INTERSECTIONS
A REINTERPRETATION OF DENSITY AT MOBILITY HUBS

AMS MID CITY 2100 / COMPLEX PROJECTS
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03/07/2019

P5 REFLECTION
PROJECT BACKGROUND
Towards the year 2100 cities globally have to deal with rapid urbanisation. Also Amsterdam is facing key challenges with a predicted on-going urban population growth, an increasing pressure on infrastructure and the automation of jobs. To counter these challenges strategies have been developed that incorporate densification of the city, improvement of mobility and that take into account people have more free time without permanent occupation. Speculating on the future of the highly popular and concentrated Centraal district it is visible that the city centre has reached its limits. Therefore in search for expansion this means that land from the IJ river will be reclaimed for building purposes together with further densification of Amsterdam Noord. Public transport will extend itself with an underground public transport system and the city centre will be free from motorised vehicles such as cars and passenger drones.

With the before mentioned scenario the question rises what density actually means in cities. Urbanisation is often seen as a threat that has to be solved with for example housing development or by improving infrastructure. On the other hand density can also be viewed as an opportunity for public interaction. Over the course of history simple and rather singular functional crossroads with a comparable low density of users have, under course of urbanisation, grown out into dense multifunctional urban nodes with a plurality of program such as Times Square and Piccadilly Circus or intensely used mobility hubs such as Grand Central New York or our own Amsterdam Centraal. The density of these arteries have grown into dynamic and multifunctional combinations of public activity and people. At first travellers just came for transit. However mobility nodes are no longer just places for transportation but have become multifunctional hubs with a diversity in public activities. Density has become an opportunity for other program such as retail, commerce, performers, artists to encroach the mobility hub. Think of graffiti, street musicians, coffee on the go at Starbucks and advertisements that make use of these natural crowds passing by each day.

On the other hand digital infrastructure has also evolved from a one to one phone call in a payphone box into vast online networks such as social media platforms (e.g. Facebook or Instagram) with high densities of people connected at the same time. Also here it is evident that digital infrastructure has evolved from a singular purpose of communication into multifunctional online hubs that have been encroached by commerce, advertisement and online shopping which make use of the users around a popular spot.

Altogether both types of intersections with high density of users serve as a focal point for public activity. Attention, attraction and exposure are keywords which make it successful for commerce and public activity to flourish. Both online and offline the economy thrives on numbers. Density also means convenience for its users. Therefor public facilities at physical mobility hubs have become of utter importance. Non-travellers nowadays even come to these pulsating focal points to make use of the facilities and amenities.

Looking forward to 2100 problems may arise with new digital lifestyles. First of all digital intersections are taking over program from the physical realm. Inherent physical activity is disappearing online. Think of streaming services or online shopping. Secondly these new digital lifestyles also affect the way we use and perceive our physical environment. People start to live in an elusive and individual version of reality. There is a trend of people separating from each other by living in a filter bubble which makes them non-critical while in their little echo chambers of the same information and like-mindedness. Also there is less real time physical interaction with an increase in online behaviour which makes people unsocial and unaware when present in public physical environments. We are sucked into our own devices withdrawn in our own cocoon. Lastly we become more introvert with the high pace of life where people are always in a constant motion. This life in the fast lane is defined by on the go activities. The use of time and space from home has to be spent efficiently.

Both before mentioned consequences of digital lifestyles challenge the meaning of physical mobility hubs. Nonetheless travelling/transportation will remain a physical means in the future, unless someone invents teleportation which for now seems an unlikely scenario. Therefore a mobility hub will still serve as a significant space for public activity.
The project tries to find an answer to the future role of public space in-between modalities as urban intersections with high density of users influenced by new digital lifestyles. It looks at the meaning of intermediate spaces of mobility hubs (e.g. a station hall) with a scenario where people are constantly living in their own digital bubble. The design is centred around the meaning of space in-between where people have to exit this bubble for a brief moment and naturally intersect. The project is defined as a mobility hub that contains public space in-between a passenger drone-port on the roof and an underground station for metro/pods that complements and adapts to new digital lifestyles.

On a programmatic level the project stresses and offers physical activities on the go that can’t be done online. The project gives way to a variety of sensory impulses and physical activity. A grasp of the program contains essentials such as a hairdresser or a medical scan centre, media and commercial space with showrooms to test products that are hard to judge online, a swimming pool with real water, a theatre and exposition spaces. All the program is characterised by a sensory aspect that can’t be virtually simulated such as touching, smelling, hearing. Also all the activity has the convenience that it can be done on the go.

The project is located at the edge of the inner city from which cars and drones are banned. Several new transport hubs will emerge around the perimeter which will serve as new transition points. Westerpark (which has already been taken up in plans to connect Amsterdam Centraal with Amsterdam Sloterdijk and new neighbourhoods in the West) will function as one of these main transfer hubs to get in or out of the city centre. The project contains the circulation between different transport modes and forms a connection in the city network with a park that runs over the sunken old railway lines. There is a hierarchy for predicted user flows. The first and most prominent will be the interior transition between air travel by passenger drone and the underground network of pods/metros. Second will be a city passage that connect the two parks on site. Third will be the arrival and departure of residents from the surrounding neighbourhoods. These flows are also defined by three types of users. Commuters that still go out for work are the people using the transfer possibility, facility users come and go with the intention of using facilities and actors or spectators accidentally passing by this building.

The goal of the character of the building is to influence people’s digital behaviour through the physical human senses. People are attracted out of their bubble with the presence necessary physical activity but also with the architectural experience when moving through the building. Important starting principles for the design have been the visibility and transparency of activities.
DESIGN PROCESS
To kick off the concept development the design brief was summarized into a clear principle scheme with a set of rules on the level of program, location and character. Together with the hierarchy of users and flows on site these principles have initiated a first exploration through physical models. This method involved discovering possibilities through the level of massing, program organisation and conceptual models. Combinations were made and further explored on their potentials. One combination focussed on a prominent horizontal route as one directional route where the program relates around a central hallway in a single envelop. Another combination focused on a prominent vertical circulation with a spontaneous route on ground level and multiplicity of volumes containing the program. After evaluation the best qualities of both were merged and combined into an ideal scheme. The concluding scheme contained one circulation core in one building envelop from where the full program is accessible and visible. Another important decision was to create an overarching flat roof for passenger drones to land.

However when reflecting on the research through models a fourth key theme of exploration was missing. This was the creation of space. The focus should be on what is left as space and not what is being built. Therefor I added more research on carving space from inside out rather than placing mass in an urban context. With this strategy I arrived to making a void that serves as the intersection. The void serves as the interior transition from passenger drone to underground metro and at the same time as passage through the city. To incorporate the scenario where people are constantly in a digital cocoon the void eventually evolved into a vortex. On an interior level the void reveals all activity which is placed around it.

The initial development of the project centred itself around coming up with strong concepts that can function as a leading thread through all scales in the design. These concepts have been visualized in such a way that the overarching idea is deduced into an abstract diagram. These concepts only show the necessary essence. One example of a strong concept for the character of the building has been ‘compression and expansion’. This concept actually derives from Frank Lloyd Wright work who used variations in colour, ceiling heights and hallway widths to alternately compress and expand the sense of space as a person moved through the building he created. When carving the space for transition and passage I also varied with scale, width, height and light to form an experience that might subconsciously influence the users digital behaviour. Here several options have been explored in phenomological way to form the desired transition. This has resulted in a sequence where the user is attracted, compressed and ends up surprised when either entering the building from outside into the void or from transiting the underground and arriving on the roof.

The exterior on the other hand has played a less important role whereas the project will be foremost experienced from inside out. It has never been the purpose to attract the people around the building but rather the experience through it. After exploring several massing shapes the project returned to the simple shape of a block that integrates all predicted flows on site. However the project does embed in its urban surrounding by being cut off at the side and with two major entrances on the front and back façade that connect the parks. The main function of the façade seen from the exterior will be as an interactive dynamic media screen. This thin layer of makeup reflects on the new digital lifestyles and disguises the actual physical program inside. As a whole layer the façade became a facilitator for the main structure, fire escapes, sanitary units and technical cores for piping (HVAC).

After defining the shape of the interior void came the incorporation of the circulation. The circulation would have to spiral around the void which functions as a people mover. Several possibilities were designed through a set of design principles and were evaluated on another set of criteria. The result ended into an on-going spiral helix detailed as moving walking. The circulation contains of two segments going up and two segments going down per floor. The access points to the walkway shift per floor and are marked by a set of 8 columns that pierce through the building creating an even balance of flows. Again the building element as a whole falls back on creating a user experience where people are influenced in their digital behaviour through mimicking a swirling effect. The moving walkway stands for the digital bubble that people live in and is therefore also detailed as a shiny technical machine. The latter principle also accounts for the façade which serves as an interactive dynamic media screen.
Organising the program has mostly been decided through ‘just’ drawing the actual physical activity that takes place. Here the research method becomes the drawing of plans, sections and facades. The activity spaces have to be drawn in detail to see where exits are placed or views are blocked. There is no need to make this method unnecessarily complex. The concepts are there already and it is just a matter of keeping it simple and concise. It doesn’t require further derivations of concept.

A mistake in the design process has been the research into overly designed construction elements that obstructed the clearness of the void. However, the lesson learned was that the quality of the building lies in the void and the program configuring around it and not that much in the structure. Also for finalizing the project with materialisation and technical details it is important to stay strong to the storyline and concepts of the project. In that case the outcome will follow naturally.

Figure 1: Two explored combinations shown as program relation schemes

Figure 2: Evaluating and merging qualities of the two explored combinations
Figure 3: Sectional schemes for further phenomenological research on ‘compression and expansion’

Figure 4: Desired transition in a storyboard

Figure 5: Concluding scheme for interior void as intersection through building
Figure 6: Evaluation of a few variations for the circulation on specified criteria
Figure 7: Final implementation of the circulation in 3d model

Figure 8: Final massing in physical model
1 RELATIONSHIP BETWEEN RESEARCH AND DESIGN
Research and design can’t be seen as two standalone processes. In my opinion these are always intertwined. By evaluating opposites and narrowing down with a set of constraints, answers are gradually found. Research informs design decisions by sketching, testing and drawing the complexities of the project can be understood. Usually an initial thought or hunch serves as a good direction. Nevertheless it is important to explore different variations to justify this first hunch. The idea for a large main circulation core for example derived from the conceptual model of a spiralling staircase. Often the key is to stay close to the main storyline and not drift off into ambivalent choices. Keeping it simple and staying strong to the first principles are essential. For this project that has been seeing the interior transition through carving out space as a focal point on an architectural but also urban level. This architectural element lays a connection between the physical activity around it and the user which is living in a digital bubble.

2 RELATIONSHIP BETWEEN THE PROJECT, COMPLEX PROJECTS AND ARCHITECTURE
Looking back from the start at the whole graduation year the topic has thoroughly evolved into a meaningful project. First it started out with an interest in densities. However the initial phase focussed on the problem solving level by looking for solutions in densification. At a certain moment I realised that density also contains opportunities for social public benefits. From here the topic even broadened with a parallel to the digital realm which set it in a futuristic point of view.

The project is in line with the emphasis of the complex project studio on renewing cities by large projects. The project touches on several levels from improving urban mobility to renewed public relations. The complex projects studio focuses on gathering, organizing and questioning the complex forces that manifest themselves into the built environment and operate within many different scales and cultural context. So does my graduation project find a simple solution for a complexity of variables forming urban, societal and technical relations from concept to detail.

3 RESEARCH METHOD AND APPROACH IN RELATION THE THE STUDIO METHODOLOGIES
The first half year of the graduation process is defined by doing research. This phase within complex projects studio is about collecting data through all scales in the building environment. First it contains socio-economic research mapped into hard and soft data. Then it continues into a study on historic and contemporary precedents summed into space data. In my case densities on site were part of hard data, consequences of digital lifestyles as a phenomena were described in soft data and spatial research was done on what the space between modalities such as a station hall has been, is now and what it can become.

Altogether this phase is about seeing trends and projecting them to the future. In speculative research assumptions are made on the analysis of past and current data. These conditions and statistics are then translated into a future scenario which serve as a starting point for speculative design. Without this research based set of guidelines the project could never root itself and it would have becomes an utopia.

The storyline of a project within the complex projects studio is of high importance. This storyline derives from combining the researched data into a coherent narrative. Through the graduation process it has become clear to always present the design decisions in relation to the main narrative.

4 RELATIONSHIP WITH A WIDER SOCIAL/PROFESSIONAL AND SCIENTIFIC FRAMEWORK
The graduation project also links to other fields other than the field of architecture. First of all it contains a wider societal significance. One of the challenges for the future is the social engagement with digital environments on the rise. Digital behaviour influences the way we interact with one another in physical public spaces. The project serves as an example of what would happen if a large part of social activities are replaced online. The mobility hub combines all future left over physical activity into a spot for public interaction.

Another exemplar field is urban planning. Strategies, visions and scenarios which are underlying the project can serve as a reference for city planners or developers. The project and it’s context shows what can be possible in the Centraal district of Amsterdam. Especially in this district population growth can still happen
through densification. This relates to the wider global topic of urbanisation. Another example which has been explored in the project is how to avoid congestion of mobility. A solution has been found in making the city car free, extending the underground public transport and adapting to new flying technologies such as passenger drones.

5 ETHICAL ISSUES AND DILEMMAS

One question has returned over and over through the graduation process when reflecting on speculative research: How do I know what will happen in the future? In the end no one has the answer to this question. However fantasizing and developing future scenarios makes sense when it is framed into a logical story. The future can never be fully predicted but scenarios might contain some truths. Speculative research is about stating current trends and technologies and projecting them towards the future. A mobility hub for passenger drones is for example based on new flying technology such as the Ehang 184. Accompanied by further research on small scale droneports.

Also when elaborating on the design process the question kept returning whether the project was futuristic or not. In the end the project foremost focuses on the continuation of space for meaningful physical activities. Personally I don’t believe that designing for the future is about magical materials or floating buildings. The futuristic part of the design lies within new relations and combinations between activities that may have changed over time. For this project the way people behave in public is an aspect that will change over time with new digital lifestyle. Another aspect is the disappearance of physical activity to the online realm.

Speculative design should be practised from opportunities in creating something and not from a problem solving point of view. Therefore we can’t be too critical or negative on what is happening nowadays and the outcomes for the future. Everything goes as long as it is framed in a coherent and logical way. It doesn’t help to compromise design decisions to technical or functional disabilities especially when designing for the future. Extreme decisions ask for bold and radical statements. However this still doesn’t mean the project has to be flying.