and make it less dominant. A mentality towards public transport and a more sustainable traffic solution is needed in the good dense city.

In the year of 2018 a new metro line in Copenhagen is opening, called 'cityringen'. Cityringen will connect to the existing metro network in two nodes, Kgs. Nytorv and Forum. The new cityring will also get a stop at the main train station, connecting the city to the global network even better.

"In two years, the Metro received 20 percent more passengers, and now the question is whether there will be even more Metro stations in the future. Representatives of Metro's owners, State and City of Copenhagen has a clear vision for more Metro. Jesper Christensen, Vice President of the Ørestad Development Corporation Board of Directors, believe that a major expansion beyond the City Circle will be ready after 2025. He believes that Metro must be incorporated into the urban development, and that one should go for a Cityring 2 further into the future. Transport Minister Flemming Hansen also believe more Metro, not one Cityring but some new metro lines connected to the City Circle." [http://www.nordhavnen.dk]

THE FUTURE TRAFFIC METHOD

Both metro, buses and bikes are all proven to be the most efficient in the inner city, but this does not always makes it the easiest. "Even if a family lives in a dense urban area, which in principle should allow for a high possibility of bicycle and pedestrian traffic, it may well be organized so that daily life will be much more comfortable if you use the car instead of the bike and public transport." [s. 7, www.naturstyrelsen.dk] To enforce the public transport and the biking for everyone, new innovative solutions need to be found. Especially the interaction between different kind of transport is necessary.

"Tomorrow's commuter should have many possible combinations. Few of us are one-dimensional pedestrians, motorists, cyclists, train or bus passengers. We use a cocktail of transport, and in the future we will increasingly seek to maximize our own mobility. Tomorrow's commute is one of a new word can call mobilist." [http://www.information.dk] An example of this made by DSB, where they made it free to bring your bike on the train, tripled the user bringing their bikes on the train. "Since 2010, when it was free to include your bike on the train, the number of cycles more than tripled from 2.1 million to well over 7 million bicycles a year. Today, DSB has made the system permanently." [http:// www.information.dk] Thousands of passengers, which normally wouldn't have used the train took the advantage of this offer and combine both train and bike. Economy of course has a lot to do with our choice of transportation.

Infrastructure is a sensitive subject when talking about the good dense city. The fact is that the amount of space is limited when the city is densified, which makes us need to think in other traffic methods than car traffic, which easily can dominate the city.

With the opening of the Cityring in 2018, with plans of a further additional extension of the metro network and more facility improvements for pedestrians and cyclists, the project finds the right argument for reducing car traffic in the inner city of Copenhagen. The reduction of cars results in left-over spaces creating new potential building plots.



URBAN FABRIC.

HIGH RISE VERSUS LOW RISE

When designing towards a densified city, the question about high rise buildings is inevitable. Are high rise buildings suitable to Copenhagen?

"Today Copenhagen skyline, a low city with slender towers, provide fertile ground for the identity of Copenhagen, as the city with the beautiful towers - a Tourist Slogan created by brewer Carl Jacobsen in 1910."

Copenhagen skyline has for many years resembled itself, but over the next five to ten years there will be many more spiers to the capital's profile - new towers which will contain business and residential functions in line with the increased population growth in the City of Copenhagen. Today the municipality has decided that the construction of new towers in the city has to be slim, complimenting the old existing towers and piers - it is not enough that the developer will make the building profitable. [http://politiken.dk]

It is obvious that a high density is easy to reach when building high rise. It has a low coverage and a high FAR and POP at the same time. But what happens to the public urban spaces around the buildings? The micro climate is often very bad; bad sun conditions coming from the big shadows, wind turbulence domination and a lack of human scale. The result is often a non existence urban life.

As architect and associate professor Merete Ahnfeldt-Mollerup explains in the article 'Does a metropolis need high rise buildings?': "SAS hotel is in fact a very good example of what the towers can not do, no matter how good the architecture is it can not attract urban life. There is no life around SAS hotel, nor is it about the Empire State Building, like there was no urban life this friday night, I visited Broadgate in the City, partly because that blows a constant storm, and partly because all the activities that generate urban life, is completely forreign to the culture that will invest in high-rise buildings." [http://politiken.dk]

THE ADVANTAGES OF LOW-RISE

When building in the existing city, it is very important not to affect the good quality of life for the people already living in the area. The architect needs to keep a respect for the locals in the area. When talking about densifying strategies with housing it is important to provide an improved quality for everyone in the area. The new urban structures should focus as much on the surrounding environment than the building itself. The high-rises might very often be a prestige project, only focusing on its own inside and might forget the urban life around it. Even though the proposals for new high rise buildings tries to incooperate and invite the city inside, there will always be certain privacy and boundary between indoor and outdoor public spaces when it comes to the verticality. The scale of the high-rise building is in-human, and often the flow and the perception around the building seem homogeneous as well as the complexity of the city is reduced to a minimum.

DESIGN QUESTION.

High rise buildings are the symbol of a metropolis. But does Copenhagen need this symbol? The project wants to examine on how it is possible to densify with low-rise remaining the human scale and charmning skyline of Copenhagen that can attract urban life. The urban life is driven by the urban fabric around it, providing the conditions for the good life. The project wants to use the low-rise structure as an obstruction, on how to develop a new residential densification structure blending into the context of inner Copenhagen with Nybro as the example site.

How can we create the highest possible density on Nybro, while designing a low-rise residential structure, which at the same time provides a good open space?

URBAN SPACES.

How is it possible to provide urban quality to the city when designing a new residential low-rise structure? What is a good micro climate in a densified low-rise structure?

The comfort in the urban space has a direct influence on the way a city develops. Wind, sun, shadow and daily light are the markers that outlines the potential for urban life to exist. The urban space of today help people to understand and de-stigmatise themselves in the society. The big diversity of the city, contains cultural and political positions, which characterizes the welfare city of today.

""It might help to constructively express the experience of "multiplicity" (Gilles Deleuze, Ash Amin) and of being "thrown together" (Doreen Massey) in cities with people, they are far stranger and very different from oneself, which today is characteristic of the dweller ... A democratic urban space from the 21th century tries to invite everyone by offering some very specific and local detemined qualities .." " [178, New nordic.]

Through the history of architecture the boundaries of the housing plot and the public urban space have always been an interesting subject for the urban designer to discuss and explore. The discussion of the graduated space is very relevant. An interaction between the individual and the public space is important in the densified city. Exactly what Rem Koolhas is mentioning in his manifest. "His entire life work as an architect is about to reintroduce openness, diversity and complexity of urban planning and architecture."[http://politiken.dk]

When attempting to create the highest possible density with a low-rise structure in the existing urban fabric the overall urban space is reduced to its minimum. By densifying in ground level, in traffic left-over spaces existing valuable urban areas are reduced. When taking quality, it is important to give a proper substitute through urban quality for both the city and the new residents to enjoy. The new residents need to interact with the city and its users as the new design structure will interact with the cities existing buildings.

Urban spaces can be divided into two main categories: the in-between area and the open space. The in-between area is the necessary space of movement; the street or path and do not necessarily have optimal climate conditions. The open space is where people want to stay and climate conditions are optimal, the space that attracts people.

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STUDY: THE GRADUATION OF OPEN SPACE

Which open spaces are preferable when creating a new dense structure and the amount of urban space is limited when?

A good micro climate does not only concern the urban square and public park in the city. Also the smaller open spaces, private as semiprivate, have an important impact on the diversity and complexity of the urban life as long as they are visible for the city to experience.

This study of open defines the different types and graduation of the open space in the city. The graduation consists of the private, semiprivate and public open space. The open space can be divided into five different types of spaces, that all affect the city; front garden, balcony, roof terrace, inner yard and squares&parks. The cases are primarily from New York, Tokyo, The Netherlands and Denmark. **The private open space** is defined as the outdoor micro climate connected to a single dwelling unit. The private urban space that is visible to the city, is seen in both the balcony, terrace and front garden. As these elements are visible in the public space, the private urban space also provides natural surveillance to the city. A popular example of the private urban space visible in the city, is 'Kartoffelrækkerne' in the inner city of Copenhagen - a attached town house typology with private front gardens. The front gardens lie site by site along the public street creating a local environment.

Working with a densification low-rise structure, the overall outdoor ground floor area is reduced to its minimum. Private ground floor gardens occupy the ground floor area, which is why private front gardens and inner yards are excluded for further studies. The balcony and roof terrace are both elements that will fit into a densification design as they use the building itself and not the outdoor ground floor.

The semi-private open space is defined as the micro climate connected to more than one dwelling unit. The typical example of a semi-private space is the Danish block structure. An introvert structure that contains an inner yard hidden from the public. The typical block structure are very exclusionary and only let the residents in the block use this valuable urban space in the city. Therefore the design of this project needs to give something valuable back to the city, which this semi-private inner yard does not give. But the micro climate in the inner yard of the block are often optimal, There are often a lot of greenery to be found, they are secured from wind, have good sun conditions, which all makes them popular in the Danish climate. It is possible to make further studies of this concept, how to open up the block structure, giving something back to the city, but still remain the good micro climate. A good alternative to the hidden inner yard is the shared green roof top terraces. The greenery and people are to be seen from the urban space. Furthermore, the green roof top terrace is a dirrect extension of the building, and thus do not take

any further space of the limited amount of urban space

The public open space is defined as the urban space free for everyone to enter. The public space in the inner city can as well vary in size and character, from the central urban square to the small green pocket park. It is important to create public open spaces in the new structure, as it needs to give back urban quality to the city - Working with smaller dwellings (see chapter 'Our dense history', p.24) when densifying is not the only importance when densifying, also the public open space needs to be smaller as the amount of urban space is limited. As the residential lowrise urban structure will provide smaller spaces, the public space will get a local character but it is very important that it is still inviting the public to enjoy the space.

THE POCKET PARK AS THE OPEN PUBLIC SPACE IN A DENSE URBAN STRUCTURE.

"Copenhagen has a vision in 2015 to become the world's eco-metropolis - the capital of the world that has the best urban environment. An increase in the city's green areas and elements is a priority in relation to achieving this vision." [http://www.dac.dk]

In this connection the municipality of Copenhagen is introducing the pocket park as the open public space in the dense city:

"We will be an eco-metropolis and a metropolis for people. Pocket parks are a great answer to how Copenhagen can be a green and blue capital, where Copenhagen's quality of life and health are improved. Pocket parks can be placed in even the densest neighbourhoods and will give Copenhagen new opportunities for experiences, activities and venues. In both the existing city and in new city districts, they will show how environmental considerations and new local opportunities can give extra dynamism in the urban development." [www.kk.dk, p.2]

Copenhagen Municipality defines the 'Copenhagen pocket park' as:

- A well-defined area, always in a small scale
- Partly green, partly paved
- A break in the city
- It is used for something, but not everything at once
- Local, but for everyone
- A surprise in the city.
- [lwww.kk.dk, p.5]

We want to introduce the concept of the pocket park in the design of the residential low-dense urban structure, since the pocket park has many advantages when working with a small scale. The size of the park creates an interesting space while working with the public and private boundary. The small urban space is a part of the open public space and might help with the social interaction among the local people as well as the people from other districts. The pocket park are able to create a local identity for the people living in the area, but at the same time be a part of a coherent recreational system in Copenhagen. The pocket parks can help the city adapt to the climate changes locally by limiting temperature increases through greenery and handling larger rainfall in extreme cases. In the pocket parks the water can be collected and used, evaporated or for seepage (See the chapter 'Water', p.42)

LEARNING FROM TOKYO.

CASESTUDY: LEARNING FROM TOKYO.

What can we learn from the low-rise dense residential areas of Tokyo? Does Tokyo faces any problems in their urban structure?

This section is based on personal experiences from a five month stay in Tokyo. The observations have been made in a local residential area in the very centre of Tokyo, Shinjuku.

The residential area of Tokyo is a result of a necessity of living close together, creating a very high dense area of 358 POP / Ha. What the project finds very interesting is the "urban village" structure, inside the big city. With an average street width of around 4 meters, and low-rise building volumes of only 2-6storeys, the environment fits the human scale. The street scape of Tokyo's residential areas is characterized by its one way streets, with shared space, where the car traffic is reduced to a minimum and the velocity is low as the local people are being the only ones using them. This make it very pedestrian and bike friendly, even though the citizens of Tokyo do not bike that much. Instead of this they walk in combination with the very well known trademark of Tokyo - the efficient public transportation system.

The single plots system, creates on one side a chaotic urban structure, but on the other side this becomes a beautiful mosaic in both plan and street level as both detached single family housing, shared family housing, attached housing and multi-storey apartment housing create and interesting mixture. It is fascinating and never boring to walk around the same neighbourhood as the detail level of diversity and complexity in both street scape and typologies seem to be in constant change. The scale of the houses gives the feeling of a human scale and a friendly environment. The street scape of only 4 meters removes any link to a European modernistic city with big roads designed primarily for the cars, and leaves instead a perfect scale for the local life. Because of the variety of edge zones the perception of the streets seems quite diverse and almost unique wherever you go (see next spread). The narrow street of 4m is only the functional space, the in-between space, but the actual experience of the urban space is much bigger, as the edge zones move from 0.5-3m and even gets interrupted by a parking lot from time to time.

But the dense residential areas in Tokyo faces a future problem. According to the future city planning of Tokyo, it will face the confrontation with the non-existence of public spaces in the local areas. Especially Atelier Bow Wow is investigating in this field trying to incorporate pocket parks and break down the traditional private plot into semi-private spaces, making the entrance and the appearance of the private open space more visible to the city introducing a new way of interaction in Tokyo. This might be the solution to the residential areas of Tokyo, reaching a more green and open living area.

The project wants to use the principles of Tokyo as a guideline, a strong inspiration and a challenge when creating a low-rise dense structure in the context of Copenhagen without loosing the quality of the graduation of open spaces in the city. The project is searching for a 'Nordic mosaic.

WATER IN THE CITY.

How can new urban areas in the inner city of Copenhagen contribute to the solution of extreme rainwater management?

SUTAINABLE URBAN DRAINAGE SYSTEMS (SUDS)

From 1672-1840 a massive urbanization occurs. Copenhagen is growing by 120,000 people without the city area was expanded. The high density and low technological conditions meant that people became very sick. There were no draining and sewage system to handle the waste water.

Today, 150 years later, sewers are still on the agenda in the capital. Today, it is not odour nuisances that creates the problem. The waste water is not a problem anymore, not even when densifying in the existing city, the impact is minimum. Instead the problem is the combined sewage system, that can not cope with today's extreme rainfall. Therefore, human excrement with massive bodies of water still end up on the streets of Copenhagen and in the basements of low-lying houses.

In the last couple of years the focus on rainwater management in case of extreme rainfall has therefore been a warm topic. The extreme cases of flooding caused by rainwater has led to a new innovative solution the so-called SUDS - Sustainable urban drainage systems. The idea behind SUDS is to manage the rain water above ground, relieving the pressure on the municipal storm water sewer. Instead of enlarging the current drainage systems under ground, the SUDS creates a much cheaper way of enlarging the system above ground. The new design thereby becomes visible to the public and might be able to enhance the recreational value of the area.

SUDS IN THE INNER CITY OF COPENHAGEN

A densification with new building structures in the existing city of Copenhagen require a redesign of the current urban floor. Why not introduce rainwater management above ground when already redesigning the current city to help secure the city in case of extreme rainfall.

When talking about rainwater management the solution is either based on Seepage or delay. In the area of Nybro (representing the inner city), the polluted soil and the railway cutting makes the rain water seepage impossible. The project therefore need to work with the delay of the rainwater in the inner city. This means that the water will be led in a tray to collect the rainwater and reduce the flow towards the current sewage system. With the introduction of SUDS the tray is today a visible part of the city where the design of the tray can be challenged in the search of new innovative design solutions. ill.03

SUDS AND THE POCKET PARK

Pocket parks can help the city adapt to the climate changes locally (SUDS).

Pocket parks are designated as pioneer projects in the climate plan of Copenhagen Municipality. This means that all pocket parks must contain elements and systems that contribute to the decrease of temperature and the management of rainwater within the city. The municipality has made some technical requirements, which the project wish to follow:

• The park has to be sustainable, which means that climate change adaptation and operation must be coordinated from the start.

 The park should be designed, shaped and planted to provide shelter from wind and weather.

 Rainwater should as far as possible be evaporated, being seepaged or

- delayed locally (SUDS)
- Rainwater can be used as a recreational element.The plants natural growth must be used to highlight

the urban environment.

• Plants should be selected to suit the place of use and support the desired design expression of the specific park

To determine a satisfying goal when solving the rainwater, the project looks at the pacts from spildevandskommitéen. They allow a flooding of the city every 5 year, which seems to be a realistic solution for the project to work with.

ANALYSIS CONCLUSION DESIGN PARAMETERS.

URBAN FABRIC CREATE A LOW-RISE RESIDENTIAL URBAN FABRIC

OUR DENSE HISTORY CREATING SMALLER APARTMENTS

LEARNING FROM TOKYO

MOSAIC STRUCTURE A VARITY OF HOUSING TYPES (AND FACADES) HUMAN SCALE - 2-6 FLOORS SHARED SPACE STREETS NARROW STREET PROFILES OF PRIMARILY ONE WAY STREETS A WIDE RANGE OF DIFFERENT EDGE ZONES COMPLEXITY

INFRASTRUCTURE REDUCED CAR TRAFFIC CREATES NEW BUILDING PLOTS CREATE GOOD ACCESS FOR CYCLISTS AND PEDESTRIANS

URBAN SPACES

A GRADUATION OF THE URBAN SPACE: IN-BETWEEN AREAS & OPEN SPACES

- THE OPEN SPACES:
- CREATE POCKET PARKS AS THE PUBLIC OPEN SPACE
- THE BALCONY (PRIVATE OPEN SPACE) AND GREEN ROOF TERRACES (SEMI-PRIVATE OPEN SPACE)

WATER:

USE SUDS, WITH FOCUS ON RAIN WATER DELAY, AS AN ACTIVE DESIGN TOOL IN THE URBAN SPACE.