## OUR FUTURE FLOW MACHINES THE TRANSFORMATION OF GLOSTRUP

# Glostrup



#### TITLE

OUR FUTURE FLOW MACHINES THE TRANSFORMATION OF GLOSTRUP

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## READING GUIDE

The following report, as the product of my master thesis, is meant to unfold in the next pages the discussion of "Our future flow machines", projected in a concrete site by the transformation of the Glostrup Station.

The report is structured based on the narrative journey of discovering and highlighting the design process of transforming the existing settlement of Glostrup by exploring the current potential.

The first chapter starts by enlightening the motivation and the framework, through demarcating the subject of the current thesis. The introduction of "Our future flow machines" project is illustrated in the next pages and is concluded by the problem statement, meant to accentuate the purpose of the project, as well as the branches that are going to be incorporated in order to answer to it. As the conclusion of the first chapter, the objectives will be uncovered.

The methodology, as the second chapter, is coming to align the methods and tools used to accomplish the objectives previous listed.

Afterwards, the theoretical background is framed, by approaching two different angles of perception, as urban life and urban mobility. The theoretical chapter is also meant to create the foundation for the further empirical and analytical studies.

The introduction of Glostrup station represents the starting point of the analytical and empirical studies. The studies are conducted in order to define the existing potential and opportunities for a further transformation.

Due to the mindset of the theoretical background as well as the current situation of Glostrup sta-

tion, the concept behind the thesis is formed. As the main backbone of the project, the concept is described through a following vision. In order to create a design recipe for the further transformation of the Glostrup, the "Design concept and bases" chapter was introduced. This chapter is meant to list all the elements that are making the foundation of the design: the mindset behind the concept, the urban strategy, technics of designing for flows, design concept and station elements (modular design).

Based on the previous chapter the "Presentation of the new Glostrup" is introduced. Playing with scales, the drawings are presenting the design story, taken from above to below. Starting with what exists to the masterplan, going from the axonometric view to the detailed plan and technical drawings, the atmosphere shown by the visualizations is unwrapping all together in the last pages of this report.

All together, this journey is meant to introduce you, as a reader, in the fast world in which we are living, in the world of flows. Designing our transit hubs, as being our future flow machines is representing just the fist step in admitting and becoming conscient in the that designing for flows is not just a description of our daily journeys, but instead is our future world trajectory.

" Our world is moving in a fast pace and also us...We are changing our urban spaces by each step that we are take. Considering urban design as a tool, we, as urban designers, should appreciate that our urban spaces are perceived in motion and that is way we should design for flows."

## ABSTRACT

In the matter of mobility, the stations are illustrated as our transitory playgrounds. Stations are drawn and established upon their main quality of hosting movement, connectivity and directionality. However, the rapid acceleration within our society, both in terms of technology and mobility, had affected their capacity to afford a good and structured connectivity. Therefore, the project is seeking to study the acceleration within society and how this had been reflected on human interactions, their embodiment performance and movement within the transitory spaces of stations, as mobility hubs.

The current project is, thereby, concentrating around the debate of stations' capability to maintain their most distinguished quality of distributing the flows internal and external. Based on this state of quo, the three terms of wayfinding, connectivity and cohesiveness were introduced as design parameters, pillars for elevating the full potential of stations.

Giving the fact that the stations are made also for people, as community (identity, sense of place, activities), the design is readdressed in order to afford proper conditions for a social environment. Recognizing the importance of creating these social environments, factors such as gathering spots, new experiences and interactions are hosted.

By transforming Glostrup Station, the design solution is offering a complete recipe of designing for flows, in the matter of community.

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# INTRODUCTION

"The study of the traffic systems have traditionally been the domain of engineering and economic science, and these have also delivered far most of the knowledge we have. But an understanding of the complexities also involves an involvement of sociology and political science – the engineers and economists' rational decision cannot describe what goes on within a family or at Christiansborg"

Per Homann Jespersen, 2016

## MOTIVATION

Time means movement and movement means time.

The motivation for this project is based on my own experience, as a traveler who through everyday journey routine needs to: walk, run, catch the bus, exchange the train etc.

Moving from the peripheral parts of Denmark to Copenhagen represented a huge step, an awakening. It started as a harsh confrontation with the public transport system. Observing the public transportation system as a newcomer, it was astounding how the traveling pace differs with the size of the cities.

Based upon this experience the following conclusion emerged. Thinking how the rapid frequency of public transport is influencing the traveling behavior, both in terms of the pace and in the way in which we are moving.

It was that moment when my fascination with the public transportation had begun– as in terms of traffic planning and the sociological aspects of mobility. It is about a fascination of going further, of addressing the spaces in which we are moving, a reflection upon the importance of spaces in affording and affecting our moving behavior and trajectory.

Based on the prior mentioned experience I chose to conduct my master thesis within the theme of everyday mobility. There, my thesis is taking point of departure in the rapid frequency of both public and personal transport and looking into their effects on our common/public spaces. The rapid frequency had influenced our perception of being mobile and flexible. Constant being mobile has further affected our perception of both: time and space.

Following the fascination with the sociological aspects of mobility – I chose to frame my thesis having the users in focus. Hereby, the design is meant to answer to the needs and necessities of both the stations' users as well as the users of the connected urban spaces. Here for, the thesis is concerning people and their perception of time and space.

Considering that a good research result is the one that even tested is still good, I decided to test my mindset by transforming the Glostrup Station. Within Glostrup Station, as the project site, the transformation took as point of departure, the Municipality's undergoing strategy. The strategy involves the accommodation of a new mean of transportation, the light rail, within the actual train and bus station. The focus will be kept on restructuring the connectivity and easy accessibility between the different transport and links with the regional trains.

Therefore, Glostrup represented an interesting case.By considering its future perspective, Glostrup Station is meant to become an important interchanging point for both the internal as well as regional connections. It is in this space that the field work, analysis and design decisions are stemming from. Through the work on the thesis, I will be following the assumption that a rapid frequency within public transport will be one of the main factors in increasing the time spent within stations. Hereby, the reason behind the benefits and affordances of transforming a station into a public space is that it may contribute to the travelers' experience and community identity.

For a complete approach of the reasoning behind my choice, the following problem statement was formulated: How can there, with the transformation of Glostrup Station, be ensured wayfinding, cohesiveness and connection within the space, in order to fulfill the needs and necessities of a future mobility hub from the perspective of both spaces' users and inhabitants of Glostrup?

Now, is not only about seeing the station as an important urban space, but it is also about the fact that the station is made by the flows being a flow machine. Moreover, is about distributing and attracting flows, about departures and arrivals, people and their mobile behavior. Based upon this recollection, I chose to base my design upon the stations' primary function – the importance of flows.

## DEMARCATION

As the start-up process began, the project has continuously be outlined by both additional selections and deselections. The most vital selection has been the choice of incorporation Glostrup Station as the project site. This choice was based upon the introduction of the light rail connection, making the station more attractive as a future trasit hub.

During the project, the problematics derived from Glostrup station regarding flows had been wished to be readdressed and transformed into a design recipe. Considering just the two layers of physical and social aspects of the station area, the demarcation is framed by the social, the flows, in order to design the physical, the structures.

The scope of the project is to design for flows by taking into consideration also the non-flow spaces, as activity experiantially rich spots (gathering spots).

Considering the station as a mobility hub, the design proposal is targeted in both creating an urban space for community as well as a transit space for travellers.

In terms of scale, having in mind the idea of flows, through the design process two types of flows were recognized: internal flow - station as a flow machine- and external flow - station as a node in the network city's system. Going down in scale, this can be translated as following: internal flows are defined as the current transit within the station, meanwhile the external flows are considering the station as point of departure and arrival.

Within the design demarcation, the method of designing for flows had been reflected by the introduction of three parameters: wayfinding, connectivity, cohesiveness. These are framing the vision which is meant to create an infrastructural hub affording both urban life and urban mobility.

## THESIS INTRODUCTION

As mentioned in the motivation, the theme of the current project is related with the transformation of Glostrup Station as a future flow machine. This takes point of departure in two different, but complementary strings. One has been defined by the accelerated changing process of the society, which is presented by French philosopher, cultural theorists and urban planner Paul Virilio and the second being reflected by the design method of our transit systems within the network city, presented by professor Ole B. Jensen. Here the introduction aims to uncover the effects that the ever acceleration society have had on our city.

The term 'Acceleration society' is introduced and is describing our society as ever accelerating.

Virilio's teachings are taking point of departure in the following basic assumptions:

1) Speed determines the layout of the world;

2) The logic behind the speed is that it will increase

3) The décor of the world changes as velocity increases (Brügger 2001, p. 73).

With this division of his theory, Virilio is sketching the development of our society, as a development that will never slow down, instead is a development which is only going to accelerate. Virilio states the following:

"Acceleration is thus the dynamic principle behind the changes in the world" (Brügger 2001, p. 116).

This understanding has been further developed by the German sociologist and political scientist Hartmut Rosa. According to Rosa, the acceleration of history and culture, or time itself, is not a new phenomenon but rather a quality stemming from modernity's emergence. Here, he shares his view, which is related with the fact that society is ever accelerating.

His claim is that we are not adequate to understand the nature and character of modernity and neither the logic of the structural and cultural development, without adding the temporal perspective (Rosa, 2003 p. 3).

With the point of departure in the following application, Rosa has created an analytical framework based on three analytical as well as empirical categories (acceleration of the "pace of life", acceleration of social change and technological acceleration), which he describes as Social Acceleration (Rosa, 2003 p. 6). Therefore, in the further discussion the project is going to considering as main, the last one mentioned above, the Technological Acceleration.

The term technological acceleration is covering the acceleration of transport, communication and production. According to Rosa, the technological acceleration has affected time, in the global society have been "compressing or even annihilating space" (Rosa 2003, p. 6). Further, he states that "Space, it seems, virtually 'contracts' and loses its significance for orientation in the late modern world. Processes and developments are no longer located and locations become 'non-lieux' without history, identity, or relation" (Rosa, 2003 p. 6).

Thus, the technological acceleration is a physical manifestation of intentions regarding a faster and goal-oriented world, as Virilio has defined. According to him, this has a significant impact on our society.

Rosa speaks of the consequences of the accelerating technology, as the original prioritizing turned on time and space. Thus, the spaces are retracting and lose their importance (Rosa 2003 p. 6). Manuel Castells, which is a Spanish socialist especially associated with research on the information society, communication and globalization (2003), is describing this acceleration as a change within society, where we, as people, have turned from being located within a 'space of place' to now being located in a 'space of flows'. Meaning that there are flows of people which are defining the society, rather than the spaces.

An example of this is the Copenhagen Metro, which "is nothing less than the greatest and most profound physical transformation of the country's capital since Chr. IV." (O.B. Jensen 2012 p. 40) (Own translation). Here, both the speed of communication, passenger, transport and data processing has increased significantly (Rosa 2003 p. 6)

Next John Urry, British sociologist, associated with the fields of the sociology of tourism and mobility is incorporated. In order to display his view, the way in which the acceleration society has affected our physical travels was illustrated. Urry is questioning whether the increased and more accessible communications can reduce the number of physical travels. Instead, he affirms that the increased use of virtual media has created a need for physical travels. Moreover, his approach is reflected upon the fact that the virtual communication should not replace the physical (Urry 2007 p. 164).

The conclusion is that passenger transport has increased in line with the virtual technology (Urry 2007 p. 164), but ,of course, also it has been affected by the technology of transportation, infrastructure and economic persuade.

This acceleration has led to a development of high-speed trains, cars and aircraft as well as to a better and more comprehensive infrastructure, with an emphasis on efficiency and low friction. This has, in some cases, been reflected in the physical design. An example of this is the metro in Copenhagen. Ole B. Jensen, in his contribution to "Byen i Bevægelse: Mobilitet - Politik -Performativitet", is articulating his urban view, its architecture and movement on the metro. Jensen is describing this metro as a "100 % 'clean' flow machine whose opportunity of public activities and urban programs appear knowingly and intentionally limited" (O. B. Jensen 2012 p. 41). Zygmunt Bauman, a Polish sociologist, is here included due to his perception of time and space. He expresses that the rapid development, also occurring within mobility, has affected our perception and understanding of time and space. The changes and the development within public transport have made us more flexible. This is clearly displayed in the Danish prognosis of



commuting, which indicates that in 2012, 40 % of those who are employed in Denmark, worked outside of their home municipality (Politikken 2012). See illu. 1.1.

Concluding, we are living in a modern world where our social relations are being analyzed through different connections (Urry 2007) or flows (Castalls 1996). Hereby, our modern societies, meaning our cities should be viewed as 'spatially opened and intersected by many forms of mobility – from human flows to access to information' (Amin & Thrift 2002: 3, Sheller & Urry 2006: 1, Jensen 2011, 9). These flows are presented in our townscape, a running flow of transport consisting of both people, different goods of information and data, developing in a rapid pace.

These mentioned forms of mobility, these flows, are outlining a picture of the modern world and the mobile life within it (Jensen 2011).

The second string of which the project is taking departure in is then the network city. The network city is connected to the technology and transportation within society. Now, in the regards of this notion, the city existing as an isolated unit is beginning to disappear. This is due to the acceleration of society, as both technology and transportation, which is accelerating and becoming more efficient.

Now the city is instead beginning to be viewed as a network which is connected both locally and globally to other networks due to these exact connections. Therefore, the project wishes to take point of departure in the design of our transit systems within the network city.

Standing as a clear result of both the technological development and the rationalistic, functionalistic planning tradition, the metro of Copenhagen is a clean mobility machine. Likewise, it was described that our society is based upon flows more than places, due to the changed focus from space of place to space of flows. These conditions place the status of the space, in a position, where it has no longer a second function than a transit space.

#### **PROJECT SCOPE**

Due to the increasing in the importance of the connections within our city and the change in understanding of a place, the project seeks to study how the design of transit spaces which holds both a functional and technical value can also hold aesthetic, cultural and pleasing values.

Thus, how can we challenge the understanding of a place? The answer is not only by viewing it as a space of flows, but also by going back to the premise based on which is a space of a place. Challenging how the station not only is being perceived as a place of waiting, lacking human concerns but instead by being viewed as multiple flows of energy, in this case, future potentials. Focusing on the main target group, the users, the project adopts the Gehl's human scale approach by integrating it into praxis.

The scope of the thesis is to uncover a place where both creativity and safety is welcoming, while the identity of the place is portrayed through both the design and architecture.

As mentioned in the motivation, the thesis is introducing Glostrup Station as the chosen project site. The chosen area is interesting, due to its position on the new light rail alignment. Moreover, the outlined project area is containing the spot where the future light rail alignment will intersect with the current station. This will be the meeting point of three different means of transportation (bus, train, light rail), framing in this way a future importance of Golstrup Station as an inter-

#### changing spot.

Therefore, it is a site, within an area, which will in the coming years, attract a range of transformations. One of them being the design within the station and the other being the urban city center. These will take shape of a strategic transformation, which will concern the municipal vision, their aim towards becoming a healthier city in motion (Glostrup Municipality 2016 A).

Aiming to further reflect upon the potentials of the transformation of Glostrup Station, the future light rail as well as the future regional alignment are key elements in connecting Glostrup in a local, regional and national context. Is not only the development within Glostrup Station as a link in the expansion of the traffic network but it is also a link in creating cohesiveness and connectivity across the rail tracks, connecting the north and south end of the municipality. The project is incorporating the problem statement as shown below;

In addition, the design proposal of the thesis wishes to study the importance of flows and their meaning in an everyday routine. Furthermore, is focusing in unwrapping the significance of station as a gateway for the external flows and as an experientially urban space for the internal flows.

Therefore, the future station aims to introduce new functions and activities which will help create a social linkage between the everyday users, the passengers, and the locals living in Glostrup. The future station, as well as the connected area, will function as local networks which connect both people and places.

How can there with the transformation of Glostrup Station, be ensured wayfinding, cohesiveness and connection within the space, in order to fulfill the needs and necessities of a future mobility hub from the perspective of both the spaces' users and inhabitants of Glostrup?

Wayfinding is defined as an information system, which guides people through a physical environment. This is through a tool of graphical communications of information within the built environment. Hereby, wayfinding is in this project, concerning the strict oriented guidance as well as the short and fast routes from A to B. Connectivity is perceived as a tool of linking the places between the static aspects of the dynamic mobility. This process of linking is between the destinations or departure points of the users and through the design it will be enhanced by introducing new activities.

Cohesiveness is here viewed as a tool of uniting objects. Thus it is in this project utilized as the ability of creating more than just A – B travels. Seeking to create a unitary image of the urban space. While being a place with the potential of creating meeting while connecting – becoming a place of public interaction.

## THE RECAPITULATION OF THE INTRODUCTION

To sum up the introduction chapter, the project is using the acceleration society as a fondation concept. Deriving from this, the importance of considering that the society is based upon movement and connections, the network city had been incorporated.

The rapid acceleration within technology covering transportation, communication and production has affected time (Rosa 2003). Affecting the time had resulted in a compressing or even annihilating space.

As a concequence of the accelerating technology, the spaces has retracted and lost its significance. This had affected that we, as people, had turned from being located within a 'space of place' to now , being located in a 'space of flows'. So, travelling has now become an experience of time, disregarding the dimension of a place.

In this regard the rapid frequency within the transport has made us more flexible, increasing the amount of journeys. Therefore, the behaviour towards transport has changed, as we are now spending more time at the gateways.

Based upon the before mentioned, the project is constructed as a part (node) of our network city. Recognizing the importance of the connections within the network city, the focus is projected on the design of the node, the trasitory place. This node is translated as the station.

Taking point of departure in a station, the project is recognizing that the most distinguish function is around distributing flows, both in terms of internal and external.

In order to respond to both types of flows, three design parameters were introduced: wayfind-

ing, connectivity and cohesiveness.

Basing the thesis on field work, theoretical framework, references and case work, the aim is to address the development of a chosen case, Glostrup Station.

## OBJECTIVES

1. Observing the existing conditions of the project site with the focus on the users mobile behaviour and the affordances of the station's physical expression.

2. The introduction of two theories: urban life and urban mobility, proving guidelines in order to address the two layers of the station the social and the physical.

3. Framing the design parameters (wayfinding, connectivity, cohesiveness) based upon the combination of the two theories.

4. Creating a new recipe of "Designing for flows", based on the design parameters.

# INTERVIEWS

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## METHODOLOGY

in regards to answering the above mentioned problem formulation, it is wished to utilize different research methods, which seeks to put the stations' users and inhabitants in focus. By utilizing both observations, interviews and literature studies, the empirical material will possess different qualities which creates the opportunity of addressing the analysis from several empirical bases,

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The following chapter is containing the methodology which has composed the thesis project. Firstly, the Integrated Design Process has functioned as an umbrella term giving the theme of the thesis, combining design with engineering techniques. Through the project, focusing upon stations' users and the municipality's inhabitants, the utilised research methods have been chosen out from a qualitative approach. With the focus also laying on wayfinding, cohesiveness and connectivity within the station and its surroundings, the empirical material are gathered through field observations, expert interviews and user interviews from both the chosen case site and Flintholm Station.

The chapter is following each method, accounting for the approach and for how it has influenced and affected the project.

## METHODOLOGY

#### **INTERGRATED DESIGN PROCES**

Through the project, the Integrated Design Process has been one of the main methods utilised. The method seeks to combine the design with practical engineering techniques by combining both the engineering skills and the aesthetics. Therefore, it is resulting in a final design proposal which is going to be a more holistic outcome.

In this particular project the Integrated Design Process is a valid necessity giving the theme of designing transportation hubs. The method touches the challenges of the network city and mobility. Designing mobility hubs is a complex process and the mentioned method seeks to combine the knowledge from urban design, architecture and engineering with the mission to solve the complicated problems connected to the design of these. Thus the method is addressing the combination of the functional aspects, accessibility, the aesthetics and technology. Moreover, it is vital to address the many parameters and transdisciplinary approach (Hansen & Knudstrup, 2005).

The method of the integrated design process is divided into five phases – these are as following: Problem or idea, analysis, sketching, synthesis and the last being the presentation. Given that the learning process of this project and a typical design process, is similar to the hermeneutic spiral, where you often have a pre-understanding of a topic, followed by new knowledge resulting in a new pre-understanding. That being said, new aspects of the problem, analysis or sketching, might arise forcing one or multiple steps back and re-think the design in order to, in the end, form the synthesis.

Next to formulating the problem, the scope of the project and the phase of the analysis seeks

to gather the information needed in order to define the different design parameters and then gain knowledge on the technical insight in order to proceed to the sketching phase of the project. This information is concerning e.g. the municipal plans, regional plans, flow analysis, context and so on. Leading up to the sketching phase, multiple iterations are made in order to fulfil the needs and create the solution for the mentioned problem. It is typically in this phase that new problems will occur and will lead one back to gather more necessary data to continue with the design. (Hansen & Knudstrup, 2005).

Further in the synthesis phase, the design parameters are specified during the sketching process, then helping to shape the design into its final form. Here the scope of the project is reached as well as the design parameters of the project have fulfilled the projects problem statement. The last phase, the presentation, is where the project is presented in a proper graphical manner of which the project most clearly portrays the potentials and quality of the result. (Hansen & Knudstrup, 2005).

#### **LITERTURE STUDIES**

The second layer of the methodological considerations, is the literature study. The following are used, especially to gain new knowledge regarding the different theoretical perspective creating the framework of the thesis. The literature study has had a substantial role in addressing the overall development within stations as well as for gathering knowledge regarding stations. The literature that has been incorporated is illustrated by research articles regarding mobility, in order to grasp a deeper understanding of the choices behind some of the design decisions.

In addition, the literature study has been a cen-

tral method within the historical research, given that a study of the past is limited through other methods. Furthermore, journals, articles and newspapers have been incorporated in order to gain insight into modern debates on the topic. As for the method itself, there are some weaknesses. Given that the material is written and thus controlled by the author, is often set to portray a certain message from the beginning (Andersen 2005 p. 63).

#### **OBSERVATIONS**

The next dimension of the methodological considerations, is illustrated by observations. This was out from a wish to, through field observations, cover an event or occurrence in 'real time', meaning observing the situational mobility. Also, observations have been used to show how a station is portrayed both physical and structural, in order to see how people are moving and interacting with each other, within the station.

The challenging part of conducting observations is the fact that, it is a very time consuming and difficult to carry out process. In a matter of credibility, there is a certain degree of margin of error, given that the observations have been conducted by only one observer. In order to reflex an everyday situation, the observations have been conducted over multiple days – here by trying to secure a bigger validation.

As another margin of error, conducting the observations have been the difficulty of appearing anonymous – hereby not influencing or affecting the users, both through the observers' actions but also through their appliances. In order to observe the usage and function of different design programs, a direct form of observations have been conducted. These have both been done at Glostrup Station and at Flintholm, out from a wish to map out the influences of the physical dimensions of stations.

It has been chosen to conduct observations, being one of the tools found within sociology. Silverman (2007) is introducing the term, 'naturally occurring data', and is arguing for the ability of studying what people do instead of what they say (e.g. qualitative interviews) (Jensen 2011). Here 'naturally occurring data' are compared to 'manufactured data', as the data which is the output from the traditional qualitative interviews, data which is unavoidable influenced by the researcher (Jensen 2011 p. 43)

#### **INTERVIEWS**

The fourth dimension of the considerations is the incorporation of interviews, both in the sense of experts and user-interviews.

Based on the fact that the station and the connecting areas are planned, designed and developed for users pleasure, it was chosen to implement these into the project.

The interviews have been conducted based upon a semi structured interview guide, given the respondent the possibility of impacting the direction of the interview. Do to the form of the interviews, being short, spur of the moment and on site the interviews were not recorded but instead only noted down. This can create a margin of error, given by the processing of the interviews: the written notes and recollections.

Four user interviews have been conducted, with

travelling respondents, age group 23-80 (Appendix A). The interviews have been conducted with the aim of identifying the usage of stations. In addition, the users' perception of the functional and design parameters of a station has also being considered.

The questions, which are listed in appendix 1, are targeted towards the users' behaviour at such stations and their opinion of the physical design. They are open question, which as mentioned prior, is out from a wish not to guide the respondent towards a specific answer but instead allowing them to lead the interview in another direction. Here, by not asking for a specific answer, the data should appear more valid.

## THE RECAPITULATION OF THE UTILIZED METHODS

As for the utilised methods, they each share an important factor – their relation to social and qualitative characters. Each method has individually and as part of a team contributed to reaching the empirical background needed to ensure a holistic design. The incorporation of literature studies has, first of all, ensured a vital background knowledge. Hereby, they are contributing to an understanding of a transit space.

The literature study supplies the thesis with many perspectives of perception of a station – and the connecting space. Thus, the literature study has provided an empirical point of departure for the thesis.

The incorporation of observations has resulted in a view into the users' usage of the station. Moreover, through observations it has been possible to map out the performed situational mobility. Here it can be seen how the theory is transferred into practice. In addition, it has here been shown how the dimensions of a station plays into the behaviour at the station.

By adding interviews as a methodological layer, has supplied the thesis with a user specific angle. Hereby ensuring that the user, their needs and necessities are kept in focus. The methodological layers have provided an insight into the users' perception of specific stations – an insight in how and why they are utilising the station and connected areas.



# **DESIGNING MOBILITIES**

NON-PLACES: AN INTRODUCTION

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## THEORETICAL FRAMEWORK

In the following chapter, the theoretical framework will be outlined. This will incorporate two different, but complementary theories meant to display their principles in order to create a theoretical synergy as the backbone of this project.

> THEORY OF URBAN MOBILITY THEORY OF URBAN LIFE

The theoretical framework is derived from the need to answer to the problem statement.

Seeking to answer the mentioned problem statement it is vital to recognise the Per Homann Jespersen's (associate professor at Roskilde University) mindset given by the following quote:

"The study of the traffic systems have traditionally been the domain of engineering and economic science, and these have also delivered far most of the knowledge we have. But an understanding of the complexities also involves an involvement of sociology and political science – the engineers and economists' rational decision cannot describe what goes on within a family or at Christiansborg"

The thesis's main problem statement targets the two significant ideas prior mentioned. These are seemingly different while indeed strongly connected and related.

Therefore, the theories incorporated in this academic work, are related to traffic/infrastructure and to social relations, which are projected in the spaces where are performed.

The turn of the theoretical background should not be only towards traffic engineering when seeking to solve traffic issues, instead it should recognise that these problematics are strongly connected to public life and spaces. Based upon this, the incorporated theories are serving under the two approaches: Urban Mobility and Urban Life.

Urban Mobility will include the perspectives of Urry and Jensen, seeking to implement the thoughts on mobilities design which is strongly oriented towards the human perception.

Urban Life is introducing the perspectives of Gehl and Hajer & Reijndrop. These are contributing with their understanding of places and public domains as active supporters of the urban mobility.

In the following pages the theoretical background is unfolded.

## THEORY OF URBAN MOBILITY

The following section of theory is regarding the design of our mobility hubs, as physical settlements, and furthermore our mobile situations (social interactions).

As prior described in the thesis introduction, in the extent of the rapid acceleration society, we are now experiencing that technology and transportation are accelerating. The rapid efficiency and the effect that this have had in making us more flexible, had also made us, now, to experience more and longer travels, from A - B, in both locally and nationally connected networks.

The well-connected network is influencing our cities in terms of their physical appearance. Considering that the network is drawn by its armatures, as being channels of infrastructure and spaces of transit (Jensen, 2009), represents the factors that are affecting the urban physicality . The terms 'Armature' (infrastructure channels, transit spaces, urban assemblages) and 'enclave' (fixed and specific sites or units) (Jensen, 2009), from Shane, are important urban categories in the discussion and deliberation of urban theory (Jensen, 2009).

Adopting the mindset of armatures as vital factors in determining the transit spaces, the challenge is raised by how can we apply urban mobility to these areas. In urban design, this challenge can be solved by understanding the armatures as places and systems that goes beyond 'non-places' (anthropological spaces) (Agué, 1995). In this way, they are producing more meaningful and experiential connections in a geographical contexts. In wrapping all together, the 'critical mobility thinking' is presented in order to signalise that our performances are not just occurring in static enclaves, but also in the intermediaries and circulation in-between places' (Jensen, 2009).

Just as much as the city is marked by armatures and it is equally constituted by the multiple flows and interactions (Jensen, 2009 p. 139). These engagements with the environment are the ones that 'makes mobility' (Jensen, 2009 pp. 139-140). These are the considerations behind the reason for adding sociological perspectives into new mobilities research, generating the new paradigm with mobility research, 'the new mobilities turn' (Urry 2007).

It is sociologist, John Urry, whom is one of the first to address these problematics – addressing how mobility is more than the physical objects and that it should be connected to society. He states the need of this turn for expanding the meaning of motion and movement. Translated from being a single purpose term into an interdisciplinary description and design of mobilities (Urry 2007).

"The mobility turn connects the analysis of different forms of travel, transport and communications with the multiple ways in which economics and social life is performed and organized through time and across various spaces" (Urry 2007 p. 6).

In his book, Mobilities (2007), Urry is connecting transport, as an activity related to transit with social experiences.

By tradition, the focus within traffic has beforehand been about how to plan our traffic in order to move and transport people in, both in the most efficient and fastest way. This rationalistic approach has been a theme belonging to the profession of traffic engineering. Here, the goals have been subjects, such as traffic safety, risk reductions and optimising our road capacity in order to increase the efficiency.

Compared to this rationalistic way of doing transport research, new research within mobility has furthermore created an interest within both social and cultural consequences of motion (Jensen, Wind & Lanng, 2015).

Thus the situations of mobility can be understood as stages of performance, portraying 'more than from A – B' movement, where the everyday commuting is combined with other forms of activity (Jensen, Wind & Lanng, 2015). The mobility is now becoming a performance, where the body is interacting with the socio-spatial environment. Hereby, the mobile situations are staged by the design of our cities, the infrastructures and the physical environment while they are performed by the actors, the users of the cities (Jensen, 2013).

Trying then to uncover both problems and potentials of specific mobile situations, new interventions and creations are proposed in order to reconfigure them. This is the process of designing mobilities – the study of the design that conveys decisions and interventions which makes mobile situations possible (Jensen, Wind & Lanng, 2015).

Given that these performances are anchored in our everyday mobility and in realistic situations, the notion of 'mobile in situ' is incorporated. Shortly a mobile situation can be understood as 'staged from above', which is through planning, design or regulations, or 'staged from below' meaning acted or performed by humans (See Illu. 3.1). When speaking of creating connectivity, cohesiveness and wayfinding, from the perspective of an urban designer, it refers to the physical environment, but also to the inter-



ILLUSTRATION NO. 3.1

*The Staging Mobilities* framework (published in Jensen 2013)

actions and embodied performances within this physical environment.

Speaking of interactions and the embodied performances within the physical settings, it is vital to recognise that the impacts of which mobility is entailing have some importance according to our experiences and, overall, our life.

According to both Jensen (2009) and Massey (2005), the 'identity productions' are explained as being 'relational in ways that are spatio-temporal' (Jensen 2009). Therefore, the identity is influenced by our relations with both the physical and social environment, physical surroundings as much as the people we meet and interact with.

Another aspect of the interactions occurring in the physical environment is when we are travelling, moving and navigating through the city. Here we are forced to 'negotiate in motion' when faced with obstacles. Also many of 'temporary congregations' are formed, by people, in the process of travelling. These are happening in most of the cases when you are going in and out of multiple situations of being 'mobile with' (Jensen 2010).

While describing the unavoidable situations of a complex transit space, it is important to mention the notion of Critical Point of Contact (CPC) (Jensen & Morelli 2011). CPC, is stemming from viewing the city as an assemblage of multiple networks, based upon multiple points of interactions. Interactions of which should be viewed as both nodes, interfaces and networks, explaining the situations of which the two, or more, variables are intersecting. What then creates a critical point, is when one of the variables is interfering and changing a specific value of importance (Jensen & Morelli 2011).

These intersecting nodes, are not only reserved for human on human interactions but also concerning the interactions between humans and non-human artefacts. Here it is about speaking of the intersections occurring between human and semiotics or other material layers (Jensen & Morelli 2011).

Thus the concept is defining the clashes which may occur between people and artefacts in motion and, how these start to become critical when changes are intervening. Changes in a way where these assemblages of multiple networks now intervene and overlap (Jensen & Morelli 2011)

## THEORY OF URBAN LIFE

In terms of creating urban life, the theory of both Jan Gehl with his work concerning the human scale and Hajer and Reijndorp with their work on public domains will be incorporated.

Gehl is, as one of the first things, stating that the human scale, prior has been overlooked for decades and even been treated randomly within urban planning. This was the result of prioritising the rapidly growing car traffic. Moreover, this has been escalated into a reduction of the possibilities of pedestrianism as a form of transport, while putting significant pressure on both social as well as cultural functions (Gehl, 2010). Now by following the mobilities thinking, the infrastructure started to be perceived more than simply a way of transporting. As discussed on the previous pages, one could ask if this could increase the quality of urban life as well as our public spaces.

The next question is raised by asking what is really making a public space? Is the station a public space for instance? This thesis utilises the interpretation of Hajer and Rijndorp (2001) and their discussion of the general understanding of public spaces in the sense of being fixed and permanent physical spaces. They state that the 'public domain' is defined as "Places where exchange between different social groups is possible and also occurs." (Hajer & Reijndorp 2001 p. 11).

Based on that the infrastructure is combining a number of different districts, different areas, the station is not only a transit space but also a key node where people are meeting. More than that, is a central node for affording public spaces. Thus in the following thesis, public spaces are interpreted accordingly to the combination of both Hajer and Reijndorp and the Jensen's perspective of social environment(Jensen 2009). "Cities are the places where people meet, to exchange ideas, trade, or simply relax and enjoy themselves. A city's public domain – its streets, squares, and parks – is the stage and the catalyst for these activities" (Richard Rogers 2010)

Working with the prior mentioned perception of urban spaces is unavoidable to mention urban life and urban quality. Common for the life within urban spaces is the factor of versatility which the spaces are possessing. It is important that these activities are consisting of an intricate character, combining both drifting, determinating behaviour, rest and conversations.

By both affording unpredicted, unplanned but also planned activities and attractions, people whom would pass by, will possible be inspired to stop, take a closer look or even participate in the ongoing events or activities (Gehl 2010).

"Urban life in the living, save, sustainable and healthy cities have as a prerequisite that cities are good to walk in, but the more far-reaching perspective is that we strengthen life on foot, following a variety of valuable social and recreational opportunities. "(Gehl 2010, p. 29)

Furthermore, Gehl is in "Life between buildings" (2007), introducing the notion of gathering or spreading, not only activities, but also people. By gathering people, activities, artefacts and events, they are able to stimulate on another, stating,

"A self-reinforcing process will be able to get started" (Gehl, 2007 p. 77). In elongation of this, Gehl is introducing four scales where this notion of gathering or spreading people may occur. The scales are: the regional, city wide, planning/ development and last the small human scale. The interesting thing is that the station has or can

have a vital impact on all of the scales. Especially, the small human scale relates to the station environment, given, as Gehl is articulating, by the scale where people are moving, meeting, interacting and experiencing the outcome of both regional and urban planning. Moreover, it is in this scale that negotiations of different embodied social practices really can be observed.

As for the urban life, it is heavily influenced by the urban quality and vice versa. Gehl is in his chapter, 'the city as a meeting point', articulating the importance of the relations between the obligatory activities, the non-obligatory and the social activities. Further he stats that by strengthening the urban life, you are creating the prerequisites in order to strengthen all forms of social activities within an urban space. It is the activities within an urban space which is affording all types of communication between people.

"Is there life and activity within the urban space, then there are also many social exchanges" (Gehl 2010 p. 32).

Connected to the notion of seeing and hearing people, Gehl is stating that, people are the city's biggest attraction. He is further expressing the ancient saying that, "people are peoples greatest joy". Therefore, when creating and developing places meant for people, it is only naturally to take point of departure in those people, their senses as well as their ability of movement. These parameters are rooted in human biology, such as behaviour and our communication within an urban space (Gehl 2010 p. 43).

Another factor which is important within urban spaces are the physical dimensions and in connections to this. It is possible through planning to consider these, their character and influence on the outdoor activities and gestures. Making it possible to not only afford walking but also other gestures as safety, visual connection and quality, urban furniture and protection (Gehl 2010 p. 31).

Regards to the physical environment of an urban space it seems as it either can be inviting or rejecting. Inviting is by being easy going as accessible, hereby not only for people but also events. Now making it possible to cross from the private to the public environment (Gehl 2007 p. 107).

The notion of being able to see and hear are mentioned by reflecting upon the positive role it plays in inviting people into the urban space.

"If the children are able to see the playground, or the street, from their building then they are also able to observe what there is happening and who's playing. Hereby motivating the children to join the games opposed to the children which can't see hence they e.g. live too high in the building" (Gehl 2007 p. 107).

## THE RECAPITULATION OF THE THEOREICAL FRAMEWORK

As a result of the work with the theoretical framework it is acknowledged that the themes of urban mobility and urban life are essential when designing places within a city. This is based upon the assumption that a place should be able to both accommodate the network of flows (space of flows) and should be also a place that invites users to stay and experience it.

Therefore, combining these themes, a place affords both mobility and urban life. Thus a challenge is now to create a place which benefits from both themes and then become attractive while being still a functional interchanging point.

Hereby, to sum up of theoretical considerations, this thesis aims towards viewing the stations as an area where public transportation means, bikes and pedestrians are able to negotiate, be mobile with and interact while accommodating the main purpose of the station. The station has the purpose of distributing and attracting flows in order to maintain and secure transit. Thus, the project seeks to further develop the perception of a station. Now not only being an armature with the purpose of directing people but also afford activities which gathers people.

Further the thesis aims to view the station as more than a 'in-between' place. Thus, seeking to design a station which follows the perspectives of both Jensen and Gehl and enhance the quality of urban life at the station. The goal is to recognise that the development of a station can influence the development of a city.

Therefore, the station becomes the framework of the thesis trying to incorporate the themes of urban mobility and urban life.



ILLUSTRATION NO. 3.2 Diagram displaying the framework of the thesis



ment of Glostrup municipality as well as
# GLOSTRUP MUNICIPALITY

## INTRODUCING GLOSTRUP

Glotrup Station is representing the project site, the base of the analysis. Though the chapter the project site will be presented. Further, it will involve the readers into the understanding of the undergoing transformation of Glostrup Station. Hereby explaining the reasoning behind chosen Glostrup Station as project site.

GLOSTRUP

COPENHAGEN

#### ILLUSTRATION NO. 4.2

Displaying the placement of Glostrup municipality in a danish context. Also outlining Glostrup Station - the project site The outlined area is presenting Glostrup station and will, through the project period, work as the project site. This is the place where the urban transformation as well as the design in detail will be conducted from.

Glostrup Station as part of the municipality's undergoing transformation, is entering in a developing phase, concerning the future mobility hub as well as the new vibrant urban center. This will further be introduced on the following pages (see. the chapter on the new development and transforming Glostrup).

- All - All

Glostrup Municipality has a unique placement given by being close to the capital of Denmark, Copenhagen, while still being able to offer beautiful green areas and open areas, un-programmed, where both fresh air and greenery are presented. Moreover, it is a municipality which is consisting of highway, bus and train connections. This connections are contributing to the attractiveness of the municipality, both in the sense of living and as a place of doing business. This will further be displayed in the conducted analytic work, in chapter 5.



### THE NEW DEVELOPMENT

The new development which is prior mentioned, is the construction and establishment of the future light rail alignment.

The new alignment is an initiative to accommodate the traffic congestion in the metropolitan area. The Capital Region of Denmark, which is one of the primary actors in the efforts against traffic congestion, is stating that these congestion both cost and are hampering the growth in the region. Thus, the mentioned congestion which is caused by the increasingly growth in the road traffic have led to a decision, by, among others, the Capital Region of Denmark, to prioritise a reduction of congestion. The capital region of Denmark is considering it to be particularly challenging to further develop the infrastructure, so the increasing traffic flows can operate better (Region Hovedstaden 2012).

The intention of establishing a new light rail alignment along Ring road 3 is meant to promote the public transport and to increase the passability across the famous fingerplan (See illu. 3.3). The new alignment is also making possible new urban developments along Ring road 3. In addition, this is providing a realistic public transport alternative to the cars (Region Hovedstaden, 2012). The objective of the light rail is to be integrated as much as possible with the already existing stations and mobility hubs.

This new alignment is supposed to be the backbone of the Capital Region and will aim to connect the region while decreasing the current pressure on public transport hubs in Copenhagen.

The light rail will have 27 stations distributed around a 27 km track and the full route starting from Ishøj al the way to Lundtofte will be covered in about 55 minutes. The light rail is expected to have 13 million to 14 million passengers



ILLUSTRATION NO.4.3 The Copenhagen Finger Plan 1947,

after which the capital's development should proceed in five directions / fingers along the roads and tram lines. Published at the Danish Center of city history

#### annually (Transportministeriet, 2014).

In the transport agreement from 2012, which is an agreement between the government and remaining parties, regarding "Better and cheaper public transport" it was decided that five million DKK should be allocated towards an analysis regarding the "coherent public transport network in the metropolitan area with a focus on new transport interchanges and an analysis of metro and light rail expansion" (Transportministeriet, 2014).

The analysis, mentioned above, is at a screening level, and is therefore a general strategic bid for a future expansion of the public transport in the metropolitan area. Based on the following crite-

#### **ILLUSTRATION NO. 3.4**

Displaying the future light tail alignment from Lyngby (north) to Ishøj (south)

> V. L'ENGBY CENTRUM LYNGBY-TAARBÆK KOMMUNE

V. LUNDTOFTE

OTU

L. AraDEMNE,

V. L'INGBYGARDSVES

LENGBY

L. GAMARE MOQUES

L. GLOASATE TRAFICADOS L. DINGERIATRA L. DINANOVES

V. HERLEV HOVEDCOM

. Lyster

V. ISIEVBBO

V. E.

L. HIRSTED INDUSTRIPART L. CLOSTRUP HOSPITAL

GLOSTRUP

V. PARA ALLE VEST

V. LAULENBBERNUES

VALLENSET

BRANK

· HERLEY HOGPLAN

GLADSAXE KOMMUNE

HERLEV KOMMUNE RØDOVRE KOMMUNE

ALBERTSLUND & GLOSTRUP KOMMUNE

BRØNDBY KOMMUNE VALLENSBÆK KOMMUNE ISHØJ KOMMUNE

ria, more passengers, shorter travel times and a more solid public transport network, it has been examined which investment will be allocated to the new train system, which halting patterns as well as which metro and light rail extensions are needed in order to develop Glostrup, and Ny Ellebjerg (Transportministeriet, 2014).

Hereby, due to the location of Glostrup Station, and their future traffic connections, it was decided that this should be developed, together with Ny Ellebjerg Station, into future central hubs for public transport in Copenhagen (Transportministeriet, 2014). Thus, the appointment of Glostrup as a future central hub has been chosen as the point of departure for the further analysis.

## TRANSFORMNING GLOSTRUP

Glostrup municipality is located only eleven kilometres from Copenhagen and has approximately 22.475 inhabitants (Danmarks Statestik 2016 A). The municipality is seeking to become a place where dreams are reachable, both from the perspective of the inhabitants and local companies. In the municipality's vision, from 2013, they state as following;

"Health is a strong foundation for growth and prosperity [...]. It creates the opportunity to create a city in motion, a city which stimulates creative development and full realisation of individual's potential, where the city's development supports our citizens and businesses possibilities for progress and allows that one can move toward their dreams. We must create a welcoming city with profits where there is time and room for one to get involved a little extra in their environment and fellow human beings. In this way we can help to ensure that citizens and businesses will want to move to Glostrup and not least remain" (Own translation) (Engelhardt, 2013)

In the journey towards securing the municipality's vision, which among other points are to create a creative space, where both the needs and necessities of both the inhabitants and businesses are reached, a range of goals are set.

The goals described in the vision are: creating more life in the urban space, expansion the recreational areas in order to create a greater space for outdoor life, compel more people to use public transport or ride a bike instead of the car, strengthen the city center of Glostrup as a hub and create better connections to the surrounding parts of the city. Moreover, a goal is to increase the accessibility for disabled road users as well as the overall traffic security (Glostrup Municipality B 2016). Given that the city is thus both seeking regional and municipal development, the infrastructural component is a vital factor. The infrastructure component is covering both the obvious connections within the city, such as the path ways, roads and of cause the rails. In addition, it is also consisting of the areas with public accessibility such as the urban spaces, the parks and the recreational areas.

Speaking of infrastructure and the fact that this particular thesis is concerning public transport and the importance of its gateways, a focus is put on Glostrup Station. Glostrup municipality, thus its station, is placed in an intersection between both the ring road connection and the regional connection towards west.

Then. the connections have been continuously expanded and Glostrup has achieved a strategically important location as a "crossroads" in front of the capital entrance. Glostrup Station has similarly an important transfer location for all the commuters to the many jobs in the area and bus alignments further along Ring road 3. With the planned construction of the future light rail along the Ring road 3 corridor and the restoration of regional and long-distance trains stopping at Glostrup Station, the transfer function is further expanded.

Now Glostrup Station is designated to be a mobility hub, mainly due to the large scope of transfer possibilities.

When the new railway to Ringsted over Køge opens in 2019, there will again be a long-distance operation at Glostrup Station and with the establishment of the light rail in 2020, Glostrup Station be the fifth largest station(in terms of the total number of transfer passengers between transport operators bus, light rail, s-trains and


B

1:10000 м

long distance trains) on Sjælland.

In regards to the development of the new light rail, the municipality of Glostrup, will have five stations, constructed along the Ring road 3. One of the mentioned stations will be connected to the already existing station area in Glostrup, while the other four will be whole new stations. (See Illu. 3.6).

The municipality of Glostrup is articulating the scope of the light rail, as offering the possibility of establishing a good service in terms of better connections through public transport.

This is out of the belief that, there now will be given an opportunity to serve and settle a larger amount of traffic in peak hours. Thus it is should be possible in areas around a station to plan new areas, containing features which provides a higher traffic flow: office premises or high-dense housing.

With the development of the future light rail, the surrounding areas will have the opportunity of being planned in order to fulfil a more intensive use.

The five stations are as following; Glostrup Sta-

tion, by Glostrup hospital, by Hersted Industrial park, by Ejby and by Islevbro. (Glostrup Municipality 2016 C).

This project is taking point for departure in Glostrup Station, which will with the development of the new light rail stop, be strengthening the station as a mobility hub. Moreover, the unified potential of expanding and developing around the station will be strengthened by the establishment of both the new light rail and the regional train stop (Glostrup Municipality 2016 C).

The composition of the new station, based purely on the means of public transport, will accordingly to the municipality of Glostrup, be designated as portrayed on illustration 3.6

*The new composition of Glostrup Station, including the new lightrail stop.* Published at Glostrup municipal plan 2013 - 2025

ILLUSTRATION NO. 4.6





## ANALYSIS

In the following chapter, the analytic work which have been conducted throughout the project period, is accounted for. As prior mentioned Glostrup station is incorporated as project site, and will therefor open the analytic chapter. The different analysis which are conducted are as following;

> SWOT analysis Site analysis Sense of place Observations Interviews

## SWOT ANALYSIS

The data registered from the site is structured into a SWOT analysis and its weaknesses, threats, strengths and opportunities are displayed.

It has been concluded that the new introduction of the light rail as well as the following expansion of Glostrup Station as a node in the public transport transformation is both considered to be a strength and opportunity for the further transformation. Thus this expansion will further, in terms of both a municipal and regional context, be a fertiliser for interventions and developments. The key obstacle in terms of cohesion and connection within the municipality is the division which the rail structure provides – also isolating the station platforms.

As it is in the existing situation, the city's surrounding functions are turning their backside towards the station. This makes the station merely a place for transit.



**ILLUSTRATION NO. 5.0** 

Graphical displaying the SWOT analysis - displaying both the strengths, weaknesses, threaths and oppotunities

## SITE ANALYSIS

The conducted site analyses in this section are made in order to gain an greater understanding of the site, Glostrup Station, and context, Glostrup Municipality, and to work as a motivation for further work.



Framing the inner city is a circle of high dense housing, sheltering both the station, it's connecting areas as well as the city center. In the next periphery of the city, clusters of low dense housing are ruling – manly higher residential areas.



The municipality is characterized by housing a great deal of industry – concentrated in large industrial areas distributed around. Within the municipality of Glostrup, there is approx. 21.800 jobs where some of the biggest are Glostrup Hospital (Glostrup Kommune 2016 D) and the municipality. Connected to the boarders of the municipality are furthermore the next door municipality's, Albertslund, heavy industrial area, Hersted Industripark is located.





The green areas within the municipality carries a certain diversity, consisting of both intensive park areas while others have the opportunity of growing and developing more naturally. The greenery helps to give the municipality structure and is further framing the large parts of the outdoor life. The green areas have different features and many of them include a wide range of activities, both planned and informal. The green areas represent local areas, retreats with their own identity and qualities. In the municipality, green wedges are incorporated as a tool of creating coherent recreational links between large green areas. Given the many places of employment which are located within the municipality, is representing a great deal of people commuting to and from Glostrup. Via Denmark's statistics it has been experienced that there are 19289 individuals which are commuting to Glostrup every day (Danmarks Statestik 2016 B). Within these data there are also the private car commuters. According to a Transport Habits Survey conducted by the Danish Technical University, 12 % of these travels are conducted by the utilization of public transport (DTU 2014).



The railway tracks are dividing the municipality in to two parts, excluding the southern part. Only three roads are crossing the tracks, one being the Ring road 3, the second being Østbrovej and the third being the tunnel running under the rail tracks. The mentioned roads are main roads, which results in a quickly and efficiently settlement of a high amount of traffic. Additionally, it means that, even though the roads have segregated traffic with proper bike paths, there are many which choose to go through the tunnel. As portrayed on illustration 5.7, the project site is mainly characterised by commercial use. This is due to Glostrup Shopping Center, City hall, the public library and the court house. Secondly characterising the area is the residential use. This is mostly due to the high number of dense housing in the city center . Thirdly is the category of mixed use, mainly consisting in buildings having commercial use in the ground floor with housing opportunities on the first and/ or second floor.



The displayed statistics are shown in order to create an overview of the inhabitants in Glostrup, according to age. The portrayed statistics are gathered in 2016, and show that the ages are not equally divided between the different groups. The largest group is the one between 40 to 60 years.

The age group which is causing the statistic to de crease is the group between 18-24. This could indicate a need in moving in educational purposes.



#### **ILLUSTRATION NO. 5.6**

*Population in Glostrup per. the first in the 3rd quarter of 2016, divided into 5-year intervals.* Published at Statistics Denmark (http://www. statistikbanken.dk/statbank5a/default.asp?w=1280).





The following illustration is displaying the infrastructural connections within the municipality. The current situation is showing that inside the municipality the infrastructural system is well connected, due to the existence of highway connection and rail way connection.

At illustration 5.8, the context of the project site is displayed. Here the affordances of which the area is consisting of is presented. Outlined is the design specific site, the area where many of the analysis stems from and where the design interventions will occur.

In this illustration, it is further outlined a distance of 500 meters – which is viewed as the walkable distance.

As seen on the map, the area is mostly characterised by hospitality industry together with grocery opportunities. Parking, green areas and public transport are secondary characterising the area. As portrayed and prior mentioned the area is affected by public transport: train, busses and soon the future light rail as well as regional- / long distance trains.



# FLOW ANALYSIS

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Here the motorised traffic is showing both the different s-train and bus alignments running through the station. Additional the map displays the only route for car traffic passing through the station. Giving the frequent bus, taxi and train traffic, the station works as an important transfer hub, offering a range of transfer opportunities. This quality will only be reinforced by the connection between the light rail and regional trains.

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**ILLUSTRATION NO. 5.9** 



### FLOW ANALYSIS - PEDESTRIAN TRAFFIC

PRIMARY FLOWLINE

minim

11 35

SECONDARY FLOWLINES

TERTIARY FLOWLINES

As displayed on illustration 5.9 and 5.10, Glostrup Station is an important transfer hub. Due to the transitory character, the flow lines are categorised in three groups, displaying the frequency on the specific route. The primary flow lines are connecting the train platforms to both north and the south of the platforms. The secondary flow lines are combining the station areas the bus stops, meanwhile the tertiary flow lines are the ones that are creating the CPCs within the station area.

1:1500 M

USTRATION NO. 5.10

## SENSE OF PLACE

The following analysis is focusing upon the atmosphere of the site specific area. More specifically is addresses the experience and expressions obtained at the site. This analysis is conducted, out from a wish to understand how to deal and handle the already existing physical, material layers while adding new ones. This analysis focuses on how it feels to be in the area. The analysis is divided, into photos, and thus portraying the significance of the chosen areas, displaying the important factors need when creating a site-specific design. Following is a thorough analysis of the atmosphere and expressions experienced through out the site. The reasoning behind the quotes in the pink bubbles are to be found the Appendix C.

welcomed by a narrow platform, only surrounded by an open, wild grown, field with rail tracks and old buildings. Entering the bus parking lot, you are welcomed into a new domain – a domain where the primary regent is the busses. This urban space both looks, acts and feels like a jungle. A semi shared urban space where people, bikes, taxis and busses are all struggling to move uninterrupted.

Photocollage portraying Glostrup Statio form the front end.

#### "PLACE MAY BE SAID TO HAVE 'SPIR-IT' OR 'PERSONALITY', BUT ONLY HUMAN BEINGS CAN HAVE A SENCE OF PLACE"

- YI-FU TUAN, CHINESE-AMERICAN GEOGRAPHER

A semi shared urban space where people, bikes, taxis and busses are all struggling to move uninterrupted.

> The only ways of escaping the classic railscape, is through a set of downwards steps. Walking down the steps, you are entering tunnels, only providing one option – to follow.

> > 0

Also functioning as a barrier between the rails and the bus parking lot is a number of old industrial buildings - now out of function. The buildings are e.g. an old postal office with parking and the old the Danish railway company

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## OBSERVATIONS

The following chapter, regarding observations is addressing the theories of mobility - here the reactions towards both the physical environment but also the social interaction - thus addressing a range of meetings in motion



#### MOBILE WITH

The first concept, which is introduced is, 'Mobile with', which is concerning the dynamics occurring when "a group of two or more either co-presently moving together...." (Jensen 2013, p. 54). That being said, being 'mobile with' together with others, are not limited travels of a certain time frame – nor to a certain degree of mobility.

These travels where one is 'mobile with' are varying, as seen on the observations, illustration no. 5.26 - 5.29, from the ten bikes, all riding closely in the rush hour period, to the four pedestrians standing as pearls on a string, waiting for the train to arrive, the three family members crossing the country by train awaiting vacation a head.



#### TEMPORARY CONGESTIONS

The next concept which is introduced through observations are 'temporary congestions'. As captured on the shown photo-series, on the previous page, a group of individuals are performing their situational mobility – here getting into the s-train at Flintholm Station.

It looks as if it is a race, people are running from far and wide all towards the same one thing – here creating a stream of flow of people – resembling pearls on a string. Suddenly the flow of people stops because of a congestion generated the individuals' in the doors of the train. Now forced to negotiate amongst each other to fully get into the train.

It is within the situation of being 'mobile with', which the individuals are while waiting on the platform, that the notion of 'temporary congregations' begins.

This is when one is travelling in and out of being 'mobile with' – meaning e.g. from the moment the individual is entering the train platform, the temporary congregation is formed, and one is now mobile with the other. Then entering the train, a new congregation is formed, now mobile with the other travellers on the train – to exiting the train, forming yet another congregation.

Thus, temporary congregations are a notion used in order to define and characterise the brief

timeframe of when a subject is moving beside you (Jensen 2013).





ILLUSTRATION NO. 5.36

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#### NEGOTIATION IN MOTION

In continuation of the already introduced terms, 'mobile with' and 'temporary congregations', the concept of 'negotiation in motion' is incorporated. This concept is linked to the before mentioned, hence that it is typical in those situations that 'negotiation in motion' are occurring. It is concerning the movement of the mobile subjects, and how the move according to each other, then negotiating about their directions, their lanes of mobility.

The concept is following the notion, that the random, and brief interactions occurring when in motion are moreover a well-thought out action based upon a set of negotiations while in motion (Jensen 2013).

Illustration 5.34 and 5.35 are captured on Flintholm Station and the high frequency occurring on the station are displayed through the observations. In most cases, the width of the platform is affording plenty of space in order for the users to negotiate in long distances, avoiding clashes, as seen on the illustrations.

But giving the period of times, where the number of people are on its highest, hence the times where trains are arriving – having both entry and exit of the train.

Through observations of the individuals at Flintholm Station, many of the techniques which Jensen is mentioning, is seen. Both 'A) Group letting a stranger in', where, as the name mentions, a groups of people are splitting up in order to let a stranger come through. 'D) Both giving in', where both individuals moves in order to avoid a collision, 'E) the zig-zag turner', where an individual creates a zigzag movement through a group of people in order to quickly reach its goal and last 'F) Stop to pass', where people stop to figure out which way to pass each other (Jensen 2013 p. 147).

Given the relative large amount of space compared to the number of individuals who use the station, the most watched is 'D) Both gives in', which is when both individuals are moving according to each other.

Characteristic for Flintholm Station is that many of Jensen's techniques of "negotiation in motion" is containing a stagnant party – meaning that, at the station, many are standing still, awaiting a train.

Often, the individual whom is not already in motion, will continue standing still and not move in order for the other individual to pass. Another way of negotiating is when both individuals are in motion, but only one changes its lane of mobility, in order to dodge a collision, while other continues without evasion. This is portrayed on the photo series displayed in illustration 5.34 – 5.35.



ILLUSTRATION NO. 5.37

## INTERVIEWS

In the following section, the users' interviews are incorporated – this is done in order to get an insight into the everyday commuter's view on stations. These interviews are conducted both on

She tells that she actually has two possibilities of travelling, one where she is taking the C-line all the way from Hellerup to Malmparken, which takes approx. 40 min, or the F-line from Hellerup to Flintholm, changing to the C-line to Malmparken, which takes around 30 min.

She is asked about her opinion regards to the station where she end tells that she likes the many functions of the station, "*It is nice with a 7/11, because I often forget my lunch and somedays I will go in quick and buy some*." (Appendix A, Interview A). From hereon she was asked more specific about the physical surroundings of the station and her appointing regarding favorite and least favorite space.

To this she answered as follow, "I really like to be on this platform (the top with the C-train) or at the metro, because there I have the full view. My least favorite place is down there (she points at the ground level platform), because down there I can't see any one. And that sharp corner (she points at the corner between the platform wall and steps from the top platform) does that I can't see if people are coming down that way". (Appendix A, Interview A). Glostrup station, to get a perspective on the current situation and Flintholm, to get a perspective of a station, already functioning as a mobility hub – the future of Glostrup station.

The next interview which were conducted where with a small family, consisting of dad, mom, young son and a baby in a stroller. They are found on Flintholm station, travelling with the metro towards the Airport.

The young family are living close by, but still, I almost never visited the station. "We almost never use the train so therefore we almost never use the station. I mean it is not that kind of area that I would bring my kids to play" (Appendix A, Interview B).

They are asked what a good station, for them, is to which the mom is answering, "Given that I usually travel far for work, and if I were to take the train, I would have to change a whole bunch of times, it would have to be a place where I could relax and kill some time. Perhaps a café of some sort, like the have here. Or if I have my children with me, it could contain some of activity that could activate the big one" (Appendix A, Interview B).

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The third interview is with a middle aged woman, travelling from Nørreport Station to Glostrup every day for work. She usually leaves her bike at Glostrup Station, in their underground bike parking garage, and then takes it work.

She is asked what her general appointing of the station is, heron she answers, "*I really don't like it! I use the bike parking garage, and uses the bike from the station to work, but it is so difficult to get the bike from the underground garage to the road. I have to bring my bike through the center – and it feels so unnatural" (Appendix A, Interview C).* 

Here she puts emphasizes on the value of good access points, "*I mean if even getting to the platform gets too difficult, I will just take my car*" (Appendix C).

She quickly replays, " I think the station is a chaos, especially that I have to bring my bike through the shopping center" (Appendix A, Interview C).

The last short interview conducted is with an old married couple found in the tunnel underneath Glostrup Station. They do not only use the station as a way of traffic but instead as a passage way through the north and south part of Glostrup Municipality.

They live in the north end but frequently walk to the south part to visit friends and family. Because of their use of the station, the interview where more focused towards the areas related to the station.. To this they responded, "*it is a shame that it is so difficult for us to get to the other part of the city, even though that it is only a matter of a couple of 100 meters*." They continue, "*The only way for us is to walk underneath the station*" (Appendix A, Interview D).

They are ask about their least favorite place at the station and the man replays, "**The elevators and the escalators, but that is primarily because that they never work.**". The women explain that the plaza is her least favorite place, given the overall messiness of it (Appendix A, Interview D).

#### THE RECAPITULATION OF THE ANALYSIS

Through the development of the analysis together with the construction of a SWOT analysis, both problems and potentials of Glostrup Station have been identified and based upon these a concept of the project have been constructed. The mentioned problematics are consisting of topics such as wayfinding, connectivity/access points, the ability of save feeling. The mentioned potentials are consisting of topics such as regional strength, municipal development and municipal cohesiveness and connectivity.

The range of problematics are, combined, resulting in that Glostrup Station, at the time being, is a un pleasant terminal, used all hours of the day. A main issue in the lack of access points to the station – creating a barrier of using it. Given that there are two access points to the platform, one in each end, but only one elevator is creating many delays, for the travellers themselves, especially during rush hour.

In addition, the lack in access points, not only to the station, but also to the south of the municipality is creating a lack in connectivity and cohesiveness across the municipality.

Elongating the discussion on discomfort, resulted by lack of access and connectivity, the problematics of wayfinding is incorporated. By travelling through the station, one has to be comfortable by letting the station lead you. Given the choice of tunnels, as connecting and access points for the stations, you are led underground travelling through the station.

Proceeding to the sense of save feeling - or lack thereof, the stations connecting areas will be discussed. The small plaza placed south of the railway tracks, are placed in the intention of welcoming the travels in to the station. Not only being the back side of the station, but also being the front-end for the inhabitants arriving from the south, hence both the municipalities known housing areas and the adjoining municipalities' housing areas.

Instead, due to its complete emptiness, resulted by the lack of design programs, it is a square completely out of scale, creating many small pockets, perfect for hiding. Hereby is feels more as a back ally compared to a station plaza.

On the north side of the station, you have the big bus parking lot. The parking lot creates on big CPC (Critical Point of Contact), given that many informal pathways created by both bicycles and pedestrians. The parking lot is divided into lanes by fences, only leaving the passenger few ways of crossing. This fences are received, by the pedestrians, as barriers – creating an even bigger danger in crossing.

The lack of wayfinding is resulting into the lack of save feeling – this becomes clear when entering the shopping center – trying to find the train tracks. The physical environment of the constructed pathways is in a closed setting, given that it is a center, closing up from both sides and the top – traps you.

#### ILLUSTRATION NO. 6.45

Photograph displaying the heavy flows. "Flow, is to move along in a continuous and steady stream or current". located at https://ourweirdandwonderfulworld.wordpress.com/category/tokyo/ 艺

THE ALTON
# DESIGN CONCEPT AND BASES

The following chapter is containing the thesis concept, thus displaying the trajectory of the final design recipe. Next, both the design bases and concept will be unveiled. Hereby, it aims to create insight to the recognized importance of designing for flows. Thereafter, the chapter will include the perspective of designing for public transport, underlining the important of such. In addition, the chapter will include the incorporated station elements as well as the reasoning behind these.

> Concept of the thesis Vision Clarification of terms Site specific design strategy Designing for public transport Design concept Station elements

# CONCEPT OF THE THESIS

Taking as point of departure the analysis synthesis together with the two perspectives of the theoretical background, the concept is created.

Creating the core of the concept upon the theoretical principles it wishes to address the two complementary angles of urban mobility and urban life. With the mindset determined by the theory, the analysis had been conducted in order to display the current situation of Glostrup Station.

The concept is taking shape from considering the analysis synthesis as the existing playground in which the theories (urban mobility and urban life) are projected.

When speaking of urban mobility, it is as mobility theory implies, not only concerning the travel from A to B (flows), but also the mobile performances, interactions and negotiation in motion. Meanwhile, when utilising the theme of urban life, as it was illustrated through the theory and the analysis, is concerning the variables of sense of place, identity and meeting points.

Based upon both the variables of urban mobility and life, but also the symbiosis of analysis and theory the design parameters were emerged. The design parameters are the following: cohesiveness, connectivity and wayfinding.

The connectivity, wayfinding and cohesiveness are elements, which are going to be incorporated in the vision and they will be acting also as tools in the design.

Further it will be displayed through the vision in the following pages.



# VISION

THE VISION IS TO CREATE A NEW INFRASTRUC-HUB WITHIN GLOSTRUP STATION, WHICH TURAL CONNECTS BO THE CITY AS AS D WFI TFFFR-ТН ENT MODES OF MOBI ITY AND WHERE THF DYNAM-THE FRAMEWORK SHAPING AROUND ICS ARF THF PERFORMED AND THIS PART ITFF ITVFD TN LAR URBAN SPACE. MOREOVER, IS AN CREAT URBAN SPACE WITH WAYFINDING, COHESIVENESS AND CONNECTION WHERE BOTH URBAN MOBILITY AND URBAN LIFE ARE ENHANCED.



### ILLUSTRATION NO. 6.44

Diagram portraying the vision of the thesis. Seeking how the station can be designed, influenced by wayfinding - connectivity and cohesiveness Before going into depth with the design concept at Glostrup Station, the foundation of which the design is based upon is defined. As the project title unveils, the thesis is revolving our future flow machines, thus focusing upon the flows.

Basing the design on flows through the foundation, it is recognised that the station is managing more than one type of flows. The reasoning behind splitting the flows is illustrated by the needs and necessities of different user groups.

Being that the station isn't an isolated element within the city, the movements are often exceeding the station Therefore design is thus both addressing the movements within the station and outside of the station. Seeing the station as a part of a greater network, the movements, are mentioned below.

### 1. Internal flows

The first type of flows takes place within the station and is defined by their transit character. Therefore, this is the type of flows which describes the journey from A – B between different means of transportation.

### 2. External flows

The second type of flows is treating the station as the destination or departure points of the users, based upon the reasoning behind the journey.

In order to address both the movements in and outside the station, the design is developed based upon three parameters. These are as followed, wayfinding, connectivity and cohesiveness. On the following pages, the meaning and value of the three terms have been drawn out.



### ILLUSTRATION NO. 6.1

Diagram displaying the designing bases. Here regonizing the movements of which is located at the station



# CLARIFICATION OF TERMS

In order to clarify the precise meaning of thesis' problem formulation, here comes a clarifying definition of and how the various terms are used.

### WAYFINDING

Wayfinding is in itself not explained and has in many situations different meanings. Wayfinding is general defined as following," Wayfinding encompasses all of the ways in which people (and animals) orient themselves in physical space and navigate from place to place" (https:// en.wikipedia.org/wiki/Wayfinding 2016)

In some contexts, it is used as noun which refers to a graphic or audible method, used to convey locations or directions to travellers.

The perception of a place and thus the information in the built environment is an important factor for one to navigate to the right destinations. In connection, this process of finding the proper information should be as smooth and easy as possible.

In this particular thesis, wayfinding is used as a tool of helping people navigate through an urban pace. More specific through the usage of tactility in urban surfaces. Here creating intuitively defined flowlines.

Thus wayfinding is defined as an information system that guides people through a physical environment and there enhances their understanding of the space. This is done via a tool of graphic communications of information in the built environment.

Thus in this project, wayfinding is concerning and covering the strict oriented guidance as well as the short and fast routes from point A to point B.



### CONNECTIVITY

General definition: Within urban design, connectivity is an essential theme and overall describes the extent to which the physical surroundings permit or restrict movement of people or vehicles in specific directions.

Connections may of course vary in scale and involve different types of routes. E.g. urban designers and urban planners wanting to improve regional and municipal connections thus highways or other infrastructural connections. In a smaller scale is the connections such as, streets and green corridors. Even smaller is the connections, connecting urban spaces which are involving smaller types of routes and pathways. Given that this project has as its main focus, the station as well as it's connecting spaces, the scale of which connectivity is introduced is in the human scale.

Connectivity is a central theme in linking different urban spots by pedestrian friendly orientated design and by supporting it through creating experiences on the way. As Gehl mentioned, "An important prerequisite for a comfortable and enjoyable walk is that there is room to move reasonably, freely and undisturbed" (Gehl 2010 p. 131. Own translation). Therefore, streets and pedestrian pathways must be enjoyable and comfortable to walk at. Moreover, these connections must link the key static aspects, thus destinations, and most function in an appropriate scale.

Connectivity is viewed in this particular project as a tool of linking the spaces between the static aspects of the dynamic mobility. This process of linking is between the destinations or departure points of the users and through the design it will be enhanced by introducing new activities.





### **COHESIVENESS**

The general meaning of cohesion is when more than one object is closely united.

Here cohesiveness is incorporated as urban cohesion. The concept of urban cohesion is moreover linked to both social factors and physical/ functional factors. Social factor, seeking to promote and improve social inclusion and generation of integrative dynamics. Integrative dynamics such as when humans are interacting in the socio-spatial environment. Such as when travelers are moving around one another because of multiple encounters. These situations can be described with the terms of the interactions of the 'ballet' or the 'river' (Jensen 2010). Physical factors in terms of urban form. Thus creating a continuity of space.

Therefore, in this project, cohesiveness will be viewed as the ability of creating more than just a to b travels. Seeking to create a unitary image of the urban space. While being a place with the potential of creating meetings while connecting – becoming a place of public interaction.

To sum up, the three terms are incorporated in order to follow the vision.

Hence create a place which connected the city as well as the different means of transport. Here wayfinding and connectivity will be incorporate. Cohesiveness will, as shortly mentioned, be incorporated as a tool of creating a unitary design image.





The abstract behind the design paramters movement.



### WAYFINDING

- GUIDENCE SYSTEM
- FLOW



### CONNECTIVITY

- GUIDENCE SYSTEM
- LANDMARKS
- ACCESSIBILITY



### COHESIVENESS

- INTERGRATED SPACE
- UNITY DESIGN LANGUAGE

ILLUSTRATION NO. 6.11

Design paramters; wayfinding, connectivity and cohesiveness.

# SITE SPECIFIC DESIGN STRATEGY

The following axonometric diagrams are portraying the design strategy in a local setting.



ILLUSTRATION NO. 6.12

### WAYFINDING

Wayfinding will in Glostrup Station be incorporated as a tool of connecting the different means of transport. Here a tactile information system will be incorporated to guide the short – goal oriented – travels within the station.

### CONNECTIVITY

Connectivity is used as a tool of connecting then the rest of the city to Glostrup Station. Hereby connecting the important landmarks and functions of the city to the station

### **COHESIVENESS**

Cohesiveness is used in relation to the surroundings – the urban form, thus ensuring both the continuity of space and a unitary design language



**ILLUSTRATION NO. 613** 

### CONNECTIVITY

urban flows performing connections between different uses of the built environment



ILLUSTRATION NO. 6.14

### COHESIVENESS

Urban flows generating cogerence within the public spaces.



# DESIGNING FOR PUBLIC TRANSPORT

### **DESIGNING FOR FLOWS**

Yet, another important aspect of designing station, and especially this project, is that we are designing for flows. That being said, when designing for flows as vital opportunity appears. An opportunity of creating rich places which both considers the movements, the actors of the movement as well as their behaviour and lastly their interactions.

Here following, flows are defined through three aspects,

1. Flow variables, flow situations and lastly flow patterns. In other words, designing for flows is a process of which these parameters are taking into considerations. Hereby seeking to transform the urban spaces, prior destined for movement, now into both safe, experientially and transitory places.

Firstly, flow variables are defined as mobile entities – meaning mobile actors. These actors are through their mobile behaviour, their flow patterns, temporary transforming the mobile environment through the different flow situations. The actual circumstances of each mobile situation are a key factor, because of the difference in the way of acting out our movement.

Secondly, flow patterns are defined as the different types of mobile actors manipulating the flow situations through their movements. Hereby, the flow pattern is a link between the different variables that are influencing the motion and the environment of which they are performed in. The flow patterns of the actors are influenced by e.g. speed, direction and flow fluidity.

Lastly, is the flow situations. These are defined as the places where the interchanging of the city

is shaped throughout the actor's behaviour.

That being said, the flow situations are functioning as an urban framework, fundamentally connected to the context.

On the following page, different types of flow situations are displayed.



**ILLUSTRATION NO. 6.16** 

Design paramters; wayfinding, connectivity and cohesiveness.



ILLUSTRATION NO. 6.17 Shared space



ILLUSTRATION NO. 6.18 Semi shared space with separated lanes for cars



ILLUSTRATION NO. 6.19 Traditionally car and tram oriented intersection.

ILLUSTRATION NO. 6.17 - 6.19 Different types of flow situations

### **TRAFFIC CALMING**

In designing for flows, while still maintaining the value of a semi shared space, there are different methods which can be incorporated.

First, there are different methods of traffic calming. These methods are utilised in areas/zones where motorised vehicles are still prioritised. Here the purpose of the methods is to push people into the streets where different urban activities are presented – thus to re-think the prioritising of the streets.

Thus the mindset of the methods is that the roads should not solely be for motorised vehicles. Instead they should provide a sense of place, offering people a place to walk, look, drift, play and so on, without feeling dominated by the present of the motorised vehicles.

Portrayed on the right, it can be seen a range of different principles of traffic calming. The slow down motion is done through both physical and visual tools. By implementing these tools, it is wished that it will provide a safe sense of place for people, hence not feeling dominated by motorised vehicles.

These concepts will further be displayed in the final presented design.



Zone signage

ILLUSTRATION NO. 6.20

Tools of traffic calming

### **USING LIGHT RAILS WITHOUT WIRES?**

In the following project, Ground level switched contact system is introduced as an alternative solution for the now-norm Overhead Contact System (OCS). OCS is often perceived as unpopular with the public, especially when talking about new implementations. Nevertheless, due to both the newer technical and technological improvements, OCS could become a system, belonging in the past (Swanson 2004, p. 731).

The system, Ground level switched contact, is functioning as following. The power supplied for the light rail is located inside the train tracks. Thus the light rail is, by itself, collecting the power via a special 'vehicle collector shoe' system. Because of safety considerations, the special contact rail (displayed on the illustration below) which is needed for connecting the collector shoe to the tracks, is only placed in certain sections. Then when the system detects that the light rail is above it, through the detection loop, it will energise the segment of the contact rail.

In the event of an electrically dead zone, the system has an 'on-board emergency battery' with automatic transition to battery power. In addition – in the event of a lost signal, a 'system monitoring equipment' is installed. Here with a purpose of detecting faults in any of the power rail segments (Swanson 2004, p. 739)

# ECONOMY & IMPLEMENTATION FACTORS

Focusing on both the economic and implementation factors of such systems the costs are virtually the same. The suppliers are estimating a value within 5 % of the traditional OCS systems (Swanson 2004, p. 744). Given the value of the modular components, the system can easily be installed within the already existing situations. Moreover, it can easily be accessed and replaced in case of a default.

Given that all practical knowledge on the system originates from a case in Bordeaux in France, means that the system hasn't been tested in a cold, winter climate such as Denmark. Nevertheless, the system has been tested in a humid and wet environment and has shown a leakage of less than 5 volts outside of the running rails (Swanson 2004, p. 743).



# DESIGN CONCEPT

As previous mentioned, both the design strategy and concept is based upon the importance of flows. The concept of the design is a further development upon the term, Critical Points of Contact (CPC) (Jensen & Morelli 2011). CPC are described as multi-point network based upon interactions – interactions which not only are preserved for humans but also interactions between humans and non-human artefacts. This notion of a CPC can occur when two or more points are intersecting or crossing.

More important when speaking of flows is of course the meetings which are occurring when flows are intersecting. Here the notion of CPC is combined with Jensen's term, Mobile with (Jensen 2014). Jensen is here describing how movements are occurring based upon the constellation of travellers. Then illustrating the constellation of movements, Jensen is describing the intersecting points as CPC's. Here the project is adding his theoretical term of Mobile with as a starting point for people to engage in a mobile behaviour with each other.

In the following thesis, the concept is following the mindset that both the form and the functions are following the flows. Thus making the flows the vocal point of the design.

Thus the urban form is shaped, as illustration no. 6.22 is portraying, by the flows. Also the flows are determinating the placements of the functions

Therefore, by first mapping out the flowlines, creating the base layer for the design, then the intersecting points, it is now possible to place the material layers. Here both the informational functions together with the urban form.

# INTERCHANGING SPOTS (INTERSECTING SPOTS)

**ILLUSTRATION NO. 6.22** 





ILLUSTRATION NO. 6.24



ILLUSTRATION NO. 6.25

On diagrams no. 6.23 - 6.28, the steps of the concept are visually portrayed.

1. EXISTING FLOW SYSTEM - is regarding the mapping of the main flowline (see. Analytic work). Here the main flowline is guiding the users from one end of the site – through the bus parking lot – and further out into the tunnel.

2. NEW MEAN OF TRANSPORTATION - is the establishment of the new light rail tracks.

3. NEW FLOW SYSTEM - is represented by the effect of introducing the new light rail, which is basically going to generate a new flow system. This is created by tilting the existing flow system in order to secure an inclusive connection between the existing means of transport and the new light rail. The new flowlines are creating a grid, of which the placement of the design is based upon.



ILLUSTRATION NO. 6.27

ILLUSTRATION NO. 6.26



ILLUSTRATION NO. 6.28

4. INFORMATIONAL NODES - is highlighting the intersections of flowlines. Thus determining the placement of both the functions and forms.

5. STATION ELEMETS - is then the designation of the different station elements, which are presented on the following pages. The placement is reasoning in that every time two or more important flowlines intersect, there should be a tool of information that guides you further in your travels.

6. URBAN FORM - due to the wayfinding system, a series of activity clusters are generated. Here the design is oriented towards experiences and shapes. Shaping the experiences along the journey, why securing more than an A – B route.

# STATION ELEMENTS

### TACTILE INFORMATION SYSTEM

By applying a tactile information system, we are able to guide people to either near by or far away destinations. This is a vital element of a station. This element is implemted through visual guidance systems which also directs the flows to specific elements in each of the sites through the positioning of the stations' physical elements.

### MODULAR ACTIVITY SYSTEM

The modular activity system, is meant to create an urban form that stands for both flexibility within the space and directionality regarding the main flow paths. This system is introduced in order to create coherence in terms of urban form as well as enhancing the life quality by adding new activities.

### SHELTERS

By incorporating a 'shelter' within a station is a vital element. These are created in order to accommodate the needs and necessities of the users. Here by creating a safe and covered environment which will accommodate the weather elements, such as rain, wind and snow etc. Therefore, appoint a save place for people to meet and interact.

### SENSORIAL INTEGRATION

A covering parameter when designing a station is the perception of the station – here under e.g visibility. Here focusing on the senses, these can be stimulating into making the urban area seem more exciting and inviting. By making the urban space appeal to ones' senses, broader experiences will be created as well as positive stories.



### ILLUSTRATION NO. 6.41

Station elements; wayfinding - modular activity system - shelters - visual integration











The station elements are the design elements used in the current project for generating a coherent design proposal based on flows. Guidence, directionality and orientation in space are some of the features introduced in order to create a trasit system between different means of transportation - bus, train and tram.

### TACTILE INFORMATION SYSTEM | surface and texture





### SHELTER | panels, roof and seats



1. PANELS



2. WAITING SPOTS



3. ROOF

### 4. MODULAR STRUCTURE



ILLUSTRATION NO. 6.42

New flow lines generated by the introduction of the new mean of transportation - the lightrail.

New flow pattern generated by the people's movement, which is meant to direct and guide the travelers, within the space of the station. The flow pattern system is also a way of semnalizing a pedestrian orientated space. The pavement structure was based on the flow pattern system and has the role of introducing the design parameter of cohesiveness, in order to create a unitary design language. Is made by concreate tiles of 1,20x1,20 meters 4

The wayfinding system is introduced to guide the travelers from one mean of transportation to another, being made by rubber in the specific colors of each type of transport (bus, train, tram)

Having the generated flow pattern, the activity pattern is developed based on it, by specific framing the activity zones. The activity zones are located in the empty corners, along the flow lines not in their direction. The modular system is introduced by pulling (urban trambulines) or by pushing -(seats and steps) the modules of the pattern system. In terms of texture, this type of urban furniture will take the pavement's texture, as concrete blocks. Supporting the idea of a flexible urban design, a flexible modular furniture is introduced. The pattern system is upgrated in the activity zones with tracks in between the concrete tiles, making in this way the wood modules flexible/movable.

A in order to create performative urban solutions, these wood modules can be transformed, in regards with the needs and demands of the comunity and travelers. In this way, the wooden modules can become plant beds, tranforming this sector of the station in urban gardens.

In terms of inducing a better orientation within the station space, modular vertical panels were introduced. These vertical modules were tilted on a 15 degree angle and closed in some parts with glass, in order to offer a better wind protection. These are made by corten steel and can be opened or closed.

The vertical modules are also flexible. In order, to create waiting conditions, the direction of the poles is changed and are meant to incorporate benches. The seats shape is drawn by the flows, being cut it on the flow directions. For creating a unitary design language the material is also corten steel. Another important part of the shelters is the roofing. The solution for covering the waiting areas was made by elevating the flow pattern at the height of 3,00 meters and by rotating it for a better covering of the 2 programs that are hapenning under: flows and seats. 4 The station structure was created based on specific combination of the elements presented before and has the advantage of combining them different, in order to create different conditions, which can answer more proper to the specific needs (bus, train or tram station).



# PRESENTATION OF THE NEW GLOSTRUP

In the following chapter the final design recipe will be presented. In order to fully experience the new Glostrup station, the existing situation is presented. Thereafter, the new design will be portrayed through first a Master plan here where the placement of both zones of urban life and urban mobility are presented. Following the design will be presented in details, displaying the station elements and their placements.

> Masterplan Detail plan 3d sections Technical section Visualizations

As prior described this thesis wishes to celebrate the main function of the station – thus the ability too quick and seamless distribute transit. Thus the design is target towards managing flows. When addressing flows, it is of cause a necessity to address the people whom are generating the flow – the users.

### THE NEW GLOSTRUP STATION

The design of the transformed Glostrup Station, wishes to accommodate the heavy flows and are therefore targeting the flows both inside the station as well as the flows departing or beginning at the station.

Thus the designing is utilising three key terms, wayfinding, connectivity and cohesiveness. All of which is linking to flows. Shown on the right is the current situation of Glostrup Station. Here it is seen how the station now also is focusing upon flows – though manly the flows of the motorist vehicles. Hence, not addressing the users and turning the station into a segregated urban space.

### **GUIDANCE AND CONNECTION**

The new design, which is graphical presented on the following pages in thus introducing both new activities, structures and services. The urban space of the station now offers activities for everyone. There is both the ability of jumping on the light rail and for the first time being able to cross the famous finger plan through rail born transport. If you are having trouble locating it, look down and following the green tactile guidance path. It will lead you to the light rail platform.



Are you instead waiting for the regional train? Then go to the modular activity system placed next to the steps to tunnel. Also providing you with the perfect sightlines to both the light rail, busses and a great view of the rest of the station. In the search of better connecting both the north and south end of the municipality to the station, a tactile pattern has been utilised. Here wishing to display connectivity event though the barrier of which the tracks are creating. Thus it is wished that the station will both be portrayed as, following Gehl's mindset, both spreading and gathering people (Gehl 2007).

Moreover, it will work as a tool of displaying a cohesiveness through the station, given that these tactile patterns are based upon the new flowlines of which the light is creating. These patterns are addressing a different scale then the coloured tactile guidance paths, hereby directing the flows whom are external to the station.

### **MODULAR SEATING AND ACTIVITYES**

The mentioned modular activity system which is located at the station is also placed according to the flows and sightlines.

These are placed in order to please the needs and necessities of the users, both the drifter, the determined traveler and inhabitant which uses the station as their favorite stumping ground.

As mentioned in the reasoning behind the station elements (see page 106-107), the modules are placed in order to not irrupt the flow lines. Therefor placed in the corners of the station. Here they are also given the perfect sightlines, following the ancient saying, "people are peoples greatest joy".









CONNCECTIONS BETWEEN TRAIN AND LIGHTAIL



SEATING WITH URBAN GARDENS






















# CONCLUSION

The vision for the project have been to create a new infrastructural hub which connects both Glostrup, as a city, as well as the different means of transport presented at the Station. In addition, it was to create an urban space where both wayfinding, connectivity and cohesiveness are presented. To create a space which bears more than the function of being a space of transit.

To accommodate the needs and necessities of the users, the means of public transport are all within walking distances, as well as they are supplied with seating's and shelters.

The process of the concerning thesis has gone through first though background knowledge needed to address the utilised problem statement. Further both analysis, design foundation, design concept, site-specific design concept and detailing the design steps has all taking part in creating a holistic design proposal. This has through the project work been done by applying different approaches from point of departure. Approaches such as both mobility, urban design, technology, theoretical perspectives and field work. Mobility has of cause played a significant part of the design decisions and overall thesis and have therefore been taken into consideration from point of departure.

Facing the design with the needs of the users, the design is transforming the station from being a part of a segregated urban space to prioritising the users. Thus it is no longer the motorist vehicles which are the most important factor at the station. This is done by moving the cars from the space, providing more space to the shared space and limiting the amount of CPC of the area. Still making it possible for both cars and taxis to drop passengers of at the stations area, it has been made possible to pull in to the side without disturbing the traffic. Further to limit the CPC's, which may occur when mixing both people, bikes and busses, methods of traffic calming are implemented.

As portrayed in the design, the character of each urban zone are designed in relation to speed and function of the space. This leads towards the urban spaces with different characters. The first, the urban pocket spaces filled with modular activities and the urban flow zones. Thus the zoning secure the purpose of the station. Both providing places with seating and spaces providing the needs of quick and easy transit.

Specific for Glostrup Station, the design redirection the focus from being targeted towards motorist transport to now focusing upon the people and pedestrian flows. The concept is here for placed within a site-specific content, which then is a semi shared space thus displaying flexibility. Now being an urban space which is consisting of varying programming.

Thus the station becomes a vibrant center located inside of a city which, in the next years, are undergoing a grand transforming. Then when transforming the station public spaces of both shared and semi shared characters are linked though invisible lines. They are then places where people feel welcome, biking through the site, travelling from A to B, walking from one train to another. Providing the users of the opportunity of experiencing the site while having a seamless transit.

The design further connects both sides of the municipality, thus breaking the barrier of which the rail tracks has created. Of cause then design of the station, which itself is incorporating mobility, while thus the shape of the shelters and structures are based upon the flow patterns. The structures are placed on the main buildings of the station, placed on both sides of the tracks, providing a unitary, cohesive image. Moreover, to create the perception of a landmark.

# REFLECTION

Beginning at my motivation and here being intrigued by the effects of our stations the reflections begins. There experiencing the potential which lies within our station and the question if this potential is fully exploited? Here I am thinking of its contribution in terms of being a tool in search of an urban development. So if the station could be utilised as a planning tool, being the starting point of an urban development.

Not trying to focus on an entire city and its possibilities I have thought of using the three recurring terms, wayfinding, connectivity and cohesiveness as parameters of an urban development within Glostrup Municipality. Recognising the complexity of the city, I have through the work on my thesis, also recognised the complexity of the station and how it is not able to stand alone in an urban development. Here I have recognised that trying to enhance the urban quality of a space takes more than placing a number of activity and redirecting cars. It instead involves multiple elements within the planning process. Elements such as both political convincing, technical requirements, environmental impact assessments as well as the socio-spatial influences.

The chosen parameters are here for incorporated based upon their general character. Moreover, their essence of together being able to internally strengthen the city. Here meaning to strengthen the connections and characters of the city. So by strengthen the connections within the station – and the connections external of the station, contributing to an urban development.

Of cause, just implementing a shared space with a tactile guidance system is not a single solution in gathering the city, generating an urban development. Utilizing the term of an urban development, many perspectives are coming in to play. In this particular thesis, when speaking of urban development, it is in terms of a densification in the urban areas which are leading up the new light rail station.

In contributing as a layer of a densification of Glostrup city, the presented design has been revolving around the importance of distributing flows – both internal and external. Here combining the transits with the flows departing from or ending at the station.

Further playing a part in an urban densification of Glostrup Station is the establishment of the before mentioned light rail. It is expected that such an establishment there will be an increased demand for both housing and also businesses.

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# APPENDIX A

## INTERVIEWS CONDUCTED AT GLOSTUP AND FLINTHOLM STATION.

### **Interview A**

The first respondent, respondent A is found on Flintholm station, where she travels from Hellerup to Malmarken almost every day. I start to tell her about the project and she volunteers to talk until her train arrives. She is 24 and a student at DTU in Ballerup.

#### Interviewer; What is your daily travel?

**Respondent A**; I Usually have to go to the university and those days I get the train from Hellerup to Flintholm, here I change to another train to Malmparken.

Interviewer; Do you ever use alternative routes?

**Respondent A**; I could actually settle for just taking one train which goes all the way from Hellerup to Malmmarken, but that is slower and I am usually in a hurry.

Interviewer; How do you like the station in general? Do you ever use its functions?

**Respondent A**; Its fine.... (pause). though there is a lot of steps – but that is of cause inevitable given that it has so many alignments all crossing in this tiny area.

(observation) she looks at her bike next to her). Yes, and then I have this creator to carry around, which means that I have to wait in line every morning for the elevator – or of cause carry it. It is nice with a 7/11, because I often forget my lunch and somedays I will go in quick and buy some. **Interviewer**; Ok – fine. What to you is then a good station?

**Respondent A**; For me, a good station is an area where I feel save, where I don't have any trouble waiting in 20 min at night – and perhaps where there a more than one elevator.

**Interviewer**; What point of the station is your favorite places, and which one is your least favorite place?

**Respondent A**; I really like to be on this platform (the top with the C-train) or at the metro, because there I have the full view. My least favorite place is down there (she points at the ground level platform), because down there I can't see any one. And that sharp corner (she points at the corner between the platform wall and steps from the top platform) does that I can't see if people are coming down that way.

Her train comes and she steps in.

### **Interview B**

Respondents B, are a small family consisting of a dad, mom, young son and a baby in a stroller. They are found Flintholm station, and are travelling from Flintholm to the airport, using the metro. **Interviewer**; Do you use the station for any daily travels?

**Respondent B(dad)**; No, we almost never use the train so therefore we almost never use the station. I mean it is not that kind of area that I would bring my kids to play.

Interviewer; What is then for you a good station?

**Respondent B (mom)**; Given that I usually travel far for work, and if I were to take the train, I would have to change a whole bunch of times, it would have to be a place where I could relax and kill some time. Perhaps a café of some sort, like the have here. Or if I have my children with me, it

could contain some of activity that could activate the big one

**Interviewer**; If you were to pick, what is then your favorite places? And what is your least favorite? **Respondent B (dad)**; I can't say – because I don't really spend time here. Perhaps my favorite place is down there (he points to the empty space between the ground floor platform and the bus parking lot), because there is air and you are like in between with a lot out air. **Interviewer**; And your least favorite?

Respondent B; I don't know.

### Interview C

Respondent C is a middle age woman, found at Glostrup Station. She travels every day from Nørreport Station to Glostrup.

Interviewer; What is your daily travel?

**Respondent C**; I travel in rush hour from Nørreport to Glostrup, and back, every day for work. **Interviewer**; Do you ever use alternative routes?

Respondent C; No, not really.

Interviewer; How do you like the station in general? Do you ever use its functions?

**Respondent C**; I really don't like it! I use the bike parking garage, and uses the bike from the station to work, but it is so difficult to get the bike from the underground garage to the road. I have to bring my bike through the center – and it feels so unnatural.

Interviewer; Ok. What is for you then a good station?

**Respondent C**; Something with good access points – it needs to make my travels affordable and more than the economic sense. I mean if even getting to the platform gets too difficult, I will just take my car.

**Interviewer**; What point of the station is your favorite? and which one is your least favorite? **Respondent C**; My favorite is properly the platform – because at least here everything is semi working. My least favorite thing is everything ells – because everything ells is not working. I think the station is a chaos, especially that I have to bring my bike through the shopping center.

### **Interview D**

The fourth interview conducted in with an older couple, approx. 70 years old. They are found in the tunnel beneath Glostrup Station, the only pedestrian friendly connection between the southern and northern part of Glostrup municipality.

Interviewer; Do you use the station for any daily traveling?

**Respondent D (man)**; No, not really. We only use the station when once or twice a month. **Respondent D (woman)**; Yes, but we go through the station almost three times a week when we are visiting friends and family

Interviewer; How do you like the station in general? And the connecting areas.

**Respondent D (man)**; The station itself is OK – I mean, what can you expect from a s-train station **Respondent D (woman)**; The station is not the problem; it is more the way you are getting to the station. I really don't like to go through the tunnel at night and I think that it is a shame that it is so difficult for us to get to the other part of the city, even though that it only is a matter of a couple of 100 meters. When we are walking to the other part of town, the only way for us is to walk underneath the station.

**Respondent D (man)**; And because of my bad hip it is a problem walking on stairs, so it is really on fortunately that there is no elevator (in the south end of the tunnel).

Interviewer; What is to you a good station?

**Respondent D (women)**; A good station is a place where you feel comfortable at any hours of the day.

**Interviewer**; So which point of the station is your favorite part? And your least favorite part? **Respondent D (man)**; The elevators and the escalators, but that is primarily because that they never work.

**Respondent D (woman)**; I really don't like the square up here (she points towards the plaza south of the tunnel). It is so big, no lights and an overall mess because of all the bikes which are just thrown everywhere.

# APPENDIX B

### INTERVIEW WITH METTE NEIMANN, MAA ARCHITECT, HEAD OF DEPARTMENT OF MOBILITY AND INFRASTRUCTURE AT GOTTLIEB OG PALUDAN

**Interviewer (I)**; Projektet handler om at kortlægge hvilke fysiske og sociale parameter som indgår i planlægning og designet af en station, og et tillæggende område. Hertil tænker jeg, når I som firma bliver hyret ind til en opgave, så som at planlægge de her stationer, er der så et sæt grundprincipper som I tager med i forhold til stationsområder?

**Mette Neimann (M)**; Ja, det er der, kan man sige – det er der på forskellige niveauer. Der er forskellige indgangsvinkler. Der er det praktiske så som, Hvad skal en station kunne – hvad er der af grav til udstyr. Hvis man går lidt længere ud, så kan man sige, hvad er der af krav til flowet – hvor mange passagerer er der, hvor mange mennesker kommer der forbi, hvad er oplandet til det her. Også er der måske hele den trafikale sammenhæng – er der andre trafikmidler? Cykler, biler, skift mellem offentlig transportmidler. Der er forskellige niveauer af ting.

Hvis man starter, ikke nede fra, men oppe fra – hvad er det for et sted det her? Hvordan bevæger folk sig, hvem kommer her, opland, mængder af mennesker og hvordan kommer de til station – går de, kører de, med det offentlige eller cykler de? Når man så kommer helt tæt på så er det, hvordan indretter vi det her, flowet og logistikken til at få det til at hænge ordenligt sammen. Og til sidst, ud-formningen af den enkelte for plads, stations, perron, hvad der nu end er afhængig af hvilket transportmiddel det er. Der er nogle lag, lige et løg, hvor man skræller ind.

Så er der nogle helt grundlæggende parameter så som tryghed, overskuelighed, synlighed og wayfinding, som ligger ud over det hele. Så jo, det er sådan man folder et projekt ud.

#### Interviewer: Så det er opdelt i skalaer?

**Mette Neimann**: Ja, for det handler også om, hvad betyder det for byen, eller for den bymidte. Interviewer: I forhold den artikel, du har skrevet til BYPLAN, så handler det også om at at stationen skal være en forlængelse af byrummet – og et attraktivt sted at opholde sig, så tænker jeg, et attraktivt sted at opholde sig? I hvilken dimension tænker du? De 5 min før toget kommer, er det kaffe? Eller i hvilket omfang

**Mette Neimann**; Gerne i store omfang. Hvis vi går 100 år tilbage, så er stationer nogle store præsige bygninger som i sig selv var en begivenhed hvor turene tog flere dage, så er der så sket en masse undervejs, men nu handler det om at komme hurtigt ind – hurtigt ud. Fuldstændig sømløs. Stationen bliver ikke, ligesom før, som en flagstang, der siger: her står jeg men i stedet noget der glider ind i byrummet og mønster eksemplet som ikke kan implementeres alle steder det er selvfølgelig Nørreport. Det er et byrum som også er en station. Byliv og transport glider sammen og man skelner ikke mellem de to. Jeg ved godt at nu er man under jorden – men det er f.eks. Forsøgt med vores letbane perroner bliver en del af vejsystemet – en forlængelse af fortovet. Man tænker ikke, nu går jeg ind på stationen. Selvfølgelig kan den have sin identitet og klare vare tegn og du skal ikke være i tvivl om hvor den er. Men den måde man bevæger sig på og opholder sig på, der skelner man ikke så meget

mellem om det nu er det ene eller det andet. På den måde opfatter vi at byliv integreres i stationen og omvendt. Det skal være nemt og bekvemt at både trække cyklen og drikke kaffe i den her myldre. Og det er selvfølgelig når vi snakker i byerne – det er selvfølgelig noget andet når man kommer ud i forstæderne – men hvis vi ser på S-togs nettet.

Interviewer; Hvordan sikre I at stationerne så bliver nogle gode steder af opholde sig? Hvordan sikre I attraktiviteten i trafik terminalerne? Hvad piller I ved, forholder jeg til?

**Mette Neimann**; Hovedoverskriften er primært det samme. Selvfølgelig er der nogle steder hvor det er decideret stations funktionalitet, der skal være noget information, rejsekort og skærme. Og det skal man ikke pille ved, fordi hvis man begynder at gøre det tvetydigt eller ikke synligt – så bliver folk utrygge også gider de ikke at rejse så der er nogle ting som bare skal fungere og så man bare ikke må gå på kompromis med.

Det er jo ikke fordi at det er raket videnskab – det handler om at blande noget udstyr, bænke og belægning. Stationerne er også en by forbindelse – det er lige så meget en attraktivitet – et sted du ikke kun kommer for at rejse, men måske fordi at der er en kiosk hvor du kan købe en kop kaffe eller på tværs af banen, hvor der er en bro over, som gør at du får nogle mennesker der kommer på stationen, ikke fordi at de skal rejse, men fordi at de har et ærende på den anden side. Det gør at der er liv og mangfoldighed og ikke kun er de sure med deres rejsekort. Det er jo selvforstærkende, det ligger op til en anden form for liv, og jo mere attraktivt vil det også være at gå der hen. Hvis det kun er den rene station, så er det kun de 2 min hvis det er metro – 5 for S-tog. Og det er det. Og det er jo effektiv trafik maskine, men så for man jo ikke integreret byens liv i.

(Mette fortæller om Flintholm og om hvordan, da de anlagde den kun var en bar mark på Frederiksberg siden. Man snakker om at infrastruktur generer byudvikling, og det har fungeret ved Flintholm efter anlæggelsen. Selvfølgelig ikke kun pga. stationen – men også pga. stationen)

**Interviewer**; Nu hvor Flintholm ligger lige imellem Frederiksberg og Vanløse, lidt Brønshøj og København. Har man forholdt sig til de lokale aktører når man planlægger Flintholm?

**Mette Neimann**; Der er altid en gruppe – og en bygherre. Kommunerne havde mulighed for at give deres input. Med hensyn til Letbanen, så er det jo vigtigt at alle kommunerne ikke skal kunne det samme – i forhold til identiteten. Nogle kan noget med kultur, nogle kan natur, nogle har handelsliv, erhverv. Og det vil afspejle det liv som stationen får og den omkring.

DSB er ret meget opmærksom, som aktør, især på S-togs stationerne. Der er nogle bygninger som har udtjent deres formål. Der er ikke længere billetsalg, der er ikke længere noget som helst. De gør en ret stor indsats til de bygninger man ikke kan rive ned [...] De gør en stor indsats for at få lokale aktører ind, så der på den måde, tildel bliver en lokal forankring, som kan virke præventiv for hærværk, men der skabes også liv, hvis der kommer en filial for biblioteket. Så kommer der kan drive noget lokalt, noget der kan give en ekstra dimension på til rejse.

**Interviewer**; Det var også det jeg tænkte i forhold til retten til byen. Tanken går at hvis man føler ejerfornemmelser og tilhørsforhold til noget, så laver man ikke hærværk og svinder ikke på samme

måde, så om det er nogle overvejelser I har haft med ind over.

**Mette Neimann**; I høj grad, ved at få ejerfornemmelser ud i det lokale tror jeg betyder enormt meget, som præventivt. Der kommer en beskytter trang og ligger i højgrad i vores bevidsthed. Vi prøver at påvirker det. Men vi kan ikke bestemme som rådgivere. DSB kigger meget ind på hvordan man kan aktivere det.

[....]

**Interviewer**; Jeg arbejder med de sociale dimensioner af en station, disse forbinder jeg med social interaktion. Ikke nødvendigvis interaktion som når du og jeg sidder og snakker, men i lige så høj grad visuel interaktion. Der er noget i forholder jer til?

**Mette Neimann**; Jeg tror at vores kultur i Danmark afholder os fra at interagere med hinanden, folk er meget utrygge ved det, så det er noget et kulturet issue, man ikke kan flytte så meget på som arkitekter. Vi ser selvfølgelig på hvordan man bevæger sig på, det er selvfølgelig ikke så meget interaktion, men hvordan og hvor man bevæger sig. På Nørreport, det at bygningerne er runde, så der er inden skarpe højner, der er heller ikke nogle huler hvor man kan gemme sig, og være utryg ved, eller steder hvor man kan sove om natten. Det betyder at stederne føles rarere, men det betyder jo ikke at jeg går hen og slår en anden mand på skuldreren og spørger hvordan han har det. Det er det med at hvis man ligger op til at det er bevægeligt, at folk gerne vil være der. Og hvis der så er et sted de kan sidde i solen. Så kunne det godt tiltrække og skabe et socialt rum – så kan man godt sætte os ned ved siden af en anden. Og det kan godt være at vi ikke taler sammen – men vi har det rart og er tilpas. Og man er tryg.

Interviewer; Jeg arbejder med Glostrup som case og Flintholm som kontekst, og det her idékatalog skal henvende sig til Glostrup og stationer som ligner Glostrup, med henblik på den transformation som Glostrup står overfor. Hertil ses på hvilke kvaliteter der skal ind for at åbne op for stationsområdet, Hertil tænker jeg, når I som firma laver et forslag, hvilket krav er der typisk stillet fra bygherre side.

**Mette Neimann**; De økonomiske er de første, det siger sig selv. Det andet hænger af en masse ting. Man kan sige vi er altid langt ind under nogle normer, en masse regler. Nogle har mere end andre nogle standarder, nogle typer materialer eller produkter som man gerne vil bruge. Det har nogle fordele rent driftsmæssigt. På den måde er tragten ved at snævre sig godt ind når vi kommer ind på opgaven, der er nogle give der i hvert fald er givet. Man kan sige at hele formgivningen er jo stadigvæk fri. Dog med at arbejde med jernbaner så er togskinnerne utrolig dyre så derfor laver man ikke lige en krølle eller spiller sporet. Der er ikke frie rammer – der er nogle begrænsninger på

**Interviwer**; Det var også mere med henblik på designmanualer som DSB før har brugt- om det var noget I er underlagt.

Mette Neimann; Hvis vi tager dem en af gangen – DSB har egentlig ikke en design manual, det har de haft en stolt tradition i at have. De har standarder for alt det udstyr som står på perronerne, det skal være ens over det hele også behøver man ikke tage stilling til det.

(Mette fortæller at man har siddet og snakket om at man skal finde tilbage til det der virker, i forhold til udformningen af stationen – uanset om det så var fra 70'erne eller forrige århundre – alle har nogle

kvaliteter, gode og gadine materialer).

Hvad er det vi skal fremhæve ved de her rum, byer eller steder? Og få ryddet op – skærer det overflødelige væk.

(Mette beskriver Ryparken som der har været arbejdet med)

Der er blevet ryddet ud, lagt nogle sten og anlagt nogle cykelbede, ligesom ved Nørreport, eller defineret cykelområder. Det er helt skrapede og det fungere super godt. Cyklerne står hvor de skal og der har ikke været graffiti. Stedet er nu opdelt, her er cyklerne, her er trapperne, her kan man bevæge sig. Der er ingen grund til at forsøge at være noget man ikke er. Det er sted hvor man skal hurtigt op til toget og ellers hurtigt ned til cyklen også hurtigt hjem eller over i Irma.

Det er sådan noget vi forsøger – at få noget gadint og noget robust hed, noget kvalitet ind over. Også er det faktisk det folk oplever virker præventivt. Hvis noget er lidt shappy og skidt og skal vedligeholdes, vi ved at det ikke bliver gjort, de kommer ikke ud og vasker ned og renser af . Så skal vi have noget der kan tåle at det ikke bliver sølle at se på selvom at det ikke bliver gjort rent. Nogle af de ting man langsom begynder at udvikle rundt omkring – men det handler meget om DSB.

I forhold til letbanen står vi i den situation at den er ikke lavet før, så der har vi kunne designe mere frit. Men vores fokus er stadig at lavet noget enormt enkelt – der er en masse elementer som vi putter ind i et skab og lukker inde så vi kun har den klare rene overflade. Man skal ikke være i tvivl over hvor man skal gå hen – man skal kun søge informationen et sted. Så får man også ryddet op i opleverne

**Interviewer**; Kunne man frygte at ved at have klare, rene og glatte overflader og robusthed – at det bliver lidt identitetsløst. Eftersom at alle stationerne ligner hinanden og køre det samme design.

**Mette Neimann**; Det der var med s-togs stationerne i 70'erne var at det var røde felter og det var sorte og røde felter der kørte. Det kørte fuldstændig igennem og der var manualer for alt. Hvis man skulle bruge et håndtag – så var der en manual for det. Det vi gør nu, og de er nu sådan set stadig meget forskellige, det er ikke nødvendigvis de samme materialer vi bruger alle steder, vi prøver bare at skrælle ind til kvaliteten. Så man tænker, hvad er det præcist lige at det her sted kan – hvad skal vi fremme, hvordan er lyset, hvordan skal man kunne komme ind, så det er faktisk ikke 1:1. Vi bruger at skrælle ind og finde ud af hvad der fungere de enkelte steder. Så der er nogle krav i forhold til materialer pga. driften – ellers kan man simpelthen ikke styre det.

På den måde tror jeg ikke at ensartetheden er så stor endda, da alle stationerne alligevel ligger forskelligt. Og har forskellige adgangsforhold. Det er nok først når man kommer op på perronen at den vil virke ensartet. Og det kan man sige bliver kedeligt, men der er også en vis tryghed i det. At du netop ved, hvor finder jeg informationen, den er typisk placeret der. Og skiltet sidder der.

I den sømløse rejse, skal du ikke være bevidst om det, du skal ikke være bevidst om det. Det sker bare af sig selv, helt intuitivt og det er det bedste. Hvis man kan opnå det så er man nået langt.

Så kan man træde et skridt tilbage og så skal der være oplevelser, men trygheden kommer også af gengængeligheden. Også af mange andre ting, men også af gengængeligheden.

[....]

# APPENDIX C

### REASONING BEHIND THE SENSE OF PLACE ANALYSIS



The first sets of pictures portraying the back-end of the station, placed south of the rail tracks. The over dimensioned square is a typical take on the back-end of a station, containing the required necessities, bike parking and a big clock. Due to the size of the square combined with the lack of programs, the area quickly feels out of scale, empty and in the late evenings and early mornings it feels very unpleasant.

The access point for the tunnel, topped with the big red S – trademarked for the s-train, is emerging from the ground as a rollercoaster getting reading to loop. It looks and feels as a portal, marked by to small trees, reeling you in. Even the choice of pavement, cobble-stone, are rolled out as the red carpet, welcoming you to the station.

Walking up to the tunnel, it starts to feel like a race. The surrounding people are running, battling to reach the tunnel first, starting to resemble cattle running for water. Some of the people are racing on their bikes, almost throwing them against the fence and continues to run down the tunnel. Others are just running. I walk down carefully, trying to keep a straight line, given that people are swirling around, running in front of one another.

As I walk down the steps, into the big black hole I notice the bright graffiti, beautifying the light grey concrete with a splash of color. While the graffiti are beautiful, it is still a matter of vandalism and portrays a negative feeling. Making one think of what is going on at the station in night hours.



Walking down into the tunnel, it is a mixed feeling, unsure of the what is going to greet you in the other end. When getting to half way into the tunnel, you are greeted by a light in the end of the tunnel, making it feel more comfortable to walking through it. It is covered in light curry yellow paint with orange tiles, making it feel cohesive and light.

Walking up the stairs and arriving at the platform is always a nice feeling, a feeling of relief that you made it. It is steep steps which is leading you to the platform, covered by the narrow metal ramp, assisting the bikes in reaching the station. In the mornings people are standing in line to use the ramp, and it creates chaos that there only is one ramp.

Getting to the top, you are welcomed by a narrow platform, only surrounded by an open, wild grown, field with rail tracks and old buildings. Even in the middle of the day the platform feels deserted an uncomfortable being on. The platform is a classic, consisting of a couple of completely covering shelters, a couple of half covering shelters, a couple of billboards with benches on each side and some login machines for rejsekort. The space is implicit signalling you what to do, and how to do it.

The bright yellow spots on the pavement signals you how far to go on the platform, and more directly the height difference in between the platform and rail tracks, signals you how far you are able to go.

Either way you're trying to escape the railscape, by going east or west, you are led up a tunnel, not knowing where you will end up.



Trying to escape the classic railscape, you are led to a set of downwards steps. Walking down the steps, you are entering a tunnel, only providing one option – to follow. It is always, with an unsettling feeling that you walk down such a set of stairs, not knowing what to expect. The tunnel is equipped with bright lights which are stimulating you visually and providing you with a safe feeling. The tunnel is leaving you no sense of direction or overall overview and suddenly, now you are led out into a big parking lot.

Now entering the bus parking lot, you are welcomed into a new domain – a domain where the primary regent is the busses. This urban space both looks, acts and feels like a jungle. A semi shared urban space where people, bikes, taxis and busses are all struggling to move uninterrupted.

Even though that the space, likes the railscape, is signaling you where to go and where not to go there still lies an uncertainty in moving within the parking lot.

These signals, some regulated as rules and some un spoken, are not all being followed and people and vehicles are uncontrolled moving in between one another. Compared to the railscape, velocity here is an important, unknown, factor given that it is both pedestrians, bikes, busses and taxis' involved with one another.

Moving alongside the parking lot, you are led up to the right part of the Glostrup Shopping Centre, where the main entrance is covered by the big bright S, making you filed with joy, showing you that you are on the right path. It is a great feeling to enter the shopping center, thinking that here, there will be comfort, being amongst other people. instead I am heavily disappointed, being greeted by an empty café and a heavy smell of kebab.



Looking desperate for the sign of a train, you are led over to a pair of escalators, leading you further underground. This is the only rational way down to the train, forcing to to bring your bike onto the escalator.

It is a strange place, agian , bad lighting and a missing of overview. It is not a place with a nice atmosphere - and there ais not many places where people can hide and gather

You turn to the left and are greeted by a 7 eleven, which is really nice knowing that there at least here are other people. You walk through the sliding doors and are now, ones more, entering the railscape. Here welcomed by the commuter's bicycle-parking basement, elevator and steps leading you to the platform.

# APPENDIX D

### SECURING ACCESSIBILITY FOR ALL

Within addressing the theme of designing for public transport, accessibility is an important component. Hereby focusing on the physical conditions for passengers of public transport and securing accessibility. Here a publication by The Danish Road Directorate is incorporated, HÅNDBOG, FÆRDSELSAREALER FOR ALLE – HÅNDBOG I TILGÆNGELIGHED ANLÆG OG PLANLÆGNING (2013).

Given that 10 % of the Danish populations has a persistent disability which means, that they have a need for one or move devices. These 10 % are including, among others, people with movement disabilities, here also including wheelchair users and people whom are blind or very visual impaired. (Vejdirektoratet. 2013)

By planning, designing and developing the urban spaces - including stations - so they are free of barriers and thus useful for all, the consequences of the impairment is reduced or removed. The design of the station should be as simple as possible, so that the urban areas are easy to use regardless of user's experience, knowledge, language skills or ability to decode the traffic or the space itself.

Denmark has ratified the UN Convention regarding disability rights, and in article 4, of the UN disability Convention, it is encouraged that the participating parties are;

- Developing standards and guidelines regarding accessibility
- Communicate knowledge of good solutions for architects and other responsible professionals
- Involve the disability organizations in the planning processes (Vejdirektoratet 2013)

This agreement, a new road standard, is to ensure that accessibility for all users in public traffic areas. Given the difference among disabilities, a range of different needs are crucial – both in regards to the physical design of traffic areas. As a tool of securing accessibility, the accessibility revision can be included. The accessibility revision is conducted in order to secure that future construction projects are accommodating the guidelines according to availability and accessibility.

Also in regards to public transport, it is necessary to ensure equal possibilities for every one – thus setting some demands in regards to both décor and the physical design of bus stops and traffic terminals. (Vejdirektoratet. 2013)

Ensuring accessibility within the stations are moreover, as mentioned above, the incorporation of décor. Décor ensures more than accessibility, it ensures wayfinding. Here implementing the importance of semiotics, such as information and signs, and the importance of leading elements, such as leading lines, directions and attention fields. (Vejdirektoratet. 2013)

Focusing on the décor of stations, pedestrian systems and sidewalks should be accessible for everyone, thus accommodate the needs of the different user groups. In regards to the user, having full access, the dimensions and choices of materials, regards to sidewalks are important to include. This creates a set of demands regarding both the dimensions and choices of the pedestrian systems and sidewalks.

In regards of the materials of the pavement, it is a demand that the pavement is even, solid and skid proof. Generally speaking, cobblestone and setts or similar materials shouldn't be used in pedestrian systems due to the on-evenness. If there lies a wish to incorporate the same materials throughout the area, the pedestrian systems should be executed in even granite tiles.

Also influenced by the choices of materials is tactile guidance paths. An aim in the designing and planning processes should be to establish and utilize natural tactile guidance paths, as a part of the ordinary occurring elements in the pedestrian areas. Where this is not possible, special tactile guidance paths should be implemented. These tactile guidance paths are to, calculated, be implemented into the design of both pedestrian crossing, sidewalks, shopping streets and of cause traffic terminals.

These significant tactile guidance paths are to begin and end by a 'attention field' and is to be placed, in the degree it is possible, in intersections in 90 degree angels. Moreover, these attention fields are to be utilized when a shift in direction appears, on a tactile guidance paths, or in the sport where two paths are intersecting.

# APPENDIX E

### DESIGN PROCESS AND DEVELOPMENT

Appendix E are displaying the design process, concept generation and formgeneration of the project, leading up to the final design recipe.

#### **CONCEPT DEVELOPMENT**





### **DESIGNING FOR FLOWS - DEVELOPMENT OF DESIGN STEPS**







### **DESIGNING FOR FLOWS - STRUCTURE GENERATION**


## DESIGNING FOR FLOWS - DEVELOPMENT OF THE SITE SPECIFIC DESIGN





