

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
Name	Alina Bruder
Student number	6079318

Studio		
Name / Theme	Metropolitan Ecologies of Places	
Main mentor	Alexander Wandl	Environmental Technology and Design
Second mentor	Birgit Hausleitner	Urban Design
Argumentation of choice of the studio	From the beginning of my studies, a deep care for the environment has motivated my study projects. When I think about my professional trajectory, I envision a path on which I can contribute to making the planet healthier for all its inhabitants. Consequentially, this also motivates me in my thesis where I want to explore the potential of a degrowth vision for regional development between planetary and societal boundaries. As there are many linking points as well as conflicting opinions between post-growth and circularity, I think it could be an interesting topic to discuss under the sub-theme "Circular Urban and Territorial Metabolism". Another aspect that draws me to the MEP studio is the possibility to start my thesis from a system. I would like to approach this topic by first looking at a whole country (The Netherlands) and defining a site for closer investigation based on the analysis. I believe that thinking about changes to a certain area will involve looking at many different flows (energy, mobility, ecology etc.). Lastly, I see myself developing my thesis project in MEP because for me, the ecological concern weighs heaviest in the end. Furthermore, this studio would provide me with a great environment to have discussions and peer-feedback from people with similar motivations.	

Graduation project	
Title of the graduation project	Beyond Growth A spatial exploration of a degrowth future for the Randstad
Goal	
Location:	Randstad, The Netherlands
The posed problem,	Despite numerous warnings over the course of the last decades (Meadows et al., 1972; Rockström, 2009) global resource consumption and population growth still fail to come together in an economic system that stays within the planetary boundaries (Caesar et al., 2024). To meet those boundaries, The Netherlands adopted

	the green growth paradigm. While this led to the decoupling of their GHG emissions from GDP growth, their resource consumption continues to rise (Bruyninckx et al., 2024), leaving other societies in the global value chain to pay the price for its socio-ecological consequences. Additionally, with a rising population and stagnating welfare, less people profit from the economic growth. Within The Netherlands, the Randstad is the main driver of economic and urban growth (Ministerie van Economische Zaken, 2024), even though the region is highly vulnerable to climate change-induced risks such as flooding and soil subsidence (IenW et al., 2024). Further, the green growth paradigm locks urban development in a growth dependency by making the provision of public services depend on revenue from land development, thereby incentivizing developments along the urban edges. Thus, this lock-in is also reflected in physical growth (BURA & Crimson, 2024; Xue, 2022; Savini, 2021). While this is widely accepted in the planning community (Durrant et al., 2023), it hinders socio-ecological resilience. For this reason, the search for an economic paradigm beyond growth-dependency has also gained attention in the field of urbanism in recent years. For the Dutch economy which significantly relies on trade, degrowth seems to be a viable alternative, especially due to its emphasis on global solidary economic relations. However, to operationalize degrowth for spatial planning and design, scholars express the need to explore a holistic spatial perspective that looks at degrowth through the scales (Krähmer, 2022; Xue & Kębłowski, 2022). Exploring the spatial effects of a degrowth transition could inform a more region-focused economy in the Randstad. That would allow it to be part of an urban-economic system that is independent of economic growth but instead promotes socio-ecological resilience.
research questions and	How could degrowth values inform metropolitan development to overcome its growth dependency and increase socio-ecological resilience in the Randstad? SQ1: How and where does the growth dependency manifest in the built environment of the Randstad since World War II and how does this decrease socio-ecological resilience? Aim: - To understand the interrelation between the urban and the economic system in the Randstad since the World War II - To understand where in space and where in the system the growth dependency manifests and which morphological and physiological processes it is linked to SQ2: Which spatial, socio-economic, and ecological potentials and challenges can be identified in the Randstad and how can they be used to explore a degrowth transition?

Methods for SQ1: How and where does the growth dependency manifest in the built environment of the Randstad since World War II and how does this decrease socio-ecological resilience?

Literature review

Literature from the fields of systems theory (complex adaptive systems, resilience), urban and territorial metabolism studies and (spatial) degrowth and post-growth is reviewed and discussed to form a conceptual approach for the research.

Netzstadt

The following elements are taken and adapted from the Netzstadt analysis approach (Oswald et al., 2003):

- *Diachronic analysis:* The interrelations between the urban form and the flows of people, goods and money are studied over time in the Randstad.
- *Identification of the network:* The nodes and connections in the settlement and infrastructural layers as well as for the abovementioned flows are identified
- *Spatial analysis of morphology and physiology:* Important spatial structures are identified, and their relations are analysed by using GIS- based spatial analysis techniques (e.g., network analysis, accessibility analysis).
- *Synthesis:* Potentials and resistance to change are identified.

Systemic section

The systemic section is used to visualize the systemic relations of a regional system (Wandl, 2021). It is combined with the Netzstadt approach to analyse and is also used in the design phase.

Methods for SQ2: Which spatial, socio-economic, and ecological potentials and challenges can be identified in the Randstad and how can they be used to explore a degrowth transition?

Pattern language

The pattern language as first introduced by Alexander et al. (1977) is used at various stages throughout the thesis to detangle and design with the complexity of the urban-economic system. The methodological approach feeds into the development of a pattern field because patterns are used and in turn added, revised or edited at every step of the research and design process. In the analysis phase, the patterns are used to understand the system components and their relations. In the scenario phase, the patterns are used for scenario building. Grouping them on the leverage framework by Abson et al. (2017) helps to see which ones have the capacity to promote systemic change, which ones lead to resistance and lock-in effects and which ones can support the change on lower levels. Lastly, they form a pattern language that can be used together with the adaptive pathways.

Trend analysis

Socio-economic trends relating to the five quality criteria are researched to understand current developments in the sectors of housing, work, leisure, transport, communication, cleaning and exchange (corresponding to the essential functions adapted from the Netzstadt). The trend analysis is used to construct the trend scenario.

Policy review

Policies related to spatial planning and design, economic development and their intersection are reviewed on the scale of the provinces within the Randstad, the Randstad, The Netherlands and the EU. The policy review is used to construct the trend scenario and to create policy patterns.

Fieldwork

Timeline of the research process

Category	Activity	Start Year	End Year
Research framework	Problem Field	P0	P1
	Research question and methods	P0	P2
	Theoretical and conceptual framework	P0	P2
Pattern language		P0	P4
Analysis	diachronic analysis	P0	P1
	morphological and physiological analysis	P1	P3
	policy analysis	P1	P2
	trend analysis	P2	P3
Fieldwork		P2	P3
Scenarios	Scenario building & mapping	P2	P3
	Scenario evaluation	P3	P4
Design	Adaptive pathways - structure map	P3	P4
	Strategy - policies	P4	P5
Discussion		P4	P5
Reflection		P0	P1
Presentation		P0	P1
		P1	P2

Literature and general practical references

Literature

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Methods

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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)?

In this thesis, I look at degrowth as a means to increase socio-ecological resilience in the built environment. As degrowth comprises a different set of values than the current ones in Dutch spatial planning and design practice, I am working with value-based spatial design which is one of the central aspects of the urbanism programme. The goal of socio-ecological resilience links my thesis topic to one of the main concerns of current urbanism practice (and the master track). To spatialize the abstract concept degrowth is, I draw on the approach of the MEP studio which emphasizes systemic design strategies as well as metabolic thinking. In my thesis, I combine planning and design methods in an approach that integrates the fields of economy and spatial design. As such, it resonates with the integrated and multi-disciplinary perspective the Master programme AUBS is promoting.

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

During my research process so far, I initially questioned the current economic paradigm and quickly found that it has a considerable influence on urban development and the way spatial design is practiced. The growth dependency of urban development led scholars to call for a value shift away from a growth-oriented mindset in planning and design practices (Lamker & Schulze Dieckhoff, 2022; Xue, 2022; Xue & Kębłowski, 2022; Savini, 2021). By researching the spatial manifestation of these values, I want to contribute to the discourse. Lastly, I also want to form my own opinion about degrowth as a possible solution to current socio-ecological crisis.

Since the discourse on degrowth in urbanism is still recent, proposals for degrowth have remained on the local scale (Krähmer, 2022) and/or were made for specific sectors such as housing or mobility, which led to a plurality of definitions and approaches (Xue & Kębłowski, 2022). While this diversity is sometimes seen as a barrier to upscaling the movement, Krähmer (2022) values the plurality of definitions and proposals as degrowth approaches need to relate to their specific spatial context. Following them, a site-specific approach also necessitates a selective view on localism as it would be irrational to deny the global ties of a regional economy. Further, an inter-scalar approach is necessary because degrowth measures on different scales are likely to contradict each other (Xue & Kębłowski, 2022). To illustrate, an upscaling of urban gardening would lead to dispersed development, or decentralised development would generate more transport emissions than centralised development, both resulting in unwanted social and environmental effects (Xue, 2022).

As this is a thesis in the field of urbanism, it does not focus on advancing the economic debate, but it departs from the current state of research and applies degrowth values in space to showcase an alternative future and explores how to reach it. Xue (2022) highlights this as an important step to introduce the degrowth discourse into planning practice.