JUST FOOD
Pig farming in an Arcadian landscape

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1. Introduction 5
  1.1 Ruin of the welfare state 6
  1.1.1 A short history on agricultural development and policy 6
  1.1.2 The current state of agricultural policy 10
  1.2 Problem field 12
  1.3 Project Location 14
  1.4 Problem Statement 15
  1.5 Research question 16
  1.6 Relevance 16
  1.6.1 Societal relevance 16
  1.6.2 Scientific relevance 16
  1.7 The utopia of JUST Food 17
  1.8 Reading guide 17

2. Theoretical framework 19
  2.1 Agriculture in the Netherlands 19
     2.1.1 Pig business 20
  2.2 Integrating discourses in food planning 23
  2.3 Conclusion 27

3. Design proposal 29
  3.1 Integrating discourses 30
  3.2 Chain integration 31
     3.2.1 Design program HUB 31
  3.3 Cluster of pig farms 32
     3.3.1 Design program pig cluster 32
  3.4 Multi-functional landscape 32

4. Methodology 33
  4.1 Literature study 33
  4.2 Case study 33
     4.2.1 Spatial analysis 33
     4.2.2 Semi-structured interviews 34
  4.3 Intended end products 35
  4.4 Time working schedule 35

5. Reference projects 36
  5.1 The new regional pattern 36
  5.2 Inspirational images 38

6. Spatial framework 39
  6.1 Spatial analysis Ysselsteyn 41
     6.2.1 Analysis spatial structure Ysselsteyn region 46
  6.3 Potentials map for regional design 53
1. Introduction

"As a majority of the world’s population is now thought to be ‘urban’, cities have acquired a new role: namely, to drive the ecological survival of the human species by showing that large concentrations of people can find more sustainable ways of co-evolving with nature" (Morgan & Sonnino, 2010, p. 2).

Food is the first necessity of life for every human being (and even animal) on earth. The first settlements on earth emerged because of this first necessity and eventually these settlements grew into cities. While ancient cities relied mainly on their local hinterland, international trade was an important part of the economics of these first cities, like ancient Rome for example (see image 1.1).

During the decades food has become more and more a global issue and the local hinterland has changed into a global hinterland (Steel, 2008). With a growing world population, urbanization trends and scarce resources food has become an urgent complex and global topic.

Knowing the world population will grow from the current 7 billion to 9 billion by 2050, food is an emerging topic in various disciplines. Except that the growing world population will increase the demand for food, increasing welfare and income in developing countries like China and India increases the consumption of food (von Braun, 2007, p. 1). This will also cause a shift in

Fig 1.1 historical trade routes (Steel, 2008)
consumer preferences from grains to fruits, vegetables, dairy and meat. The demand for prepackaged and ready-to-cook meals also increase especially in urban areas (von Braun, 2007, p. 1).

The fact that in cities consumer demands are met, is mostly thanks to our globalized chains of food production, processing and distribution. This global food system has brought many benefits to the urban population so far, like low food prices and a year round supply of many food products (Wiskerke & Viljoen, 2012, p. 21). These benefits however, have also come at a cost. Issues regarded to food can be categorized in terms of social, economic and ecological problems. When exploring the topic of food, Wiskerke and Viljoen (2012) mention downward pressure on farm family incomes; loss of labor, skill, competences and knowledge; environmental pollution and degradation; waste; fossil fuel dependency; climate change; water stress; loss of (agro)biodiversity; decline in organoleptic quality and diversity; agricultural land; soil degradation; public health (p. 21-24). Many of these issues have a manifestation in cities.

The way we deal with our food nowadays, is a result of a gradual development, related to the welfare state.

1.1 Ruin of the welfare state

In the 18th century - thanks to industrialized means of agriculture and food production - for the first time in world history the amount of food produced didn’t form a barrier to population growth. This in contrast with the theory of the British economist Robert Maltus (1766-1834) who theorized that a maximum of production limits population growth (Bieleman, 2008, p. 30), also known as the Malthusian Trap. Indeed, the amount of food produced today, is enough to feed the whole world population. Paradoxically hunger and overproduction exist at the same time. For the first time ever, we have been able to produce enough food for the whole world population. At the same time a billion people suffer from obesity and a billion people suffer from hunger (WRR, 2014, p. 39). The major issue is therfor not a production problem but a distribution problem.

Dependency on food production directs attention to national and international regulations. From governmental institutions to non-governmental organizations (NGO’s), entrepreneurs and multi-nationals. Policies are made at the European and international level (WRR, 2014) influencing the national and local level. In Europe there is a long tradition of agricultural policies and subsidies. The introduction of these policies were strongly related to

1.1.1 A short history on agricultural development and policy

Agriculture used to be a way of living and a strategy of survival to many. Around the end of the Middle Ages farming used to be a daily occupation for the majority (Bieleman, 2008, p. 567). Over the centuries it has developed into an economic sector employing less and less people. The industrial revolution was accompanied with significant population growth and urbanization. However in the Netherlands the family farm was a flourishing business until the 1950’s (Bieleman, 2008, p. 273).

In the 19th century the UK was an important trade partner for livestock. Industrialization increased demand in neighboring countries. Already back then The Netherlands started to develop itself as an export country (Bieleman, 2008, p. 276).

With the introduction of transport overseas, grain from the ‘new world’ was imported. And except for grains from the new world, just before the second world war already a quarter of the Dutch livestock feed was imported (Bieleman, 2008, p. 285) which later translated in the import of corn and soy products.

The first disruption in the Dutch food system was observed during the first world war (1914-1918). The import of manure and feed were largely unchanged while the demand in the UK and Germany increased. This troubled the domestic food supply and the Dutch state started to regulate the export (Bieleman, 2008, p. 288). The war temporarily intervened in the agriculture system, however after the war the system restored itself in large parts.
Increased competition harmed the export to the UK. The prices decreased and farms became almost not profitable, while daily expenditures increased. In the 1930s the Dutch government started to structurally support farmers. With the so called ‘Landbouw-crisiswet’. This set the fundament for the changed relationship between the state and the farmer (Bieleman, 2008, p. 314) where the state got much more influence in the production, quality, prices, trade and processing. Until this moment the state had a liberal standpoint, not to interfer in the market (Bieleman, 2008, p. 293).

The second World War (WWII, 1939-1945) asked again for a restructuring of the Dutch agriculture. The occupation of our land meant a restriction to the sea side. Introduced state regulations aimed at maintaining the nutrition level of the population (Bieleman, 2008, p. 295). The Dutch state demanded farmers to hand over their harvest to the state, see figure 1.2 and 1.3.

Right after WWII nation states focused on intensification of food production to eliminate food shortages which resulted from the war and economic depression. The Netherlands already before the war used to be a country of high production levels. In 1958 a government plan called ‘Ruilverkaveling’ was introduced. This policy stimulated the merging of farming plots and aimed at scale enlargement see picture 1.4.

Before the war, farms mainly used to be a traditional mixed farm involving complementary agricultural activities. After 1960 there was a trend of specialization. What used to be a traditional mixed farm specialized in dairy-, pig or chicken farms (Bieleman, 2008, p. 467). "Het proces van rationalisatie en schaalvergroting werd door de overheid belangrijk ondersteund en gestimuleerd, als onderdeel van het beleid dat werd aangeduid als structuurbeleid" (Bieleman, 2008, p. 467). Enlargement of the industrial farm led to higher productivity numbers. With state support the infrastructure in rural areas was improved considering water management and road connections to meet mechanization demands (Bieleman, 2008, p. 468). This scale enlargement also took place in the processing and distribution sector (Bieleman, 2008, p. 471).

In 1962 the European Common Agricultural Policy came into existing. The commissioner of agriculture by that time, the Dutchman Sicco Mansholt, played an important role in this. He had to convince different countries of the benefits of a common policy, which has not been easy in the beginning. Finally Mansholt managed to get every country behind a common policy and it was successful. Except for providing a basic income for farmers, high
productivity and affordable food prices for consumers the policy also aimed at free trade between the member states. However, the intensification led to higher production numbers than consumer demand. In spite of the market expansion this resulted in big surpluses (Bieleman, 2008, p. 476). A restructuring of agriculture was needed.

It lasted until 1968 before a common European polity on this matter was introduced and with no succes. In the mean time the national government had accepted the surplusses and consciously chose for an agriculture polity where scale enlargement and export stimulation was used as a way to maintain income levels (Bieleman, 2008, p. 476). Part of this polity was the stimulation of execution of small family farms in favor of larger intensive farms. As a result of the overproduction, in the second half of the '70's competition between European member states arised (Bieleman, 2008, p. 476). In 1970 not only the Netherlands coopated with surplusses but the rest of Europe as well. Untill this year the milk quotum was introduced as a tool to limit milk production.

From the 1970's onward less support for intensification was found. Farmers had an acceptable income, but the intensification so far led to pressure on the environment, nature and landscape. Now policy started to aim at a limitation of chemical use in the agricultural sector (Bieleman, 2008, p. 478).

The trend of intensification was also characterized by insecurities. Farmers started to develop off-farm activities focusing on the complete production chain more than
1800: Industrialization, population growth, urbanization. Transport overseas: low grain prices, feed import

1850: First world war. Hard business, increased demand unchanged production

1900: Increased competition, farming barely profitable

1930: Crisis wetten

1950: Distribution plan and export restrictions

1958: European Economic Comunity founded

2000: Natura 2000, budget cuts, LOG's

2050: Competitiveness and rural development, market orientation

1962: Common agricultural policy

Restriction on chemical uses

Free trade between member states

Maintenance of nutrition levels

AGRICULTURAL TREND

GOVERNMENT TREND

GOVERNMENT INTERVENTION
only on primary production. This included a complex web of processing and supply services. Farming became a comprehensive agri-business complex (Bieleman, 2008, p. 481) and farmers became entrepreneurs.

1.1.2 The current state of agricultural policy

Agriculture policy have gotten into existence for multiple reasons of which the following are most notable: a basic income for farmers, increasing the productivity of farmers, assure food production and favor food prices. In general one could say that welfare states aim at protecting their farmers and citizens and use various instruments on national, continental and global level to do so.

Still the European Union spends 40% of their budget to agricultural subsidies. According to the EU an agricultural policy is needed because:

“Market mechanisms alone cannot provide for the manifold roles and services to be provided by European agriculture, i.e. safe food, sustainable land management, the contribution to socially and economically viable rural areas, and meeting new environmental challenges. Public support to farmers is needed to face increasingly volatile markets, to ensure the provision of public goods and to facilitate changes in farming practices in order to ensure a farming sector that meets societal demands” (European Commission, 2009, p. 4).

Since the beginning of the Common Agricultural Policy (CAP) the focus of this policy has changed (EU). Part of the CAP are agricultural subsidies. An agriculture subsidy is a governmental subsidy paid to farmers and agribusiness to supplement their income, manage the supply of agricultural commodities and influence the cost and supply of such commodities. In the EU approximately 40% of the budget is spent on agriculture and fisheries subsidies. The largest subsidy is the decoupled direct payment where farmers are subsidized per hectare. Before, there was a connection between the payment and the specific crop, called the coupled payment. The single farm payment is a large proportion of income for many farmers.

The graphic shows that export subsidies have minimized and that coupled payments have been replaced by decoupled payments for a large part. Also the subsidies for rural development has increased.

Obviously in this more and more globalizing world, agreements and policies for food production and trade are made on an international level.

In Western countries there is an oversupply of certain food commodities which have negative effects on health (Schafer Elinder, 2005, p. 1333). Examples are corn in the US and the diary sector in the EU. The amount of overproduced corn in the US is transformed into an important additive for the junk food industry. Until not so long ago the EU spent almost 2 billion euro to maintain the production levels at 20% above the domestic demand and at prices twice as high as on the world market (Schafer Elinder, 2005, p. 1334). The surplus milk is converted to storable products which are then with support exported in order to dispose it. A result of this is that these export subsidies undermine the milk sector in many developing countries (Schafer Elinder, 2005, p. 1334).

“The use of export subsidies by rich countries and tariffs on imported food is a serious obstacle for growth of the agricultural sector in developing countries” (Schafer Elinder, 2005, p. 1335).

Von Braun states that in a world confronting more scarcity of food, more trade is needed to spread opportunities fairly (von Braun, 2007, p. 13).
Fig 1.5 development CAP expenditures
1.2 Problem field

“It is often overlooked that access to food is still the primary concern of everyday life”, stated by Burkhalter and Castells in ‘The new urban question’ (2009: p. 21).

The way we deal with our food today, comes with social, economic and ecologic challenges. An increasing world population and urbanization trends demand a re-thinking of our food system. “Food related issues play a major role in climate change, they impact on obesity and hunger, they are major cause of waste problems and finally they keep intact inequalities between developed and developing countries” (Broekhof & van der Valk, 2012, p. 393).

Except for feeding 3 billion more people than we have now on our planet, food can also play a role in sustainable urban development. In this more and more globalizing world, agreements and policies for food production and trade are made. A short review on the history of (Dutch) agriculture and the welfare state, as mentioned in the previous section, shows a gradual development to the state we are in today. The current food system is multi-characteristic and multi scalar and a result of perverse incentives in the past.

Simultaneously we are dealing with a decentralizing government and the end of the welfare state. This new societal situation situation asks for alternative ways to build the future. A way to do that is by envisioning an Utopia. In this case the Utopia of Food will be envisioned.

In former decades there has been a lack of attention of urban designers and planners since food was considered a ‘rural affair’. This is however neglecting the fact that food is mostly consumed in cities and that urban planning and design is physically connecting the food between the producer and the consumer (Salle & Holland, 2010). Therefore the food system is emerging as a new field in the urban planning practice (Nasr & Komisar, 2012, p. 48). “Food becomes an important prism to understand the complex web of connections that tie cities to wider relations, places and processes. In an era of rapid urbanization, embedding this view in the planning system is, more than ever, crucial not just to help cities feed themselves, but also to devise the kind of political tools and institutional arrangements needed to reconnect them socially, economically and environmentally with their surrounding regions” (Sonnino, 2009, p. 434). Following Sonnino’s thinking, food becomes a perspective to look at cities. Different dimensions of the city become visible through approaching the city through a food perspective. This is also the way Carolyn Steel perceives food as a perspective: “Through food, we can judge whether or not the life we lead is ‘good’ in every sense” (Steel, 2012, p. 39).

This cannot be seen without acknowledging that food production has a spatial dimension: “Food relates to transportation planning, planning green spaces, commercial strips and retail markets, conservation of fertile land, mixed land uses, localizing urban farms and much more” (Broekhof & van der Valk, 2012, p. 393).

Planners are expected by alternate food advocates to have a role in transforming the food system. The most common catalyst for this might have been zoning issues like the legislation of having chickens in (sub)urban areas. Zoning challenges emerged out of a direct concern around the food system and it’s problems (Nasr & Komisar, 2012, p. 49). “Increasing the share of agricultural land in a congested metropolis sets the path for a balanced land use pattern that benefits the proper functioning of the local eco-system. Reducing the amount of industrial food that has to be manufactured, conserved, transported, stored and distributed would represent a major contribution to fight against global warming and to energy conservation” (Burkhalter, L. and Castells, M., 2009, p. 21).
How Billions In Tax Dollars Subsidize The Junk Food Industry

Childhood obesity rates have more than tripled in the past 30 years, an alarming public health development that is contributing about $150 billion a year to the overall cost of U.S. health care.

Almost one in five children aged six to eleven are seriously overweight, making them highly vulnerable to heart disease, diabetes and other serious illnesses.

At the same time, Congress and the Department of Agriculture are spending more than $4.26 billion annually to subsidize the crops that are used as additives in manufacturing cookies, candies, soda pop and other junk foods. A primary contributor to childhood obesity is the junk food industry's use of ingredients made

A DARKER SIDE TO FOOD AID

Hunger and malnutrition are a growing global concern, especially in many developing nations where underdeveloped agricultural programs continue to exist. The issue of hunger can also be worsened by food aid when it undercuts local developing agricultural programs and makes entire regions dependent upon the aid.

A manifesto for solving the global food crisis

To celebrate World Food Day, here are key ways of promoting more sustainable food systems from building grain reserves to taxing pollution

Improve food distribution

United Nations data shows that we produce enough food for everyone to have an adequate diet, but poor distribution means that 655 million people are hungry while some 1.4 billion people are overweight or obese. We need to tax the food we have and make sure it is distributed to those who need it most.

Chinese firms and Gulf sheiks are snatching up farmland worldwide. Why?

The world's population is nearing 7 billion. Food prices keep spiking every few years. Food insecurity is a threat to many governments, which use food as a crucial diplomatic tool. China is the world's second-largest economy and the largest importer of agricultural products. Its needs are immense. China is enthusiastic about the vast land area and large labor pool of Africa, and increasing Chinese investment there makes sense.

The EU's Common Agricultural Policy

The European Union spends more than €55 billion a year, or about 4% of its GDP, on agricultural subsidies. These payments are in addition to the huge costs of maintaining federal food safety standards. The European Union is the world's third-largest importer of agricultural products, and its subsidies have contributed to overproduction of agricultural products, which has resulted in lower prices for farmers and higher prices for consumers. The EU's Common Agricultural Policy was designed to combat food shortages after World War II, but it still accounts for almost half of the European Union's budget.

The Real Cost of Cheap Food

Butter Mountains: The EU's Common Agricultural Policy

By IRA KARTZOFF

The EU's Common Agricultural Policy was designed to combat food shortages after World War II, but it still accounts for almost half of the European Union's budget.

The EU's Common Agricultural Policy was originally designed to combat food shortages after World War Two. Since then, farming has declined and now makes up less than 3% of the world's food production. The Common Agricultural Policy (CAP) is the EU's main agricultural policy and it has been in place since 1957. The CAP supports farmers by providing them with subsidies and other forms of financial assistance in order to encourage them to produce more food. It also seeks to ensure a stable and affordable food supply for EU consumers.
1.3 Project Location

Characterized by a high concentration of pig farming the implication of our global/local food system is in the Netherlands strong represented in the landscape of North Brabant and North Limburg. The relative cheap soil, its good infrastructural connectivity and strategic location to the hinterland of Europe this region (see image 1.6) is highly occupied with pig farming. In this area, better known as 'De Peelstreek', the landscape is highly cultivated and can be considered a production landscape, see image 1.7. In the spatial analysis in chapter four this will be emphasized.

One farmer in the village of Ysselsteyn (marked with the star in figure 1.6) will be researched into depth. The village of Ysselsteyn was planned in 1920 as a model town for the peat and pig industry. In chapter four an analysis of the region will be introduced, including the production chain of pig farming and a zoom in on the logistics of the pig farm. By researching the whole chain from production to consumption, intervention places can be determined. The starting point for the design however is the pig farm in Ysselsteyn and its company's logistics.
1.4 Problem Statement

As stated in the problem field, we as consumers have become disconnected from the way our food is produced. This is physically a disconnection as visible in the landscape of Ysselsteyn as well as a mental disconnection from not knowing how our food is produced. This gap results in paradoxical wishes like cheap food and sustainable and animal friendly food. The current focus to tackle this disconnection is on the city through means of urban agriculture and farmers markets. In this thesis the disconnection between intensified means of production (which is how the majority of our food is produced) and consumer habits will be addressed. The location of Ysselsteyn is used as a test site of how spatial qualities and characteristics can be used as a tool for embedding production sites and connecting consumers to these sites.

In this graduation project a specific product - pigs -embedded in a specific location - Ysselsteyn - is chosen to further investigate the topic of food planning. The ultimate goal in the end is to relate spatial quality to food production, which is social to its local and global society, which is economical viable and affordable and which is environmentally embedded both globally and locally. From a spatial planning perspective spatial qualities and characteristics contributing to a sustainable food system will be determined.
1.5 Research question

In counteraction of the shortly described mechanisms the following hypothesis/research question is defined:

**What are the spatial potentials and instruments for an alternative and sustainable pig farm model?**

The following sub question must help in a systematical way to answer the research question.

- **How is pig farming currently organized?**
  In order to answer this subquestion the historical development so far will be explored and placed in the context of the welfare state.

- **What are the possibilities for sustainable pig farming?**
  By doing a case study potentials for sustainable pig farming are researched.

- **What are the spatial qualities of a sustainable food landscape?**
  By doing an analysis on spatial structure and characteristics, spatial qualities can be determined and related to the possibilities for sustainable pig farming.

- **How is a model for sustainable pig farming organized?**
  This research question will be answered through research by design and finally concluded by a design proposal.

- **How can urban planning contribute to a model for pig farming?**
  Considering the role of urban planner and designer in this subject is part of the reflection. It might give new insights in the role of the urbanist in this complex multidisciplinary topic.

1.6 Relevance

This graduation project will contribute to theorizing about cities and to working in practice. Both aspects will be discussed as societal relevance and scientific relevance.

1.6.1 Societal relevance

Investigating food production and its mechanisms has several dimensions which are relevant to society. The first motivation in this graduation project is that of social justice and equity. The idea that food should be accessible to all is the first departure point. Secondly, one could say that there is an urgent need for a reform of the current food system because of multiple reasons of which most important are environmental pollution and soil degradation, waste, fossil fuel dependency, climate change, water stress, loss of (agro)biodiversity and public health (Wiskerke & Viljoen, 2012, pp. 22-24). This creates an urgent need for integrated urban food policies that create new linkages and new relationships between different stages and actors of the food system (Wiskerke & Viljoen, 2012, p. 29).

1.6.2 Scientific relevance

Food is a product made through a whole process where different actors, different locations and different consequences are involved. This not only reflects a territorial approach to food production, but also an integrated conceptualization of food. Wiskerke and Viljoen (2012) characterize the new food geography as an integrated territorial geography (p.29). “This has also considerable implications for scientific research, policymaking, planning and design” (Wiskerke & Viljoen, 2012, p. 29). Although there is wide consensus for an interdisciplinary and holistic approach, Wiskerke and Viljoen (2012) state that interdepartmental policymaking and integrated planning and design is just starting to take place or not occurring at all (p. 29). This graduation project can stress the need for an interdisciplinary perspective in academic research and also the role of spatial planning and design within this theme, which is slowly gaining attention. A personal motivation in this, is finding out what the role of urban design and urban planning might be in such a holistic approach.
1.7 The utopia of JUST Food

Utopia’s on the ruin of the welfare state

As mentioned in the problem statement ‘we in the West’ have become disconnected both mentally and physically from our food. This has resulted in a tense situation due to a growing world population, urbanization trends and scarce resource. An integrated approach towards the global complex ecological, social and economic challenges is needed.

The Utopia of JUST food reshapes the relation we have with our food by a general integrated approach to the food system. The outcome would result in a food system that does justice to the economy, the ecology and the society as a whole. Specifically this means healthy food, production is not harmful for our environment and benefits our global society. When we buy our food in the supermarket, on the farmers market or the local market in the street, we do not have to reconsider our choice. Are we being fooled by the multinationals interest and the power of the supermarket? We can trust the producer of our food, because he has the same interest as everyone in our society: health, our environment and social justice. Extra labelling for excellent animal welfare, fair trade or organic is not needed anymore because that will be the norm instead of the exception.

In this JUST food society we feed the world social, economic, environmental sustainable and ethical. Preferably this means that there is a global benefit of industrialized food production, there is a consumer demand for fair food and the producer feels the wish and responsibility to produce these fair foods. The production would create a positive spillover effect for the related countries in the food chain: a cosmopolitan food system.

This is obvious a Utopia and a very abstract description of the ideal world of food. Another observation for this broad Utopia is that it uses a systems approach to all different aspects which are intertwined with each other. Using this perspective may have potential for other topics as well, like energy and healthcare.

In this graduation project this broad Utopia of intertwined elements is taken as a starting point and will be translated to fit the matter of pig production in the Netherlands. The translation of this conceptual notion of the UTOPIA of JUST Food will be elaborated upon in chapter x.

1.8 Reading guide

This introduction will be followed by a research part in which agriculture in the Netherlands will be discussed, two discourses in food planning are elaborated upon and the way pig farming in general is being organized. The research section will be followed by the design brief in chapter 3, the methodology in chapter 4, reference projects in chapter 5, the spatial analysis in chapter 6 followed by the design intervention in chapter 7. The thesis will end with a final conclusion and reflection in chapter 8.
We are not saving the world with urban farming, but it is a way to educate, become conscious and bond socially.

When I buy my food in the supermarket, I want to be sure that it is grown sustainable and ethical to developing countries.

I can have a better farming business if I can extend my farm, that also provides opportunities for sustainability.

Feeding the growing world population cannot harm the environment in any way. If that means intensification, that must happen.

We are not saving the world with urban farming, but it is a way to educate, become conscious and bond socially.

When I buy my food in the supermarket, I want to be sure that it is grown sustainable and ethical to developing countries.
2. Theoretical framework

This chapter consists of different sections building towards a theoretical framework which will be the departure point for design. First agriculture in the Netherlands will be discussed with an emphasis on pig farming. Secondly the idea of food planning will be introduced elaborating on two schools of thought regarding local versus global food production.

2.1 Agriculture in the Netherlands

Landbouw in Nederland kenmerkt zich door intensivering. Met intensieve landbouw wordt bedoeld dat er meer inzet van kapitaal en arbeid nodig is in verhouding tot de oppervlakte grond. Boeren in het verleden was echter een overlevingsstrategie en meer een levensstijl dan een economische sector (Bieleman, 2008, p. 21). Wat Bieleman onder landbouw verstaat, is het beheersen van biologische processen. Kennis van de boer is gebaseerd op ervaring en wordt overgedragen van generatie op generatie. Verwetenschappelijking van de landbouw was een belangrijke verandering in de ontwikkeling van de landbouw (Bieleman, 2008, p. 22).

Vanaf 1750 nam de ontwikkeling een totaal andere wending: intensivering en productieverhoging ging gepaard met snelle uitstoot van arbeid. Een hoger loonpeil en tegelijkertijd dalende prijzen. Daarom werd gestreefd naar het minimaliseren van de kosten voor arbeid. "Dit bracht een veelomvattend complex proces op gang van mechanisatie, intensivering, specialisatie, rationalisatie en schaalvergroting, wat vervolgens leidde tot een snelle absolute daling van het aantal personen dat in de landbouw werkzaam was" (Bieleman, 2008, p. 32).

De verscheidenheid die tussen regio’s waarneembaar is, komt door de afwisseling in geologische en bodemkundige landschappen. Ook andere factoren zijn van invloed op de ruimtelijke verscheidenheid en zijn er verschillende ruimtelijke modellen vorm gegeven. Bijvoorbeeld het klassieke intensiteitsmodel van de 19e eeuwse landbouw econoom Von Thunen (1783-1851). Zijn model was gebaseerd op de gedachte dat de aard van agrarische productie wordt bepaald door de ligging ervan tot de markt. De landbouw neemt verschillende vormen aan naarmate het productiegebied verder van de afzet markt ligt. "Het zijn de kosten voor transport die volgen Von Thunen de belangrijkste determinant vormen voor de aard van het landbouwbedrijf zoals dat op een bepaalde plaats tot ontwikkeling komt" (Bieleman, 2008, p. 33). Von Thunen ging er van uit dat boeren hun profit maximaliseren.

In de periode 1950-2000 ontwikkelt de Nederlandse landbouw tot sterke economische sector, vaak omschreven als agribusiness. Als gevolg van de groeiende economie ging het algemeen loonpeil omhoog. Voor boeren betekende dit een flinke kostenstijging terwijl de prijs van de producten nauwelijks veranderde. De oplossing was om meer te gaan produceren om een inkomensniveau te bereiken dat rendabel was (Bieleman, 2008, p. 462). Grond en arbeid veranderden in schaars goed. Eerst werden er land saving technologieën toegepast zoals het gebruik van kunstmest. Daarna lag de nadruk meer

2.1.1 Pig business

Van oorsprong richtten de varkensboeren op de zandgronden zich voornamelijk op de export. De provincie noord Brabant ontwikkelde zich bij uitstek tot varkensland. Rond het midden van de jaren '80 herbergde de provincie zo'n 40% van de varkensstapel (Bieleman, 2008, pp. 515–516). Na 1960 ontwikkelde de fokkerij en mesterij zich steeds meer als gescheiden sectoren. Sinds de varkenshouderij zich losmaakte uit het traditionele gemengde bedrijf deed zich een verdere specialisatie voor op basis van de drie fasen die men in de varkenshouderij kan onderscheiden:

- De productie van fokzeugen
- Het voortbrengen van mestbiggen op vermeerderingsbedrijven
- Het mesten van varkens voor de slacht

Sommige boeren integreerden die fasen op 1 bedrijf maar dat bleek slechts beperkt tot 6% in 1980 (Bieleman, 2008, p. 517).

Naast de varkenshouders waren er nog tal van andere bedrijven en instellingen in de keten actief. Zo zorgen de veehandelaren voor de verzameling en
Distributie van fokvarkens, mestbiggen en vleesvarkens en de export van mest- en vleesvarkens. Daarnaast is er de verwerkende industrie, waar vanaf 1960 een proces van schaalvergroting en concentratie voordeed (Bieleman, 2008, p. 518).


<table>
<thead>
<tr>
<th>Jaar</th>
<th>Aantal varkenshouders</th>
<th>Gemiddeld varkens per varkenshouder</th>
</tr>
</thead>
<tbody>
<tr>
<td>1950</td>
<td>271.000</td>
<td>5-10</td>
</tr>
<tr>
<td>2000</td>
<td>14.500</td>
<td>200-500</td>
</tr>
</tbody>
</table>

Technische/organisatorische vernieuwingen hadden drastische gevolgen voor de plattelandssamenleving. De agrarische beroepsbevolking bedroeg 19% na WO II en 3% in de 21e eeuw (Bieleman, 2008, p. 480).

Sinds 1970 was het proces van schaalvergroting in een stroomversnelling geraakt, mede door een aantal regelingen als onderdeel van een overheidsbeleid dat er op gericht was de structuur van de nederlandse landbouw te verbeteren. Het beleid moedigde onder andere investeringen in stallenbouw aan. De nieuwe vormen van varkenshuisvesting waren geautomatiseerd en gemechaniseerd. De productiviteit van de varkenshouderij ging er ook op vooruit (Bieleman, 2008, p. 519).

In de jaren ’60 en ’70 schakelde de veevoederindustrie over op geimporteerde, goedkope grondstoffen die meestal van tropische origine waren. Omstreeks het midden van de jaren ’80 voerde ze al tweederde van haar grondstoffen aan van buiten de EU, met als gevolg dat op dat moment 60-80% van de binnenlandse vleesproductie gebaseerd was op geïmporteerd veevoer.

“De uitstekende en korte verbindingen over weg en water tussen Rotterdam-Europoort en het achterland bezorgden de varkenshouders een belangrijk kostenvoordeel in vergelijking met hun collega’s elders in Europa” (Bieleman, 2008, p. 518).

Vanaf 1990 werden er verdere maatregelen genomen om de mestproductie in gebieden met een hoge vee dichtheid aan te pakken. Boeren werden gedwongen hun uitstoot aan fosfaat en stikstof naar het milieu tot een minimum te beperken. Tegelijkertijd trachtte men het overschot aan mest van varkensbedrijven over het land te verdelen. Sindsdien gingen grote hoeveelheden mest van gebieden met een hoge vee dichtheid naar gebieden met een lagere vee dichtheid en waar behoefte was een dierlijke mest (Bieleman, 2008, p. 522).

The fact that pig farming is mainly concentrated in North Brabant and North Limburg is due to multiple reasons. The soil is of sand and peat, which is very suitable for livestock farming. The soil is not very fertile and therefore not too costly. The manure from the pigs can also be used as fertilizer for the soil conditions. Another important reason for its placement in North Brabant/Limburg is the fact that there are good infrastructure connections over road and waterways. This is important for the logistics of the pig farming. Livestock feed is often entered in the Harbor of Rotterdam and from there transported. Also are North Brabant and North Limburg conveniently located close to Germany, an important export partner for pork. Pig farming in the area of North Limburg will be further elaborated in chapter 4.

When it comes to pork the Netherlands is for 260% self sufficient. This means that more is produced than domestic consumed (LEI, 2011). About 90% of pork export is within London, Berlin, Paris triangle (LEI, 2011).
2.2 Integrating discourses in food planning

Introduction

Food and agriculture have been considered typically rural issues and therefore not appearing on the urban planning and design agenda (Wiskerke and Viljoen, 2012: p. 19). The availability of cheap food has been a major driver in the process of urbanization world-wide which has caused an increase of population living in cities (Broekhof & van der Valk, 2012, p. 395). Together with a prospect of more than 9 billion people living in cities by 2050 food is becoming an emerging topic on the urban planning agenda.

Issues regarded to food can be categorized in terms of social, economic and ecological problems. When exploring the topic of food, Wiskerke and Viljoen (2012) mention downward pressure on farm family incomes; loss of labor, skill, competences and knowledge; environmental pollution and degradation; waste; fossil fuel dependency; climate change; water stress; loss of (agro)biodiversity; decline in organoleptic quality and diversity; agricultural land; soil degradation; public health (p. 21-24). Many of these issues have a manifestation in cities. That is why Morgan and Sonnino (2010) state: “As a majority of the world's population is now thought to be ‘urban’, cities have acquired a new role: namely, to drive the ecological survival of the human species by showing that large concentrations of people can find more sustainable ways of co-evolving with nature” (Morgan & Sonnino, 2010, p. 2).

Roughly speaking, there are two seemingly contrasting discourses in food planning. Both discourses are aware of the future challenge to feed the growing urban world population in a way that can be considered socially, economically and environmentally sustainable and ethical sound (Wiskerke & Viljoen, 2012, p. 21). Kneafsey (2010) describes the two discourses as following: “While the discourse of agricultural productivism celebrate the technological and scientific advances that have enabled the provision of cheap food to millions of consumers in the developed world, proponents of an alternative worldview point to the pollution of soil, water and atmosphere caused by industrial farming methods, the miserable lives endured by billions of animals in feedlots and battery farms” (Kneafsey, 2010, p. 177).

Except for the environmental episteme, there is a socio political motivation behind an alternative food movement. The industrialized and institutionalized ways of producing in the global north have produced an unequal distribution of food globally where hunger and obesity co-exist. Morgan (2010) summarizes this as following: “The systematic unfairness of the system lies in the fact that the rich countries of the North spend over US 1 billion a day supporting their agricultural producers six times what they give in foreign aid – the net effect of which is higher output at home, fewer imports, and the dumping of vast surpluses on world markets which undercut poor primary producers” (Morgan, 2010, p. 1857).

Above mentioned issues are characteristic for the industrialized, modernized, globalized capitalist society we live in today. New discourses are emerging to deal with these issues. This section will shortly elaborate on two dominant discourses: the global conventional and the local alternative, and go into the spatial implications of the discourses. Finally will be concluded with a reflection on the role of urbanism in this topic.

Discourses in food planning

The current dominant discourse is following the conventional agri-(industrial) food system, and the other is challenging the agri-business in multiple ways, called the alternative food movement. The conventional agri-system is more and more conceived as unsustainable, unhealthy, unjust and a danger to landscape heritage. Landscape uniformity, low prices for producers, bulk production, global injustice and alienation between producers and consumers are being enforced by the system. Other (spatial) consequences are monoculture, spatial homogeneity, uniformity in the landscape, decline of mixed farming systems, growing dependence on bulk production and
a declining rural labor force (Broekhof & van der Valk, 2012, pp. 394–395). High productivity farming, hyper-efficient logistics, complex web of bankers, retailers, scientific research and food processing industry are supported by the agri-business complex (Broekhof & van der Valk, 2012, p. 395).

Supporters of the agri-business believe that the environment will benefit from highly capitalized and specialized high-yield farming systems using the latest precision technology. They do recognize the need for a transition towards sustainable practices and put faith in the development of agro-parks and vertical farms. An agro-park is an integrated cluster of agri-food facilities where production is combined with packaging, transportation, waste management, labor management, market research and much more (Broekhof & van der Valk, 2012, p. 396).

Advocates of an alternative system aim for re-territorialisation of food production and processing. This effort is associated with a re-evaluation of regional artisanal and ecological quality standard and the shortening of chains for local and regional producers (Broekhof & van der Valk, 2012, p. 394). They put faith in an emerging alternative food movement. This approach advocates local food and ecologically sound production methods. The alternative discourse starts from 'quality' instead of cheap bulk products. The advocates of alternative systems promote value capture for the producers and reduction of the distance between producer and consumer (Broekhof & van der Valk, 2012, pp. 396–397). Proponents of the alternative food discourse, start from the premise that the industrial food system is not sustainable and will collapse in the long term. By bringing back food production to the city they expect to increase community commitment with the food system (Broekhof & van der Valk, 2012, p. 398). Thus their approach is not so much about curing the evil of the global food system, as creating more awareness and promoting educational activities through local production. According to Wiskerke and Viljoen (2012) the alternative food system focusses on developing along three societal axes which are party interrelated and mutually reinforcing:

- Short producer to consumer food chains (new relation between civil society and the chain of food provisioning)
- Re-valuing public food procurement (new relations between the public sector and the chain of food provisioning)
- Urban food strategies (the rise of municipalities and city-regions as food policy makers, pointing to new relations between the government and civil society) (Wiskerke & Viljoen, 2012, p. 25).

This alternative movement is not only challenging the industrial and global approach to production and consumption and reflects not only a territorial approach to production and consumption of food but also proposes an integrated conceptualization of food (Wiskerke & Viljoen, 2012, p. 29). This integrated conceptualization of food is an important one. This is the reason Donald et al. (2010) call the regionalization of the food system a contested concept because of its dual identity. However, it can provide a clearer conceptual terminology for a system that describes the complex flows, processes and relationship of present-day food systems rather than more bounded structures and systems most often associated with either a conventional global agri-food system or a highly localized one (Donald et al., 2010, p. 174).

The two seemingly contrasting discourses of the conventional food system versus the alternative food system should not be seen as separated. Broekhof and van der Valk (2012) argue for a synthesis of the global and local approach, what they call the ‘third way’, bridging the contested middle-ground between conventional de-localized and alternative re-localized agri-food systems. Morgan and Sonnino (2010) state that: ‘Culturally diverse cities that wish to develop ‘sustainable food strategies’ need to strike a balance between the localization of their food chains, where the aim should be to calibrate the local production and consumption of seasonal food, and globalization, where the aim should be to promote the use of fairly traded produce from developing countries. In other words, a sustainable food strategy ought to embrace a spatial strategy that tries to promote cosmopolitan localism, rather than localism per se’ (Morgan & Sonnino, 2010, p. 4). When applied
in such a way cities are given a dual identity as a bounded space with a local territorial identity and as a relational space (Morgan & Sonnino, 2010, p. 4). However they do not explain what a spatial strategy consists of.

**Spatial implications**

The food system is the chain of activities connecting food production, processing, distribution and access, consumption and waste management, as well as all the associated supporting and regulatory institutions and activities (Ilieva, 2013, p. 75). The infrastructure for food systems in towns and cities has various manifestations including places for food trading, processing and growing (Viljoen and Bohn, 2012: p.385). Food relates to transportation planning, planning green spaces, commercial strips and retail markets, conservation of fertile land, mixed land uses, localizing urban farms and much more (Broekhof & van der Valk, 2012, p. 393).

De la Salle and Holland (2010) point out two causes for the elimination of food from our cityscape: urbanization and the car. As cities increasingly became the hub of human activity, more and more people moved - and are moving - to urban centers, leaving behind the family farm. The family farm has been replaced by large industrial farms (Salle & Holland, 2010, p. 23). Cars enabled a new wave of change where urban settlement patterns, which were once solely bound to key transportation nodes, became spread out, undiversified, and most of all, completely dependent on the car. The car not only facilitated new patterns of urban development but also enabled food sources to be centralized in large stores, often only accessible by car. People began to drive long distances to buy their food from grocery stores instead of growing it themselves or trading it with neighbors (Salle & Holland, 2010, p. 23). Twentieth century food systems saw a shift away from producing fresh produce and meat relatively close to cities toward centralized processing and distribution facilities in disconnected off-limit areas. The advent of scaled-up international trade made it so that cities no longer depended on the surrounding hinterland for their food needs. Instead they grew to become dependent on the global hinterland (Salle & Holland, 2010, p. 23). 20th century food and agriculture is highly mechanized and takes less human energy and by that fewer people working in the sector. Energy input into growing or otherwise obtaining food has shifted from human-animal-solar inputs to largely fossil fuel-based input (Salle & Holland, 2010, p. 24). De la Salle and Holland see the extravagant use of exhaustible resources as a significant vulnerability in our food system. “One could speculate on these future scenarios, but underlying all of them is the need for a more energy-efficient food and agriculture system” (Salle & Holland, 2010, p. 25). The emergence of the global hinterland transformed the form and the function of cities. Food processing and storage facilities, such as slaughterhouses, canneries, and warehouse, have been moved from the city core out to industrial zones or even to other countries. Because of the migration of food processing and storage from the public realm, there is no longer policy or development guidelines for how these facilities can be part of the urban fabric. The traditional marketplace and small shops have faded away, replaced by large-scale grocery stores (Salle & Holland, 2010, p. 27). De la Salle and Holland (2010) define the public realm in a city as a key opportunity for integrating food back into cities (Salle & Holland, 2010, p. 28). According to them a more comprehensive approach to sustainable food systems is required including aggressive urban agriculture strategies (Salle & Holland, 2010, p. 23).

Given that urban planners and designers from this new perspective on food should play a role in the emerged interest in food, Porter (2010) states that: “While we urban designers have recently adopted a more holistic approach to considering economic, social and environmental needs of current and future generations, deliberate attention to food has largely been overlooked and/or oversimplified to a narrow set of key issues such as farmland protection and urban agriculture (community gardens)” (Porter, 2010, p. 115). Instead Porter pleas for agricultural urbanism which he considers as an altogether re-informed model of urbanism that considers the health of the local food system – from land security and production of food to processing, marketing, and distribution – within every aspect of physical planning and design, across multiple scales (Porter, 2010, p. 117). Research on urban agriculture highlights two types of benefits associated with producing food in
the city. First, urban agriculture contributes to people's health and people's wellbeing (Sonnino, 2009, p. 427). Secondly, urban agriculture minimizes the ecological impacts of food production by eliminating costly and inefficient transportation from rural areas and by re-using waste (Sonnino, 2009, p. 427).

Urban food strategies are introducing new ways of thinking about the food chain and new types of social, economic and environmental relationships amongst food producers, retailers and consumers (Sonnino, 2009, p. 432). Urban food planning today requires local solutions and global cooperation (Sonnino, 2009, p. 433).

The type of urban food strategies emerging today are attempting to integrate urban, peri-urban and rural areas into a coherent entity that fosters new synergies across a landscape where much is neither urban nor rural but has features of both (Sonnino, 2009, p. 434). At different scales, different interventions with different aims can be realized. In table 1 spatial interventions/concepts are summed up to give an impression of what one can think of.

Table 1, Summary of spatial concepts to food planning

<table>
<thead>
<tr>
<th>Scale</th>
<th>Physical design</th>
<th>Nonphysical design</th>
<th>Aim</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building</td>
<td>Rooftop</td>
<td>Food policy</td>
<td>Organic/Local farming</td>
</tr>
<tr>
<td></td>
<td>Balcony</td>
<td></td>
<td>Self sufficiency</td>
</tr>
<tr>
<td></td>
<td>Around Building</td>
<td></td>
<td>Improving built environment</td>
</tr>
<tr>
<td></td>
<td>Inside Building</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vertical Farm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>Courtyards</td>
<td>Food policy</td>
<td>Consumer awareness and reflection</td>
</tr>
<tr>
<td></td>
<td>Parks</td>
<td></td>
<td>Turn unproductive landscapes into productive landscapes</td>
</tr>
<tr>
<td></td>
<td>Plaza &amp; Public square</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Streets</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Schools</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Community Garden</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Urban Farming</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metropolitan</td>
<td>Continuous Productive Urban Landscapes (CPUL model)</td>
<td>Food strategy</td>
<td>Integrated productive urban landscape multi-layer</td>
</tr>
<tr>
<td></td>
<td>Food nodes of activity in network of rural buildings</td>
<td></td>
<td>Clustering of activities/ecological efficiency</td>
</tr>
<tr>
<td></td>
<td>Agro park</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regional</td>
<td>Key local identity nodes and axed</td>
<td>Food governance</td>
<td>Short food supply chain network</td>
</tr>
</tbody>
</table>

A recital of these generic spatial concepts in the urban fabric and spatial structure are somewhat out of place here because they are a reflection of the simplified key issues Porter (2010) mention. Planning for food has not become visible in the urban fabric except for urban agriculture on vacant plots as a community activity (see for example Salle & Holland, 2010; Ilieva, 2013). Planning for food can not be seen as a reflection in the spatial structure of a city, simply because it is not. Sonnino and Marsden (2006) state among others that ‘alternative food networks display new relationships of association and institutionalization; they involve companies and actors that have redefined their relationships with the state; they reconfigure the natural, quality, regional and value constructions associated with food production and supply […]’ (Sonnino & Marsden, 2006, p. 184). This is not yet the state we are in.
Conclusion and discussion

It may be clear that urban food planning is a multi-characteristic topic. Within the two reviewed discourses of conventional and alternative food system planning many discourses appear, differing from social, ecological and economical motivations and different scales. Recent food planning literature pleads for an integrated perspective on the two paradigms instead of perceiving them as contrasting and incompatible. Also a multi-scalar approach is recommended (Porter, 2010; Sonnino, 2009). Emerging interest in the role of the city and the urban realm in food planning acknowledges the role of the city as a food system innovator (Sonnino, 2009, p. 428). What has become clear is that, when considering planning for food as an urban matter, this is not only a spatial assignment. Dealing with food as a socio-political issue is part of the urban planning process. This enters the realm of urban governance. For now urban food strategies aim at introducing food on the urban agenda. A real reflection of food as a priority on the urban agenda and as a reflection in the spatial structure of cities (except for the generic spatial concepts as in table 1) is a different story. Research on the spatial structure of cities and its surrounding regions in an alternative food system is lacking in urban research, maybe because it is not yet reality. In order to make food planning a working field for the urban design discipline, further research on the changing urban fabric is necessary.

Building upon the premise that urban food planning is a matter of urban governance it might be interesting to approach urban food planning from a transition perspective. A sustainability transition is a long-term, multidimensional and fundamental transformation process through which established systems shift to more sustainable forms of production and consumption (Markard et al., 2012, p. 956). Two concepts of transition research are of importance here, the regime and the niche. The regime is a concept which imposes that incremental change is developed along pathways following a certain established logic and direction, the regime. Niches can be conceptualized as protected spaces in which innovations can develop without the influence of the prevailing regime (Markard et al., 2012, p. 957). In the case of food planning the regime would be the conventional food system. Urban agriculture and food justice movements can for example be considered niche activities which desire for a transition to an alternative food system. Engaging in transition management, forces us to look into the future and define a vision of a desirable future. "Food provides an answer. Our landscapes and cities were shaped by food. Our daily routines revolve around it, our politics and economies are driven by it, our identities are inseparable from it, our survival depends on it. What better tool then with which to shape the world" (Steel, 2012, p. 39). This is where designers can play an important role to visualize that desirable future.

2.3 Conclusion

Concluding from theory an integration between the conventional discourse and alternative discourse on food planning is desirable. In table 2 spatial solutions are set out for different problem-solution combinations considering the different discourses. These spatial concepts provide a first step in the design proposal.
**Table 2, problem-solution combinations**

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>AGRI-BUSINESS SOLUTION</th>
<th>ALTERNATIVE SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decreasing agricultural area vs growing urban population</td>
<td>High intensive food production in Agro-parks</td>
<td>Continuous productive urban landscapes</td>
</tr>
<tr>
<td>Obesity and malnutrition</td>
<td>Creation of healthy food stuff by processing industry</td>
<td>Farm to school programs, allotment gardens, community gardens</td>
</tr>
<tr>
<td>Producer consumer gap</td>
<td>School visits to Agro-parks</td>
<td>Local agriculture (on farm shops, farmers markets, CSA, box schemes, region specific produce), farm to school programs, community garden, allotment garden</td>
</tr>
<tr>
<td>Critics from society</td>
<td>Agropark providing sustainable, local and animal friendly products</td>
<td>Local agriculture (on farm shops, farmers markets, CSA, box schemes, region specific produce), farm to school programs, community garden, allotment garden</td>
</tr>
<tr>
<td>Unsustainable waste flows/unsustainable food system in cities</td>
<td>Closed waste cycles in Agro-park</td>
<td>Urban agriculture, CPULs, urban food strategies</td>
</tr>
<tr>
<td>Food miles</td>
<td>Cluster agri-business activities in Agro-park</td>
<td>Local agriculture, urban agriculture</td>
</tr>
<tr>
<td>Landscape destruction</td>
<td>Limit to intensive agro-park in order to protect the rest of the landscape</td>
<td>Landscape protection policy, buffer strips, small scale farms, organic production, crop rotation</td>
</tr>
<tr>
<td>Animal well-being</td>
<td>Agro-parks offer a healthy, safe and wide environment for animals</td>
<td>Organic produce</td>
</tr>
<tr>
<td>Food deserts</td>
<td>Farmers markets, connections to shops offering fresh produce, internet sales</td>
<td></td>
</tr>
<tr>
<td>Environmental pollution</td>
<td>Innovation of artificial manure, technical innovations for cleaner production techniques</td>
<td>Organic production, permaculture, crop rotation</td>
</tr>
<tr>
<td>Economic problems for small farmers</td>
<td>Local agriculture, multifunctional agriculture</td>
<td></td>
</tr>
<tr>
<td>Globalization on the retail market</td>
<td>Local agriculture, urban agriculture</td>
<td></td>
</tr>
<tr>
<td>Ineffective planning regulations</td>
<td>Local agriculture, urban agriculture</td>
<td></td>
</tr>
<tr>
<td>Ghost acres</td>
<td>Agro-parks</td>
<td></td>
</tr>
</tbody>
</table>
3. Design proposal

As mentioned before, food planning is multicharacteristic and it can not be considered that one solution solves the whole food system. Therefore design interventions on different scales are required aiming a specific goal. Since pig farming is mainly concentrated in a specific region, a regional design will be proposed.

The first set up for the design proposal comes from a real farmer. After talking to the pig farmer in Ysselsteyn, who is already trying very hard to be as sustainable as possible, and asking him about the ideal sustainable future of pig farming - he told me about his project together with a chicken farmer for a 'New mixed farm'. New mixed farm is an agropark with a large pig farm, a large chicken farm and surrounding agricultural land which together complement each other. The scale enlargement makes it possible to integrate activities in the chain. At the same time this clustering of activities increases the possibilities for ecological cycles and environmental sustainability. On top of that, a clustering of these activities and a large pig farm, will mean that former occupied plots can be given back to nature. So on one hand clustering activities in one location, liberates other plots. These can then be transformed into recreational landscapes, local farming projects, educational landscapes and nature.

Concluding from the visit to this pig farmer the next interventions are taken into account:

- The design of an agropark. Including the dimensions for the different production sites within the cluster, the logistics and the spatial embeddedness of the cluster.
- Planning the areas which will be liberated from activities and transformed into a different function: natural landscape, recreational landscape, local farming, educational landscape.
- An exemplar design of a transformed landscape. The design should then result in a sustainable intensified pig farm embedded in the landscape offering opportunities to multiple development directions.

Fig 3.1 concept of clustering activities and liberating plots
3.1 Integrating discourses

From theory it seems necessary to integrate the seemingly contrasting discourses around food. The alternative discourse aims at reducing the distance between producer and consumer while the conventional discourse aims at intensified means of production. Both discourses can be seen as Utopic.

Even more Utopic would be to combine both discourses in a spatial design. The case of pig farming is used for this. The design would then not be the answer to both discourses but will visualise the implication of both discourses and leaves it to the observer to form an opinion.
3.2 Chain integration

The most important activities in the pig production chain are the pig farms, a slaughterhouse, distribution center and retail center (e.g. supermarket). When combining different activities within the pig chain in one location ecological cycles are enabled and the transport between different locations are reduced. The benefit of clustering many pigs in one location is that the manure can be used for energy production for the pig farm. In this way a pig farm can be energy neutral. Another benefit is the fact that own pig feed can be made and the pig farm itself is in control over the sustainable decisions to make. Like the pig farmer in Ysselsteyn who uses local waste for 90% of his pig feed.

3.2.1 Design program HUB

- Slaughterhouse (120x150m)
- Distribution center
- Educational facility
- Retail facility
- Feed factory
- Manure processing
3.3 Cluster of pig farms

If different activities in the chain are integrated, the slaughterhouse is the leading factor in the chain. The slaughterhouse needs a certain number of pigs to slaughter each week to be profitable. I looked at the lowest number of slaughtering possible. That turned out to be 19,000 pigs a week. If we take this number as leading, it means that the cluster must house 950,000 pigs in total. This is equivalent for approximately 10% of the total market share.

3.3.1 Design program pig cluster

• Distance piglets and porkers 100 m
• Accessibility to public
• Feed silo’s
• Open architecture
• Optional: outlet area

3.4 Multi-functional landscape

In order for extreme clustering like proposed in this project, existing farms must extend their business. For this to happen in an attractive and Utopian way the extension must contribute to a multi-functional landscape. Different elements will be used in the design to create a multifunctional landscape. The idea of a multifunctional landscape originates from the wish to intensify pig production in a ecological way and involve consumers closer to the production process. The multifunctional landscape can bring the consumer closer to the production process and therefore add transparency to the production chain. Reflecting on designing the multifunctional landscape, extension rules will be defined.

Fig 3.3 visualisation of multifunctional landscape
4. Methodology

"Although the relief of hunger has the greatest claims on our ethical responsibilities, the urban food question cannot be reduced to a single issue because food, by its very nature, has a multifunctional character" (Morgan, 2014, p. 2).

The chosen topic has a multi-disciplinary character which asks for a holistic approach on both the research and design. By this I mean that different perspectives offer a useful variety of insights on the topic. In the end the main focus should be on the spatial dimension and the role of urbanism and urban planners/designers in this field of research.

The theme of the studio Design as Politics is ‘Utopia’s on the ruin of the welfare state’. The approach of the study has a few implications for the methodology of the graduation project which I would like to elaborate on shortly.

The first step done in the studio is reflecting upon the welfare state. This is already done in the introduction of this report. The results of this reflection is the starting point for the Utopia. The philosophy behind the studio is that, with a decentralizing nation state we need new visions of the future: Utopia’s. The studio sees an important role for designers here. When envisioning a Utopic future, we have something to work towards. The graduation project will not be the design of the Utopia, but will be the design of a crucial step towards that ideal future. The project in that sense, has a somewhat hypothetical character. Because of the hypothetical character, in this project is chosen for a case study to make the project more concrete, specifically the case of pork production. The whole system is taken into account to finally result in an intervening design.

The whole process towards that final design will be elaborated upon in this chapter.

4.1 Literature study

The first step in the graduation process is already done by a theoretical exploration of the topic in the previous chapter. Both academic papers and secondary literature are used to investigate the topic. Secondary literature covers policy documents and publications by international organizations of which both are an important sources of information.

The theory paper, which is written on the different discourses in food planning, is the main academic literature study and provides a first direction for the design.

4.2 Case study

The project will focus on one food product. This food product is followed along the whole food system and is spatially analyzed.

For this I chose a pig farm as case because the Netherlands knows a long history of pig farming and it still is an important export product. Pig farming is mainly concentrated in North Brabant and Limburg, therefore a pig farm in this area is chosen.

A single case study can be of scientific value because it tests theoretical concepts in a practical real time situation. The produced results play a role in verifying existing hypotheses (Yin, 2003: p.38) and without generalizing the results they can add knowledge to the existing body of literature (Flyvbjerg, 2006: p.227).

4.2.1 Spatial analysis

A spatial analysis forms the first step in the spatial research of the project and provides also an important direction for the design. The first step in the spatial analysis consists of mapping and drawing.

The food system is a very abstract mechanism, and the underlying process of the ‘ruin of the welfare state’ as well. They do have however a spatial structure. Except for the theoretical research on the development, there has been a spatial development, or I could say there is a spatial reflection of this mechanism and
welfare state in the landscape. Typological and morphological studies are suitable for this kind of spatial research. This type of spatial research is also better known as typo-morphological analysis.

The current physical typology of the landscape will be mapped and made visual. Central to this type of analysis is the attention for the different types of landscape and its cultivation (Meyer, 2004, p. 12). Meyer (2004) describes the use of this kind of method: “De typologische en morfologische studies leverden het materiaal om de historisch gegroeide stedelijke eigenschappen per plek te kunnen benoemen en vervolgens (via het ontwerp) ook te bewerken” (Meyer, 2004, p. 13). This spatial development is shown in an historical analysis of the landscape. Vernez Moudon explains the value of this kind of analysis as following: “Typomorphology offers a working definition of space and building types, and serves as a rich launching ground for studying the nature of building design, its relationship to the city, and to the society in which it takes place” (Vernez Moudon, 2004, p. 17).

4.2.2 Semi-structured interviews

Since urbanism is not the main practice working in this field of research interviews with experts should provide an extra layer of information on the missing links in the literature review and about emerging topics in the working field.

In een kwalitatief onderzoek wordt gebruik gemaakt van interviews om informatie te vergaren. Open vragen fungeren als een topic list om onderwerpen waar de onderzoeker in geïnteresseerd is, ter sprake te brengen (Verschuren et al., 2007: p. 146). De vraagstelling voor de interviews zijn gebaseerd op de vooraf gestelde definities en indicatoren van de kernbegrippen. Hierdoor wordt geprobeerd, bij de van tevoren zorgvuldig gekozen personen, de gewenste informatie te krijgen (Verschuren et al., 2007: p. 230). Een semi gestructureerd interview wordt gehouden om de mogelijkheid te laten op antwoorden in te haken die door de geïnterviewde gegeven worden.

Fig 4.1 concept of methodology
4.3 Intended end products

The intended end product is a multi-scalar design (strategy) consisting of spatial interventions forming a coherent alternative to the current food system.

Another intended end product, is a reflection on the role of urban planners and designers in the topic of food planning. As shortly elaborated in the theory paper, there are some proponents of participating urban planners in the topic of food. However, as it is a new research domain in urban planning there is still some confusion of what this role precisely is. As part of my graduation project and prospect to future working field I would like to reflect on this.
5. Reference projects

Part of the research is precedent analysis to gain input on what is done already with the topic. The chosen precedents are related to both the Utopia as to farming and food production and its societal means. This is better known as agrarian urbanism. The agrarian inspirations derived from the decentralized industrial model by Henri Ford in the 1910-1920's.

I shortly looked at Broadacre city by Frank Lloyd Wright and Agronica by Andrea Branzi. The new regional patterns by Ludwig Hilberseimer I analyzed more into detail.

5.1 The new regional pattern

Strategy for low density urbanization based on regional highways and natural environmental conditions. Organized around transportation and communication networks that unified and essentially horizontal landscape dominated suburban settlement. Informed by the natural environment instead of a grid. Whatever man does, will influence the landscape and thereby influence its own existence (Hilberseimer, 1949, p. 121).

To create a framework for living and working together to establish those desirable goods and to make them available for all is the real problem of planning. Planning in all its comprehensiveness becomes therefore a political problem, a problem of statesmanship (Hilberseimer, 1949, p. 14).

Regional planning is an all comprehensive task. It deals with life itself, with the present and with the future. The new regional pattern will be determined by the character of the landscape: its geographical and topographical features, its natural resources; by the use of land, the methods of agriculture and industry, their decentralization and integration and by human activities, individual and social in all their diversity (Hilberseimer, 1949, p. 120).

Hilberseimer pays attention to the natural versus the cultivated landscape and the human versus the environment.

When material progress becomes man's only motivating force, as it did during the industrial revolution and its days of exploitation, the landscape with its vital force has to bear the consequences of man's wisdom and greed. One of the planners most important tasks therefore is to discover this ideal relationship to determine how much forest and grassland is needed for a given amount of farm and gardenland, if the hydraulic cycle is to be continued and the landscape maintained as a living entity (Hilberseimer, 1949, p. 125). Large farms could be accompanied by various kinds of small farms and gardens (p.129).

Planned decentralization and integration of agriculture and industry presents problems whose solutions will influence and to a certain extent determines the settlement structure and therefore the pattern of the region (Hilberseimer, 1949, p. 130).

Hilberseimer explains three planning systems: 1) predominantly urban 2)
Urban planning system
'Settlement Unit' - all the necessary elements of a city segregated according to function
- Traffic artery
- Industrial area
- buildings for commerce and administration
- green belt
- residential area
- park with schools, playgrounds, community buildings
- closed end streets in park unit
- max 15-20 min walking time home-work
- internal transport not needed
- city block surrounded by streets on all sides

Rural planning system
Settlement structure of rural region determined by interrelation of different farming types:
- Large farms - staple food
- subsistence farms - single family support
- small farm - stabilize migratory existence and livelihood
- Main highway accompanied by local highways which leads the byways serving small farms

Urban-rural planning system
Provide framework for the integration of urban and rural activities for decentralization of industries and settlements and for the integration of industry and agriculture. Combination of elements of other concepts.
- main railroad and main highway
- subdivision of regions, and traffic lines parallel with main traffic line
- Air pollution free industries: limited size combined with residential sections of both size, expanding industries residential section on one side.
- Air polluting industries dispersed
- Small farms placed on byways of traffic line parallel with main highway
- Towns at crossing points, size determined by their regional function
- Byways crossing main highway lead to subsistence farmers
predominantly rural 3) combination of urban and rural. They are only diagrams, and provide an abstract scheme for the development of the regional and urban traffic and settlement structure (Hilberseimer, 1949, p. 137).

5.2 Inspirational images

![Image by SPRIKK - besloten prijsvraag stalontwerp voor Rijksadviseur Landschap Ytje Feddes, 2011](image1)

Landscape design by Michel Desvigne

![Image by SPRIKK - besloten prijsvraag stalontwerp voor Rijksadviseur Landschap Ytje Feddes, 2011](image2)

![google campus by BIG and Heatherwick studio](image3)
Pig production is largely concentrated in the area of North Brabant and North Limburg. The soil is of sand in this area, making the land not very fertile and therefore not very expensive. Historically seen manure from the pigs was used this area to fertilize the land. Another reason for the sector to be concentrated in this area is the good connection to road and water infrastructure and the relative close presence of the harbor of Rotterdam. This area of the Netherlands forms also the connection to the European Hinterland. This is also why a larger area of food industry activities is settled in this area. The pig industry and the food industry are mutually dependent. The pig industry uses waste materials from the food industry and the food industry loses its waste material to the pig industry. The following images originating from the 'Landbouw Atlas' show the settlements of the pig industry in the Netherlands and Europe.

**INTENSIEVE VEEHOUDERIJ**

De intensieve veehouderij bestaat uit de kalverhouderij, de pluimveehouderij en de varkenshouderij. In de primaire sector zijn er circa 6.700 bedrijven. Het gaat om ongeveer 1.250 kalverhoudersjien, 4.050 varkenshoudersjien en 1.200 pluimveehoudersjien. Daarnaast zijn er nog enkele andere intensieve veehouderijtakken zoals bijvoorbeeld de nertsenhoudertj.

Samen met de verwerkende industrie zorgen de primaire bedrijven voor een toegevoegde waarde van 5 miljard euro en bieden ze aan 80 duizend arbeidskrachten werk. De toegevoegde waarde van de primaire sector was in 2007 0,5 miljard. De grootste bijdrage aan deze keten komt vanuit de toeleverende en verwerkende bedrijven aangezien vrijwel alle producten, afgezien van eieren, een bewerking nodig hebben voor ze de consument bereiken.
Fig 6.2 location of slaughter houses the Netherlands (source: Landbouw Atlas)

Fig 6.3 location of feed factories the Netherlands (source: Landbouw Atlas)
6.1 Spatial analysis Ysselsteyn

The village of Ysselsteyn is located in North Limburg, close to the border with North Brabant. Around 40% of the pigs are held in the area, called ‘De Peel’. Ysselsteyn was founded in 1921 and named after a commissioner of Agriculture Mr. Ysselsteyn. The first fertile plots were located at a stream up North close to the city of Venray (see historical image from 1920).

The photo in the middle shows the planned map of Ysselsteyn. It was rationally divided into plots with agricultural land and a farm.

6.1.1 Historical analysis Ysselsteyn

The area around Ysselsteyn is called ‘De Peel’. During the middle ages a few agricultural towns arose with large fields. On small scale the farms extracted peat. Later on these activities increased when the Van der Griendt family started a peat business in this area in 1853. This development was supported by the infrastructural works organized by Thorbeckke around that time period. The village of Ysselsteyn was created as a town serving this peat business. The land which was left after the peat extraction were then being transformed into agricultural fields. Other former peat plots were being transformed into woods serving the coal industry in Limburg.

Ysselsteyn was founded around 1920 as model town for peat extraction. The settlement was rationally designed around existing infrastructure. In 1938 58 farms were built with state support. The village was named after the minister of agriculture at that time Mr. Ysselsteyn. Since then the village grew inside the ring road and along the roads.

The cultivated landscape from the 19th and 20th century is characterized by the rational and rectangular allotment pattern. The roads and ditches constructed at and after that time are also following this rational pattern.

The images on the following pages roughly show the historical development since just before Ysselsteyn was founded.
Between 1967 and 1987 we see that the location of agricultural plots more or less stayed the same, but that the plots became larger due to the policy of ‘Ruilverkaveling’. Plots were merged together and smaller farms were taken of the land and replaced by big farms. This was actively stimulated by policy. We also see that the agricultural land in the village of Ysselsteyn was slowly pushed out. In the map of 2013 there is no agricultural land in the triangle of Ysselsteyn anymore.

It seems that after 1987 the amount of agricultural land in the area of Ysselsteyn decreased. The cause and reliability of this observation is not clear. I suspect that the amount of land might have decreased, but the intensity of the productivity might have increased leaving the net-production the same.

Remarkable is the dynamic of the landscape. In every time period there have been changes in the sizes of the plots.
6.2 Landscape characteristics

Fig 6.7 landscape characteristics in the region of Ysselsteyn. A distinction is made between different kinds of green: the woods which were constructed as resources for the coal mines, the historical peat land and the defence line ‘Peel Raamstelling’ originating from the second World War.
6.2.1 Analysis spatial structure Ysselsteyn region

Map primary water infrastructure

Map secondary water infrastructure
Map pig farms

Map conclusions
Map pig farms existing situation

Map existing concentration of pig farms
In this map we see the difference between the naturally developed plot structures and the rationally developed plot structure. Ysselsteyn is obviously in the planned area which is recognizable by the straight lines and big plot sizes.

This map shows an already existing contraction of pig farms. There are two types of concentration: a concentrated concentration and a spread out concentration. The third option we see is a scattering of pig farms within the landscape. These are especially present in the natural landscape.

**Concentrated concentration**
This landscape typology is characterized by large plot sizes and concentration of large pig farms on a relatively limited plot surface. This typology has the potential to further intensify in the same concentrated way within the given borders of the plots.

**Spread concentration**
This existing landscape typology is characterized by large plot sizes and pig farms spread along a certain street or linear direction. This typology has the potential to further intensify along the same linear direction.

**Scattering of farms**
In this typology farms are scattered in the landscape on a variety of plot sizes, or mozaïque structure of the landscape. This typology does not have the potential to further intensify and is better suited for widening the farm business with off farm activities.

These different spatial models are tested through research by design for an intensified pig farm in section 7.2.
6.2.2 Conclusion

The village of Ysselsteyn was founded as a modeltown for reclamation in the beginning of the 20th century. Reclamation was an important business in the surrounding area of which there is still a nice peat landscape visible and also the rational pattern can be recognized in the landscape.

Coal mining has also been a big industry in Limburg. For the coal mining forests were planted to grow woods. Some of these forests are still present. These now serve as a recreational and landscape quality.

Along the stream valleys a natural and irregular landscape pattern is apparent. These plots have an older history than the parts in the grid pattern. The rational grid pattern is characteristic for the reclamation which took place in the area.

All the landscape characteristics refer to some historical or natural existence. When thinking considering designing, intensification of the pig industry or other kind of interventions in the landscape these characteristics need to be taken into account.

The existing concentration of pig farming will be taken as a given for further intensification of the pig industry.

6.3 Potentials map for regional design

Resulting from the analysis this map shows potential intensification areas. A few basic requirements are taken as principle.

First of all are all the potential extension areas following the existing concentration areas as shown in the analysis. All these potential extension areas are in the map highlighted by a pink surrounding.

Secondly, every extension area must be located along a main infrastructure road. This adds up to the principle of visibility but is also required for the farming due to business logistics. This would mean that the potential cluster area in the South-West part of the map would not have an opportunity to further intensify. This existing cluster however, is located in a rational pattern. This intensification area is only one infrastructural road away from a main infrastructural road. The size of this existing cluster and the strategic location ask for an exemption on this rule.

The surface beneath the dotted area is meant for widening farm business with off farm activities. Where the star is placed will be the location of the hub where different chain activities are integrated in one location. This place is chosen because of it’s connection to the most important roads. After the design research on different spatial intensification models in the village of Ysselsteyn this potentials map will be translated into a regional design in section 7.4.
### 6.4 Pig farmer Ysselsteyn

When we zoom in on Ysselsteyn, we see that almost all the buildings outside the ringroad of the village belongs to agricultural activities. In orange are all the pig farms while in purple other agricultural activities are shown which for a major part include other livestock farming like poultry and oxes and agricultural service like selling of machinery.

The pig farmer I interviewed and mapped is located at the Ysselsteynseweg. His father started the farm in 1961 as a mixed farm with chicken, grain, pigs and asparagus. The farm he started in is now developed into a villa.

After the intensification period, the farm developed into a specialized pig farm. The scale enlargement asked for expansion of the farm and the ‘company’ is now occupying 7 plots on the road where the first farm was initiated. See image below.

The farmer currently holds 50,000 pigs, both sows and porkers. He holds these at a minimum distance of 100 m. 90% of the farmers feed consist of waste material from the food industry in a radius of 200 km. The other 10% originates from waste from soy production, which originates from a company in Amsterdam. The soy enters the Netherlands through the harbor of Rotterdam and is being transported to Amsterdam. There it’s being processed and what is left is then transported to the pig farm in Ysselsteyn.
The feed for the pigs is produced by the farmer at the farm itself. By this he can be sure of the quality, he can chooses where the ingredients come from (in which he focuses on local) and by this he keeps the profit of feed production to himself.

All the manure from the pigs and waste material from the feed production are transformed into energy in a biogas installation. This is used as energy for the company, used for heating the piggeries and what is left is transferred to the electricity network of the village.

In the past the farmer had tried to integrate some of the activities from the chain in his company. From the 1986 until 2004 they had a slaughterhouse at the farm as well. This however didn't succeed because it's a complete different business than pig farming. The slaughterhouses maintain the contact with supermarkets and according to the farmer this does not fit with the activities being undertaken at the farm.
Impressions farm
geographical images of the origin of the farmers' pig feed

90% of feed originates from rest products of the food industry within a radius of 200 km.

10% of feed originates from waste from soy industry.
90% of what is being exported, stays within the triangle Berlin, London, Paris.

The other 10% mainly goes to China. This includes material which is not being consumed in Europe like heads of pigs.
7. Design intervention

The first part of this chapter consists of a design research of the different spatial models (concentrated concentrated, spread concentration, scattering of farms) which were explained in section 6.2. Firstly an inventory of the space needed for the pig intensification is made. This is translated into different ‘basic’ types of piggeries and then placed in the area of Ysselsteyn. Conclusions are drawn from this first exploration which are then translated into a regional design. Then some general rules are extracted which will be further elaborated upon in the conclusions and reflection.

7.1 Calculation of needed surface

As stated in the design proposal, an amount of 950,000 pigs are needed for a slaughterhouse to be profitable. This number of pigs is translated into the surface of needed piggeries. Different piggeries are being explored in order to make a spatial exploration of different configurations.

In order to make an estimation of needed surface I did the following calculation. Per pig I calculated 1.5 m$^2$ which is more than the current 1 m$^2$.

950,000 pig > 1,425,000 m$^2$

Traditional Megastal of 100x55 m = 5,500 m$^2$

Amount of megastellen needed = 259 megastallen

Image 7.1 shows the total surface needed for 950,000 pigs, divided in one big square or in the traditional architecture of ‘Mega stallen’.

To give an impression about the size of this surface, I placed this on the city of Delft. Almost the whole TU campus is needed to house 950,000 pigs in a square surface of 1 floor. An even bigger surface is thus needed to house those many pigs in traditional megastallen.
Departing from the spatial analysis of the region, it would be a realistic scenario that about 6 pig clusters together will be sufficient to form a system together with the slaughterhouse. The total surface needed for pigs is thus divided into 6. Image 7.3 shows those surfaces translated to 1) square surface, 2) megastall, 3) verdiepingstal (megastal with double floor), 4) a designed pig flat, housing 112,000 pigs per flat thus two flats needed.

Figure 7.3 surface translated into total surface extension cluster

### 7.2 Landscape development scenario’s

Resulting from the analysis, different landscape typologies are related to the way the pig farms are placed in the landscape: a concentrated concentration, a spread concentration and scattered through the landscape. The two landscape typologies suitable for intensified pig farming, concentrated concentration and spread concentration, are being tested on the site of Ysselsteyn through research by design. The research will follow on the following pages.

The departure point for each spatial model is the surface study presented in 7.1. Meaning that the megastall is always used as a first research model, and then translated to a meaningful design for the site.
7.2.1 Spread intensification

The first model to be tested is the spread intensification. This is much like the current situation of the farm in Ysselsteyn which is analyzed already. In order to become suitable to be part of the cluster system, the farm must extend. Different spatial models are presented to show the extension opportunities. The first starting point for the spread extension is however to extend on the same plot as the existing farm. This brings about the extension areas as shown in figure 7.4. It may be clear that the needed number of Megastallen does not fit within these extension areas and that an additional plot is necessary.

Fig 7.4 extension locations within Ysselsteyn

This model shows a complete new situation for the pig farmers in Ysselsteyn. The number of Megastallen needed are pasted in the location with a removal of the existing farms. Taken into account are the farm logistics needed like pavement for trucks and entrances for the piggeries and are the new building blocks as much as possible placed in line with other buildings to save the visual lines to the landscape. In this model it is hard to add public quality to the plot because of the limited space available without adjustments to the plot sizes and location of farm extension.
Extending on the same plots as existing farms is very much like extension have gone so far, see figure 7.4. The traditional distinction between the front side of the plot and the back side of the plot is still recognizable in many cases. However in the new situation for intensified pig farming this model for extension on the same plot does not have many opportunities within the plot size to increase accessibility and publicness to be achieved. In this sense the architecture plays a much more important role to achieve the desired transparency to the farm.

The size of the used ‘megastallen’ is also very large in comparison to the existing buildings and leave not so much space to natural development on the same plot as well. In other words: the Megastallen occupy a lot of space without adding quality to the plot. Therefore is in the next model, model 2, chosen to test farm buildings with two floors instead of one. The farm closer to the village of Ysselsteyn as adapted to the existing building dimensions. Further away from the village of Ysselsteyn are the ‘Megastallen’ placed in the landscape in a ‘dynamic’ way.
In this model extensions are added to the existing farm business on the Ysselsteijnseweg. As in model 1 as much as possible are current building lines followed to place the building blocks. Therefor the line extension on the left is introduced as translation of the megastallen building size. In a sketschup model the image of this adjustment is tested.

By increasing the floors of the farm buildings space is being saved which can transformed into publicly accessible space. The L shape extension close to the village does not have a massive appearence when configurated in a thoughtful way. The plot further away from the village does not have much relation with it surroundings, making it easier to fit the farm buildings in the landscape.
7.2.2 Concentrated intensification

The second spatial model to be tested is the concentrated intensification model. In this model all the needed pig farming surface per cluster is concentrated as much as possible or as much as is spatially possible. A new architecture typology is introduced here to profit as much as possible from the concentration.

This model shows an extreme concentration in a therefor designed pig flat with daylight for the pigs and compartment with groups of pigs. Two of those flats are needed to house the amount needed for the cluster to part of the whole cluster.
These buildings are very strong present in just outside the village. Their massive appearance is totally out of scale for this little village. It does make it possible to free lots of space.

7.2.3. Conclusion

It may sound a bit obvious but the spread intensification takes up lots of space and has limited possibilities to provide transparancy to the farm and plot. To add transparancy in the spread intensification model, architecture would play a major role.

Secondly for intensifying near existing buildings or villages the existing building structure and sizes need to be taken into account, that is both observed in model 1 and 3. Adding a floor to the existing architecture is not of so much impact as a farm with a totally different size than existing buildings. For this a combination between model 2 and 3 might be of explorative value.

Taking these conclusion back to the regional scale there are some starting points:

• When extending close to existing buildings or a village, the existing building size needs to be taken into account.
• Increasing the floors or extreme clustering bring more opportunities for a transparant farming business.
• Architecture plays an important role in all intensification models.

plot / street scale

follow scale existing building structure

exceptions on existing building structure need architectural emphasis
Extreme spread
- consumes lots of space
- large piggeries out of scale
- limited space for public development

In between
+ possibilities for transparent development
+ intensifying possible in scale related to building structure
attention for architecture

Extreme concentration
+ much liberated space for multiple developments
- totally out of scale
isolated development attention for architecture

From these conclusions the village of Ysselsteyn is not suitable for further intensification of farming business next to existing buildings. Therefor is decided to eliminate this village from the potential intensification area.

7.3 Design for HUB

Programmatically the HUB is the central element in the regional design. This is where the chain activities are integrated in one location aiming for closing ecological cycles and adding transparancy to the production chain. The location of the HUB is in the centre of the region very well connected to road infrastructure. The chosen plot is in the village of Ysselsteyn once a model town for reclamation. With this HUB Ysselsteyn can be a model town again, now for sustainable pig farming.
plot structure
public access, logistic access

logistical buildings
public building

public space
7.4 Regional design plan

The hub will function as a central point in the region. This is where all the farmers will get their pig feed, where their pigs get slaughtered and where their pig business is being exposed in an educational facility.

Together the pig clusters and the HUB will function as a complementary system exposing the qualities and benefits of this alternative and sustainable manner of pig farming and their landscape benefits.

For the pig clusters counts that the embedding of the farming volumes must follow the existing landscape patterns. The analysis shows a clear landscape structure of natural and rational pattern and these should be followed in the designing process.
decentralized system of pig farming clusters working together as one in a multi-functional landscape
7.5 Local design plan

Historically, pigs were held close to oak-forest areas. The pigs were used to eat the acorns and through this a cultivated ecological system arose in a natural environment. In some countries this concept still exist like the Iberico pigs in Spain, see the image above. The character of the oak tree forest will be brought into this site. Pigs will have the opportunity to freely walk around in certain parts of the forest. Reminding on one hand to a historical tradition and at the same time being a wish from the alternative food movement to develop production manners more towards nature.

Another spatial characteristic being an inspiration for this site is the Arcadian park landscape. The arcadian park landscape envisions an ideal landscape full of flowers, fruits and forests, clear water and a never ending summer. This ideal landscape principle suits the idea of pig farming within an idyllic landscape very well.

By varying in open and closed landscape views of a diversified landscape is created. With staging the walking route this is emphasized. In the forest different visual lines are made to experience the presence of the piggeries in an arcadian landscape. The piggeries are centralized around the pig forest and a square. The walking route is intertwined in this building configuration and even goes through two of the piggeries. This way both the natural pig forest is experienced in the same way as the high tech intensified piggery.
Visual line from the road

Visual line in the forest

Heading towards an open space

Open space in the park bordered by forest
7.5.1 Design instruments

Visual lines
Spatial differentiation
Staging of route
Staging of building blocks

Spatial differentiation open-closed
Routing: staging open-closed, experience forest

Program
Visual lines
7.5.2 Design visualisations

Impression 1
Looking from the road towards the pig forest area. The piggeries arise above the corn field and behind the trees you another piggery popping up.
Impression 2
The big piggeries are situated in a green public accessible landscape. The truck for pig transport is driving through the park and people are enjoying a sit in the square.

Impression 3
The Arcadian pig landscape houses both a pig forest and piggeries in close distance to each other. The park can is public accessible and people can enjoy a picknick between the pigs.
Impression 4
The large piggery is transparent and people can see what is happening inside. Group tours are organized to educate people about the pig industry and people are invited to walk around and see the pig industry themselves.

Impression 5
Pigs freely walk through the pig forest where children can play with them.
8. Conclusion

The Utopia of ‘Luilekkerland’ a painting of a society known for its abundance of food and good life, is the state we live in today in the West. We are dealing with welfare diseases like obesity, we have to deal with great amounts of food waste and we lack a connection to the production sites of our food. This other side of the coin was probably not envisioned by the Utopia of Luilekkerland.

In this graduation project the Utopia of JUST Food is proposed. An Utopia which was gradually developed and with much notion towards real life knowledge. The proposed Utopia of JUST Food respects at the same time alternative food movements and intensified means of production and takes into account ecologic, economic and social aspects. The Utopia of JUST food, a regional design for pig farming in an Arcadian landscape shows an integrated approach towards pig farming where both the farming business as economy and the experience of the landscape as ecological and social entity are taken into the designing process.

The final result is a ‘discussion Utopia’. My pragmatic style of researching and designing has resulted in showing the implications of two (seemingly) contrasting discourses. Visibility and transparency are the key words for this approach. Just by showing the spatial implications of certain ideas, the decisions to make are left for the public. With this design I hope to help people form their own opinion and help them in making the decision which is right for them. In order to restore our relation with food, we must be confronted by it, be educated about it and re-learn how to enjoy it.

The transdisciplinary systems approach is characteristic for the urban discipline but one might argue that such a systems approach is Utopian in itself. The starting point of the Utopia of JUST Food is a mutual benefit for economy, ecology and society at the same time. This Utopian system approach where ecology, economy and society are integral perceived, might also apply to the energy sector and healthcare for example. By making explicit what the spatial implications of certain decisions are, spatial qualities can be added in the decision making process. This is also what Design as Politics is about. The reason I call a systems approach Utopic is because one always needs to frame their starting point and one always need to make a decision to leave things out.

In the following section all the research questions are answered and this chapter will end with a reflection.

How is pig farming currently organized?

In the Netherlands pig farming is mainly concentrated in the South East region of the country. Most feed factories and slaughter houses are located in this region. The activities in the production chain are in relative close distance to each other but operate in relative isolation. The pig farmer usually holds one generation of pigs, which means he holds sows and piglets or porkers. Between these two life phases the pigs need to be transported by car from one place to another. When the porkers are fat enough they will be transported to a slaughterhouse, processed and distributed to supermarkets all over the country and even across the borders of Europe. In fact the Netherlands is for 260% self sufficient which means that only 38% of the total production is
meant for domestic consumption. Pig feed is a sensitive subject. Unsustainable soy from South America is often used as an important ingredient for pig feed. Pigs are ideally animals which can be fed with waste from the food industry. Law restrictions make it hard to fully benefit of rest products in the food industry and much is to gain in this sector. The economy of scale is of major importance in the livestock industry and hence in pig farming. The bigger the pig farm the bigger potentials there are for sustainable farming and a profitable business.

**What are the possibilities for sustainable pig farming?**

This question can not be answered with just one answer. Research on food planning literature has shown that there are two discourses in food planning. The alternative discourse aims at localization, organic production and shorter distances between producer and consumer. Seeing the size of the Netherlands our production is relatively local compared to for instance New York. This theory is lacking a notion of scale making it very hard to make strong arguments. This discourse however has a very strong narrative in reaching certain goals by for example urban farming. Urban farming should not per se be seen as a production site but more a green and social place within cities improving ones education about food. The conventional discourse aims a intensifying and improving technologies to improve production. Production takes place in large sites where different activities of the production chain are combined. Transport is reduces, ecological cycles are closed and production becomes more profitable. It may be clear that depending on personal preferences one may follow the alternative discourse or conventional discourse. Locally pig farming can become sustainable by using domestic food waste and improving neighborhood streetscapes both socially and ecologically, but it can not compete with the production numbers needed for the consuming population. Pig farming in a so called agropark can become sustainable by closing ecological cycles, reducing the use of antibiotics and produce large numbers emotionally this means of production is far from natural and one may argue about animal welfare.

**How is a model for sustainable pig farming organized?**

A spatial model for a pig cluster is explored in this graduation project. A few key interventions are emphasized by a regional and local design showing the introduction of the HUB, extension rules for existing pig farms and rethinking of piggery architecture and plot configuration. Chain activities are integrated in a HUB. In the HUB a feed factory, a slaughterhouse and an educational facility are combined. Chosing for the HUB as key intervention results in the need for about 950 000 pigs in the region to keep the slaughterhouse and feed factory profitable. This amount of pigs means a massive increase in number. A requirement for the intensification of the farming business is that the extension should follow the existing landscape patterns and characteristics, and farming should be accessible and transparent to public. This concept is translated into a spatial design. On both the regional and local scale a design is proposed. The regional landscape design consists of different landscape typologies enabling the Utopian idea of intensified pig farming in a multi-functional landscape. The local design consists of a translation of both the alternative and conventional discourse. Meaning both industrial pig farming in large pig flats as free range pigs in oak forests.
Both this regional and local design demand a rethinking of the traditional farming business model. This is partly done already by introducing the HUB, but should be further elaborated in a cooperation of farmers for example.

**How can urban planning contribute to a model for pig farming?**

The urbanism discipline is a trans disciplinairy discipline meaning that it works over the borders of other disciplines. In the case of pig farming this notion is very important because others are the experts on this topic. The role of an urbanist would be to visualise the impacts of new business models and policies. By making explicit how certain decisions would impact the spatial environment and improve or distort spatial quality decisions can be adjusted. The urbanist would become a facilitator of new developments.

### 8.1 Reflection

This reflection is not only a reflection on my graduation project but feels like a reflection on my whole BK-career. Lately I’ve been thinking a lot about what I’ve learned the past few years and my own attitude towards that.

Without much awareness and a not so critical attitude I started my study here in Delft. Taking everything to me without knowing or asking about its purpose I was not conscious about what I was learning. I found out that I learn most when it’s explicitly told what I am learning and why. This is almost never the case and when ‘academically growing up’ I now always ask myself why people are telling me what they are telling, for example in a lecture. It is not without purpose that some topics are being handled, it is not without purpose that your design teacher points out certain things. Finding out what the idea behind a certain message is, tells you a lot about the framework someone is departing from. I think this is one of the most important things to be aware of and this has been a major learning part for me.

I enjoyed my studies here in Delft a lot even though designing is not my favorite activity. This has – unfortunately - not changed over the years. Although teachers always told me that they believe I can do it, I don't believe in it myself. This insecurity has always been an obstacle and also in my graduation project it held me back. The research part of my graduation project went pretty well but I delayed when I had to start designing. Ideally this would have happened around P2. Unfortunately I started designing after P3 approximately. And even in my own eyes I would not dare to say that I designed anything yet. Hopefully I can proudly say at my P5 that I designed a sustainable intensified pig cluster.

Not being conscious enough that I was choosing for a graduation studio focusing on design, I did not make it easier for me. I cannot say that I regret this decision because I learned a lot about the relation between politics and design and that really is of my interest and a topic I would like to continue with in my professional career. The part I do regret is the fact that I still have not been able to force myself into the designing. This while I still believe that ‘designing’ is something you can learn. And reflecting on my whole BK-career, I found out just now – and you might say that is a bit late to find out - how I should and could have learned how to design: by doing plan analysis over and over again on different themes. The harsh thing here is that this is something done and taught throughout the whole studies. Since the focus in projects is on the design however, the plan analysis is always a
minor part of the activities you undertake because a student always stresses the importance of the (research and) design. And this also happened during my graduation project. Now looking back on the process and the outcome of it, I think I would have been much further with my design if I put more effort into (detailed!) precedent analysis. Especially since precedents are a major source of inspiration. Without being bold or offending towards our beautiful profession, in Dutch there is a saying: “Beter goed gejat dan slecht verzonnen”, and that is in a way what designing is. Looking at precedents and examples and in a smart way combining all this input and translating it to the specific context and design goals is one way to make a design. Now being aware of that, I hope I can include this in my coming projects – both applicable for design and research projects.

Another thing I would like to have done better is tune my methodology to my planning process. I think those two are more connected than one would think. In image 1 you will find my time schedule as I handed in during the P2.

In image 2 you will see the methodology I would ideally have followed during my graduation. I made this just last week. Those two are not connected to each other in any way. Incorporating the methodology in the time schedule would have saved me lots of fuzzy time during the graduation. Now the main question of course is how these observations have influenced my final graduation product. And of course that is a bit speculative. Right now I have the feeling that if I had planned my process more into detail, I would have been more efficient in spending my time to the right things. As always in designing processes some time goes wasted in not doing the right things and even this is helpful during the whole process. One thing I definitely know is that because of my topic I had to do lots of research which sometimes made me think: ‘what am I doing, this does not belong to my profession anymore’. I think what makes urbanism is the fact that we work crossing borders of various disciplines and that we bridge their differences. However, sometimes it’s hard to stay true to your own discipline. I think that looking backward I should have focused more on the added value of my own discipline. Therefore another graduation topic, or at least another angle for the topic would have been necessary. The way I worked during my graduation is not representative for the way I would be working in the field later I guess. Where I now had to do all the research myself, I think in a design team most of the research is brought to the team by experts and together with the urban planners and designers a plan is made. Now I was the whole design team myself, together with my teachers who did their best to guide me in the right direction. I have the feeling that because of this informational complexity, I did not reach the depthness in my project which I was seeking for when starting the graduation project. And as explained before, that also had to do with the not so well planned process and the complexity of the topic.

However, I do not regret choosing this topic for my graduation. It’s exemplar for me to choose a topic which is highly relevant to society and which is high on the (urban) agenda. I feel good about touching upon these matters. Of course I can not know if my result will be of any impact but I think I did not come up with a solution which could be further developed into a meaningful solution. That is a bit disappointing since I set high ambitions at the beginning of the year.

So concluding I think as urbanists there are a few focus points in education as well as in the profession. We stand for a multidisciplinary approach, bridging
differences between disciplines and being broad in the topics we address. This is however a very tough assignment where we often forget what our own added value is, using our own instruments, techniques and knowledge. In my opinion it would be beneficial to talk about these things more often to make explicit – there it comes again – what our skills and contributions to teams and the society are.
De SP is al bezig met een initiatief voor een gezonde veehouderij, maar een noodwet kan nu eerst een harde tijdens de opschorting kunnen dan nieuwe sluitende regels worden opgesteld om deze enorme veestallen kunnen ontstaan, zoals die er al voor kippen en varkens zijn.

Dat liet SP-Tweede Kamerlid Henk van Gerven vrijdag weten naar aanleiding van de forse toename van het aantal megastallen tussen 2005 en 2013 gestegen van 301 naar 803 stallen.

De commissie moet de transitie naar een duurzame veehouderij verder aanjagen. Dijksma kondigde in Reusel aan de commissie-Van Doorn nieuw londen het meest vervuilend zijn.
Bibliography


European Commission. (2009). Why Do We Need a Common Agricultural Policy?


Report from the workshop „Get Inspired by Biennale”

By Tanya Chandra, Martina Gentili, Di Fang, Juste Stefanovic, Sarah Rach & Krzysztof Pydo

The 14th Architectural Exhibition in Venice Biennale 2014 has become a fairly convenient location for a workshop organized by Msc3 Urbanism students from TU Delft. The major aim of the student workshop organized at the Biennale was to reflect on different forms of representation of various exhibitions located mainly in the Giardini and in the Arsenale. The major task was to analyze how the pavilions and exhibitions attract visitors, what emotions they evoke, what senses are involved in communicating the meaning of display and what is the interaction between installations and users.

The conclusions of the workshop was linked to the Design as Politics activities taking place at Swiss Pavilion, whereas students were asked to think through and to visualize the independency of Scotland, Veneto and Cataluña. The intention of the exercise was to exaggerate one of the crucial aspects of examined regions in order to create their utopian images. The utopian systems of Scottish Lottocracy, Veneto: Country of Production, Polenta & Palladio and School of life supposed to be finalized with a pavilion design of the newly formed country for the purpose of its first Biennale Exhibition in Venice in 2016.

As a group we defined different manners of involving visitors in an exhibition/pavilion. Involvement can be done in an active way where the visitor takes an active role in viewing the exhibition and needs to take effort to be provided of information or in a passive way where the viewer is more of an observer. Then there is another distinction where the viewer is either a visitor of the pavilion or is experiencing the pavilion. So summerizing there is a distinction between active and passive, and visitor and experience.

In the following the different pavilions as an end product of the Design as Politics workshop are presented which were inspired by the different pavilions we visited during the week.

The Pavilion of Scotland: Martina Gentili

The recent Scottish referendum was debated not only on the basis of national identity but on notions of justice and equality. These stem not from a regional identity but from disenchantment with dysfunctional democratic processes. Scotland is not unique in this respect but provides a convenient boundary and broad political consensus in which to base a project.

In the Scottish pavilion the future ‘lottocratic’ Scotland is presented: an independent country in which a series of lotteries have replaced normal systems within society.

The government is elected lottocratically (all citizens may be called upon). The lottery considers the hours of labour, leisure, GDP and housing required towards achieving the governments broad goals and distributes them unevenly, much in the way that resources are distributed unevenly in 2014. Money earned, house, salary and work hours are appointed at random and have no correlation to (eg. thanks to the lottery a butcher, working 3 hours a week, earn £400,000-a-year, living in a caravan in Peebles may find himself in Nairn the day after, a surgeon working 40 hours for £10,000-a-year whilst living in a high-rise). This is a form of fairness in which everything is not equal but in which all citizens will experience all ways of living - it is our contention that empathy arising from this situation would create a better society (would undermine spatial segregation, condemnation of certain housing types, accepted forms of government etc.).

In the course of a week spent in Venice working through the utopia to its absurd conclusion, with its implications for human instinct, self-determination, reproduction, education, law making, immigration etc, we feel that it provides a compelling alternative to the situation in 2014.

The visitors of the Scotland pavilion can experience it in an active way. They will find a lottery machine in the middle of the pavilion to guide them through a personal journey in the life of Lottocratic Scots. Personal paths,
determined by the lottery machine, will lead the visitor through a series of images depicting the possible life he or she could have if living in the new independent People’s Lottocracy of Scotland.

The Pavilion of Veneto: Tanya Chandra, Sarah Rach & Krzysztof Pydo

The pavilion of the Veneto region is showing the utopic country of production. The production state of Veneto is aiming an optimized production system in the sense that it should endure as long as possible. In order to create a utopic country of production it runs a cycle of optimal production which tries to reach consensus between using all available resources and exist as long as possible in this state.

The intention of this utopia is to generate a cycle that takes this character but removing the idea of ownership. Everything in it belongs to production. The four quadrants of this system is production, housing, resources and recreation. One is at its peak of production when they use the 24 hours of a day equally for working, sleeping and recreating. The pavilion consists of a conveyor belt which passes by the different quadrants of the production country. At certain times the visitor is forced to get off the belt to either rest or play a mandatory game.

The visitor of the Veneto pavilion experiences the pavilion in an active way. He is forced to participate in mandatory activities (which are a metaphor for the optimized activities in the utopic country of production) and a set time will lead the visitor through the pavilion just like the inhabitant of the Veneto region sleep, works and recreate for exactly 8 hours a day.

The Pavilion of Cataluña: Di Fang & Juste Stefanovic

For our group work we got inspiration from two pavilions – the Swiss and the French pavilions.

The inspiring part in a French pavilion was the movies, which they were showing. It was easy to understand, but at the same very informative and unique. And what was also important, that it interested a lot of people.

The Swiss pavilion mainly shows works from Cedric Price and Lucius Burckhardt, who were both much concerned with the idea of the present moment, of the need to relate to “now” and chart a future path for their contemporary society. Both Burckhardt and Price critiqued the traditional tertiary education system and were interested in rethinking the basic concept of a university. When we first arrived at Swiss pavilion, we looked at the models in the room and checked the archives, just as normal visitors. Later on, we had our workshop in Swiss pavilion and visitors came and stopped to watch our work. Then our activities became part of the exhibition and our roles changed from passive visitors to active actors.

We were working on a theme of independent Catalonia, where we basically proposed a strategy of a “School of Life”, where people are obliged to learn/produce Catalan culture and production during all their lives, and spread it all over the world. Therefore, the main idea of the pavilion of Catalonia was to create a space for workshops, where people could learn some Catalan culture. This way of exhibition is chosen in the same logics as the whole idea of the Utopia. It is based on learning to publicize Catalan culture. The pavilion is shaped as a circle, on the wall there will be screens showing movies of Catalan culture, which involves visitors in a passive way.

Inspired by our workshop in Swiss pavilion, our Pavilion will also provide workshop for people and make visitors play a more active role. The workshops in the room become performance, people sitting on the stage in the middle become the audience. As people keep coming in and going out, the “actors” and “audience” keep changing all the time, every moment becomes different.
Appendix B: remaining analysis

Vleesconsumptie EU
Bron: Eurostat

Vleesconsumptie EU
De vleesconsumptie per hoofd van de bevolking is in Nederland lager dan gemiddeld in Europa. Een verklaring daarvoor is onze relatief hoge consumptie van zuivelproducten zoals kaas. In Frankrijk, Portugal en Denemarken wordt relatief veel vlees gegeten per persoon. In enkele voormalige Oostbloklanden is de consumptie van vlees het laagst. Het type vlees verschilt nógal tussen de lidstaten. Dit heeft te maken met culturele voorkeuren (schapenvlees in Groot-Brittannië bijvoorbeeld) maar ook met de inkomenspositie.
Varkenshouderij
De varkenshouderij is sterk geconcentreerd in Noord-Brabant, Noord-Limburg, de Gelderse Vallei, Twente en de Achterhoek. In totaal zijn er nog ruim 8 duizend bedrijven met varkens. De gespecialiseerde varkenshouders bestaat uit 1.100 fokvarkensbedrijven en 1.770 vleesvarkensbedrijven. Daarnaast zijn er bijna 1.000 overige varkensbedrijven welke de gesloten bedrijven omvatten. Dat betekent dat op circa 4 duizend bedrijven varkens als neventak worden gehouden.


Varkens EU
In de Europese Unie van 27 lidstaten worden tussen de 150 en 160 miljoen varkens gehouden. Nederland heeft volgens Eurostat ongeveer 11,7 miljoen varkens. De landen met hogere aantallen varkens zijn Duitsland en Spanje (beide 26 miljoen), Frankrijk (14 miljoen), Polen (14 miljoen) en Denemarken (12 miljoen). De structuur van varkenshouderijen is grootschaliger in Noordwest-Europa, Noord-Italië en Spanje dan elders in Europa. In Zuid-Duitsland en in de voormalige Oostbloklanden zijn varkenshouderijen voornamelijk kleinschalig van opzet. >>
Complexiteit (en) voeding voor de stad

Een beschouwing van de Nederlandse landbouwontwikkeling

HET LUILEKKERLAND - Schilderij van de Belgische schilder Pieter Bruegel de Oude. Het schilderij uit 1567 laat een ideale wereld zien waarin drank en spijs in overvloed is en men kan genieten. Hedendaags valt te bediscusseren of we niet in deze situatie terecht zijn gekomen. Er wordt namelijk genoeg voedsel geproduceerd voor de hele wereldbevolking en obesitas staat bekend als de nieuwe welvaartsziekte.

Essay - History and Theory of Urbanism (AR1U120)
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Docenten: Cor Wagenaar en Han Meyer

April 2015
Stadslandbouw en urban farming zijn populaire manieren om met het serieuze voedselvraagstuk aan de haal te gaan. Regelmatig wordt over een ware voedselcrisis gesproken door de afhankelijkheid van fossiele brandstoffen en klimaatverandering (zie bijvoorbeeld Viljoen & Wiskerke, 2012). Inmiddels zijn we in de voedseldiscussie op een punt beland, waarin we voor de keuze staan om te kiezen voor verder geïntensiveerde productie op afstand van de stad – ook wel bekend als ‘business as usual’ - of stadslandbouw in en rondom de stad. De maatschappelijke weerstand tegen geïntensiveerde productie methoden zoals megastallen groeit. Toch is ook dit fenomeen, net zoals de eerder genoemde voedselcrisis en de staat van ons Nederlandse landschap, een product van onze geschiedenis.

In dit essay zal ik laten zien hoe Nederland zich als landbouw land bij uitstek heeft ontwikkeld, en hoezeer dat een complex proces is geweest. Behalve het feit dat voedsel de eerste levensbehoefte van de mens is, is de verwachting dat de mens in toenemende mate in steden zal wonen in de toekomst. Dit maakt voedsel een urgent onderwerp met een stedelijk karakter (voor zover het dat nog niet was). De manier waarop de plek waar ons voedsel geproduceerd wordt, is echter van veel verschillende dingen afhankelijk. Hiermee relater ik aan het concept ‘The city as a complex system’ en zal ik bepalende historische momenten en perioden benoemen.

INLEIDING LANDBOUW IN NEDERLAND

Ontwikkelingen van steden zijn complex. Het verloop is onvoorspelbaar en afhankelijk van allerlei externe ontwikkelingen en factoren, zowel globaal als lokaal. Een aantal prangende voorbeelden op globaal niveau zijn verstedelijking, bevolkingsgroei, druk op fossiele brandstoffen en klimaatverandering. In Nederland, lokaal gezien, hebben we te maken met een terugtredende overheid en decentralisaties. Deze lokale en globale trends zijn bepalend voor toekomstige ontwikkelingen, maar hebben ook een geschiedenis en komen niet zo maar uit de lucht vallen.

In de inleiding van het boek Town planning in the Netherlands since 1800 stelt Cor Wagenaar dat architectuur en stadsplanning gezien kunnen worden als een ontworpen manifestatie van de relatie tussen mensen en hun natuurlijke omgeving (Wagenaar, 2011, p. 20). De gebouwde en gecultiveerde omgeving zoals wij die om ons heen zien, is een reflectie van menselijke ideeën, politieke overtuigingen en kan gelezen worden als een historisch document.

Het Nederlandse landschap is grotendeels ‘man made’ en gedefinieerd door water (Wagenaar, 2011, p. 55). In de 17e eeuw, toen Nederland nog een republiek van 7 provinciën was, kenden de steden al een grote bevolkingsgroei. Het platteland werd gecultiveerd om geschikt te maken voor landbouw en diende bovendien lange tijd een recreatieve functie voor de stedelijke elite (Wagenaar, 2011, p. 23). De bevolking groeide echter lange tijd sneller dan de toename in geproduceerd voedsel, met als gevolg dat de prijzen voor veel landbouwproducten stegen (Bieleman, 2008, p. 28). Na omstreeks 1650 stagneerde de bevolkingsgroei echter, en namen de prijzen van landbouwproducten af. Toen al bleek het voor boeren moeilijk om hun hoofd boven water te houden en bedachten zij allerlei strategieën om hun bedrijf aan te passen aan veranderende omstandigheden (Bieleman, 2008, p. 29). Met name technologische innovatie heeft er toentertijd voor gezorgd dat landbouw zich staande kon houden. Het leek in de tijden waarin de republiek in crisis was, nog de enige succesvolle economische sector (Wagenaar, 2011, p. 129). Desondanks kenmerkt de landbouwsector tot op de dag van vandaag zich als een kwetsbare sector die moeite heeft een kapitaalkrachtige bedrijfsvoering te realiseren. De landbouwontwikkeling in
Nederland kenmerkt zich met name vanaf het begin van de 20e eeuw door overheidssteun en -interventie en leggen het ideale fundament voor de vormgeving van de verzorgingsstaat.

1800-1850 – Vernieuwing en ontwikkeling in de landbouw in tijden van achteruitgang

Ten opzichte van de eeuwen ervoor namen vanaf 1800 de commerciële activiteiten toe. In de 18e eeuw vormt voor het eerst in de mensheid, dankzij industriële productiemethoden, de geproduceerde hoeveelheid voedsel geen barrière meer voor de bevolkingsgroei. Dit dus in tegenstelling tot de beredenering van Robert Maltus. De Britse econoom Robert Maltus (1766-1834) stelde dat de maximale voedselproductie een grens stelt aan de bevolkingsgroei. Dit ging over het spanningsveld tussen de bevolkingsgroei en bestaansmiddelen. Van hem komt het fenomeen ‘Malthusiaans plafond’ (Bieleman, 2008, p. 21). De bevolkingsgroei zette zich vanaf dit moment door en zorgde een groeiende vraag naar agrarische productie voor verhoogde prijzen (Bieleman, 2008, p. 30). Het waren in deze periode met name technologische ontwikkelingen en de constructie van infrastructurele netwerken zoals kanalen en havens en het vergroten van vruchtbare land door meren in vruchtbare landbouwgronden te transformeren die ervoor zorgden dat er genoeg voedsel geproduceerd kon worden (Wagenaar, 2011, p. 22; Bieleman, 2008, p. 22). In dat opzicht kenmerkt het platteland en landschap van Nederland zich al lange tijd door de landbouwfunctie die het heeft. In 1849 was nog steeds 44% van de mannelijke beroepsbevolking in Nederland in de landbouw werkzaam. Dit week niet veel af van andere West Europese landen, een uitzondering was Groot Brittannië waar nog slechts 22% van de mannelijke beroepsbevolking destijds werkzaam was in de landbouw (Bieleman, 2008, p. 140).

De crisis die zich echter voorheen heeft voor gedaan, vormt de aanloop naar vergaande transformaties van het Nederlandse bestuur en daarmee inrichting van het landschap.

1850-1900 – Industriële revolutie als motor achter vergaande ontwikkelingen

Vanaf de tweede helft van de negentiende eeuw, raakt de ontwikkeling van Nederland in een stroomversnelling door de aanleg van infrastructurele netwerken in opdracht van Thorbecke (Wagenaar, 2011, p. 124). Met name de komst van de trein zorgt voor een ruimtelijke explosie in de zin dat de directe omgeving van mensen enorm toe nam door de mogelijkheid in korte tijd over grotere afstanden te reizen. In 1847 werd een traject van Amsterdam naar Duitsland werkelijkheid (Wagenaar, 2011, p. 127).

In dit tijdvak met de transformaties die Thorbecke doorvoert, waaronder het egaliseren van de rechten tussen stad en platteland, het transparant maken van de overgang tussen stad en platteland, en het tegengaan van de privileges die de stedelijke elite tot dan toe had, laten zien dat menselijke ideeën en politiek een belangrijke rol spelen in wat later ‘ruimtelijke planning’ genoemd kan worden.
Het infrastructurele netwerk wordt verder uitgebreid naar Duitsland en centraal Europa, op een manier die niet afhankelijk van België was, om zo de eigen (economische) positie te versterken (Wagenaar, 2011, pp. 137–138). Parallel en volgend op het ontstaan van dit spoornetwerk, werden ook de havens van Rotterdam en Amsterdam aangepakt om een grotere rol te kunnen spelen intercontinentale globale economie (Wagenaar, 2011, p. 140).


De industrialisatie in de landen rondom Nederland vond eerder plaats, waardoor in deze landen de vraag naar (luxe) voedsel eerder toe nam dan in Nederland. Hier konden Nederlandse boeren van profiteren en werd de export van vee een florerende economische sector (Bieleman, 2008, p. 275). Nederland begon zich tot een exportland te ontwikkelen met een sterke oriëntatie op de Britse markt. In ruil voor agrarische producten stond de invoer van industriële producten. Dat Nederland zich in deze periode tot een export land bij uitstek ontwikkelde, wordt ook wel als verklaring gezien dat onze economie nog lang van agrarisch karakter is gebleven (Bieleman, 2008, p. 276).

Een andere ontwikkeling die zich in deze periode voordeed was het inzicht dat men de wetenschap rondom landbouw verder moest ontwikkelen. Bieleman (2008) stelt: “De grote internationale landbouwtentoonstelling die in 1884 in Amsterdam werd georganiseerd, kan beschouwd worden als een keerpunt in de geschiedenis van de Nederlandse landbouw” (Bieleman, 2008, p. 310). De reden hiervoor was dat Nederland er toen achter kwam dat er nog veel te behalen viel op het gebied van onderzoek, voorlichting en onderwijs inzake de landbouw en dat dit een taak zou moeten zijn van de overheid. Zo werd er in 1886 een landbouwcommissie ingesteld die bedoeld was om een landbouwpolitiek uit te stippelen (Bieleman, 2008, p. 310).

**1900-1950 – Een dynamische periode van crises, overheidsinmenging en handelspolitiek**

De voorspoedige ontwikkelingen in de landbouw werden bruut verstoord door de Eerste Wereldoorlog in 1914. De invoer van granen en export van vee ging grotendeels onverminderd voort, maar door de grote vraag van zowel Groot Brittannië als Duitsland, kwam de binnenlandse voedselvoorziening onder druk te staan. De overheid voerde in reactie hier op een distributie wet in en boeren werden opgeroepen zoveel mogelijk van hun graan aan de overheid te leveren (Bieleman, 2008, p. 288), zie afbeelding 3 en 4. De situatie werd gaandeweg nijpender en granen werden zo schaars dat boeren wel genoodzaakt waren hun veestapel in te krimpen. Nadat de oorlog in 1918 tot een einde was gekomen, herstelde de landbouw situatie zich wereldwijd in rap tempo en brak er een periode van overproductie aan. Technische ontwikkelingen vergrootten de productie in Nederland maar concurrentie op de Engelse markt en een verslechterde economische situatie in Duitsland zorgde er voor dat er nauwelijks nog van lonende agrarische bedrijven gesproken kon worden (Bieleman, 2008, p. 290). In de jaren ’30

Het doel van deze wet was onder andere de concurrentiepositie van de Nederlandse landbouw sector te verbeteren en de binnenlandse productie daar op af te stemmen.


**1950-2000 – Rationalisatie van het landschap en de landbouw**


De komst van de auto veranderde het landschap ook drastisch door de zogenaamde ‘verstedelijking’ van het landschap dat daardoor plaatsvond. Dit had ook met een mentaliteitsverandering op het platteland te maken, door televisie programma’s die entertainment, informatie en cultuur doorgaven. Op dit punt, was stedenbouw niet enkel meer een stedelijke aangelegenheid (Wagenaar, 2011, p. 435). Het landschap veranderde doordat het verweven raakte met stedelijke functies. Landschapskarakteristieken gingen verloren doordat het ontwerp van buitenwijken veelal gebaseerd waren op simpele, grid achtige patronen, die zich niet naar landschappelijke elementen vormden: “The historically determined irregularities of the landscape were being replaced either by the neat geometrical patterns of the modern housing estates with their mass-produced series of apartment buildings, or by the equally rigid rectangular grid of the large parcels of land that facilitated the development of modern agriculture” (Wagenaar, 2011, p. 436).

Deze trend van suburbanisatie was afkomstig uit Amerika, en dateerde al van voor de oorlog. Met betrekking tot de landbouwontwikkeling heeft de ‘Marshall-hulp’ een fundatmentele betekenis gehad, ofwel het Europese Herstelprogramma zoals het officieel heette (Andela, 2000, p. 19). Dit programma hield economische hulp in voor Europa in ruil voor politieke en economische samenwerking tussen Europa en Amerika. Dit was een belangrijke strategische zet in de Koude Oorlog. Andela stelt dat dit programma een belangrijk psychologisch effect had omdat door de steun een economische herstel daadwerkelijk binnen bereik leek te komen. Bovendien “(...) maakte de steun geleidelijk en impliciet ook in ons land
de weg vrij voor de in de Verenigde Staten heersende overtuiging, dat economische groei als vanzelf welvaar, harmonieuze sociale verhoudingen en politieke stabiliteit met zich mee zou brengen” (Andela, 2000, p. 19). De ‘Amerikanisatie’ van Nederland, had dus betrekking op de auto, leefstijlen en politiek/economische ideeën.

In ruimtelijke zin werd de ontwikkeling van moderne landbouw gekenmerkt door het beleid van ruilverkaveling. Ruilverkaveling was gericht op schaalvergroting en het vergroten van de productie. Dit veranderde het landschap drastisch omdat kleine kavels werden samengevoegd en met name grote ‘levensvatbare’ boerenbedrijven overbleven (Bieleman, 2008, p. 467). Deze schaalvergroting en intensivering ging gepaard met uitstroom van arbeid en zo veranderde ook de plattelandssamenleving. Intensivering en productieverhoging ging gepaard met snelle uitstoot van arbeid. Er werd gestreefd naar het minimaliseren van de kosten voor arbeid. “Dit bracht een veelomvattend complex proces op gang van mechanisatie, intensivering, specialisatie, rationalisatie en schaalvergroting, wat vervolgens leidde tot een snelle absolute daling van het aantal personen dat in de landbouw werkzaam was” (Bieleman, 2008, p. 32). De fundamenten voor een dergelijk drastische overheidsinterventie waren reeds gelegd door middel van de crisiswetten in de jaren ’30.

De rationalisatie en modernisatie van de landbouw werd nodig geacht als voorwaarde voor industrialisatie en daarmee dus economische groei. Door de uitstroom van arbeid in de landbouw, kon men in andere opkomende industrieën aan het werk gaan. Zo werd de industrie gepland in gebieden waar voldoende arbeiders aanwezig waren, zoals op het platteland buiten de Randstad waar de geboortecijfers hoog waren. Hiermee kon ook een grote migratiegolf naar de stad voorkomen worden (Wagenaar, 2011, p. 436). De sociaal economische planning die door de industrialisatie op kwam, vormde de aanleiding voor het ontstaan van regionale planning aangejaagd door de overheid. Verspreide industrialisatie gericht op industrialisatie van plattelandsgebieden die te maken hadden met verschillende problematieken zou niet alleen een bijdrage leveren aan de nationale economie, maar ook de economische structuur van perifere streken verbreden en de druk op het westen van het land verminderen (Andela, 2000, p. 22). Deze planning werd vastgelegd in documenten als ‘de Industrialisatie nota’ waarvan er meerdere nota’s zijn geweest en de wet ‘Ontwikkelingsgebieden’. Door middel van subsidies werd in deze ontwikkeling geïnvesteerd. Dat industrialisatie niet enkel positieve gevolgen met zich mee bracht, werd langzaam duidelijk. Volgens Andela in een brochure genaamd ‘Het westen en overig Nederland’ uit 1956, gemaakt door de Rijksdienst voor het Nationaal plan in samenwerking met het Centraal Planbureau, een eerste totaalvisie op de ruimtelijke orde van Nederland uitgezet. “Kerngedachte was dat de samenballing van de bevolking en werkgelegenheid in het westen van het land en de achterblijvende ontwikkelingen in de regio’s buiten de Randstad als een samenhangen probleem moesten worden beschouwd” (Andela, 2000, p. 24). De sociaal economische planning die in deze periode ontstond, is ook in lijn met de functionele zonering zoals die in de colleges van Cor Wagenaar naar voren zijn gekomen.

In deze tijd ontwikkelde de landbouwpolitiek zich op Europees niveau. Deze trend wordt bekroond in 1958 met de oprichting van de Europese economische gemeenschap, de voorloper van de huidige Europese Unie. Hiermee werd een vrij handelsverkeer nagestreefd met de gedachte dat een gemeenschappelijke landbouwpolitiek noodzakelijk was voor het goed functioneren van een gemeenschappelijke markt. Dit hield ook in dat landbouwproducten uit de lidstaten voorrang kregen op producten uit niet-lidstaten (Bieleman, 2008, pp. 475–476). Ondanks de marktvergroting ontstonden kostbare overschotten doordat de landbouwproductie veel sneller groeide dan de vraag. Dit werd aanvankelijk binnenlands opgelost.


2000 - ... Wat nu?


Broekhof en van der Valk (2012) pleiten eerder voor een integratie van beide discoursen, in plaats van hen te zien als twee tegengestelde ideeën (p. 397). In dat kader wil ik één historisch planningsmodel er bij halen, dat is geïnspireerd vanuit een idee van een ideale samenleving. De reden dat ik een model voor een ideale samenleving aan haal, is omdat we in Nederland te maken hebben met een veranderende samenleving. Er wordt in dat kader ook wel gesproken over de Participatiesamenleving. De vraag is wat dit zal betekenen voor onze ruimtelijke planning. De omgevingswet zal ingevoerd worden, wat grotendeels betekent dat centrale sturing verdwijnt en er meer invulling overgelaten worden aan provincies en gemeenten. Wat we hebben gezien bij bijvoorbeeld Thorbecke, heeft stedenbouwkundige planning er baat bij als er sprake is van een visie waarin toekomstige ontwikkelingen gefaciliteerd worden. Voor Thorbecke was dat het realiseren van netwerken, die uiteindelijk een ruimtelijk fundament hebben kunnen vormen voor de economische ontwikkeling en industrialisatie van Nederland.

The new regional pattern

Ludwig Hilberseimer was een ontwerper maar voornamelijk theoreticus van urban planning modellen en schema’s. Zijn ideeën waren nauw verbonden met maatschappelijke vraagstukken en in de inleiding van het boek The new regional pattern schrijft Hilberseimer: ‘Planning in all its comprehensiveness becomes, therfore, a political problem, a problem of statemanship. The planner himself becomes the executer of social-political aims, translating such aims, which grow out of a concept of order, in terms of order’ (Hilberseimer, 1949, p. xiv). De planningsideeën die Hilberseimer presenteert in zijn boek, gaan niet zozeer over esthetisch ruimtelijk ontwerp als wel over ideeën hoe een maatschappij zou moeten functioneren. Hij presenteert hier een strategie voor verstedelijking met een lage dichtheid gebaseerd op een netwerk van regionale snelwegen en de natuurlijke omgeving. De natuurlijke onderlaag functioneert als bepalend element
in plaats van een grid (Hilberseimer, 1949, pp. 120–121). Hilberseimer ziet geschiedenis als een middel om antwoord te vinden op vragen die beantwoord moeten worden voordat men met ontwerp en planning begint: “Mapping the historical development, tracing changing conditions of production agriculture as well as industrial will indicate answers to these questions” (Hilberseimer, 1949, p. 121).

Hilberseimer heeft een ecologische benadering die opvallend relevant lijkt op dit moment. Hij stelt: “When material progress becomes man’s only motivating force, as it did during the industrial revolution and its days of exploitation, the landscape with its vital force has to bear the consequences of man’s wisdom and greed” (Hilberseimer, 1949, p. 125). In deze tijden zou een parallel gemaakt kunnen worden naar de kapitalistische samenleving waarin we leven, en de financiële crisis die mede tot stand is gekomen door een hunkering naar alsnog meer geld. Aansluitend stelt Hilberseimer: “One of the planners most important tasks therefore is to discover this ideal relationship to determine how much forest and grassland is needed for a given amount of farm and garden land, if the hydraulic cycle is to be continued and the landscape maintained as a living entity” (Hilberseimer, 1949, p. 125).

Los van de ruimtelijke vertalingen die hij heeft voor zijn planningsmodellen, zie afbeelding 9, 10 en 11 past zijn benadering heel goed in deze tijd waarin duurzaamheid en een ecologische benadering van stedenbouw en architectuur een opmars maakt. Het planningsmodel dat Hilberseimer voorstelt, biedt een raamwerk waarbinnen ontwikkelingen plaats kunnen vinden. Dit past in het complexiteitsdenken, waarin kaders geschept worden in plaats van top down vast te leggen wat er waar moet gebeuren. Dit model moet logischerwijs niet 1 op 1 overgenomen worden, maar vormt een inspiratie om met faciliterende ruimtelijke planning om te gaan.

CONCLUSIE

Dit essay heeft de landbouwontwikkeling in Nederland in vogelvlucht besproken. Veel aspecten zijn onbehandeld gebleven zoals de daadwerkelijke consequenties die dit heeft gehad op de plattelandssamenleving, de regionale verscheidenheid in landbouw, de ontwikkelingen die boerderijarchitectuur een opmars maakt. Het planningsmodel dat Hilberseimer voorstelt, biedt een raamwerk waarbinnen ontwikkelingen plaats kunnen vinden. Dit past in het complexiteitsdenken, waarin kaders geschept worden in plaats van top down vast te leggen wat er waar moet gebeuren. Dit model moet logischerwijs niet 1 op 1 overgenomen worden, maar vormt een inspiratie om met faciliterende ruimtelijke planning om te gaan.

Wat ik heb willen laten zien is de invloed van menselijke ideeën en idealen, vertaald in beleid, op de ruimtelijke vormgeving van, in dit geval, landbouwontwikkeling en voedselproductie. Zoals Cor Wagenaar stelt in zijn conclusie: “Every corner of the country is saturated with man’s ideas, hopes, fears, dreams and ideologies” (Wagenaar, 2011, p. 568). Duidelijk moge zijn, dat deze ideeën niet los staan van externe gebeurtenissen en factoren. Voor de Nederlandse landbouw zijn dat demografische ontwikkelingen geweest, verscheidene crisis, industrialisatie, Amerikanisatie en de vormgeving van de verzorgingsstaat. Hiermee wil ik zeggen dat deze ontwikkeling een complex verloopp is, van natuurlijke gebeurtenissen, politieke verhoudingen en het menselijk handelen daar in. Kijkend naar de toekomst, zit de kracht van stedenbouwkundige planning en ontwerp in het anticiperen op die complexe samenleving. De manier waarop wij denken over technologische ontwikkelingen zoals internet, 3d printing maar ook gemodificeerd voedsel, zal bepalen in welke richting wij onze gebouwde omgeving vorm geven. Het siert een stedenbouwkundige dan ook om stelling te nemen en een visie te hebben over die toekomst. Op die manier, zal over honderden jaren uit de gebouwde omgeving teruggelezen kunnen worden wat de idealen uit de 21ste eeuw waren.
LITERATUURLIJST


