

5.2 REFLECTION

Personal and thesis process. From the beginning my research was focussed on the stressful cities and how vegetation can address this problem. It started with the focus on the air filtering qualities of plants however it was too much focussed on technical details and it didn't have a strong social relationship, which I find very interesting. The focus in this research was on Toronto and their green rooftop bylaw. I changed the location of my thesis in between P1 and P2. It felt a bit random to implement my research and design in a city that has a different climate than ours with not a lot of extra benefits. It was still very useful to analyse Toronto and New York to see how they cope with greening the city when it is very dense and has a lot of huge rise.

The results of the research are not surprising, however give a confirmation of my thoughts. I first started with the research of ecosystem services. I really tried to choose a category of ecosystems, and completely dive into that topic, however it was difficult to choose. During my research I found the term biophilia and biophilic cities. This idea of biophilia was exactly how I looked at cities and how they need to be designed. Although I had now 2 different theories that didn't match together yet. Ecosystem services is written from an ecological point of view and it was good to have a theory with a more designers point of view. Although biophilic cities lack in the connection with the landscape and landscape architecture. Later in my research I found a third theory, 'skinny streets and green neighbourhoods'. This theory came out of the more daily, neighbourhood design from biophilia. This theory is about design and from is written from a landscape architecture perspective. These 3 theories are all about greening the city and the importance of nature from a different approach. In further research the overlap between the research became even more visible as they own and then even referred to each others work. This theory was a good start for my research by design and design as it had different components and already exists of multiple examples and design tools.

Thesis aspects. In this thesis the research is very important as it is the framework for a general design which can be implemented in 'every city'. The start of this thesis began with a design goal: *To design a green and healthy neighbourhood landscape by integrating the vertical- and rooftop green into the ground level scope so there is daily human contact with nature as well as the many environmental and economic values provided by nature*

and natural systems. The base to come to a design was to research the benefits of nature and why we need nature. Of course I already knew the importance of nature but I didn't know the exact benefits. I looked into many things, especially ecosystem services and biophilia. From this research I could conclude that indeed we need nature, preferably on a daily basis. The second question then was how to achieve that. The challenge is that cities don't have many space for green development so it is very difficult to implement new nature. Biophilia is not only a good tool to measure the importance of nature as it also gives guidelines of how we should design our cities. The book of Girling and Kellett also has many design tools of extent and maximize the nature in cities. From studying these theories and analysing many biophilic examples, I came to my design principles. Some of the design principles were already present before all the research, like 'greening where possible'. However with the research I did I strengthen those design principles, extent them and made them more practical. Like 'a small green space within 100m of every resident'. Some design tools are the same as I found in the literature however often I changed the tools because it was not completely right in my opinion. Beatley stated that you need 250m walking distance from every dwelling to a green place in the city. This book is written by an American and sometimes had to adjust to have a more European scale. Before my research it was really difficult to get a grip on the amount of green and the potential green in a city. All the design principles are a result of the research I did. From there on I had to make a design to show how this multi-dimensional biophilic city can look like. So I would say that for me the design is a tool to strengthen the research. To show what I stated in my research and to convince one why it is so important and valuable to create greener and more biophilic cities. There is an enormous distinction between greening a city without connecting and communicating it or to create a balanced biophilic city where there is daily nature for everyone.

My graduation topic is a landscape approach on an urban issue. For the master landscape architecture the graduation studio is called flowscapes. In the manual it says that the theme addresses both: 'extremely large and very small interventions which should interrelate and be part of important current developments in the world'. My problem statement is that many cities in the world have unhealthy climates and are really stressful. Predictions are that more and more people will live in cities. The World Health Organization has declared stress to

be one of the largest and most important health challenges of the 21st century. We can already see the effects of the over crowded cities in combination with the busy lives we have. Therefore it is crucial that a city is a place where people can restore from their busy lives and that it becomes a healthy and happy place. A place that will not increase stress but will decrease stress. The main solution is, in my opinion and hopefully now yours as well, to design our cities greener and to create a multi-dimensional biophilic city. We can see that till now mainly architects and planners are planning and designing the cities and landscape architects are asked afterwards. I think it is important that landscape architects will get a more important role in the decision-making and design of our cities, as we know how to use nature as a design tool. Within landscape architecture the importance of green infrastructure and creating safe and healthy atmospheres is very present. The design of a healthy city is not just to implement green. It is about optimize the green, to create spaces that touches as many ecosystem services as possible within an aesthetic framework. It is the bridge between architecture, planning, sociology, civil-engineering, art and ecology. For the design framework of a multi-dimensional biophilic city I took all those fields into consideration.

My research method is based on the philosophy of biophilia. A term that was first introduced by the German psychologist Erich Fromm. Later it was taken by ecologist E.O. Wilson who wrote a whole book about it. This theory was later used in architecture and planning. As a landscape architect you touch the different disciplines. I tried to connect the biophilia with ecosystem services and a more design approach, based on the book of Girling and Kellett. Our relationship with nature has changed rapidly and is very thin for most urban inhabitants. The research method was to show the importance of nature and how we can design with nature, related to our densified cities. A design is a good design when it is aesthetic and functional, raise awareness and has multiple purposes. I linked the three theories together to create a broader and more layered base. I think that it is very logic to work with ecosystem services when designing for a biophilic city. The first theory, biophilia, is more a philosophy, a thought, a tool to bring awareness to the importance of nature in our lives. Ecosystem services is a way to measure the benefits of nature. It is a practical continuation of biophilia, and already used widely in the whole world. Biophilia in that sense is less known by people, however is becoming a bigger part of our design and policy making. I

think that this thesis is a combination of a wider scientific framework, as it touches multiple disciplines. My thesis is a guideline of how we can design our cities differently. It is not complete due to the amount of time that it stands for. However I believe that it is a starting point to think about the possibilities that there are in cities. The possibilities to bring more and more valuable nature into the cities and to create healthy and happy neighbourhoods. As well as the possibilities of add biophilia to common urban elements, such as stairs, buildings, roads, etc. To show how beautiful a city landscape can look like, from all different dimensions. We still think about these elements in an old fashioned way. It should be functional, sometimes aesthetic as well and nowadays sustainable. To add nature into those elements increases the value. It will be a 1+1=5 or even more. That is the goal that you want to reach. Adding one element which creates multiple new elements and benefits. Implementing green does not only add to an aesthetic value as well to air filtering, to biodiversity, to water retention, to a positive psychological and physical health, etc.