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.

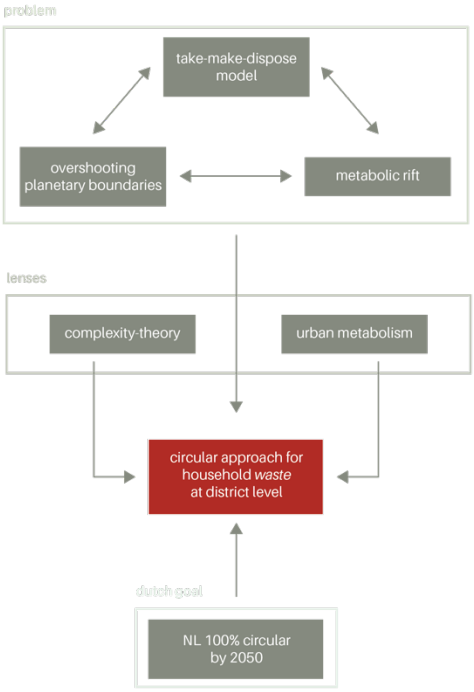
The graduation plan consists of at least the following data/segments:

Personal information	
Name	**Emma Lolkje Leuntje Tulp**
Student number	4673948

Studio		
Name / Theme	Design of the Urban Fabric (Urbanism)	
Main mentor	Leo van den Burg	Urban design
Second mentor	Juliana Goncalves	Spatial Planning
Argumentation of choice of the studio	The aim of this thesis is to stimulate people to act, in the transition towards a circular system, through the design of the public- and collective space. Therefore, this thesis will be performed under the 'Design of the Urban Fabric'-studio. The changes that are needed to transition towards a circular approach of household *waste* impact the whole society. The changes will not only have economic and governmental implications, but also spatial ones. Proposing (spatial) interventions that stimulate residents, calls for a deep understanding of the context. After all every district has its own characteristics. This context-based approach is aligned with the 'Design of the Urban Fabrics'-studio. As can be read in the year guide, this studio focuses on the dynamic and interplay between the physical environment and, among others, ecological- and socio-cultural processes to create sustainable and liveable places. The problem that this thesis will tackle, global resource scarcity, is super complex and has impact on multiple different scales and processes. For example, on the design of the public space and the residents living in the district. By approaching possible futures with several designs, patterns and processes can be uncovered. Which is a part of the DUF studio approach, as can be read in the year guide. This 'research by design'-approach can broaden and enrich my scope of possible solutions and help me in proposing the best suitable solution.	

Graduation project

Title of the graduation project	What a *Waste* : A Circular Approach to Household *Waste* Management through the Design of the Public- and Collective Space
Goal	
Location:	Indische Buurt, Amsterdam
The posed problem,	Humanity is currently exceeding Earth's planetary boundaries, which results in climate change and resource scarcity (Raworth, 2018). The system should **transition from a 'take-make-dispose'-economy to a circular economy**, changing consumption and production patterns (Elisha, 2020; Ellen MacArthur Foundation, 2013). Because of this, the Netherlands set the goal of being completely circular by 2050 (Rijksoverheid, 2016), which is still far from the 24,5% of circularity in the year 2020 (de Wit et al., 2020). Therefore, urgent action is required. **Everyone in society should do their part**, to strive towards a 100% circular system. This starts with the awareness of what the environmental impact of one's actions are, and therefore moving away from 'metabolic rift' (Dinarès, 2014). The way one thinks of *waste* and one's own production needs to change. *Waste* should be seen as a resource, instead of an unwanted by-product (Dijkema et al., 2000). [knowledge gap] Academia and practitioners are already researching how a transition towards a circular system should look like, but the **social- and spatial dimension are currently overlooked** (Prendeville et al., 2017; Coenen et al., 2012). Therefore, this thesis has a context-specific approach, using 'complexity'-theory and the concept of 'urban metabolism' as lenses. The district will be the focus point. Because interventions on the local scale encourage people to adopt a proactive attitude (Levoso et al., 2020). [scope] **Household *waste*** will be the focus in this thesis. First, because a lot can be improved by the Netherlands in the management of this type of *waste* (CBS, 2020 & Hervey, 2018). And secondly, households are at the center of the transition, towards a circular system, because they are both consumers and producers of resources (Savini, 2019). [aim] The goal of this thesis is to **engage people, through the spatial design of the collective- and public space, to do their part in the transition** to a circular household *waste* system. Conceptual Framework

	
research questions and	How, and to what extent, can (spatial) design interventions for public and collective space support and facilitate the Indische Buurt's (in Amsterdam) shift to a circular approach for household *waste* management? 1. How is the Indische Buurt organized socially, spatially, and organizationally? 2. What synergies and integrations could be identified in the current material flows of the Indische Buurt to reach a circular approach for household *waste* management? 3. What social-, material-, spatial-, and organizational elements can be learned from other cases, in terms of transitioning to a circular approach for household *waste* management? 4. How can residents be made more aware and be engaged to act in the transition, to a circular approach for household *waste* management, through the design of the public and collective space? 5. What changes are needed in the policy and strategy of the municipality of Amsterdam to integrate the proposed changes, needed for the shift to a circular approach for household *waste* management?
design assignment in which this result.	The outcome of this thesis will be a **spatial design for one of the quarters** of the Indische Buurt. Both in the public and collective spaces, interventions will be made. Recommendations will be made in the form of **governance principles** to modify the present municipal- and national strategy and policy to better integrate the suggested spatial intervention(s) within the context.

[This should be formulated in such a way that the graduation project can answer these questions. The definition of the problem has to be significant to a clearly defined area of research and design.]

Process

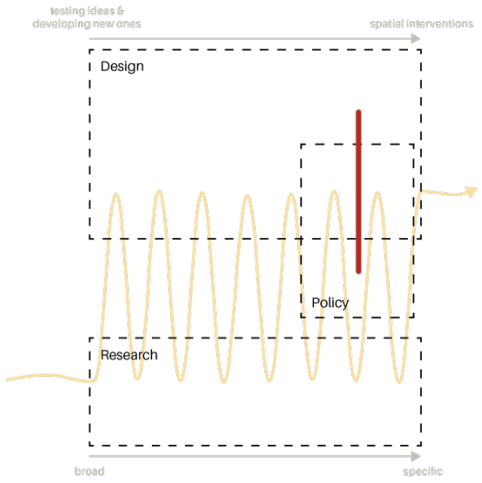
Method description

Research Approach

As stated before this thesis will have context-based approach. Therefore, the design plays an important role in this thesis. During the whole development of this thesis, research and design will develop parallel to each other. As illustrated in the diagram below (X), both the research and the design will have an influence on each other. Research will influence the way the design interventions will look like; and the design will influence what topics will be researched.

The way design and research are used during the process is written down in grey. In terms of the design, it will first be used to test and come up with new ideas. Later in the process, a spatial design will be made.
At the start, the research will be quite broad. For example, to write the problem statement. During the process designing will spark the need for specific research into a certain topic.

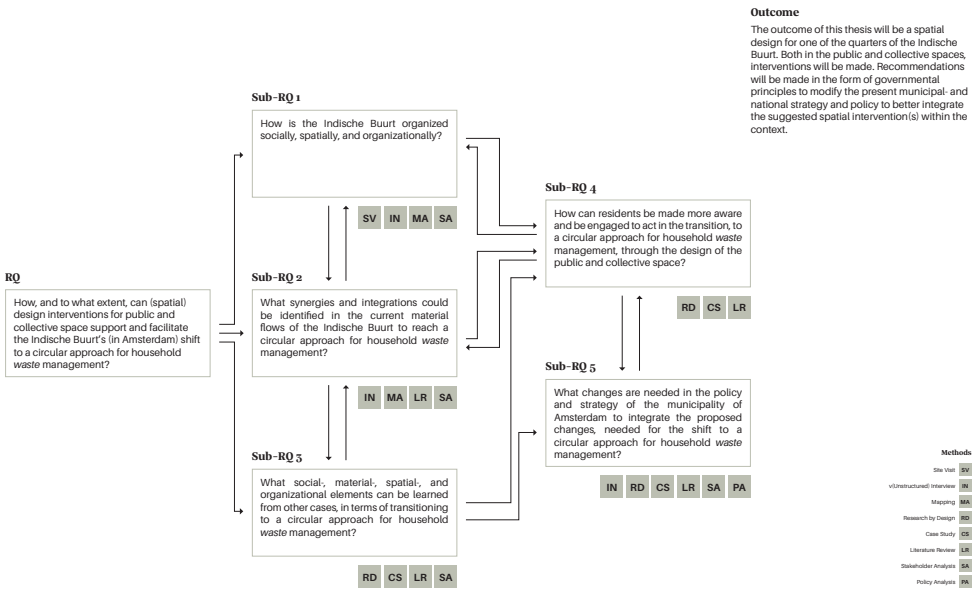
The red line in the diagram illustrates where the final outcome is positioned. The final outcome will be a context-specific spatial design. Recommendations will be done for the governmental policy to better integrate the spatial interventions.



Analytical Framework

The analytical framework shows how different methods are used to answer a certain research question. Next to this, the relation, and influence, between the different research questions is shown. A (preliminary) result of one question can influence the approach of another question.

Due to the strong connection between the different research questions, the questions will not be answered one after another. The answer to these questions will be developed simultaneously.



<u>Used Methods</u>

Site visit(s)
Type: Qualitative

Gain an understanding of the district, by observing, describing, and concluding the characteristics. This can be by making a map but also through taking photos or having a conversation with a resident. To propose well-founded interventions in the district, the author needs to have a thorough understanding of the district and the challenges (and opportunities) at hand.

Themes:
- Spatial lay-out, ex. building blocks and public-, collective- and private spaces
- *Waste* collection and litter in the public space
- Type of people who live or use the district
- (themes will follow as the project progresses)

Sources: own observation

Sub-question(s): 1

(Unstructured) Interview
Type: Qualitative

Collect context-specific information about the district, the city, and the community initiatives. This is done by having an open talk with an expert. The author has prepared the questions but is led by the direction in which the conversation goes.

Who & Why:
- Employees City of Amsterdam (*Waste* & Resources)
  Information about what the municipality is already doing & how they see the current and future implementation of a circular system for

household *waste*.
- Volunteers Buurtbuik (neighborhood initiative)
  Information about the (purpose of) the initiative & general information about the issues in the district.
- 'Gebiedsmakelaars' (see glossary for explaination)
  Information about the challenges of the district & the degree in which the residents are currently aware of the necessity of the transition to a circular system for household *waste*.

Sources: knowledge of interviewees

Sub-question(s): 1, 2, 5

Mapping
Type: Qualitative & Quantitative

Visualize, connect and/or reflect on certain observations. Maps can be about a certain theme, spatial structure, or system. Maps will be used in the beginning as an analytical tool and closer to the end as a visualization tool for the design proposal.

Themes:
- Spatial: ex. district lay-out; building typologies; public- and collective spaces
- Material: *waste* collection points & flows
- Social: networks of people

Sources: QGIS, Google Maps, Gemeente Amsterdam

Sub-question(s): 1, 2

Research by Design
Type: Qualitative

Get (new) insights about possible solutions by projecting a design (proposal) onto the context. The outcome of this method can be a (eye-level) sketch, map, principle, or policy document.

Scales:
- Building
- Block
- District
- Municipal (only for policy)
- National (only for policy)

Sources: Own imagination

Sub-question(s): 3, 4, 5

Case Study
Type: Qualitative & Quantitative

Analyze projects and initiatives that are already established to draw learnings from it. This will be done on different themes (spatial, institutional/organizational, material, and social). A case does not need to be successful (in every aspect) to learn something from it. This information will be used to enrich the proposed design.

Themes:
- Spatial
- Institutional/organizational
- Material
- Social

Sources: (depends on case-study)

Sub-question(s): 3, 4, 5

Literature Review
Type: Qualitative & Quantitative

Read and review scientific papers to broaden and deepen the understanding of the topic. This will underpin and enrich the (design) choices that will be made.

Themes:
- Underpinning the problem statement
- (Aspects which influence) *waste* separation
- Engaging people to act
- (themes will follow as the project progresses)

Sources: Google Scholar, TU Delft Library

Sub-question(s): 2, 3, 4, 5

Stakeholder Analysis
Type: Qualitative & Quantitative

Identify the various stakeholders, in the house, building block, district and city, and their relations with each other to create a good understanding of the context. These actors will be examined on their power and interest. This is important to know for proposing design- and policy recommendations.

Themes & Scales:
- Collective space (thematic)
- Public space (thematic)
- Building, block, district & city (scales)

Sources: (to be defined)

Sub-question(s): 1, 2, 3, 5

Policy Analysis
Type: Qualitative & Quantitative

Review policy documents to create an understanding of the municipal and national current and future policies. Thereafter, the policies will be held alongside the other findings and (spatial) interventions, and shortcomings will be described and resolved.

Themes & Scales:
- Degree of citizen agency (thematic)
- Transition towards a circular economy (thematic)
- Municipal & national (scales)

Sources: Gemeente Amsterdam & Rijksoverheid

Sub-question(s): 5

Literature and general practical preference

The approach of this thesis is quite context-based. Therefore, site visits, (unstructured) interviews, and (informal) talks with residents/visitors are important in this thesis to gain information. Employees of the municipality of Amsterdam, the 'gebiedsmakelaars' of the district, and the volunteers of the 'Buurtbuik' are already interviewed. In the future, more information will be gained from them, and proposed interventions will be presented to them.

Next to this, literature reviews and case studies will be used to enrich and underpin the proposed interventions.

The most important theories/concepts which are used for writing the problem statement and defining the lenses for this thesis are:

- 'Take-Make-Dispose' Economy *(Elisha, 2020; Ellen MacArthur Foundation, 2013)*
- 'Doughnut Economy', including 'planetary boundaries' *(Raworth, 2018)*
- 'Circular Economy' *(Ellen MacArthur Foundation, 2013 & Ellen MacArthur Foundation, 2015)*
- 'Metabolic Rift' *(Dinarès, 2014)*
- 'Complexity'-Theory *(Wagenaar, 2007; Axelrod & Cohen, 1999; Sammut-Bonnici, 2015; Edelenbos et al., 2018)*
- 'Urban Metabolism' *(Kennedy et al., 2007; Prendeville et al., 2017; Metabolic, 2018)*

All the sources which are used in the booklet, until now, are attached at the end of the document.

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)?

   This thesis will look at how the design of the collective- and public space can engage people to be aware and act for the transition towards a circular approach for household *waste* management. This connects to the topic of the 'Design of the Urban Fabric'-studio because, as their name reveals, their focus is on the design of the urban fabric. Next to this, the thesis' context-specific approach also aligns with the approach of this studio. The aim of the Urbanism track, as can be read on the TU-website, 'to advance, share and apply knowledge on how to adapt the built environment to societal and environmental changes; and to apply contextual design, planning and engineering strategies and interventions with impact for a better society.' (*Urbanism*, n.d.). This aligns with the topic this thesis will tackle because the transition towards a circular household *waste* system needs both societal and environmental changes. The context-specific design is also mentioned here.
   The approach of the master programme MSc AUBS is 'blending knowledge and skills from design practice, from the physical and social sciences, technology and engineering, this programme explores innovative ways to create more sustainable development.' (*MSc Architecture, Urbanism and Building Sciences,* n.d.). This thesis connects to this because the proposed design will help, supported with new technologies & engineering developments, transition towards a more sustainable environment.

   Sources:
   MSc Architecture, Urbanism and Building Sciences. (n.d.). TU Delft. https://www.tudelft.nl/onderwijs/opleidingen/masters/aubs/msc-architecture-urbanism-and-building-sciences

Urbanism. (n.d.). TU Delft. https://www.tudelft.nl/bk/over-faculteit/afdelingen/urbanism

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

Scientific relevance

The transition towards a circular system is currently a hot topic among academia, practitioners, and governmental institutions. Multiple frameworks are created, and cities have adopted their own circular strategy. However, current research for the transition towards a circular system (often) overlooks the social- and spatial dimension (Prendeville et al., 2017; Coenen et al., 2012). Most circular economy initiatives use policy frameworks, and design frameworks for a multi-dimensional circular city are lacking (Marin & de Meulder, 2018).
This thesis will tackle this research gap by adopting a context-based approach, in which social networks/structures are also addressed. The outcome of this thesis, a design for a quarter in the Indische Buurt in Amsterdam, will add to the current scientific research and propose interventions in a complex urban system. This thesis can help provide ideas for the spatial and societal implication of the circular economy in an urban context.

Societal relevance

The awareness of the need to transition towards a circular system is growing, both amongst governmental institutions and citizens. Although the awareness is increasing, the action which is taken still lag behind. The only way to reduce the overshooting of the planetary boundaries is if everyone in society will do their part. This requires a societal change which will be apparent in production and consumption patterns.
This thesis will stimulate residents to become more aware of the need of the transition and engage them to act, through the design of the public- and collective space. Also, it will show residents concrete examples of how this transition towards a circular system, which is often abstract for them, could look like.
Next to this, this thesis can improve the current (urban) circular strategies of municipalities and national governments. This will support the transition towards a circular system.

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