

The Greenhouse landscape and its cities

AR3U100: P2 report

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June, 2018

Preface

The P2-report is the second report of my graduation year. It shows the progress of the first half year of the graduation This report will explain how to graduate in February.

As part of my thesis, I will work on an exposition. I love to visit musea and galleries so I would love to try this make one. The chapter exposition will focus on the progress made so far. During the P2 presentation, the small scale exposition will be showed.

The report will start with the vision of my thesis. This vision is set and will hopefully only change a bit by sharpening it. The chapters research question and methodology will focus on how to finish this thesis in the upcoming half year. Filially, the chapters exposition and design directions will show the research done so far.

During my graduation year, I am keeping up a website. I will update it upcoming week. The p1 and p2 report can be downloaded on this site: www.janvandekamp.nl

I hope you enjoy my work like I did making it,

Jan van de Kamp, 4148037

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Vision

Abstract- The greenport is the Netherlands are producing a lot of vegetables for North-West Europe. Due to technological development and rising productivity, consumers have been more disconnected with their food production over time. This have caused a lack of knowledge and love for our food. Innovations are needed to feed our growing population and to provide enough healthy food for everyone. Vegetables consumption is still very low in Europe and especially in the Netherlands. By connecting the greenports to our daily life, knowledge and love of our food can be brought back. Besides, could this reconnection play a role in stimulating vegetable consumption for healthier cities.

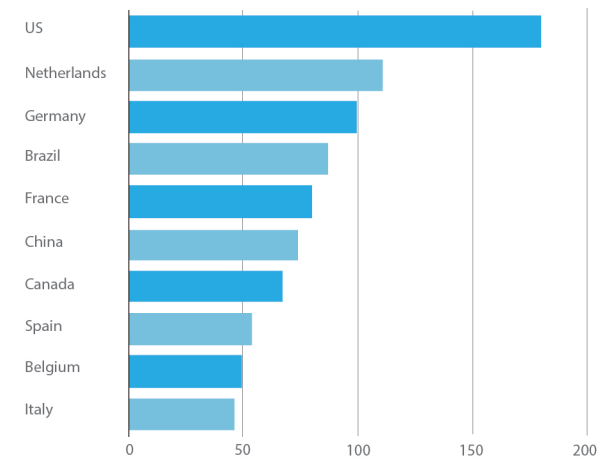


Although the Netherlands is a small country (surface wise), it is the second largest food exporter in the world (Central Bureau for Statistics, 2016). Netherlands knows an extremely dense food production. The main products produced in the Netherlands are dairy products, vegetables, flowers and processed food. The Netherlands knows six clusters of vegetable and flowers production sites; The greenport. The biggest vegetable greenport is the Westland.

Greenports as exporting machines

The food production in the Westland, have always been focussed on export. The development food production in the westland accelerated from 1822 on. In 1822 a steam ship service between Rotterdam and London opened. Due to this, the farmers in the Westland could reach a higher amount of consumers. London was growing exponentially during the industrial revolution and this created an extremely high demand for food. Around 1850s the Westland area was completely focused on producing grapes which were exported towards the UK (Jsselstijn, 2016). Almost 200 years after the opening of the steam ferry towards London, the Westland landscape is still focussed on food production. The grapes have been replaced by tomatoes, flowers and other vegetables and the export is now more orientated to Germany. Technical development in the greenhouses have risen the food production extremely fast 2 centuries.

The food industry is a complex system. The Netherlands is exporting a lot of food, but the Dutch does also eat a lot of imported food. The food industry is a complex and fast changing system. Food is transported for miles to get to its consumers. Food prices and global food prices, change the food transportation and consumption patterns of people quickly. The food industry is working on the global scale and cannot be seen as closed systems. Besides, food isn't produced in one area only anymore. The Netherlands knows a high amount of post process food industries. A clear example is the cacao industry. Although the cacao plants aren't growing in the Netherlands, the Netherlands houses the second largest cacao processing industry in the world. Food isn't attached to a place of origin anymore.



Disconnection: consumer and production

The consumption and the production of our food is disconnected in three different ways: spatial, cognitive and emotional.

Spatial disconnection

We are spatially disconnected from our food chain. Food is transported for hundreds of kilometres to its consumers. The Dutch supermarkets are full with products which are (partly) produced in different countries. With packaging and advertisement, the products try to give you an idea on how and where your food is produced.

Cognitive disconnection

Nobody knows the exact place of origin or the way our food is produced anymore. The lack of knowledge is what I call the cognitive disconnection with our food. The EU sees this as a problem. To protect its inhabitants from misleading, the EU knows strict rules about packaging. This to define the thin line between advertising and misleading. An example is the mandatory notion of its country of origin ((EG) nr. 178/2002). Another rule that pictures used for advertisements should be in the product itself and the package should say how many percent of it is in the product.

Emotional disconnection

The cognitive disconnection could still seem innocent but

Louise Fresco (President of the Executive Board of Wageningen University and Research Centre) address an even bigger problem; the emotional disconnection. In her TedTalk: we need to feed the whole world, she states that we (western countries) tend to see technical developments in the food industry as a negative thing. She addresses how people in western countries are longing for authenticity. This is a problem because "only due to technological development, we are able to feed the world's current population." (Fresco, 2009). The way we emotionally "ban" technology out of our food patterns, stagnates innovation and therefore rising food productivity, which is needed for a growing world population.

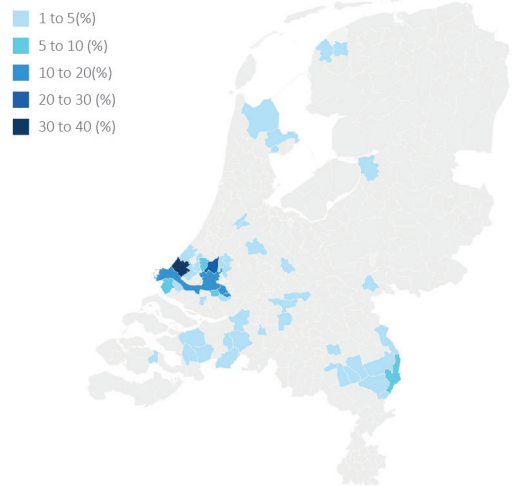
Climate change and unrighteous working conditions are problems, consumers wish to dissociate themselves with. A logical tendency is to long for the way our food was produced before climate change or unrighteous working conditions were problems known of. This phenomenon is what I call the emotional disconnection.

People judge each other on their buying behaviour. Branding is flourishing and packaging addresses the choice of being CO2-neutral and socially righteous. It is not the knowledge but the love in food that people are longing for. People are searching for food which is "fair", "real" or "good for the world".

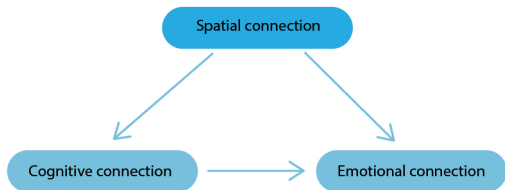
The Westland and takes a big role in the European food production and the port of Rotterdam takes a big role in the European food transportation. This area should take a position in this discussion. If there is a place where we could easily make a spatial and therefore cognitive and emotional connection with our new hi-tech food chain, it is in the Dutch Greenports and the harbour of Rotterdam.

Although the Dutch eat internationally, two thirds of the Dutch vegetable consumption is coming out of Dutch greenhouses (Stichting Voedingscentrum Nederland, 2016). These greenhouses are technological extremely far developed and are focussed on export mainly. Only 14% of the produced vegetables is produced for inland consumption. These 'production machines' have a small emotional connection with its consumers at the

Percentage of vegetables in greenhouses as part of the total cultivated land



moment. The greenhouses have a hi-tech appearance and have changed a lot by technology the last generation. Although this greenhouses are positioned in the Randstad, the Westland is a cluster positioned in the corner of the Randstad. The connection of the greenhouses and the cities in the Randstad is still very weak.

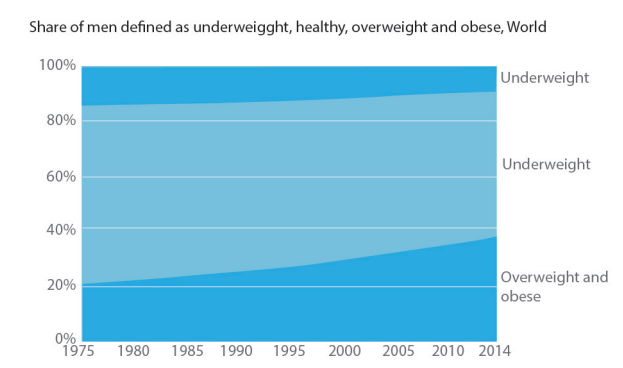


New connections are needed.

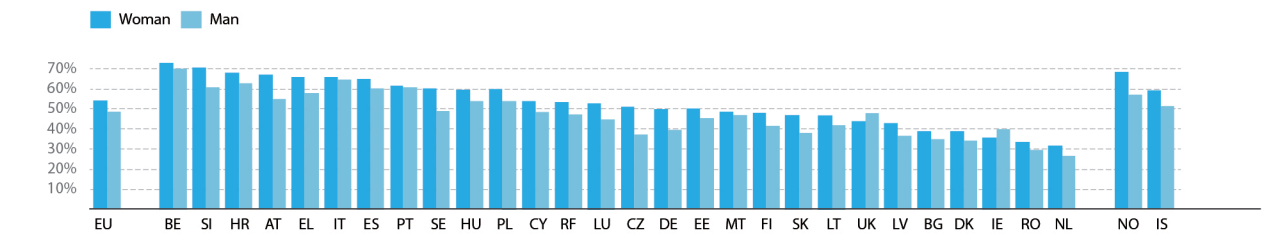
A new connection towards our food chains is needed. At the moment people are already searching for this connection. Food hypes shows the interests in food and the wish for knowledge and love. In my opinion the best way to make a cognitive and emotional connection, is to strengthen the spatial connection. By positioning greenhouses in our daily life the cognitive and emotional connection can be made by people their selves.

Connect people to healthier food patterns?

Another food related problem is obesity. It sound like a luxury problem but, due to the world health organisation, obesity have been tripled since 1975. The organisation states that more people are dying caused overweight problems then due to famine. It is striking that people or from lower social economic groups, face more overweight and obesity than people form a higher social economic group.



The voedingscentrum (food centre), addresses a clear problem: We need to eat more vegetables. Due to Eurostat, the Dutch are eating the least vegetables and fruit of all EU-countries. With an average of 139g vegetables, the Dutch inhabitants doesn't come close to the advice standard of 200g vegetables a day. To raise this consumption towards average of 200g, vegetable consumption should raise with 30,5 %. At the moment only 10% of people between 19 and 50 year reach a healthy amount of vegetables each day.



Welfare states like the Netherlands, are also facing economic problems due to this. With a less healthier population health care costs are raising. And with a growing unhealthy population, the welfare state is under pressure. In the UK, where overweight is a huge problem, sugar taxes are (already) being introduced.

Highest production, lowest consumption

It is striking that the Netherlands scores the least on vegetable consumption. The Netherlands houses one of the most innovative and high dense Greenports of the world. With a value of 6,7 billion euros. (CBS, 2018). The Netherlands exports thousands kilograms of vegetables each year. A quick calculation shows that we the Netherlands produced 4 time more vegetables that we should eat, advised by the voedingscentrum. Could a cognitive and emotional connection with our greenports stimulate vegetable consumption?

A lot of sectors are focusing on stimulating healthier lifestyles. Also urban planning. Projects like “De gezonde stad” in Amsterdam or “Kom op naar buiten” in Rotterdam, focussed on designing public space to stimulate inhabitants activity. However, those programs are only focussing on raising activity and not stimulating a healthier food pattern.

Besides, is the wold food challenge is slowly changing form banning hunger out of world towards producing enough healthy food for everyone. The Westland and other Greenports are key elements in the production of vegetables for whole North-West Europe. It is time to rethink its current isolated position.

Can a connection with food production raise vegetable consumption?

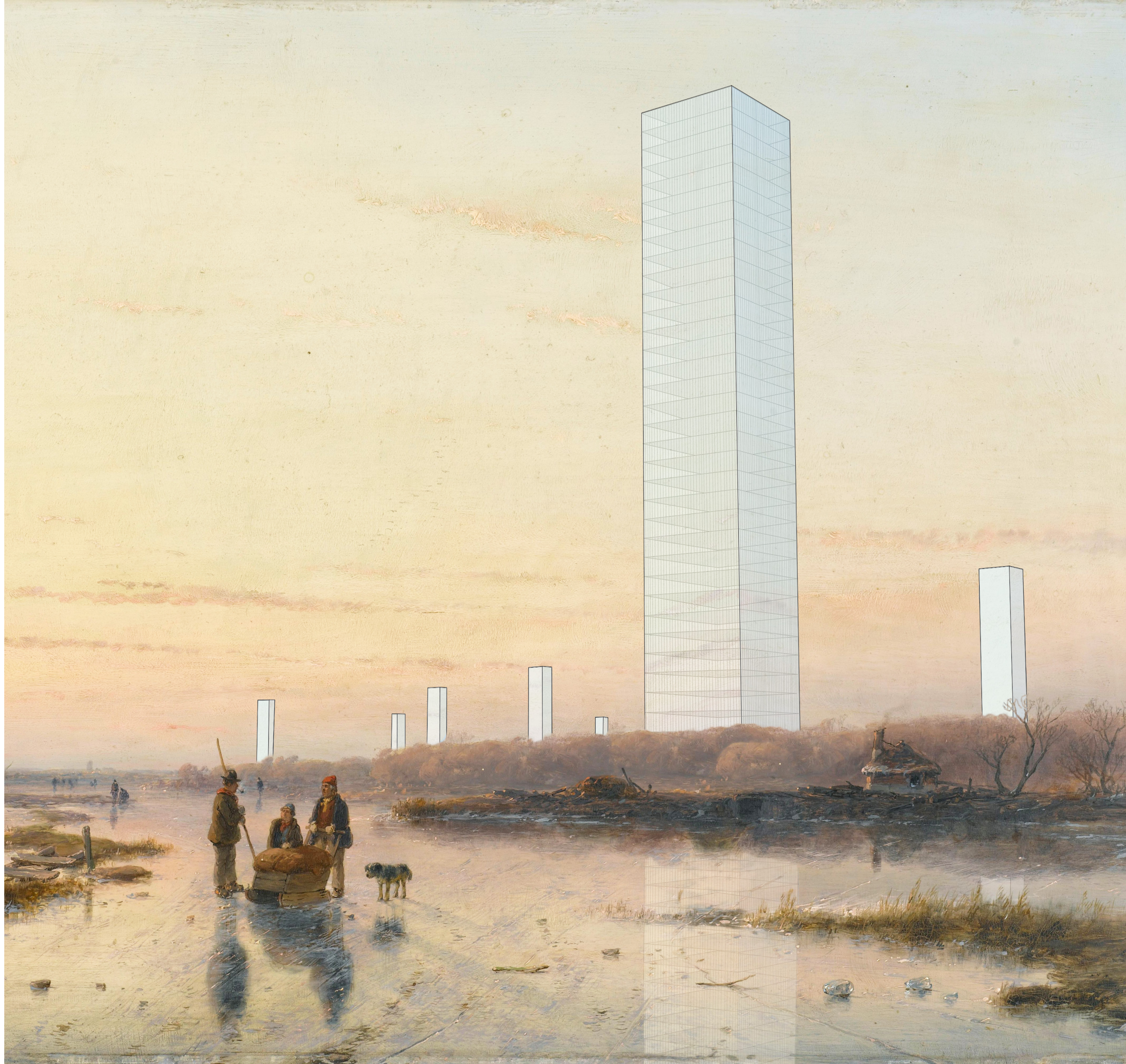
In my thesis, I will research on how to reconnect the international food production with the daily life of urban inhabitants. I will design a new neighbourhood in Rotterdam, which combines food production with city life. It will reconnecting the food production with its consumers and it will aim for stimulating healthier lifestyle.

How can we connect the consumers to the big scale production in the greenports?

By reconnecting the vegetable sector with the consumers, a small step could be made for healthier cities.

Research question

Abstract- How can we connect the consumers to the big scale production in the greenports?



The main research question of my thesis is:

How can we connect the consumers to the big scale production in the greenports?

To answer this question a few sub questions are set up.

Theoretical sub questions:

- How do current initiative connect the consumers to the food production?
- How was this connection in history?
- What causes this disconnection?

Design orientated sub questions:

- How can we position greenhouses in the cities?
- How can we design for an cognitive connection of consumers and their vegetables?
- How can we design for an emotionally connection of consumers and their vegetables?
- How can we maintain the export, while making this connection?
- How can we design neighbourhood to stimulate a healthier food pattern?

The upcoming chapter will focus on the methods being used to answer these questions.

In my Design I will take the following things into account:

By 2050.....

.....stacking greenhouses will be a serious solution (Ijsselstijn, M.,2016).

.....a rise of 30,5% vegetable consumption in needed (Voedingscentrum, 2016).

.....the ratio export/in land consumption will stay the same as now (86%/14%).

.....obesity and overweight are issues urbanism should play a role in.

Methodology

Abstract- To answer my research question six different methods have been used. The investigation of the problem field (1) and the investigation of technological developments(2) created an design concept. This concept is translated into a research question. The conclusions of the cases studies, function as design elements(3). An historical analysis (4) translated the research question towards a design question. The design question can be answered by research by design(5). Next to the design process an exposition (6) will be made. This exposition will give impute to the translation of my research towards a wider public. By explaining the methods one by one, the structure of my research can be understand.



Different methods are being used to answer my research question. This paper/chapter will explain which methods were used and how they are related to each other.

The methods that have been used are; Investigation problem field (1), investigation technology (2) case studies(3), historical research (4), research by design (5), and the translation towards an exposition (6).

During my process (especially in the beginning), I used a lot of method thought each other. Later the order and relation between them became more clear. Each method is described below. In the diagram, a visualisation of the relation between my methods is made. The numbers in the visualization correspond with the numbers in the text.

Investigation problem field (1) and investigation technology (2)

The investigation of the problem field and the investigation of possible technological solutions have been used as input for defining my concept. The investigation is based on scientific literature, tedtalks and by discussions with tutors and colleagues. However, the combination of investigating the problem field and investigation technical solutions happened subconsciously. This part of the process is unscientific and is based on your gut feeling. At a certain point a vague idea feels right to be worth to do a research. A concept is born with a research question: How can we connect the consumers to the big scale production in the greenports?

Case studies (3)

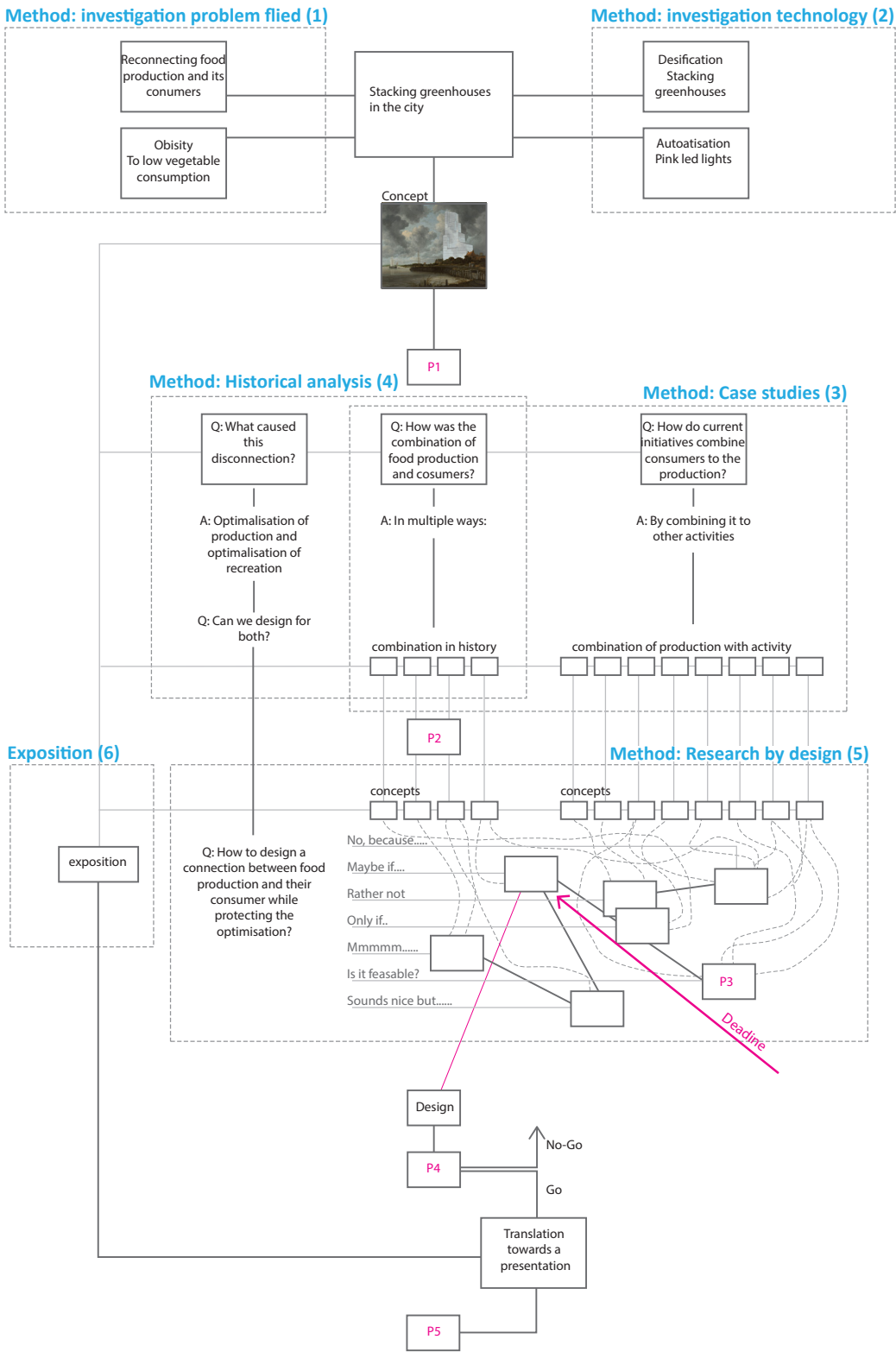
The research itself started with an investigation of initiatives with already have been executed. In order to position greenhouse horticulture in the city centres, cases which aimed for similar goals have been collected. At the moment some initiatives are positioning greenhouses in cities already. Some example have a more clear connection towards food productivity or horticulture than the others. However, all these initiatives have different interest, business models, houses different activities and are based on different food philosophies. After analysing multiple executed ideas an obvious but important conclusions could be made. All the initiatives which are positioning the greenhouse horticulture within the city are combining ‘urban’ activities with food production. The cases learned me that fruitful initiatives connect the horticultural food production with a social activity. To get a clear overview, an inventory is set up with more than 50 examples. These examples are ordered by extra non-productive activity. The chapters are: living, working, (groceries-)shopping, eating, educating/innovating, entertaining and healthcare. For each case basic information and its food philosophy is given.

Besides, its spatial needs are being analysed and explained. Each chapter gives an overview of the way the food production is combined with its activity. Each chapter concludes with design directions and concepts. These directions and concept will later serve as input for the research by design part (described later in the text).

Historical research (4)

Out of the case study multiple historic cases have been revealed. A historical research have been started. How have food production been connected to its consumers in history? And how did food production get as disconnected as it is today? In order to reconnected the food production to its consumers, we need to know how the connection have been in time. And which elements have caused this disconnection.

Through history, greenhouses and orangeries have had different accents and functions. In an historical essay about the greenhouse typology, different function within the horticultural section have been described. The renaissance and Baroque examples of horticultural orangeries were mostly richly decorated and are focussed on impressing visitors. This changes around the 1820ties. More monofunctional greenhouses emerge. The Crystal palace build in 1851 is a clear example of this typology split. The Chrystal palace can be seen as an expository greenhouse. This expository greenhouse is most of the time part of a zoo or botanical garden. It is focusing on creating knowledge on plants and on entertainment. The other type of greenhouse is the monofunctional production greenhouse. An example for this type are the Dutch greenhouses in the Westland. This type is only focussing on production. These two greenhouse types have been developed separated from each other. The hi-tech productional greenhouses are optimised machines, where visitors would only slow down the production process. Besides the productional greenhouses doesn’t have an attractive climate for visitors since the climate is 100% in function of its plants. The expository greenhouses houses many different species and are developed into indoor parks. Because these expository greenhouses are that much focussed on creating a nice experience for its visitors, it cannot compete with the production greenhouses anymore. The two types are focussing on a different goal and grew towards two new typologies.



Conclusion (P2)

Out of the cases and historical research can be concluded that optimising productivity and even optimising recreation, have caused this disconnection.

A clearer design question arises: How to combine the productional and expositional greenhouse without lowering productional or recreational qualities?

Research by design (5) (P2 to P3)

With this clear research question a new method can be applied: research by design.

The case studies form will be translated towards design concepts. These design concepts will be used as input for the design process. How can these initiative been transformed and combined to function on neighbourhood scale? Different design proposals, will be investigated and compared to each other. How to combine social functions learn from the cases with the high tech production used in the current greenports? Scales, functions, calculation on exports values, visibility and emotional connections will be tested.

The proposed designed should be able to compete with both productional and expositional greenhouses. It should be able to produces enough vegetables for its consumption and it should be able to allow visitors to get a cognitive and emotionally connection with the greenhouse horticulture. Multiple designs will be made and compared to each other. During the P3 presentation, I will present my design. From the P3 on the design process will be more focussed on combining all elements, instead of discovering more opportunities.

An exposition (6)

The outcome of the thesis will be an report and an oral presentation, However, because the topic of the research is about creating a connection between the food chain and the consumers, the idea came up to create an exposition too. By creating an exposition, a wider public is able to understand the research and vision based on this thesis. By presenting you work to an audience which is less familiar to urbanism then your colleagues, a different accent is needed. It helps to focus on communicating and think about atmospheres and lifestyles. Besides by working in a different form, it awakes you from using the same presentation method, during your whole study career. To get a grip on how to make an exposition, four different exposition proposals are being made. These proposals will all have different accents, target audiences and different location. The four proposals are made for the Nieuwe Instituut (one in the pop-up expostion and one in the 3th hall), The Westlands

Museum (exhibition hall) and a spot in the hall of the auction in Naaldwijk (location not set yet). After completing the four proposals, the four will be tested on the impact, the audience and the messages the exposition gives.

These proposals are made as an exercise to translate the research to a wider public. One of the proposal (the pop-up exposition in the Nieuwe Intituut) will be worked out and presented to the Nieuwe Intituut. By presentation my work to a professional, feedback form another work field can be used, to improve my way of communication.

During my P2 I will present a proposal to test it with my colleagues and tutors, after processing my feedback, it will be send to the Nieuwe Intituut.

Exposition

Abstract- As a part of my final products, I will make an exposition.
At the moment I have contact with Flora van Gaalen, who is responsible for program at the Nieuwe Instituut. She says she is interested in my work and will be willing to give me feedback. However I am not foccussing on the Nieuwe Instituut only. I am still keeping other options open.



After promising to make an exposition during my P1, I discovered that I still had a vague idea about what kind of exposition. After getting into contact with the Nieuwe Instituut, Flora van Gaalen, told me a pop-up expo in the foyer of the Nieuwe Instituut is open for student work. I decided to work out on proposal and to work out other concepts for expositions at the same time.

For my proposal to the Nieuwe Instituut, I decided to works out a series of drawings, in the same style of my first conceptual drawing. At the next page your will find the series. I will hang the drawings during my p2 presentation so it can be ‘tested’. The upcoming paragraph is the explanatory text which comes with the series:

In *The high-rise-Greenhouses*, Jan van de Kamp research the influences of stacking greenhouses on our landscapes. Could technology bring back landscapes which aren’t 100% food production orientated?

In *Hoogbouw Kassen*, onderzoekt jan van de Kamp, de invloed van gestapelde kassen op het platteland. Zouden we door het stappelen van kassen, weer een landschap kunnen creëren die niet 100% op voedsel productie gericht is?

P2: During my p2 presentation, I will show my series of adjusted paintings. I will make photos of the series and I will send them to Flora van Gaalen. I hope my tutors and colleagues will give

fruitful feedback which I can adjust, so I can continue improving my work.

Next step: After handing in my proposal to the Nieuwe Instituut, I will be waiting for a reply. I can expect about three types of answers: Yes, Only if.... and No.

Yes: In case of a yes I will continue finetuning my work and design the layout for the pop-up exposition.

Only if...: In case of an only if....., I hope to get fruitful feedback. I will reflect if the comments are worth working on and I will continue working on it during the summer break. If the Nieuwe instituut isn’t willing to exhibit my works after it, I will continue working on the other options, explained below.

No: If Flora is not convinced of my proposal, I will ask for feedback. I will ‘repair’ this for myself. And I will continue searching for another place to create an exposition.

As an assignment, I made multiple proposals for expositions. The proposals will show the way I am working and the ideas I made so far. The proposals are made for:

- 1. Nieuwe Instituut, 3th hall
- 2. Westlands Museum, Exposition hall
- 3. Naaldwijk auction, hallways.

	Nieuwe Instituut, 3th hall	Nieuwe instituut, pop-up expo	Westlands museum, exhibition room	Auction Naaldwijk, Hall
possible title exhibition	Vegicity	Greenhouse high-rise	Westland in 2050	Future's landscapes
target audience	familiar to musea, lover of architecture and e-culture	familiar to musea, lover of architecture and e-culture	inhabitant of westland or poeple interested in the history and culture of the Westland	visitors of the auction- and auction workers
target audience's point of view	tries to understand everything	tries to understand, but it should be self-explanatory	proud on westland, nostalgic	passing by. Not intrested like a museum visitor
message	We should reconnect with our food	We could change the way our food is produced	The Westland could take a clearer position in our sociaty	this area could be even cooler
products	interviews, models, drawings, films, installations	a series of photo montages	drawings, models, explanation (interview with myself?)	a series of photo montages
order exhibition	problem, doom scenario, visions and solutions	one unity	explain problem, explain responsibility, show possible solutions	one unity
challenge	house different views and ideas	inspiaring with a small series of work	Gain trust. A balance between glorify and criticize	it should be aesthetic over conceptual



1. Nieuwe Instituut, 3th hall.

The 3th hall in the Nieuwe Instituut, is a 450 m2 hall. The room is a square, but walls divide the space into 5 halls. A route can be made which, lead the audience, one by one through the spaces. The Nieuwe Instituut knows an audience which is familiar with museums and is interested in technology, design and architecture. An exposition in the Nieuwe Instituut can be focusing on utopian and futuristic ideas.

The proposal I made will be focussing on how the world would look like in 2050. Multiple exposition techniques should be applied and different futuristic visions should be told.

It will start with a series of interviews. Louise Fresco and Koppert Cress will be leading. Louise Fresco will address the problem of the disconnection with our food production and Koppert Cress will explain about his hi-tech greenhouse (which is lighted with bright pink led-armatures). The audience will understand the developments and upcoming problems in this field.

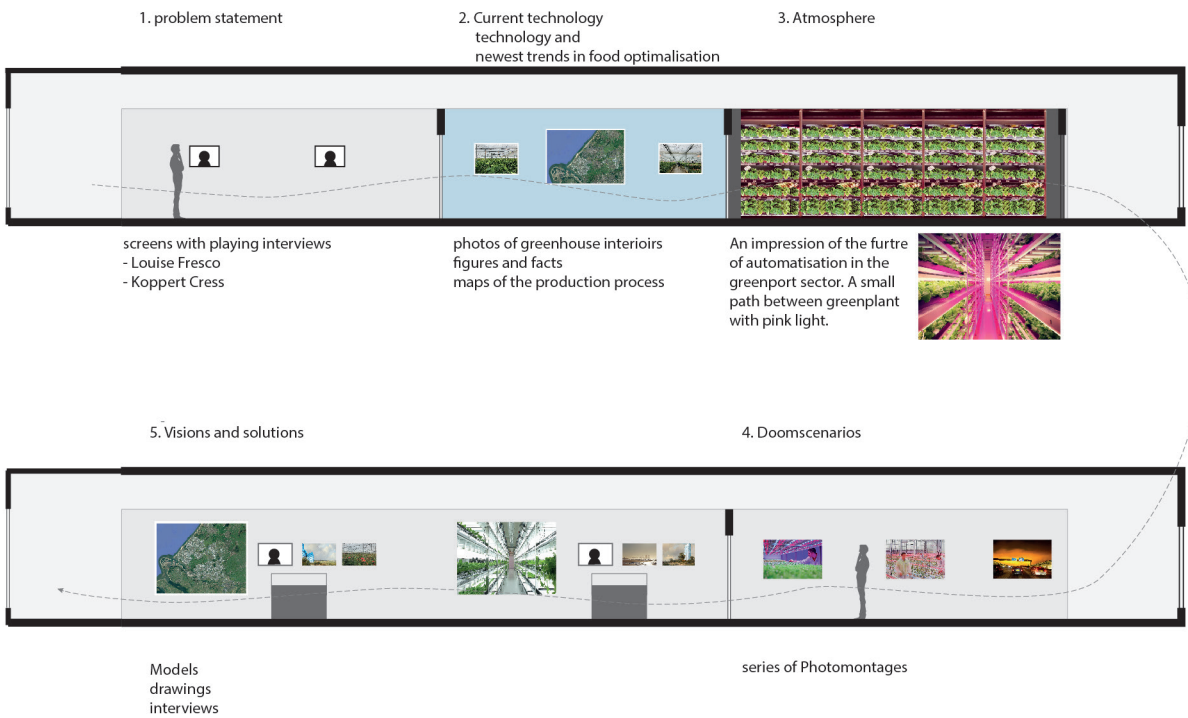
The next hall will be a representation of the current position of our food production. Where are the Greenports? How do they look like? And what is their impact? Technology is leading and

technical development is raising productivity. It will explain that our landscapes are heading towards a more and more food optimising direction.

Up next is an atmosphere room. Pink led light, robots and security cameras will show the process of vegetable production in 2050. The room should be dark and a small path should give a dense feeling. An unhuman atmosphere should be created. The audience should think: This is not what we want in our future.

Dystopian images will be shown after the pink atmosphere room. Photomontages with landscape full of concrete closed off towers will be shown and the comparison with the mega factory farm and data centres will be made. The people will conclude for their selves: “This is not going to happen, this is not what we want.”

The last room is the inspiration room. How did people in the past try to reconnect consumers and their food production? What are the visions of architects on it now? Models and drawings out of the depot will be displayed. Interviews with architects and historians will be explaining their different visions.

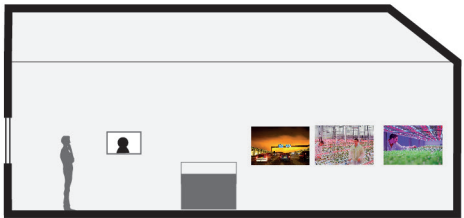
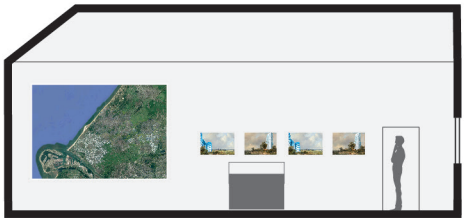


Section 1:200, proposal Nieuwe Instituut, 3th hall

2. Westlands Museum, Exposition hall

The Westlands Museum is a regional museum, which houses a rich collection of historical work related to the Westland and Midden-Delfland. Because the Westland area has a rich history in gardening, the museum is also focussing on the gardeners culture.

The museum know about 12.000 visitor a year and know a big volunteers community. Because the museum is community based, an exposition will reach an audience who is emotional attached to this place. Besides, people who have interests in the Westland will more likely visit this museum. An exposition here could reach a higher effect on the Westland than in the Nieuwe Instituut would do.



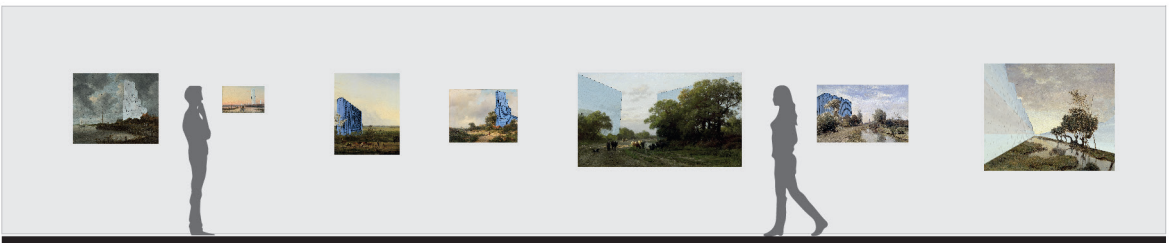
Section 1:200, proposal Westlands Museum, exhibitionroom

3. Naaldwijk auction, hall/visitor centre.

The auction in Naaldwijk is the biggest auction in the Netherlands. It is a huge complex and a lot of workers and visitors passing by every morning. With a high amount of walls, they might be willing to receive some work. Instead of an extensive exposition with different presentation techniques, a series of 2D-work will be proposed. The audience will walk by quickly and won't take the time dive into the topic. So the series should be self-explanatory and it should be aesthetic over conceptual.

The work I have made for the pop-up expo in the Nieuwe Instituut could be used as a starting point. The series should be clear without reading texts

Another idea is to invers the series by photoshopping old landscapes into nowadays greenhouses. A lot of ideas are still open and are popping up. I can continue brainstorming on this, as long as they have one clear message, are aesthetic and form a unity.



Section 1:100, proposal Naaldwijk auction, hall/visitor centre

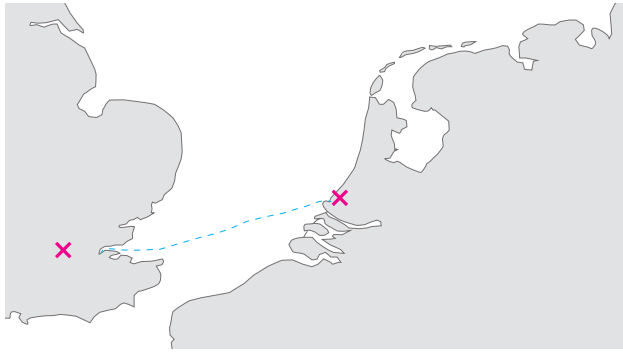
Design direction

Abstract- This chapter will show the first steps towards a design.

It will explain the location and show the first design concepts.

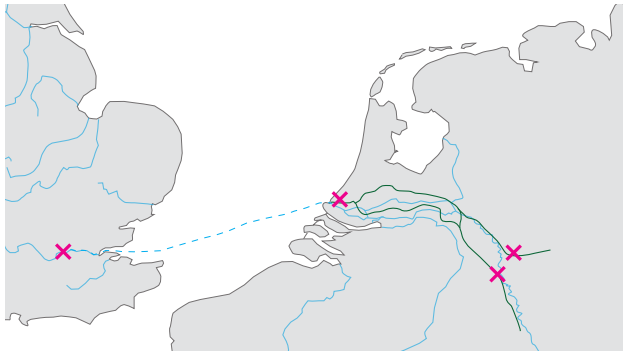
After my P2, a more systematic approach will be used. See planning in the appendix.





1820ties -1870ties

The export from the Westland started with the export towards London.



1870ties-1890ties

From 1870ties to the 1890ties the Westland became part of an international axis: London- Ruhrgebiet. An profit form the international position of Rotterdams harbour.

In 1870ties the Nieuwe Waterweg was dig out, this stimulated the export towards London.

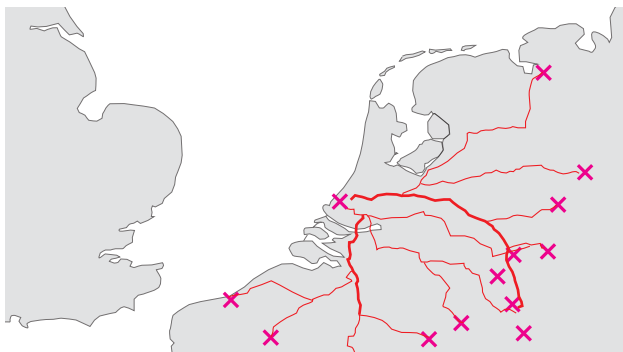
In the 1880ties, the railways between Germany and Netherlands were connected. This stimulated the export to Germany. In the 1890ties Hoek van Holland got a railway station and the boat service towards London sailed form Hoek van Holland.



1930ties-1950ties

During the crisis in 1930ties, the traded towards England collapsed. The value of the pound dropped so, exporting food wasn't worth it.

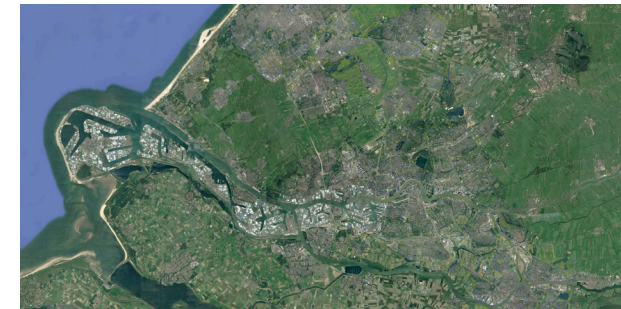
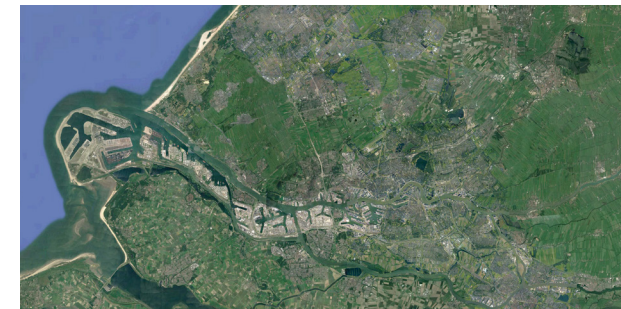
During the war, the Westland production grew again. Half of all the produced food had to be sold for a fixed price, and was transported inland Nazi-Germany. Export out of Nazi-Germany stopped completely.



1960ties- now

After the EEG, the export towards West-Germany and England raised again. Intensive gardening and up-scaling, raised to value of the Greenport. In the 60ties transportation had changed from ship and trains towards trucks. The rise of supermarkets demands for a stable offer. And due to the big scale of the Westlands its economic position was set.

Due to technical innovation, climate became less important. However, the position of the Westland is strong due to its big scale. Gardeners in the Westland can profit form a lot of Greenhouse horticultural services.



Current situation

Th Netherlands knows XXX ha of greenhouses. The Westland houses 27% of this. I the area near Rotterdam and The Hague more greenhouses are situated. In the metropolitan area Rotterdam-The Hague knows 44% ha of all Dutch greenhouses. The maps below show different thought experiments with rough calculations.

Greenhouses in Midden-Delfland

Between Rotterdam and The Hague the protected landscape of Midden-Delfland is situated. If we would fill this area with greenhouses we could build 3.100 ha of green houses. A rise of 37 % on national scale.

No greenhouses in the MRDH

If we put out all the greenhouses in the area near Rotterdam and The Hague. The amount of greenhouses will drop with 3.665 ha. Only 56% of all the Dutch greenhouses will be left over in other places in the Netherlands. Since only 14% of all the greenhouses products is consumed inland. The country could still be "self-sufficient".

Greenhouses on all our roofs.

Another option is to place greenhouses on our roofs of all our buildings. For this we should know which types of roof are suited for this and a solution should be designed for the logistics.

Greenhouses in the harbour.

The port of Rotterdam is slowly transforming form a oil/harbour towards a container harbour. If all oil related industries will be gone in 2050, a huge amount of surface will be free. The harbour know 5.978 ha of usable land. If we would transform the whole harbour towards greenhouses It would mean a rise of 72% on national scale.

Greenhouses from Westland to the harbour.

Another option would be to relocate the greenhouses in the Westland to the harbour. If we remove the all the greenhouses in the area and build the same amount of greenhouses in the port of Rotterdam only 61% of the harbour would be flit with greenhouses.

Design location

In my design I want to make a connection between the cities (centres) and the greenhouses. In the Image below an analysis is made for the possible locations.

The main criteria for a location is a balance between an (sub-)central location and a strong international connection.



I prefer to design for the pier of the Sluisjesdijk in the Waalhaven. At the moment it is functioning as an industrial zone, but there are plan to develop it towards housing. I see possibilities in exporting its food by water (Nieuwe Maas), train (Betuwe route) and motorway (A15).

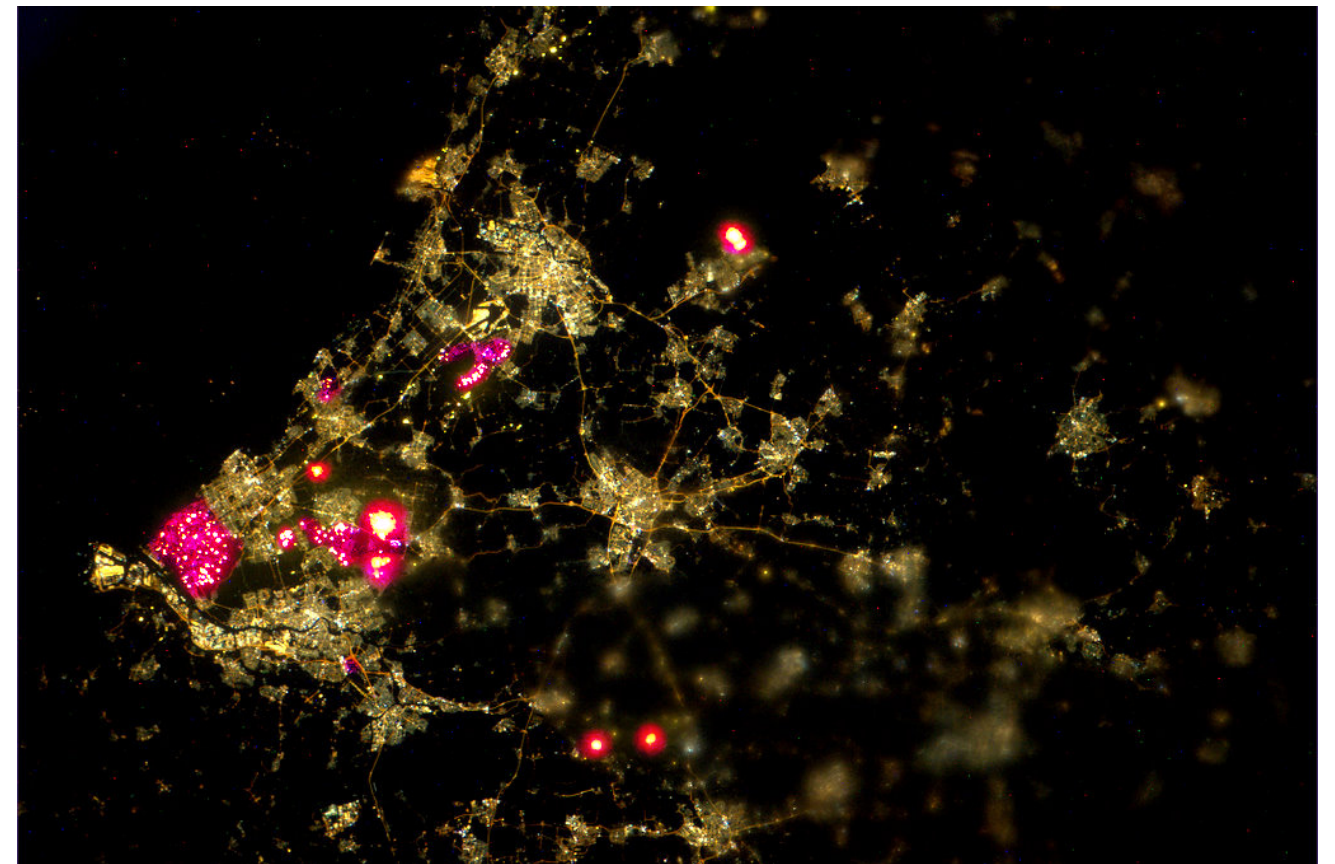
Other possible option are:

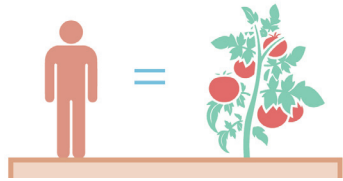
- The Merwehaven en Vierhaven
- Binckhorst
- Area between westland and The Hague
- Rotterdam The Hague airport
- City centre of The Hague
- City centre of Rotterdam



Artificial sun light and Stacking greenhouses

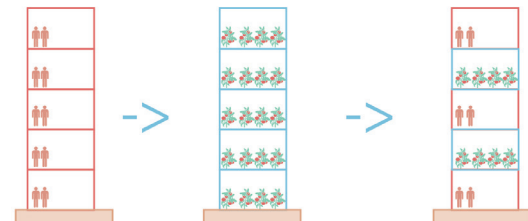
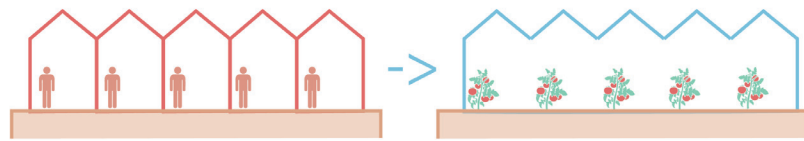
Technical developments have influents the process of food production in the greenhouses a lot. One of the recent developments is the artificial led lights. These light blue to pink led-lights send out the right amount of radiation for optimising growth. Although the investments of these light is still very expensive, it is more energy-efficient. Whenever, the greenhouses are not dependent of the sun, stacking greenhouses could be a serious development.



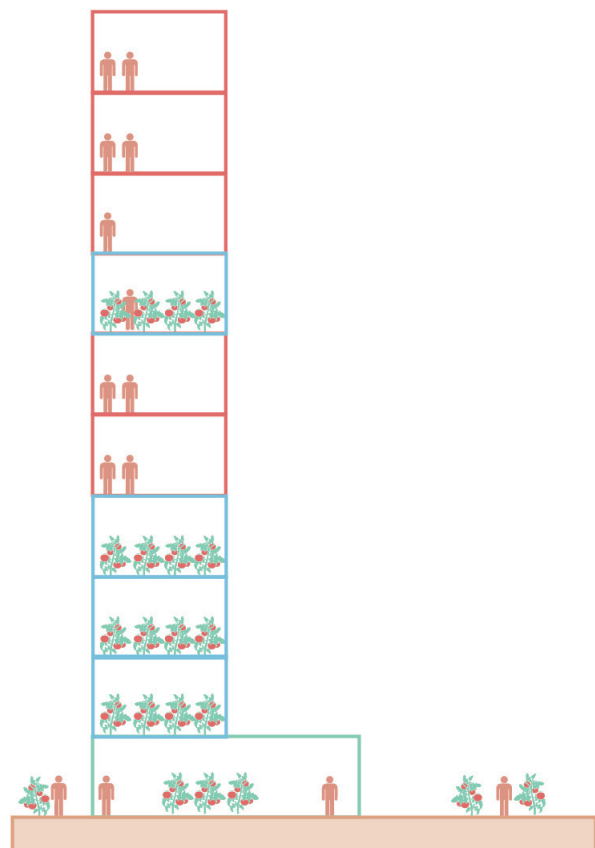


Concepts

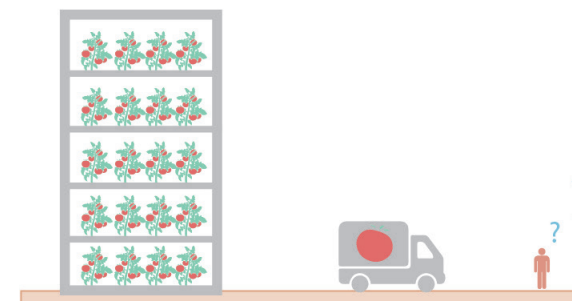
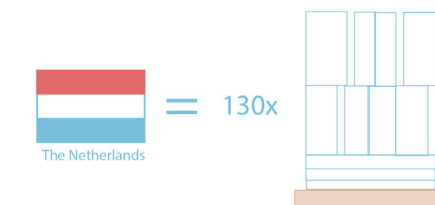
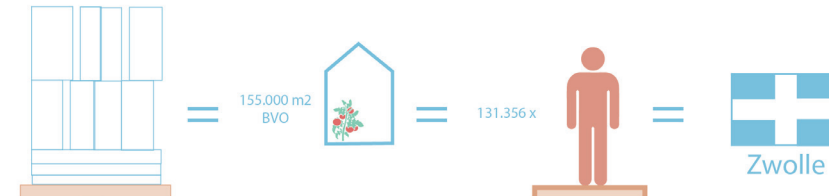
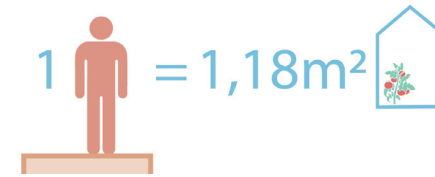
If we want to make have a strong connection with to production of our food. The production of vegetables and human should be close to each other. Just like we put plants is greenhouses, we can now cultivate plants in apartments too.



Instead of stacking greenhouses on top of each other only, we can combine apartments and greenhouses with each other. Instead of a the vertical city we call it, a vertical farmers village. In this way, a mix between the peri-urban and urban life is made.



The upper apartments can be functioning as dwellings and the lower apartments can be used for food production. This combination of food production and living, creates a complete new lifestyle. The opportunities of this combination will be researched in the upcoming half year.

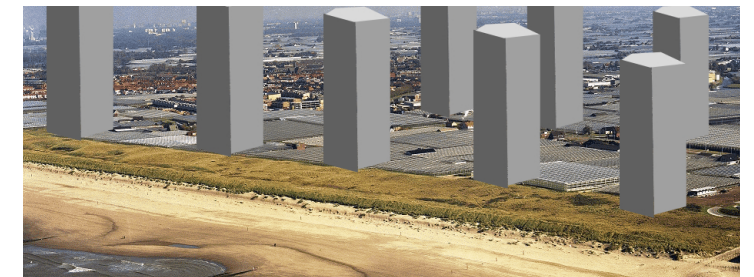


Numbers

A rough calculation shows that we need 1,18m² greenhouse per person to provide us for enough healthy food. This means that a building like the Rotterdam of OMA could provide enough food for the city of Zwolle.



To feed the whole Netherlands we need to have 131 time the Rotterdam as surface. To feed Rotterdam we need 4,8 De Rotterdams.



When stacking greenhouses will be affordable, the most efficient way would be to put a towers of greenhouses in the Westland. The Westland will be an area full of towers which would look similar to datacentres and mega stalls. A unhuman place will be created and the weak connection with food will almost vanish. However, it also could create a completely new way of living, which I will show the upcoming half year.

References



Appendix



Thesis plan form

Student name	Jan van de Kamp
Student number	4148037
First mentor	Leo van den Burg
Second mentor	Frits van Loon
Research group	Urban Fabrics
Problem statement	Urban inhabitants are disconnected from the way food is produced in the greenports and are unaware of the hi-tech developments of last decades.
Aim	Connecting people, living in the cities, to the high technical developed way food is produced in Greenhouses. While maintaining the big scale and export of the Greenports.
Motivation	The Netherlands is the second large food exporter in the world and its food productivity and food technology is still developing. The Westland area (between Den Haag and the Port of Rotterdam) is the biggest high developed greenhouse area in the world (3664 ha). 15% of all green houses in the North-East Europe is situated in the metropolitan region Rotterdam-The Hague. At the moment the Westland area is positioned as a closed off and monofunctional industrial zone at the South-West corner of the metropolitan area. Connecting people with the technological developments is hard due to the spatial segregation between the city centres and the greenhouses. In this thesis, I want to research how to position greenhouses within the city. By placing greenhouses in the mixed-use cities, I want to raise awareness, pride, identity, knowledge, innovation and raise Dutch vegetable consumption.
Meta level	I am inspired by the work of Louise Fresco (voorzitter van Wageningen University & Research). In her TedTalk: we need to feed the whole world, she states that we (western countries) tend to see technical developments in the food industry as a negative thing and that we long for authenticity. However only due to technical evolution we are able to feed the world's current population. World population is still growing. An the food discourse is slowly shifting from feeding the whole world to providing healthies food for the whole world. The Westland is one of the highest developed and most dense food vegetable production areas in the world. Besides is Rotterdam the biggest food hub of Europe. Therefore the Westland and the harbour of Rotterdam should take a clearer position in connecting people with the technology of vegetable production.

Trends horticulture	The Westland is the world's biggest and most advanced greenhouse horticultural area in the world. The infrastructure and horticultural related services in the area, makes the land prices grew extremely. The Westland will enhance further technical developed and will be densified. Automatization will change the types of job in the sector. The sector will be more innovation orientated. Greenhouses are getting higher each year and the first stacked greenhouses are build. By artificial light, stacking of greenhouses is getting a serious.
Research group	Urban Fabrics
Link with research group	The thesis will search for spatial positions to connect the greenhouse horticultural farming in the urban context. My approach will be mainly design based.
Location/scales	The thesis will focus on to the pier of the Sluisjesdijk in the Waalhaven.
Time frame	2050
Research question	How can we connect the consumers to the big scale production in the greenports?
Sub questions	-How do current initiative connect the consumers to the food production? -How was this connection in history? -What causes this disconnection? - How can we position greenhouses in the cities? - How can we design for an cognitive connection of consumers and their vegetables? - How can we design for an emotionally connection of consumers and their vegetables? - How can we maintain the export, while making this connection? - How can we design neighbourhood to stimulate a healthier food pattern?
Possible methodology	See Methodological framework
Main issues to study	Function of the Westland (economic impact, food flows). Emotional and cognitive connection with space. Relation between cities and their food productive landscapes. Technological developments in the horticultural sector.

Theory paper

Production and exposition greenhouses

An historical essay on the development of greenhouses.

AR3U022, Theory of urbanism
Master Urbanism, Technische Universiteit Delft

Jan van de Kamp
4148037
May, 2018

Name tutors: Leo van den Burg, Frits van Loon, Dominic Stead,
Stephen Read and Gregory Bracken

Abstract – The Westland area in the Netherlands is a horticultural greenhouse cluster which has a monotone productional character. By doing a typological research on greenhouses, the different functions of greenhouses in history can be exposed. This typological research reveals the reasons the Westland has overcome this monotone productional character. Already since the Roman empire, humans try to imitate different climates in order for plants to grow on places where they are not indigenous. Though history the greenhouses have been changing slowly towards the 18th century orangeries. The development of the greenhouses split in the 19th century. The Crystal Palace, which was more focussed on being an exposition space then focussing on creating a climate for its plants highlights this spilt. In the same century a steam ferry between Rotterdam and London appeared. This boosts the production of grapes in the Westland, Netherlands. The greenhouses in the Westland developed in a different way, focussing on optimizing the horticultural production only. From this point on the greenhouses where split into two greenhouse typologies; The entertainment greenhouse and the productional greenhouse. These two types of greenhouses develop in a different ways, inspired each other and got influenced to similar technological developments. The productional greenhouses are bigger, monofunctional and have a shorter life cycle. Most of the expositional greenhouse are old buildings, are situated closer to the city centres, know clear and impressive entrances and are focusing on people more than plants.

Key words – Urbanism, architecture, greenhouses, horticulture, history

Introduction: Why this typological research?

Greenhouse horticulture is a more and more common way our food is produced nowadays. Each species need a certain climate to grow and in order to grow plants in other climates, human have been faking different climates to stimulate the growth of their plants. By sheltering plants within a space surrounded by glass, a different climate can be created, while sunlight still comes in. By controlling the climate, plants can grow in places where they are not indigenous. By managing the temperature, sunlight and humidity, the growing speed can be managed. Managing the growth speed of the plants does not only mean

speeding up the growth. It could also be slowing down the growth speed to save its products when the prices are lower.

In the Westland 2.200 ha of greenhouses is situated. 8% of all Northwest European glasshouses is situated in this small area (Van der Velden, 2016). The area exists out of eleven villages which are surrounded by greenhouses. Although 105 thousand people are living here, the complete area is focused on the production of vegetables and flowers. The Westland area have been a place where most of the recent developments in the greenhouse horticultural food production took place.

In her book *Land InZicht*, Bobbink stated the greenhouses as a Dutch landscape. In her book

she distinguishes ten different landscape types in the Netherlands; barrier dune, greenhouse, river, harbour, highway, peat meadow, lake, lake bed, forest and roof landscape (Bobbink, 2004). Bobbink describes the ten different Dutch landscape which are all man made. The greenhouse landscape, which is completely focussed on production and transport of flowers and vegetables, is the most recent landscape typology she distinguishes. Although the Greenhouse landscapes look a lot like an industrial zone, the landscape does not know heavy industries. Therefore the landscape knows less safety restriction and living close to the greenhouses does not form any danger.

Although the greenhouse landscape is mainly orientated on the food production, the development of the greenhouse typology have not been focussing on rising productivity only. By researching the historical examples of the greenhouses we can learn the different functions and accents of greenhouses had though history. The different historical functions and accents could be used as input for the current development of the Westland and for other greenhouse landscapes.

Though examples, the historical thoughts about horticulture will be explained. The renaissance villa of Aldobrandini, the Barok hof van Pieter de Wolf, the hortus botanicus of Leiden and the Victorian Chiselhampton greenhouse will be explained one by one. The last big change in the greenhouses typology is the explained by the example of the Crystal palace. From this time on the greenhouses are spiltted into the productional and expositional greenhouses. The latest trends of these will be explained with the examples of garden by the Bay in Singapore and the greenhouses of the Westland.

The beginning of imitating climate for plants

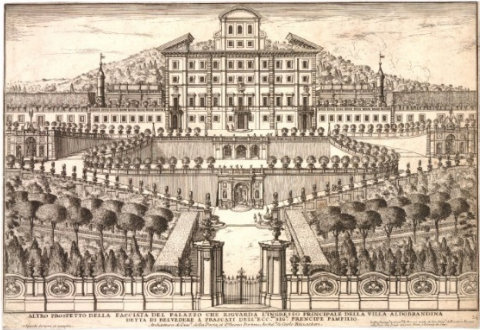
The oldest known examples of ‘interior’ horticulture can be found in the Roman empire. To let imported Citrus trees grow, primitive arrangements were made to protect them during in winter. In this way plant which did not grew in a seasonal climate could be kept in Europe (Woods, 1988). There are none of these Roman primitive arrangement been saved.

A famous example where plants were stored during winter, is the Renaissance garden of Villa Aldobrandini in Frascati, Italy.

Aldobrandini in Frascati, Italy.

In the garden of the villa Aldobrandini different types of orange trees, imported out of the East, were planted in pots. The pots were used as architectural element accentuating the entrance of the villa. Because the imported plants were exotic and expensive to maintain, the plants where used to impress visitors. The pots in plants would all have been waters twice a day and the pots were stored inside the villa during the winter to protect them from possible frost (Woods, 1988). Besides the production of Citrus fruits, the garden was used to impress visitors.

Image of the Aldobrandini garden with the pots used as architectural elements.



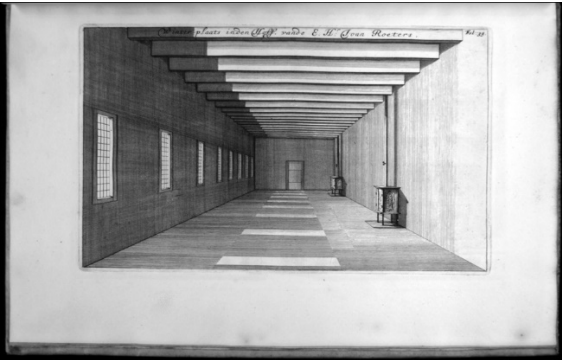
The Villa Aldobrandini at Frascati seen from the main façade (1699) etching by Alessandro Spechi.

Hof van Pieter de Wolf

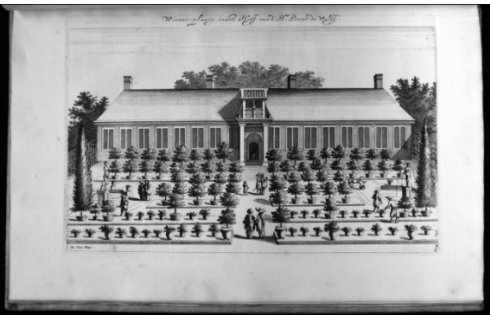
In the Dutch golden age, the horticultural development Florished. In Nederlandstze Hesperides (Commelyn, 1676), Jan Commelyn wrote on how to practise and use an orange and lemon garden. In this do-it-yourself book the garden *Hof van Pieter de Wolf* is described as an example on how to grow lemon and orange trees in an orangery in the Dutch climate. The orangery is a building specially build for the hibernation of plants. These building were mostly part of an estate. The book describes in a detailed way how and when to move the lemon and orange trees in and out. It gives also information on how high the stove should heat the orangery (Commelyn, 1676). The book of Commelyn was a success and two years later this book got translated in English.

This and other Dutch books on horticulture had a big influence on the horticulture in other European countries. (Woods, 1988).

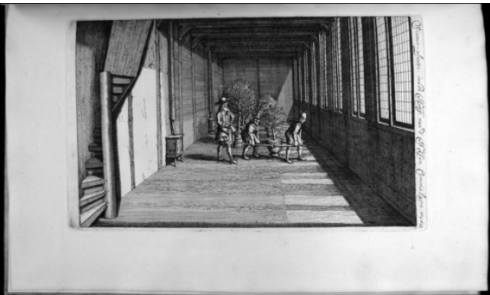
Images of a Dutch Orangery, the interior was used as storage of lemon and oranges trees during the winters.



Commelyn, J. (1676). *Nederlantze hesperides*. p. 64
Amsterdam: Marcus Dornik



Commelyn, J. (1676). *Nederlantze hesperides*. p. 65
Amsterdam: Marcus Dornik



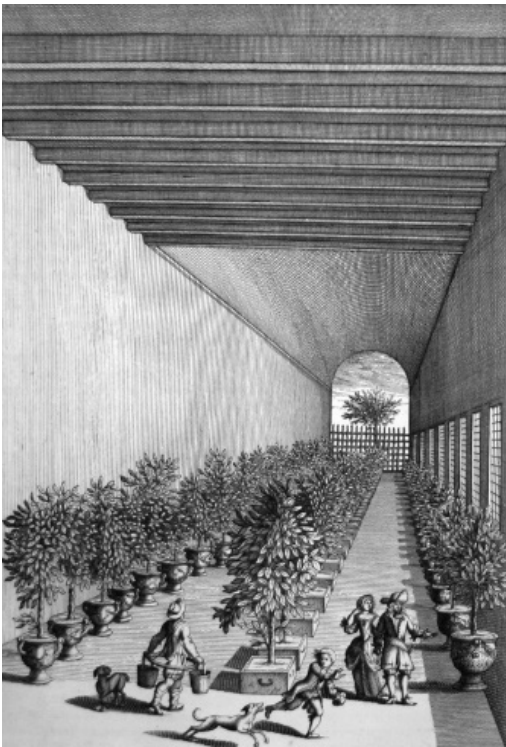
Commelyn, J. (1676). *Nederlantze hesperides*. p. 67
Amsterdam: Marcus Dornik

Hortus Botanicus, Leiden

Another Dutch example is the botanical garden of the University of Leiden; Hortus Botanicus. This university garden had an orangerie, like the orangerie of Pieter de Wolf. However, this garden was mainly used for researches. The garden knew a lot of plants taken from the Dutch-Indies. In order to research the species functions and ideal conditions, experiments were done. Due to the information learned

from this experiments, big plantations could be set up in the Dutch-Indies. This research was accelerated by the Rector Magnificus Herman Boerhaave which made the Hortus Botanicus grown towards a botanical garden with 5846 different species. The greenhouses in the Hortus Botanicus in Leiden did not have any productional purposes and were mainly used for research (De Jong, 1993). Besides was the garden not open for a big public like it is nowadays.

The orangerie of the botanical garden of Leiden researched plants from the Dutch-Indies.



Commelyn, J. (1676). *Nederlantze hesperides*. p. 63
Amsterdam: Marcus Dornik

The greenhouse of Chiselhampton

One of the first orangeries which had a glass roof and façade is the greenhouse in the orangerie of Chiselhampton from around 1800. The glass façade of the greenhouse is orientated at the South to catch as many sunlight as possible. The north façade exists out of a brick wall. This wall is not only used for the stability but also functions as a temperature buffer. During the day the sun is warming up the wall which stays warm during the night. In the 19th century the first greenhouses in the Westland were also based on this model. In the early 19th century many

British gardens had greenhouses like this. (Ijsselstijn, 2016)

The greenhouse in the garden of Chiselhampton has a glass façade and roof. It can be seen as one of the first greenhouses which has 4 glass façades (three walls and a roof).

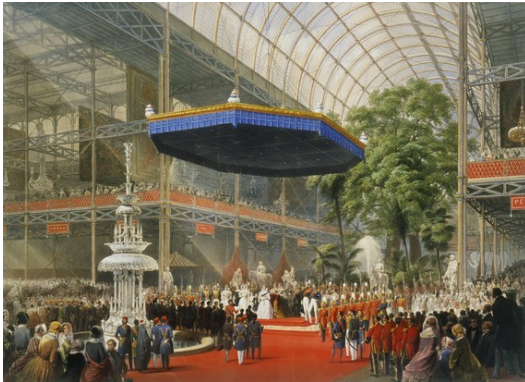


Woods, M., Warren, A. (1988). *Glasshouses: A History of Greenhouses, Orangeries and Conservatories*. p.88 London: Aurum press.

1851: Crystal Palace and the European World exposition

One of the most famous greenhouses in history is the Crystal Palace in Hyde park London. The Crystal Palace houses the Great Exposition in 1851. This huge greenhouse, was designed by the gardener Joseph Paxton but was built as an exposition space instead of a productional greenhouse. The Great exposition got a lot of attention in the western world and can be seen as the first world's fair. At these fairs European countries showed off their exotic products found in the east. It had a strong nationalistic character so almost every European countries "needed" an exposition place just like Great Britain had the Crystal Palace. These expositional greenhouses would not only house other world's fairs but also houses smaller expositions. The middle class was coming up and there became a higher demand for this form of entertainment. (Wagenaar, 2015)

The opening of the great exhibition in 1851



The State Opening of The Great Exhibition in 1851, colour lithograph by Louis Haghe

The crystal palace had a lot of influence on other greenhouses. More expositional greenhouses appeared in a lot of European cities. A Dutch example was the Paleis van Volksvlijt which was situated on the Fredericksplein from 1864 until 1929. The expositional greenhouses were not designed for the production or researching on plants, but mainly designed for exposing and impressing. This new typology of greenhouses could be seen as an early form of entertainment like public Zoo's and botanical gardens functions nowadays. With the loss of the Paleis van Volksvlijt in 1929, the Netherlands does not have an expositional greenhouse anymore.

The Paleis van Volksvlijt in Amsterdam was inspired on the Crystal Palace.



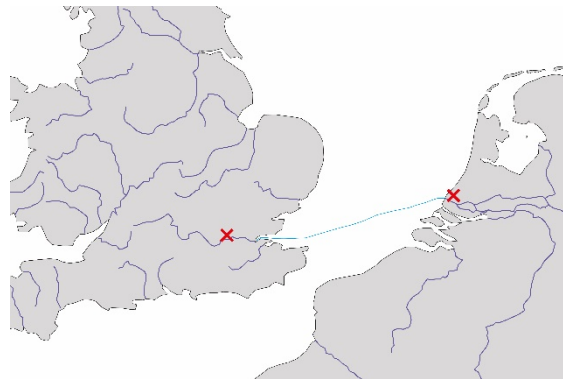
Helder, G. (1922). *Aerial photo*. SERC

1822 on: The production greenhouses in Westland.

In 1822 a steam ship service between Rotterdam and London opened. Due to this, the farmers in the Westland could reach a higher amount of consumers. The city of London,

which was growing exponentially during the industrial revolution created an extremely high demand for food products. Around 1850s the Westland area was completely focused on producing grapes which were export towards England (IJsselstijn, 2016). Although the Westland looks far from London, the transportation measured in traveling time it was relatively close by. Besides route crosses the sea, so no tight canals or toll sluices were passed, were toll needed to be paid.

With the introduction of the ferry the Westland was situated close by the city London



Made by the author

Other reasons of the development of the greenhouses was the local climate, surface and water level. Because of this good conditions horticultural oriented farmers already lived here. When the steam service opened, the area had already a productional culture. However, the demand of products raised a lot.

Climate: The Westland is (like its names suggested) positioned at the west. Just like the province of Zeeland, the Westland has more sun hours then the rest of the Netherlands. The wind, which comes mainly out of sea, influence the temperatures a lot. Due to the temperature of the sea the wind in winter is more warm, so the winter temperatures in the Westland are less cold. It is freezing less in the Westland, the in the rest of the Netherlands (Rienks, 2009).

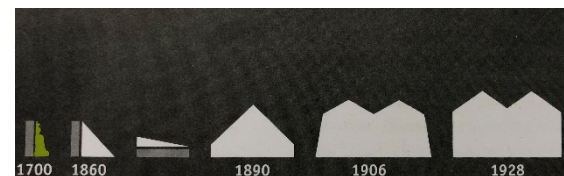
Surface: Westland has a very fertile soil. The soil of the Westland can be divided in three types: river clay/sea clay, dunes and peat. Through history people have been mixing these soils to create the perfect type (IJsselstijn, 2016).

Water level: Due to sedimentation of the river Maas, the peat area at the Westland is mixed

with clay. During the cultivation of the peat landscape, the soil started to oxidise and started to sink. Because the peat in the Westland was mixed with relatively more clay, the soil did not sunk that much like it does in the rest of Holland. This is still visible in the landscape, the didges in the Westland are quiet deep. Due to the save water conditions, it was profitable to make investments here.

The development of the greenhouses changes slowly. The first grapes grew on brick walls. This walls were originally meant for the stability of the plant but also functioned as a warmth buffer during the night too. Just like the greenhouse of Chiselhampton. Already in the 18th century gardeners came up with the idea to place windows over the grapes. In the 1860s the production of bigger glass panels accelerated the development of the greenhouse. In the 1890s the greenhouse did not had any brick walls anymore. Form 1906 on multiple greenhouses were constructed next to each other and in 1928 the Venlo kas was invented. This Venlo kas has straight wall and is still the most common shape of the greenhouse nowadays (Stroeken, 2011).

Development of the greenhouses



Stroeken, F., Hartkamp, D. (2011). *Mooi glaslandschap p. 19. Wageningen: Uitgeverij Blauwdruk.*

The grape export towards London came to an end during the 1930s. The world economy collapsed and the Value of the pound dropped drastically. Selling grapes to the UK did not pay off anymore and the production of grapes collapsed. It was after WOII that the greenhouses in the Westland got a new boots again, concentrated on vegetables and flowers. Although the production is still mainly used for export, most of the export is going into the continent instead of towards the UK.

Expositional and productional greenhouses

Since the industrial revolution two types of greenhouses have been developing next to

each other. The entertainment greenhouses is focusing on people while the productional greenhouse is only focusing on managing the ideal climate for the plant growth.

Last developments in the entertainment greenhouses: Gardens by the bay, Singapore

A clear and recent build example of exposition greenhouses are the greenhouses in the entertainment park Gardens by the Bay in Singapore. This botanical park attracts a lot of national and international tourists. The park houses two huge greenhouses. One is imitating the tropical highlands climate and houses different exotic species of orchid (Singapore's national symbol). The second greenhouse exposes plants from all over the world. The different heights in the greenhouse have different but stable temperatures. Inside this greenhouse plants from all over the world are displayed. With 8.8 million visitors a year, it can be seen as the biggest botanical gardens in the world.

The funtion of this greenhouse is maily leisure. And the greenhouse does not focus on educating. The garden sprovides an overview of spieces form all over the world. Although you can buy flowers in the shop. It does not focus of food or flower production.

The two greenhouses of gardens by the bay are part of a big garden complex.



Source: Gardens by the Bay

Last developments in the productional greenhouses: Westland

After WOII the production of grapes was not profitable anymore in the Westland. Due to faster infrastructure, the big grape plantations

in Spain produced more and cheaper grapes. However after the hunger winter of 1945-1946, the Netherlands wanted to be self-sufficient in their food production. The National government stimulated the food industries and the greenhouses in the Westland were producing different types of vegetables and flowers. The Westland area profited a lot form the rapid developing close by Rotterdam harbour. The fresh products produced in the Westland are close to the port and could be transported fast at many different cities. Upscaling made the production process become cheaper. Especially the tomato production grew a lot. Besides the upscaling the greenhouses, its interior changed a lot. Automatic sunscreens, watering systems, and humidity instruments did raised the production. Due to the close by port, the produced products in the greenhouses could be quickly at its consumers. The greenhouses of the Westland, nowadays are only focussed on production and are mainly exported towards Germany.

Conclusion

The greenhouses have change a lot during time. The first greenhouses started as a shelter to survive the winter. In history the horticultural buildings were not only used for its production but also used for showing off, do research in and for entertainment. The development in the 19th century created big differences between two types of greenhouses. The greenhouses focused on production only and the greenhouses focussing on entertainment mainly. The greenhouses are becoming two complete different types. The main difference is that the entertainment greenhouses are focussing on people mainly while the productional greenhouses are non-public greenhouses focused on rising production only. The two types of greenhouses are developing separated form each other. The greenhouse of gardens by the bay in Singapore are completely different from the newest greenhouses in the Westlands. The entertainment greenhouses are focussed on representing nature and giving comfort to people. The productive greenhouses are becoming technological production machines without any people. Due to this development, the production of fresh products

in greenhouses have been put socially further away from the people. The expository greenhouses have loosen their productional side and does not give any information on the technological developments in the productive greenhouses.

Discussion

The segregation between the exposition and production greenhouses is part of a wider discussion about the trend were people are disconnected from the industries. Although the production of vegetables is not outsourced like the clothing industry, the consumer are not familiar with this production process neither.

Louise Fresco, warns in her TED talk *feeding the whole world* about the problems were are facing by being distance from our food chains. She stated that in most Western countries, we tend to long of authenticity and the transitional ways of food production. However, she notes that it is because of technological development we are able to feed the amount of people we have living on this planet now (Fresco, 2009). The latest technological developments in the greenhouses are relatively unknown by its consumers while this industry is relatively close by.

The expository greenhouses have been developing into entertainment parks focusing on representing nature rather than representing technological food production. This expository greenhouses could place a larger role in connecting the technological developments in the food production industry with its consumers.

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Report workshop

Student: Jan van de Kamp, 4148037.

AR3U040- Graduation orientation

Series of workshops- reflecting on an exhibition proposal

Introduction: As part of my graduation, I will make an exhibition. After getting in contact with the Nieuwe Instituut, Flora van Gaalen (responsible for the program) told me a spot is free in the pop-up expo in the hall of the Nieuwe Instituut during two weeks in September. She told me, student work may be exposed here. And she is willing to consider exposing my work if I came up with a sufficient proposal.

In order to give everything I have for this opportunity, I decided to organise reflection workshops on my proposal, before handing this over to the Nieuwe Instituut. In a series of 4 workshops, I hope to receive enough feedback for an adequate proposal.

Each workshop will have another goal, and different questions are prepared. The participant from which most of them are friends, will be invited for dinner. My work will be displayed and discussed for about an hour. Hopefully their tips and tricks could be showed on the computer immediately.

Background about the exposition: In *The high-rise-Greenhouses*, Jan van de Kamp research the influences of stacking greenhouses on our landscapes. Could technology bring back landscapes which aren't 100% food production orientated?

Question, participants and dates

Reflection workshop 1 – Form of the buildings and representation.

6th of June - Invited participants: Architecture and interior orientated

Robin Cals(graduated complex projects)

Charlotte Kok (Graduates in July, complex projects)

Femke Bouwknecht (graduated Public Building)

Help Question workshop1:

Is after reading the text and seeing the images the message clear?

Do you dislike any and why? Should any be left out?

Should I change the forms of the buildings and why?

Should something be happening after the glass and how to show this?

Reflection workshop 4 – Representation of my ideas

week of 25 June - Invited participants: current urbanism colleagues

Lissanne Baak (student Urbanism)

Anne Bonne (student Urbanism)

Daan Leenders (student Urbanism)

Erik Van de Valk (student Urbanism)

Help Question workshop2:

Is after reading the text and seeing the images the message clear?

Do you dislike any and why? Should any be left out?

Does the series represent my idea, like you understood them during this semester?

Is the series complete, should there be one more?

Reflection workshop 3 – story telling and representation

begin July - Invited participants: Graduated urbanism students

Marit Haaksma (student urbanism)

Jeroen van de Kwaak (student urbanism)

Anouk Klapwijk (student urbanism)

Vera Kuipers (student urbanism)

Help Question workshop 3:

Is after reading the text and seeing the images the message clear?

Do you dislike any and why? Should any be left out?

Do you get the message and do you agree?

Is the series complete, should there be one more?

Reflection workshop 4 – Atmosphere and photoshop-skills

Begin July - Invited participants: Landscape architecture orientated

Jeroen Stroesel (Student landscape architecture and urbanism)

Niels van Hasselt (Student landscape architecture)

Minna Lui (Student landscape architecture)

Help Question workshop4:

Is after reading the text and seeing the images the message clear?

Do you dislike any and why? Should any be left out?

Are the colours and atmospheres printed in a good way? Should a filter be added?

Should it be printed on canvas? And is it better with old fashioned picture frames or without?

Time planning

Week 24
Hand in P2 report
Week 25
P2 presentation
Week 26
Work out feedback
Hand in exposition proposal Nieuwe Instituut
Week 27 – Week 35
Summer break
Week 35
Week before possible pop-up exposition Nieuwe Instituut

Week 36
Finish inventory with design concepts
Week 37
Analyse location and workout requirements
Week 38
Designing
Week 39
Designing
Week 40
Designing
Week 41
P3's?

Week 42
Workout feedback p3
Week 43
Designing
Week 44
Designing
Week 45
Designing
Week 46
Designing
Week 47
Stop designing process
Week 48
Work out final design
Week 49
P4 dates?
Week 50
P4 dates?

Week 51
Work out feedback
Week 52
Christmas break?
Week 1
Christmas break?
Week 2
Work out drawings
Week 3
Work out presentation
Week 4
P5's
Week 5
P5's

