Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences

Graduation Plan

Personal information	
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Studio		
Name / Theme	Metropolitan Ecologies of Place	
Main mentor	Dr. Alexander Wandl	Urbanism, Environmental Technology and Design
Second mentor	Prof.ir. Eric A.J. Luiten	Landscape Architecture, Regional Planning and Design
Argumentation of choice of the studio	The interdisciplinary studio Metropolitan Ecologies of Place forms a crystallization point between the different disciplines of urbanism and landscape architecture, which sparked my initial interest. Central to both this studio and this thesis is the socio-economical and ecological transition towards regenerative and biophilic design. It looks at urbanism through the lens of the territorial landscape, examines how cultures have urbanized previously natural landscapes throughout history, and explores how new hybrid commons of Cultural and Natural typologies can be researched and designed. At the heart of my graduation project is a research by design that examines the urban developments of the late twentieth-century of the Randstad region, where the gradual urbanization dissolved urban and rural on a continuous patchwork landscape. Through national spatial planning policy that is embedded in the urban-rural dichotomy, market-driven developments established industrial and technocratic productive landscapes that have pushed the soil and water system to its limits. The climate- and energy adaptation transition provides the necessity and opportunity to opt for structural spatial developments that strengthen sustainability and spatial qualities in the peri-urban interface.	

Graduation project	
Title of the graduation project	Patching up the Lowlands
Goal	
Location:	The northeast peri-urban area of the Rotterdam-The Hague metropolitan region, the Netherlands
The posed problem,	Driven by an urge to inhabit an inhospitable landscape, early settlers in the delta of the Netherlands were forced to adopt a technophilic relation towards their natural environment. As the country transitioned towards contemporary modernity, national planning policies established industrial production patterns that contribute to the societal, economic and ecological imbalances that are negatively impacting the metropolitan region's landscape today.

	The intensive production landscapes of the Netherlands subsequently aimed at maximization by scaling, intensification and an increased use of chemicals, disregarding the soil and water system on which they thrived. In turn, this resulted in the disruption of ecosystems and significant loss of biodiversity, and an inherently instable landscape that can not respond to the contemporary negative environmental externalities as a result of climate change. (RLI, 2019). Indeed, this system is expected to face significant challenges due to rising sea levels, increased precipitation, eutrophication, river overflows, drought periods, subsidence, and saltwater intrusion. While spatial planning should aim for sustainable metropolitan development to mitigate this, the existing sectoral approach and the perceived cultural urban-rural divide maintain this original dichotomy, thus disregarding the strategic interconnections within the larger metropolitan region. Nevertheless, a polycentric metropolitan region has taken shape that no longer corresponded to this traditional dichotomy, on the territorial scale of what is referred to in this thesis as the Deltametropolis. In fact, most of this territory can be classified as neither urban nor rural, as Wandl et al. (2014) call 'territories-in-between'. While urban and rural typologies have been dissolved in a continuum, they are functionally and morphologically isolated as juxtaposed patches. To promote sustainable metropolitan development, a more holistic approach that spatially, socially, ecologically and economically connects urban and rural land uses might need to be adopted. As the landscape of the Deltametropolis was culturally formed through a technophilic attitude which has led to the societal, economical and ecological imbalances it is currently facing, the hypothesis is that biophilic spatial structuring choices must be prioritized in order to sustainability resolve these imbalances.
research questions and	[Research question]: In the transition towards a sustainable Deltametropolis, how can an adaptive design enhance spatial qualities in the peri-urban interface through biophilic and technophilic developments? [Subquestion 1]: How did the spatial, socio-economic and ecological dimensions of the Deltametropolis form over time, what were the main driving forces, and what could this mean for the future? [Subquestion 2]: How can the deep transition be understood and what are the risks, values and resultant spatial qualities associated with a technophilic or biophilic future for the agricultural sector in 2100? [Subquestion 3]: How can urban and rural spatial qualities in the peri-urban interface of the Deltametropolisbe strengthened by merging biophilic and technophilic values?

design assignment in which these result.	The aim of this thesis is to promote sustainable socio-economic and ecological metropolitan development in the peri-urban interface of the Deltametropolis by connecting urban and rural land uses and enhancing their respective spatial qualities. The Dutch delta landscape has undergone cultural formation and intensification, driven by a technophilic mindset. However, this approach has indirectly contributed to the societal, economic, and ecological imbalances that characterize the current locked-in landscape today in 2023. To address these challenges in a sustainable manner, it is hypothesized that embracing biophilic-led planning and designing spatial development may be necessary. The primary objective is to provide structural choices that allow the development of the agricultural sector to once more align with what the soil and water system can offer. In light of an uncertain future, it is essential to explore how this landscape can regain its adaptability to changing circumstances.By posing “what-if” questions, research by design could generate valuable insights and arguments. This approach involves testing potential spatial alterations and examining how they interact within the existing context. This will put forward a morphological framework in which natural and artificial spatial qualities are merged and functional programmes and uses can flourish.

Footnotes

1. Deep Transition – a ‘deep transition’ consists of a series of connected individual transitions in a wide range of socio-technical systems. The ‘First Deep Transition’ evolved through interconnected technological developments. These span from the Industrial Revolution of the 19th century up until the widespread adoption of information systems and telecommunications in the 1970s. These major developments led to industrial modernity and have shaped the socio-technical systems that underpin today’s globalized society (Deep Transitions, 2021).

2. Deltametropolis - The collaboration of the four alderman for Spatial Planning of Amsterdam, Rotterdam, The Hague and Utrecht resulted in a joint ‘Verklaring Deltametropool’ – Declaration Deltametropolis (1998), which aimed at a shared vision and strategy of the urban agglomeration of these four largest Dutch cities within the larger international delta region of the Rhine, Meuse and Scheldt rivers, competing with other global regions. In this thesis, the Deltametropolis largely refers to the Dutch Deltametropolis - the metropolitan region consisting of the so-called Randstad and Green Heart, for which a vision will be produced.

3. After-sprawl - Although the Randstad-Green Heart conceptualization arose out of fear of uncontainable sprawl, its ensuing anti-sprawl policies indirectly led to a new phase of urbanisation which is characterized exactly by suburbanization, labelled as the ‘after-sprawl condition’ by De Geyter et al. (2002).

Process

Method description

Sub-question 1
How did the spatial, socio-economic and ecological dimensions of the Deltametropolis form over time, what were the main driving forces, and what could this mean for the future?

Aim
To understand the context-specific preconditions and dimensions of the metropolitan region as a basis for future development

Method: Diachronic Analysis
A more thorough understanding of the spatial development of the Deltametropolis must be achieved. This can be accomplished by looking at the spatial, socio-economic and ecological dimensions to show how urban-rural relations evolved over time. With the benefit of hindsight, patterns, drivers, or striking changes within the landscape can be traced. In turn, this might give insight into potential future trajectories, by noting qualities that might have been obtained or lost, whether it be spatial, ecological or economical.

Sub-question 2
How can the deep transition be understood and what are the risks, values and resultant spatial qualities associated with a technophilic or biophilic future for the agricultural sector in 2100?

Aim
To explore and define adaptive pathways into plausible futures for the agricultural sector based on risks, values and resultant spatial qualities

Method: Adaptive Pathways
Behind any development is a set of values that guide or steer transitions, entrenched in paradigms from that time. To be able to think of sustainable future developments that enhance the liveability of the landscape, these values have to be proactively (re)defined in order to consciously prompt for change and development. In the context of this thesis, adaptive pathways are used to identify spatial pathways that over time allow for a multitude of values to manifest in spatial development, accounting for unforeseen circumstances.

Sub-question 3
How can urban and rural spatial qualities in the peri-urban interface of the Deltametropolisbe strengthened by merging biophilic and technophilic values?

Aim
To give an expression to the articulation of peri-urbanism in the Deltametropolis, by testing sustainable land use configurations

Method: Research by Design
Research by design contributes to new knowledge by posing well-defined “what-if”-questions to guide the design for a specific location. This method generates design-based insights or argumentation by testing potential spatial alterations and how they interact within an existing context. It could visualise a desired outcome which could be implemented in an overall strategy, or produce insights to be fed back into the iterative design process, i.e. a new “what-if”-question.

Other methods:

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Thick Mapping

The method of thick mapping aims to spatially, informatively and artistically render the thickness of the abstract urban palimpsest. It is routed in a multidimensional notion of space, and thus intents to encompass both this space and the people inhabiting it in the through the anatomy of a map. In his Dictionary of Sociology, Scott (2014) illustrates: “Intensive, small-scale, dense descriptions of social life from observation, through which broader cultural interpretations and generalizations can be made”. The superimposition of several layers of information reveals interrelations and allows for synergies between these layers to be disclosed. Scoring can moreover be used as a supporting approach to aid the thick mapping process.

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Field work, Observing, Scoring

Key to observation is realizing space is constantly changing by movements through time. It can therefor increase the understanding of interactions and patterns throughout a given time and spatial environment.

Scoring can be used to notate perceived sensory conditions that belong to the landscape and serve as stimuli. This can also be used to represent non-visual qualities of space, such as sound, smell, horizontal and vertical locomotion, or the feeling of a certain material. An interesting feature of scoring is that the observer consciously or subconsciously discriminates and extracts, making notation a balance between an objective and subjective experience. As there are many different qualities linked to the environment, the same route needs to be walked multiple times.

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Literature Review

Research is the process of generating new knowledge, partly by using existing knowledge in a new way as to generate new concepts, methodologies and understandings. Existing, thematically adhering knowledge is to be found in (academic) papers, books, and reports. This moreover informs, implicitly or explicitly, a gap in knowledge, still to be researched and discovered.

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GIS-supported Spatial Analysis

Spatial analysis is used across multiple sections, layers and scales to investigate relations between seemingly separate things, categories, and silos. It serves as a tool for understanding complex systems and visual thinking.

A geographic information system (GIS) further aids this process by creating, managing, analyzing and mapping numerous types of data. It connects data to a framed space, and integrates location data with descriptive information. This helps to understand patters, relationships, and geographic context.

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Network Analysis

Through network analysis, relationships and relational properties within or between datasets are examined. It differentiates between nodes (individual entities within a network) and their connective links (interactions between these entities). For example, it could aid the understanding of the movement of people within and between patches of the Deltametropolis.

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Data Visualisation

Data visualization is widely used to give a graphic representation of information. It moreover allows for translating numerical information into a visual representation. In visualizing data, it is imperative that otherwise complex or abstract information can be comprehensively understood through visualization. An example of the appliance of this method in this thesis if for mapping information throughout time in the diachronic analysis.

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Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

The topic of my graduation project has in common with the studio, master track Urbanism and the Faculty of Architecture and the Built Environment that sustainable development of the living environment is to be aspired. This poses the question in which way it would be necessary to address the *polis* – the patterns and way of inhabitations in the world – and the required skills in research and design needed to address this. These skills consist of a balance between evidence-based research and the imagination of desirable future spatial qualities, which are manifested in the graduation project.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

[Scientific relevance]
Although the Randstad-Green Heart conceptualization arose out of fear of uncontainable sprawl, its ensuing anti-sprawl policies indirectly led to a new phase of urbanisation which is characterized exactly by suburbanization, labelled as the 'after-sprawl condition' by De Geyter et al. (2002). While sprawl often has a negative connotation, its processes and principles are not yet sufficiently researched and designed for, as a result of its neglect in planning policy (Wandl et al., (2014); De Geyter et al., (2002)). Nevertheless, the interwoven landscapes, infrastructures and buildings of these territories-in-between may provide a breeding ground for typological innovation. The aim of this thesis is therefore to integrate urban and rural spatial qualities and economies within this contemporary after-sprawl condition.
[Societal relevance]
The '*Nationale Woon- en Bouwagenda*' (National Housing Agenda) has the aim to construct 900.000 homes by 2030, of which nearly 60% will be constructed in Utrecht and the Holland provinces (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2022: 8). Little could be said about the quality of these houses, as this would have to result from negotiations with the provinces and private parties. Again, as with most of the growth center and Vinex policies, quantity threatens to trump quality. The question of *how* we want to live should be central to planning sustainable urban development, but it is again subordinate.
This graduation project aims to respond to this by putting this question central, and proposing two alternative future scenarios with different underlying values and spatial qualities. The result of this adaptive design would allow for the studying and discussing of the outcomes, which ultimately would result in a design grounded in desired spatial qualities.

Research question: In light of the ongoing Deep Transition, how could an adaptive design be developed for the peri-urban interface of the Deltametropolis to strengthen complementary urban and rural spatial qualities?

Subquestion I: *How did the spatial, socio-economic and ecological dimensions of the Deltametropolis form over time, what were the main driving forces, and what could this mean for the future?*

Aim: *To understand the context-specific preconditions and dimensions of the metropolitan region as a basis for future development.*

Subquestion II: *How can the Deep Transition be understood, and what are the risks, values and resultant spatial qualities associated with the proposed plausible futures for 2100?*

Aim: *To explore and define adaptive pathways into plausible futures for the Deltametropolis based on risks, values and resultant spatial qualities.*

Subquestion III: *How can typological innovation integrate urban and rural spatial qualities and economies in the contemporary 'after-sprawl' condition?*

Aim: *To give an expression to the authentic articulation of the after-sprawl condition, by testing sustainable land use configurations*

research questions

primary methods

secondary methods

literature, studies and concepts